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The Gateway Centre

TRAFFIC IMPACT STUDY

Charis Developments

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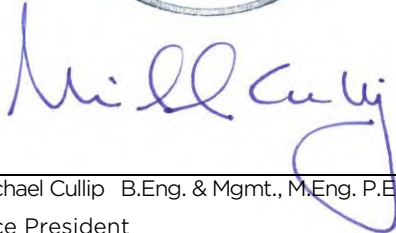
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Prepared by:

Tatham Engineering Limited
115 Sandford Fleming Drive, Suite 200
Collingwood, Ontario L9Y 5A6
T 705-325-1753
tathameng.com

Prepared for:

Charis Developments
204-186 Hurontario Street
Collingwood, Ontario L9Y 4T4

Authored by:	Reviewed by:
	 
Matthew Buttrum B.Eng., EIT Engineering Intern	Michael Cullip B.Eng. & Mgmt., M.Eng. P.Eng. Vice President

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Issue	Date	Description
1	April 1, 2022	Final Report
2	September 17, 2024	Revised Site Plan

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1 Introduction

Tatham Engineering Limited was retained by Charis Developments to prepare a Traffic Impact Study in support of a commercial development to be located on the northeast corner of the Poplar Sideroad/County Road 32 intersection with Hurontario Street/County Road 124 in the Town of Collingwood. The location of the development site is illustrated in Figure 1.

1.1 STUDY PURPOSE

The purpose of this study is to address the requirements of the Town of Collingwood and County of Simcoe with respect to the potential transportation impacts of the development on the local road network. In particular, the following will be discussed:

- the operations of the road system through the study area prior to the proposed development.
- the growth in the traffic volumes not otherwise attributed to the development (i.e. from overall growth in the area and/or other developments);
- the number of trips the proposed development is likely to generate;
- the operations of the study area road system upon completion of the development; and
- the resulting impacts and need for mitigating measures (if required) to ensure acceptable overall road operations.

1.2 REPORT HISTORY

The initial *The Gateway Centre Traffic Impact Study*¹ was completed in April 2022 and submitted to the Town as part of the development application. Subsequent to this, and reflective of initial Town comments, the site plan has been revised thus warranting a revised traffic impact study.

1.3 REPORT FORMAT

The Traffic Impact Study report is structured as follows:

- Chapter 1: introduction and study purpose;
- Chapter 2: existing conditions, detailing the road system, transit and active transportation networks, and corresponding traffic operations;

¹ *The Gateway Centre Traffic Impact Study*. Tatham Engineering, April 1, 2022.



- Chapter 3: future conditions, prior to the completion of the proposed development (referred to as future background conditions), and the expected growth in traffic levels and the resulting operating conditions;
- Chapter 4: proposed development and associated details including land use, access, traffic volumes and parking;
- Chapter 5: future conditions, with completion of the proposed development (referred to as future total conditions); and
- Chapter 6: summary of the report and key findings.



2 Existing Conditions

This chapter will describe the road, transit and active transportation networks, traffic volumes and traffic operations for the existing conditions.

2.1 ROAD NETWORK

The road network to be addressed by this study consists of Poplar Sideroad/County Road 32, Hurontario Street/County Road 124 and their respective intersection.

2.1.1 Key Road Sections

Mapping and photographs of the road network are provided in Figure 2 and Figure 3, with further details provided below.

Poplar Sideroad/County Road 32

Key elements/characteristics of Poplar Sideroad/County Road 32 are as follows:

- under the jurisdiction of Simcoe County;
- designated a primary arterial within the *Simcoe County Official Plan*;
- oriented east-west through the study area;
- 1 travel lane per direction
- urban cross-section from Hurontario Street/County Road 124 to beyond High Street to the west;
- semi-urban cross-section from Hurontario Street/County Road 124 to Hughes Street to the east (curb and gutter on the north side and open ditch on the south side) reverting to a rural cross-section beyond this;
- posted speed limit of 60 km/h through the study area (increases to 80 km/h east of Raglan Street); and
- relatively straight and flat alignment albeit there are some slight vertical curves.

County Road 124

County Road 124 is very similar to Poplar Sideroad/County Road 32, as follows:

- under the jurisdiction of Simcoe County (County Road 124 ends at Poplar Sideroad);
- designated a primary arterial within the *Simcoe County Official Plan*;



- oriented north-south through the study area;
- 1 travel lane per direction within a rural cross-section;
- posted speed limit of 70 km/h; and
- relatively straight and flat alignment.

Hurontario Street

Hurontario Street is the extension of County Road 124 into the Town of Collingwood, having the following characteristics:

- under the jurisdiction of the Town of Collingwood (Hurontario Street begins at Poplar Sideroad);
- designated an arterial within the *Town of Collingwood Official Plan*;
- oriented north-south through the study area;
- 1 travel lane per direction with a centre turn lane within a rural cross-section;
- posted speed limit of 50 km/h (speed changes just north of Poplar Sideroad); and
- relatively straight and flat alignment.

2.1.2 Key Intersection

Poplar Sideroad/County Road 32 & Hurontario Street/County Road 124

As illustrated in Figure 4, the intersection of Poplar Sideroad/County Road 32 with Hurontario Street/County Road 124 is a 4-leg intersection operating under signal control. The intersection configuration is as follows:

North Leg (southbound travel)	▪ left turn lane (centre turn lane) ▪ through-right lane
South Leg (northbound travel)	▪ left turn lane (60 m storage and parallel + 140 m taper) ▪ through lane ▪ right turn lane (60 m parallel + 80 m taper)
West Leg (eastbound travel)	▪ left turn lane (20 m storage + 40 m parallel + 115 m taper) ▪ through-right lane
East Leg (westbound travel)	▪ left turn lane (25 m storage + 40 m parallel + 115 m taper) ▪ through lane ▪ right turn lane (45 m parallel + 60 m taper)

The geometric design standards for turn lanes are provided in Table 1 for various design speeds (which are typically taken as 10 km/h over speed limits of 60 km/h and below, and 20 km/h over



speed limits in excess of 60 km/h). The turn lanes on Poplar Sideroad/County Road 32 comply with the requirements for a 70 km/h design speed (10 km/h over the speed limit), whereas those on County Road 124 vary between 80 and 100 km/h. While the latter are not 20 km/h in excess of the posted 70 km/h speed limit for each metric, they are considered appropriate in that they exceed the speed limit and further recognizing that the speed reduces to 50 km/h immediately to the north.

Table 1: Turn Lane Geometric Requirements

DESIGN SPEED	LEFT TURN LANE		RIGHT TURN LANE	
	Parallel	Taper	Parallel	Taper
60 km/h	30	100	30	50
70 km/h	40	115	45	60
80 km/h	50	130	60	70
90 km/h	60	145	70	75
100 km/h	70	160	85	80

Further to the separate left turn lanes on each approach, there are provisions for advance green phases in the westbound, northbound and eastbound directions (no southbound advance green).

2.2 TRANSIT NETWORK

There are several transit services/routes operating within the Town of Collingwood including several Town routes (West, East and Crosstown) and services linking Collingwood to Blue Mountain and Wasaga Beach. Notwithstanding, there are currently no transit routes operating on the frontage roads of the subject site or operating in the immediate area. The closest services are provided along Lockhart Road to the north (approximately 650 metres walking distance) and Raglan Street to the east (1,500 metres).

2.3 ACTIVE TRANSPORTATION NETWORK

A number of sidewalks and trails are provided in the immediate area as evident in the aerial photographs of Figure 2 and Figure 4. These include:

- the Hamilton Drain Trail (3.0 metre asphalt) which runs along the north limit of the development site;



- a multi-use trail (3.0 metre concrete) extending from Poplar Sideroad/County Road 32 north to the Hamilton Drain Trail, beyond which it continues as a standard sidewalk into the Town;
- a standard sidewalk on the north side of Poplar Sideroad/County Road 32 from Hurontario Street to the commercial access to the gas station/Tim Hortons on the northwest corner of the intersection; and
- sidewalk system throughout the adjacent residential subdivision to the east which includes several points of the connection to the Hamilton Drain Trail.

Immediately adjacent to the site, there is the following:

- a gravel shoulder along the east side of Hurontario Street;
- a 1.5 metre paved boulevard on the north side of Poplar Sideroad/County Road 32 (immediately behind the curb); and
- a 1.0 metre paved shoulder on the south side of Poplar Sideroad/County Road 32.

2.4 TRAFFIC VOLUMES

2.4.1 Traffic Counts

In support of the initial traffic impact study, turning movement counts were obtained for the intersection of Poplar Sideroad/County Road 32 and Hurontario Street/County Road 124 from July 2019 and October 2021. Recognizing that this data is dated as of the writing of this updated report (count data should be no older than 3 years old), new count data was obtained at the intersection from January 2023, June 2024 and August 2024, details of which are summarized in Table 2.

Table 2: Traffic Counts

LOCATION	COUNT DATE	COUNT PERIODS	WEEKDAY AM PEAK HOUR	WEEKDAY PEAK HOUR
Poplar Sideroad/ County Road 32 & Hurontario Street/ County Road 124	Wednesday Jan 18, 2023	7:00 – 10:00 15:00 – 18:00	8:30 – 9:30 1,551 vehicles	16:00 – 17:00 1,713 vehicles
	Wednesday June 19, 2024	7:00 – 10:00 15:00 – 18:00	7:45 – 8:45 1,658	16:30 – 17:30 1,767
	Thursday Aug 1, 2024	6:00 – 9:00 15:00 – 18:00	8:00 – 9:00 1,399	15:45 – 16:45 1,753



2.4.2 Factors & Adjustments

Seasonal Peak

Within recreational areas such as Collingwood, summer traffic volumes are typically the greatest and thus counts completed outside of the summer period are often adjusted accordingly. To explore the need for such, seasonal traffic counts were obtained from Simcoe County for Poplar Sideroad/County Road 32 east of Hurontario Street and County Road 124 south of Hurontario Street (in the immediate vicinity of the development site). The corresponding volumes are provided in Table 3. As noted, the summer and fall volumes are typically comparable to each other ($\pm 5\%$) and are higher than spring volumes. As such, no seasonal adjustment is considered necessary.

Table 3: Seasonal Traffic Volumes

ROAD SECTION	YEAR	SPRING	SUMMER	FALL
Poplar Sideroad/County Road 32 County Road 124 to Raglan Street	2018	9,687	10,342	10,441
	2021	8,835 ¹	10,070	10,329
	2024	11,366	11,791	n/a
County Road 124 Poplar Sideroad to 33/34 Sideroad	2018	9,186	8,841	8,929
	2021	7,851 ¹	8,597	8,879
	2024	7,862	7,813	n/a

¹ considered low due to COVID-19 implications

2.4.3 2024 Traffic Volumes

To ensure a conservative approach to the study, the greatest individual movement volumes from the 2023 and 2024 counts were employed. As the summer and fall volumes are comparable, no seasonal factors were applied. The resulting traffic volumes employed to reflect 2024 peak hour conditions are provided in Figure 6.

2.5 TRAFFIC OPERATIONS

In considering traffic operations on the study area road network, consideration has been given to the following:

- intersection operations; and
- queue operations.



2.5.1 Intersection Operations

The assessment of existing conditions provides the baseline from which the future traffic volumes and operations (both with and without the subject development) can be assessed. The capacity, and hence operations, of a road system is effectively dictated by its intersections. As such, the analysis focused on the operations of the Poplar Sideroad/County Road 32 and Hurontario Street/County Road 124 intersection. The analysis is based on:

- the 2024 traffic volumes;
- the existing intersection configuration and control; and
- procedures outlined in the *2000 Highway Capacity Manual*² (using Synchro v.11 software).

For signalized intersections, the review considers the average delay (measured in seconds), level of service (LOS) and volume to capacity (v/c) for each lane movement and the overall intersection. For unsignalized intersections, the review considers the average delay (measured in seconds), level of service (LOS) and volume to capacity (v/c) for the critical lane movements, namely the stop movements on the minor approaches. With respect to the noted metrics:

- level of service A corresponds to the best operating condition with minimal delays whereas level of service F corresponds to poor operations resulting from high intersection delays (additional details regarding Level of Service definitions are provided in Appendix B); and
- a v/c ratio of less than 1.0 indicates the intersection movement/approach is operating at less than capacity while v/c of 1.0 indicates capacity has been reached.

A summary of the 2024 intersection analyses is provided in Table 4 considering advance green phases as currently provided and optimized signal timings; detailed operations worksheets for the existing traffic conditions are included in Appendix C.

Based on the existing volumes, configuration and control, the study area intersection provides good overall levels of service (LOS C), good individual movement levels of service (LOS A, B or C) and nominal delays for most movements during both peak hours. As such, no intersection improvements are required to support the existing conditions.

² *Highway Capacity Manual*. Transportation Research Board, Washington DC, 2000.



Table 4: Intersection Operations – 2024

INTERSECTION, MOVEMENT & CONTROL			WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR		
			Delay	LOS	V/C	Delay	LOS	V/C
Poplar Sideroad/ County Road 32 & Hurontario Street/ County Road 124	EB L	signal	14	B	0.20	15	B	0.11
	EB TR	signal	32	C	0.81	34	C	0.86
	WB L	signal	18	B	0.24	16	B	0.30
	WB T	signal	24	C	0.62	19	B	0.47
	WB R	signal	19	B	0.14	16	B	0.11
	NB L	signal	16	B	0.36	18	B	0.38
	NB T	signal	15	B	0.28	18	B	0.24
	NB R	signal	14	B	0.06	16	B	0.03
	SB L	signal	28	C	0.61	29	C	0.63
	SB TR	signal	23	C	0.33	28	C	0.60
overall		signal	23	C	0.65	25	C	0.69
L left lane T through lane R right lane LT left-through TR through-right LTR left-through-right								

2.5.2 Queue Operations

Queue operations have also been considered for the southbound and westbound directions, (given the site location and frontage along the north and east legs) considering their respective configurations and employing Synchro software. As there is a centre turn lane on Hurontario Street, the available storage for the southbound left turn lane exceeds 100 metres.

The results of the queue operations are summarized in Table 5 for the following queue lengths (measured in metres), with the corresponding queue worksheets provided in Appendix D:

- 50th percentile queue (average queue), which will be exceeded 50% of the time; and
- 95th percentile queue, which will be exceeded only 5% of the time.



Table 5: Queue Operations – 2024

INTERSECTION & MOVEMENT		LANE LENGTH	WEEKDAY AM PEAK HOUR		WEEKDAY PM PEAK HOUR	
			50 th	95 th	50 th	95 th
Poplar Sideroad/ County Road 32 & Huronario Street/ County Road 124	WB Left	65 m	4 m	10 m	6 m	13 m
	WB Through	thru lane	44	72	41	72
	WB Right	50 m	0	12	0	13
	SB Left	TWLTL	26	47	32	55
	SB Through-Right	thru lane	21	38	45	71

TWLTL – two-way left turn lane (centre lane)

As noted, the anticipated 50th and 95th percentile queues can be readily accommodated within the existing lanes. As there is currently no southbound advance green, the southbound left turn queues are increased as compared to the westbound left turn queues (which have an advance green).

2.6 ROAD NETWORK IMPROVEMENTS

Based on the results of the existing intersection and queue operations, no improvements to the road network are considered necessary.



3 Future Background Conditions

This chapter will describe the road network and background traffic volumes expected for the following horizon years:

- 2030 to reflect full build-out of the proposed Gateway Centre;
- 2035 which corresponds to 5 years beyond build-out; and
- 2040 which corresponds to 10 years beyond build-out.

The latter horizons (+5 and +10 years) are required to address Simcoe County requirements.

3.1 ROAD NETWORK

No significant changes to the area road system are anticipated over the study horizon and thus the existing road system as described in Section 2.1 has been maintained.

3.2 TRANSIT NETWORK

The Town of Collingwood commissioned a transit service review study in 2021³, through which a number of service options were considered including:

- fixed routes that would be similar to the existing service but with modifications to the Town routes to better serve newer and future developments, including provision of services along Hurontario Street and Poplar Sideroad/County Road 32 that would serve the subject site;
- on-demand service that would cover the entire town and be responsive to user needs; and
- hybrid service that would include 2 fixed routes through the core of the Town (including along Hurontario Street and Poplar Sideroad/County Road 32) in addition to on-demand service within the west and east limits of the Town.

The recommended service strategy under the 5-year service plan was to implement the on-demand transit service option beginning in 2022 (albeit such remains outstanding).

3.3 ACTIVE TRANSPORTATION NETWORK

The *Town of Collingwood Active Transportation Framework 2017* and the *Collingwood Active Transportation Plan 2012-2017* identify Poplar Sideroad/County Road 32 as a possible future corridor for a trail system to support both recreational and active transportation uses, albeit they provide no recommendations or directions with respect to facility type or timing.

³ *Collingwood Transit Service Review*. IBI Group, September 29, 2021.



3.4 TRAFFIC VOLUMES

Background traffic volumes expected for the future background horizon years have been determined based on the existing traffic volumes, historical and projected growth, and consideration for other development specific traffic volumes.

3.4.1 Background Growth

Population Growth

In considering historical and projected population levels for the Town of Collingwood, the following are noted:

- based on the Census data for the years 2006 and 2021, the population of the Town increased from 17,290 to 24,811 persons, which translates to an annual growth of 2.4%;
- as per the *2021 Community Profile*⁴, the Town's 2030 population is estimated at 29,866, which translates to 2.1% annual growth over the 9-year period 2021 to 2030;
- as per the County of Simcoe's *Growth Forecast and Land Needs Assessment*⁵, the Town has been allocated a population of 42,690 by 2051 which yields an annual growth of 1.8% when considering a 2021 population of 24,811.

The corresponding population figures are provided in Table 6.

Table 6: Town of Collingwood Population

	2001	2006	2011	2016	2021	2030	2051
Population	16,039	17,290	19,241	21,793	24,811	29,866	42,690
Annual Growth	2006 to 2021 – 2.4%				2021 to 2051 – 1.8%		

Traffic Growth

Historical traffic volumes on Poplar Sideroad/County Road 32 and County Road 124 were reviewed as provided by Simcoe County. The County typically undertakes counts during the spring, summer and fall periods for each road section on a 3-year cycle. In review of the noted counts, there is no discernable difference between the seasons (with the exception of the Spring 2021 volumes which were notably less, likely due to COVID-19 implications at the time), and thus average volumes have been considered (i.e. average of the spring, summer and fall counts) as summarized in Table 7.

⁴ *2021 Community Profile*. Town of Collingwood, May 2021.

⁵ *Growth Forecast and Land Needs Assessment*. March 31, 2022, Hemson for the County of Simcoe.



Table 7: Historical Traffic Volumes

ROAD SECTION	AVERAGE ANNUAL DAILY TRAFFIC (AADT)				ANNUAL GROWTH (2015 TO 2024)
	2015	2018	2021	2024	
Poplar Sideroad/County Road 32 County Road 124 to Raglan Street	9,600	10,200	10,200 ¹	11,600 ²	2.1%
County Road 124 Poplar Sideroad to 33/34 Sideroad	8,000	9,000	8,700 ¹	7,800 ²	-0.2%

¹ does not include spring volumes as they were significant less due to COVID-19

² considers only spring and summer volumes

As noted, volumes on Poplar Sideroad/County Road 32 increased in the order of 2.1% per annum over the period 2015 to 2024, whereas those on County Road 124 decreased 0.2% per annum over the same period. In considering the more current period 2018 to 2014, growth rates of 2.5% and -2.3% have been realized.

Consideration of Other Studies

Background growth rates have been considered as employed in several other studies as follows:

- the 2017 *Eden Oak Homes – Proposed Residential Development Traffic Impact Study Update*⁶ (Eden Oak is the residential development just north and east of the subject site) employed a background growth rate of 1% per annum for both Poplar Sideroad/County Road 32 and Hurontario Street/County Road 124 in estimating future traffic volumes;
- the 2018 *Blackmoor Gates Traffic Impact Study*⁷ employed a 2% annual growth rate for background traffic;
- the 2019 *Collingwood Transportation Study Update*⁸ employed a 0.5% background growth rate, applied to all Town roads considered in the assessment;
- the 2021 *Indigo 2 Traffic Impact Study*⁹ (Indigo 2 is located at the south end of Peel Street) assumed an annual growth rate of 0.5% per annum to be consistent with the *Collingwood Transportation Study Update*, with consideration for a number of other area developments (many of which are common to this study);

⁶ *Eden Oak Homes – Proposed Residential Development Traffic Impact Study Update*. Cole Engineering, September 2017.

⁷ *Blackmoor Gates Traffic Impact Study*. WSP, May 2018.

⁸ *Collingwood Transportation Study Update*. RJ Burnside & Associates Limited, August 2019.

⁹ *Indigo 2 Traffic Impact Study*. C.F. Crozier & Associates Inc., December 2021.



- the 2022 *Pretty River Estates Transportation Impact Study*¹⁰ (Townhomes of Pretty River which are located on Poplar Sideroad to the east of the subject site) employed a 2% annual growth on County roads (Poplar Sideroad and Hurontario Street to the south) and 0.5% annual growth on Town roads, as provided by the County and Town respectively;
- the 50 *Saunders Street Traffic Impact Brief*¹¹ considered a 2% annual increase on Poplar Sideroad; and
- the 2024 *Summit View Phase 3 Traffic Impact Study*¹² assumed 2% annual growth on Poplar Sideroad (as per Town comments).

Overall Background Growth

To maintain consistency with the previously completed transportation studies, and ensure a conservative approach, a 2% annual growth rate has been assumed to represent background growth.

3.4.2 Development Growth

Further to the historical growth in traffic volumes and anticipated population growth in the area, consideration has been given to a number of area developments that are expected to increase traffic volumes through the study area, as illustrated in Figure 7 and listed below:

- 50 Saunders Street;
- Summit View Phase 1 & 2;
- Summit View Phase 3;
- 655 Hurontario Street;
- Pretty River Estates Phase 2;
- Blackmoor Gate;
- Indigo 2; and
- DiPoce Industrial Development.

Additional details pertaining to each development are provided below, as determined from respective traffic impact studies and/or information obtained through the Town of Collingwood Land Use Planning Services website. The traffic volumes associated with each background

¹⁰ *Pretty River Estates Transportation Impact Study*¹⁰. Paradigm, May 2022.

¹¹ *50 Saunders Street Traffic Impact Brief*. Tatham Engineering Limited, February 9, 2024.

¹² *Summit View Phase 3 Traffic Impact Study*. Tatham Engineering Limited, August 2024.



development that are expected to travel through the study area road network (assuming full build-out) are also provided in Appendix E.

50 Saunders Street

50 Saunders Street is a residential subdivision proposed at the northwest corner of Poplar Sideroad and Saunders Street, consisting of 64 detached residential units with an assumed build-out horizon of 2030. Details with respect to the resulting traffic volumes and assignment of such through the study area road system were determined from the *50 Saunders Street Traffic Impact Brief*.

Summit View Phase 2

The Summit View subdivision is located at the northwest corner of Poplar Sideroad and High Street. Phase 1 is complete and occupied, with Phase 2, which consists of 151 single detached and 42 semi-detached residential units, under development. At present, approximately 75% of the development is completed and occupied; 50 units remain to be built and/or occupied. Full build-out is anticipated by 2025.

Details with respect to the resulting traffic volumes and assignment of such through the study area road system were determined from the *Summit View Phase 3 Traffic Impact Study* which considered the remaining of the Phase 2 lands. It is noted however that the referenced study was based on 107 remaining units (which was reflective of the time of the study traffic counts) within Phase 3. As such, the respective volumes have been reduced accordingly to reflect the current development levels (50 outstanding units vs 107).

Summit View Phase 3

Summit View Phase 3 is located at the northwest corner of Poplar Sideroad and High Street, immediately abutting the roundabout to the south and east, and the Summit View Phase 1 and 2 lands to the west and north. Phase 3 is to consist of 38 semi-detached units and 97 townhouse units (135 total units) with build-out anticipated by 2030. Details with respect to the associated traffic volumes and assignment of such to the local road system were determined from the *Summit View Phase 3 Traffic Impact Study*.

Six 5 Five

Six 5 Five, located at 655 Hurontario Street, consists of 50 residential apartment units, to be located on the northeast corner of Hurontario Street and Lockhart Road. Development details and traffic volumes were determined from the *655 Hurontario Street Traffic Impact Brief*¹³.

¹³ *655 Hurontario Street Traffic Impact Brief*. C.C. Tatham & Associates Ltd., March 19, 2019.



The Townhomes of Pretty River

The Townhomes of Pretty River (previously referenced as Pretty River Estates Phase 2) is the easterly extension of the Pretty River Estates residential development, located on the north side of Poplar Sideroad just east of the subject site. As per the *Pretty River Estates Transportation Impact Study*, the development is to consist of 90 townhouse units, to be built-out by 2024 (the units are currently under construction and thus build-out is expected within 1 to 2 years). The associated traffic volumes and assignment to the study area road network have been established from the noted study, and extended through the study area based on the overall trip distribution patterns.

Blackmoor Gate

As per the *Blackmoor Gates Traffic Impact Study*, this development is to consist of 34 residential units (30 single detached units and 4 semi-detached units) with access to Campbell Street. The associated traffic volumes to result from this development and the allocation of such to the area road system are based on the respective traffic study (with volumes extended through the study area intersections as appropriate).

Indigo 2

The Indigo 2 development is to consist of 21 single detached units and 107 townhouse units, as referenced in the *Indigo 2 Traffic Impact Study*. While a build-out of 2024 was assumed in the noted study, construction has yet to commence and thus a revised build-out of 2030 has been assumed. The association traffic volumes and assignment through the study area road network reflect the assumptions and methodology employed in the noted study.

DiPoce Industrial Development

The DiPoce Industrial Development is located on the north side of Poplar Sideroad between Raglan Street and Sixth Line, with the lands encompassing the Georgian College campus. The trips associated with the remaining development lands were reported in the *Eden Oak Homes - Proposed Residential Development Traffic Impact Study Update*.

Phasing & Horizon Years

With respect to the background developments, assumptions as detailed in Table 8 have been employed relating to phasing and completion dates (as determined from existing conditions, development details in the respective traffic studies, and consideration for existing project status and approvals). It is noted that the DiPoce Industrial Development has not been identified on the Town's current *Development Activity Map* and hence it has been assumed outside of the noted horizon period (i.e. after 2040).



Table 8: Background Development Phasing & Completion

DEVELOPMENT	SIZE	PERCENT COMPLETE			
		2024	2030	2035	2040
50 Saunders	64 units	0%	100%	100%	100%
Summit View Phase 2	193 units	75%	100%	100%	100%
Summit View Phase 3	135 units	0%	100%	100%	100%
Six 5 Five	50 units	0%	100%	100%	100%
Townhomes of Pretty River	90 units	0%	50%	100%	100%
Blackmoor Gates	34 units	0%	100%	100%	100%
Indigo 2	128 units	0%	100%	100%	100%
Dipoce Industrial Development	142 acres	0%	0%	0%	0%

3.4.3 Background Traffic Volumes

Background traffic volumes (i.e. prior to consideration for the subject development) for the 2030, 2035 and 2040 horizon years have been determined based on the following:

- the 2024 volumes as per Figure 6;
- the noted annual background growth rate; and
- the additional traffic volumes associated with the background developments.

The resulting background traffic volumes are illustrated in Figure 8 through Figure 10.

3.5 TRAFFIC OPERATIONS

3.5.1 Intersection Operations

The intersection of Poplar Sideroad/County Road 32 with Hurontario Street/County Road 124 was again analyzed for each horizon year given the projected background volumes. The results are summarized in Table 9 through Table 11 for the respective horizon years with detailed worksheets provided in Appendix F. In each case, the existing intersection configuration and control have been maintained, and signal cycle lengths and phasing plans have been optimized.



Table 9: Intersection Operations – 2030 Background Conditions

INTERSECTION, MOVEMENT & CONTROL			WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR		
			Delay	LOS	V/C	Delay	LOS	V/C
Poplar Sideroad/ County Road 32 & Hurontario Street/ County Road 124	EB L	signal	16	B	0.25	15	B	0.14
	EB TR	signal	44	D	0.92	45	D	0.93
	WB L	signal	19	B	0.37	21	C	0.46
	WB T	signal	25	C	0.66	22	C	0.54
	WB R	signal	19	B	0.16	17	B	0.13
	NB L	signal	19	B	0.49	24	C	0.55
	NB T	signal	18	B	0.34	21	C	0.29
	NB R	signal	16	B	0.07	19	B	0.04
	SB L	signal	39	D	0.76	45	D	0.79
	SB TR	signal	26	C	0.42	39	D	0.76
	overall	signal	28	C	0.78	32	C	0.82
L left lane T through lane R right lane LT left-through TR through-right LTR left-through-right								

Table 10: Intersection Operations – 2035 Background Conditions

INTERSECTION, MOVEMENT & CONTROL			WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR		
			Delay	LOS	V/C	Delay	LOS	V/C
Poplar Sideroad/ County Road 32 & Hurontario Street/ County Road 124	EB L	signal	16	B	0.28	15	B	0.15
	EB TR	signal	47	D	0.94	51	D	0.97
	WB L	signal	21	C	0.45	24	C	0.55
	WB T	signal	26	C	0.67	22	C	0.56
	WB R	signal	19	B	0.20	17	B	0.14
	NB L	signal	24	C	0.58	34	C	0.72
	NB T	signal	21	C	0.38	24	C	0.33
	NB R	signal	19	B	0.08	21	C	0.05
	SB L	signal	50	D	0.83	63	E	0.89
	SB TR	signal	29	C	0.45	47	D	0.83
	overall	signal	32	C	0.83	38	D	0.89



Table 11: Intersection Operations – 2040 Background Conditions

INTERSECTION, MOVEMENT & CONTROL			WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR		
			Delay	LOS	V/C	Delay	LOS	V/C
Poplar Sideroad/ County Road 32 & Hurontario Street/ County Road 124	EB L	signal	18	B	0.35	16	B	0.18
	EB TR	signal	62	E	1.00	73	E	1.04
	WB L	signal	24	C	0.49	28	C	0.56
	WB T	signal	28	C	0.71	23	C	0.58
	WB R	signal	19	B	0.24	18	B	0.17
	NB L	signal	30	C	0.68	84	F	0.96
	NB T	signal	23	C	0.43	27	C	0.37
	NB R	signal	19	B	0.09	24	C	0.05
	SB L	signal	74	E	0.95	89	F	0.99
	SB TR	signal	30	C	0.49	58	E	0.89
overall		signal	39	D	0.92	53	D	1.00

L left lane T through lane R right lane LT left-through TR through-right LTR left-through-right

As indicated, acceptable overall intersection operations will be provided through the 2035 horizon during both peak periods (LOS C or D). However, at the 2040 horizon during both peak periods, the eastbound through-right movement will operate at/over capacity (i.e. $v/c \geq 1.00$). This is largely a function of the increased through and right turn volumes, and the provision of a shared lane. Additionally, during the PM peak period, other movements are noted to operate at LOS F and/or near capacity (v/c approaching 1.00). Improvements are required to address these operational problems.

The intersection was reassessed at the 2040 horizon considering the following improvements:

- an advanced green signal phase for the southbound left turn; and
- an eastbound right turn lane, allowing for separation of the eastbound through and right turning movements.

It is noted that these improvements are consistent with those recommended in the *Summit View Phase 3 Traffic Impact Study*. Results of the reassessment are summarized in Table 12 with detailed operations worksheets provided in Appendix F. As indicated, the intersection will provide improved operations overall (LOS C) with most individual movements expected to



operate at LOS B or C with average delays. All movements will operate with reserve capacity remaining during both peak periods.

Table 12: Intersection Operations – 2040 Background + Improvements

INTERSECTION, MOVEMENT & CONTROL			WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR		
			Delay	LOS	V/C	Delay	LOS	V/C
Poplar Sideroad/ County Road 32 & Hurontario Street/ County Road 124	EB L	signal	18	B	0.40	18	B	0.23
	EB T	signal	36	D	0.87	44	D	0.91
	EB R	signal	18	B	0.14	19	B	0.20
	WB L	signal	18	B	0.38	23	C	0.55
	WB T	signal	33	C	0.83	28	C	0.71
	WB R	signal	19	B	0.24	19	B	0.19
	NB L	signal	24	C	0.64	29	C	0.67
	NB T	signal	28	C	0.61	29	C	0.48
	NB R	signal	22	C	0.09	25	C	0.05
	SB L	signal	32	C	0.78	26	C	0.68
	SB TR	signal	26	C	0.52	41	D	0.82
overall			28	C	0.78	32	C	0.84

3.5.2 Queue Operations

Queue operations were also repeated for the future background conditions, considering the improvements recommended to address poor intersection operations, with the results provided in Table 13 and Appendix G for the 2040 horizon (as this horizon serves the greatest volume, this queue assessment is the most critical). As noted, the average and 95th percentile queues can be accommodated within the existing left and right turn lanes. However, it is noted that when the projected 95th percentile traffic volumes exceed the noted movement capacity (as noted for several movements in the tables), the queues may be longer than the values noted.



Table 13: Queue Operations – 2040 Background Conditions + Improvements

INTERSECTION, CONTROL & MOVEMENT		LANE LENGTH	WEEKDAY AM PEAK HOUR		WEEKDAY PM PEAK HOUR	
			50 th	95 th	50 th	95 th
Poplar Sideroad/ County Road 32 & Huronario Street/ County Road 124	WB Left	65 m	6 m	13 m	10 m	19 m
	WB Through	thru lane	74	111	77	118
	WB Right	50 m	4	18	4	19
	SB Left	TWLTL	31	52 ¹	39	59
	SB Through-Right	thru lane	35	54	77	124 ¹

TWLTL – two-way left turn lane (centre lane)

¹ 95th percentile volume exceeds capacity, queue may be longer

3.6 ROAD NETWORK IMPROVEMENTS

3.6.1 Advance Green Phases

As previously noted, the analysis of the existing and future background conditions considers advance green phases for the northbound, eastbound and westbound left turn movements (as currently exist). As identified above, a southbound left turn advance green phase is also recommended to accommodate the projected 2040 background traffic volumes. As there are currently no provisions for a southbound advance green, such will have to be implemented (namely replacement of the southbound signal heads to facilitate the advance green arrow and modifications to the traffic signal timing plan). It is noted that given the existing southbound left turn movement (nearly 200 vehicles during the PM peak hour), the provision of a southbound advance green to serve existing conditions would be advantageous, as would implementation at an earlier horizon under background conditions.

3.6.2 EB Right Turn Lane

To improve the 2040 operating conditions (and primarily address the increased through volumes on Poplar Sideroad/County Road 32), the provision of an eastbound right turn lane is recommended by the 2040 horizon (during the PM peak hour, the through and right turn volumes will amount to 595 and 200 vehicles respectively).

3.6.3 Recommended Improvements

To ensure acceptable operations for background traffic through to the 2040 horizon year and beyond, the following road network improvements are recommended:



- provide a southbound advance green signal phase (would provide immediate benefit); and
- provide an eastbound right turn lane on Poplar Sideroad (for 2040).

While the first improvement is desired and will provide improved operations, the intersection will continue to operate acceptably should it not be constructed.

It is recognized that additional property will be required along the south side of Poplar Sideroad to accommodate the turn lane, and that this property will not likely be obtained until the property on the southwest corner is developed. It is recommended that the County monitor the intersection operations to confirm the need for the turn lane, and seek to obtain the required property to facilitate its implementation.



4 Proposed Development

This chapter will provide additional details with respect to the proposed development, including its location, the projected site generated traffic volumes and the assignment of such to the adjacent road network.

4.1 LOCATION

As illustrated in Figure 1, the proposed development is to be located at the northeast corner of the Poplar Sideroad/County Road 32 and Hurontario Street/County Road 124 intersection in the Town of Collingwood.

4.2 LAND-USE & PHASING

Details with respect to the proposed land uses, sizes and phases (3 phases are proposed) are provided in Table 14. The corresponding site plan is illustrated in Figure 11.

Table 14: Development Land Use & Size Details

	BUILDING & LAND USE	PHASE	SIZE		UNITS
1	Starbucks + drive-thru	1	157 m ²	1,690 ft ²	GFA
2	Dollarama	1	929 m ²	10,000 ft ²	GFA
3	commercial/retail	2	727 m ²	7,830 ft ²	GFA
	residential	2	165		units
4	commercial/retail	2	540 m ²	5,815 ft ²	GFA
	office	2	1,080 m ²	11,625 ft ²	GFA
5	grocery store	3	4,576 m ²	49,250 ft ²	GFA
6	Pet Valu	3	372 m ²	4,000 ft ²	GFA
	commercial/retail	3	875 m ²	9,415 ft ²	GFA
7	McDonalds + drive-thru	1	368 m ²	3,965 ft ²	GFA



With respect to completion and build-out, it is assumed that Phase 1 construction (i.e. Buildings 1, 2, and 7) will begin promptly with completion by 2026, whereas the remaining phases will be fully built out by 2030.

4.3 ACCESS

4.3.1 Configuration & Location

As per the site plan and further illustrated in Figure 12, the development will be served by 2 access points as referenced below (all of which are to be constructed as part of Phase 1):

- Access 1: full moves access approximately 190 metres north of Poplar Sideroad/County Road 32 (measured centre to centre) with a width of 9.0 metres; and
- Access 2: full moves access approximately 150 metres east of Hurontario Street/County Road 124 and 120 metres west of Hughes Street (measured centre to centre) with a width of 9.0 metres.

4.3.2 TAC Guidelines

The Transportation Association of Canada (TAC) has established guidelines with respect to access spacing/corner clearances in relation to signalized intersections recognizing the implications that each can have on the other (e.g. queued vehicles at the signalized intersection can block the access thus interfering with inbound and outbound movements). For operating speeds of 50 km/h, the TAC guidelines recommend a minimum spacing (i.e. corner clearance) of 70 metres, measured from the edge of the access to the edge of the road.

As noted, Access 1 is 190 metres north of Poplar Sideroad (centre to centre) and thus satisfies this requirement.

Access 2 is located 150 metres east of Hurontario Street (centre to centre) and therefore also satisfies the 70 metre requirement. It is noted however, that the speed limit on Poplar Sideroad is 60 km/h through the study area whereas the TAC guideline is based on an operating speed of 50 km/h). As the corner clearances are based on stopping sight distances on the departure leg between the signalized intersection and the access, the stopping sight distance requirement for 60 km/h was reviewed. As per TAC standards, the requirement is 85 metres, which can also be achieved with Access 2. Notwithstanding, additional analyses will be undertaken with respect to intersection operations and potential for queue spillback.



4.3.3 Town of Collingwood Standards

As per the *Collingwood Zoning By-Law* and in consideration of the proposed land uses, the required site access width is 7.5 to 15.0 metres. As such, the access widths as proposed 9.0 metres) are considered appropriate.

4.3.4 Sight Line Analysis

The sight line analysis completed at the proposed site access points has considered both minimum stopping sight distance and intersection sight distance as per Transportation Association of Canada (TAC) guidelines and defined below.

- Minimum stopping sight distance provides sufficient distance for an approaching motorist to observe a hazard in the road and bring their vehicle to a complete stop prior to the hazard.
- Intersection sight distance allows a vehicle to enter a main road from a side street (or site access) and attain the appropriate operating speed without significantly impacting the operating speed of an approaching vehicle.

In addition, given that Poplar Sideroad/County Road 32 is under the jurisdiction of Simcoe County, the County's sight distance requirements have also been considered, as per their entrance by-law.

The corresponding sight distance requirements are provided in Table 15, as are the available sight distances as determined through site investigations (and further evident in Figure 13). In all cases, the available sight distances exceed the minimum stopping sight distance, the intersection sight distance and the County of Simcoe sight distance requirements and thus the access locations are considered appropriate without the need for sight line improvements.

Table 15: Sight Line Assessment

ACCESS	DESIGN SPEED	TAC SIGHT DISTANCE			COUNTY SIGHT DISTANCE	AVAILABLE SIGHT DISTANCE TO/FROM	
		Stopping	Left Turn	Right Turn		West/North	East/South
Access 1	60 km/h	85 m	130 m	110 m	135 m	>200 m	>200 m
Access 2	70 km/h	105 m	150 m	130 m	170 m	>200 m	>200 m

4.4 DAYLIGHT TRIANGLES

The provision of daylight triangles at the site access intersections and also at the intersection of Poplar Sideroad/County Road 32 with Hurontario Street/County Road 124 will be resolved with Simcoe County through the site plan approval process. The provision of such have no bearing on



the transportation operations or traffic impacts and thus need not be resolved in support of this study.

4.5 VEHICLE CIRCULATION

As per the site plan, the parking aisles are a minimum width of 6.0 metres, thus complying with the *Collingwood Zoning By-Law* (for parking spaces at 70° or more, the aisle is to be 6.0 metres).

4.6 TRANSIT NETWORK

As per pre-consultation comments from Coltrans, the proposed development is expected to serve as a transit hub/stop in the future. As such, space for a transit shelter is provided in front of the grocery store to accommodate this future service.

4.7 ACTIVE TRANSPORTATION

As illustrated in the site plan of Figure 11, the following pedestrian and cyclist measures will be provided:

- sidewalks to be constructed across the site frontage along both Hurontario Street and Poplar Sideroad/County Road 32, including connectivity to their respective intersection to facilitate crossings. This also assists the Town's stated goal of providing an active transportation corridor along Poplar Sideroad, as detailed in Section 3.3;
- 2 sidewalk connections between the site and the sidewalk along Hurontario Street which will provide access to/from the Dollarama, Starbucks and McDonalds, and access to the remaining development via the internal pedestrian system;
- sidewalk to be constructed north-south through the site, connecting to Poplar Sideroad/County Road 32 to the south and the Hamilton Drain Trail to the north; and
- bicycle racks to be provided adjacent to all buildings to facilitate bicycle travel and parking.

All sidewalk crossings of the internal road system will be continuous, thus improving visibility and prominence of the crossing, and hence enhancing safety of the pedestrians.

4.8 PARKING

4.8.1 Parking Requirements

Parking requirements are dictated in the *Collingwood Zoning By-Law* for specific land uses. Those considered for this assessment are as follows:

- dwelling, apartment 1 resident space + 0.25 visitor spaces per unit;
- restaurant 8 spaces per 100 m² gross floor area; and



- all other non-residential uses 3 spaces per 100 m² gross floor area.

The resulting parking requirements are detailed in Table 16. As there are no parking rates specific to general commercial, supermarket or office space, the parking requirement for the “all other non-residential uses” classification has been applied. The calculations include reductions to gross floor area (i.e. discounting of space used for mechanical rooms, storage, etc.) as defined in the Town’s *Zoning By-law* for each use as appropriate.

Table 16: Development Parking Requirements

BUILDING & LAND USE		PARKING RATE		SIZE	PARKING REQUIRED
1	Starbucks + drive-thru	8	per 100 m ²	157 m ²	13 spaces
2	Dollarama	3	per 100 m ²	836 m ²	26
3	commercial/retail	3	per 100 m ²	727 m ²	22
	residential	1.25	per unit	165 units	207
4	commercial/retail/office	3	per 100 m ²	1,620 m ²	49
5	grocery store	3	per 100 m ²	3,204 m ²	97
6	commercial/retail	3	per 100 m ²	1,246 m ²	38
7	McDonalds + drive-thru	8	per 100 m ²	287 m ²	23
Total					475 spaces

As indicated, a total of 475 parking spaces are required. It is noted that this parking requirement is the cumulative requirement considering each independent land use and does not consider any on-site synergies (i.e. shared parking) that may result.

For a parking requirement in excess of 100 spaces, the Town requires that 2% of the total requirement for configured as accessible parking. Based on the need for 475 spaces, the accessible requirement amounts to 10 spaces.

4.8.2 Parking Supply

The site plan currently accommodates 585 spaces, including 12 accessible spacing, thus satisfying the Town requirements for each noted requirement.



4.8.3 Parking Stall Configuration

Standard parking stalls are 2.8 x 6.0 metres in accordance with the *Collingwood Zoning By-Law*. Similarly, the accessible stalls reflect the Town requirements.

4.9 DELIVERY & LOADING SPACES

The Town's delivery and loading space regulations, as per the *Collingwood Zoning By-Law*, are:

- no requirements for a development of less than 460 m² GFA;
- 1 delivery space for a development of 460 m² to 2,500 m² GFA;
- 1 loading space for a development of 2,501 to 7,000 m² gross floor area;
- 2 loading spaces for a development of 7,001 to 10,000 m² gross floor area; and
- 1 additional loading space for every additional 2,500 m² gross floor area.

Considering the needs of each building separately, the following are noted:

- Buildings 2, 3, 4 and 6 require a delivery space (each has a GFA between 460 m² and 2,500 m²); and
- Building 5 requires a single loading space (GFA is between 2,501 and 7,000 m²)

As per the Site Plan, with the exception of Building 5, all buildings will provide one delivery space, whereas Building 5 will provide 2 loading spaces, thereby exceeding the Town requirements.

4.10 DRIVE-THRU

For restaurant uses, the *Collingwood Zoning By-Law* requires 10 queueing spaces within a drive-thru. Measured from the pick-up window, the drive-thru at the Starbucks will provide space for 12 queued vehicles, whereas that at the McDonalds will accommodate 14 vehicles. A further 2 queueing spaces are provided in each drive-thru beyond the pick-up window.

4.11 SITE TRAFFIC

4.11.1 Trip Generation

Gross Trips

The number of vehicle trips to be generated by the proposed development for the weekday AM and PM peak hours has been determined based on type of use, development size and trip generation rates as per the *ITE Trip Generation Manual, 11th Edition* noted in Table 17. Trip rates specific to McDonalds and Starbucks were also identified from other development specific traffic studies and are included in Table 17 for comparative purposes. The McDonalds rates are based



on surveys of such restaurants with drive-thrus in the City of Ottawa¹⁴ whereas the Starbucks rates are based on 4 separate surveys of a site in New Jersey¹⁵.

Table 17: Trip Rates

LAND-USE & ITE CODE		VARIABLE	WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR		
			In	Out	Total	In	Out	Total
multifamily housing (high-rise)	222	dwelling units	0.09	0.18	0.27	0.18	0.14	0.32
small office building	712	1,000 ft ² GFA	1.59	0.33	1.92	0.78	1.67	2.45
variety store (dollar store)	814	1,000 ft ² GLA	1.67	1.37	3.04	3.42	3.28	6.70
shopping plaza, w/o supermarket	821	1,000 ft ² GLA	0.58	0.36	0.94	1.83	1.98	3.81
supermarket	850	1,000 ft ² GLA	1.69	1.17	2.86	4.48	4.48	8.95
pet supply superstore	866	1,000 ft ² GLA	-	-	-	1.78	1.78	3.55
fast food + drive-thru	934	1,000 ft ² GFA	22.75	21.86	44.61	17.18	15.85	33.03
coffee/donut shop + drive-thru	937	1,000 ft ² GFA	43.80	42.08	85.88	19.50	19.50	38.99
McDonalds	-	1000 ft ² GFA	12.12	11.18	23.30	10.02	8.88	18.90
Starbucks	-	drive-thru	93	93	186	46	46	92

The resulting trip estimates are provided in Table 18, considering the following:

- any commercial uses with a specific tenant identified on the site plan (i.e. Dollarama, Pet Valu, grocery store) have used rates representative of that use;
- the *shopping plaza without supermarket* trip rates have been applied to the general commercial/retail uses (i.e. without a specific tenant identified) and while the rates are based on gross leasable area (GLA), it is assumed to equal the gross floor area (GFA) in that no “internal corridors” as would occur in a shopping mall are expected. Furthermore, while ITE rates are available for a *shopping plaza with supermarket*, consideration of the

¹⁴ 886 March Road McDonalds Transportation Study. HDR Corporation, March 2013.

¹⁵ Traffic Impact Study Proposed Starbucks Drive-Thru Only Facility. Stonefield Engineering & Design, LLC, February 24, 2021.



supermarket as a separate independent building and use results in higher, thus more conservative, trip estimates;

- the fast food + drive-thru trip rates have been applied to the McDonalds as opposed to the specific “McDonalds” rates as the former were significantly higher than the latter (thus ensuring a conservative approach);
- the application of coffee/donut shop + drive-thru trip rates yields near identical trip estimates to the “Starbucks” rates (the ITE rates have been employed as they reflect industry standards).

Table 18: Trip Estimates – Gross Trips

BUILDING & LAND USE	SIZE	WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR		
		In	Out	Total	In	Out	Total
1 Starbucks + D/T	1.7 1000 ft ²	74	71	145	33	33	66
2 Dollarama	10.0 1000 ft ²	17	14	30	34	33	67
3 commercial/retail	7.8 1000 ft ²	8	5	14	20	21	41
residential	165 units	15	29	45	30	23	53
4 commercial/retail	5.8 1000 ft ²	6	4	10	15	15	30
office	11.6 1000 ft ²	16	3	19	9	17	25
5 grocery store	49.3 1000 ft ²	83	58	141	220	220	441
6 Pet Valu	4.0 1000 ft ²	-	-	-	7	7	14
commercial/retail	9.4 1000 ft ²	10	6	16	24	25	49
7 McDonalds + D/T	4.0 1000 ft ²	90	87	177	68	63	131
Total Gross Trips		320	277	597	459	457	916

Trip Adjustments

With commercially oriented development, not all trips generated will be new trips. Rather, a portion of the trips generated are expected to be already on the adjacent road network for other purposes but will visit the site as they are driving past (e.g. on the way to work, on the way home, etc.). These are referred to as pass-by trips. In terms of the study area road network, pass-by trips will occur as existing traffic travelling along Poplar Sideroad/County Road 32 and/or Hurontario Street/County Road 124 access the site prior to continuing along their normal route.



As per the *ITE Trip Generation Handbook, 3rd Edition*, the following uses are expected to generate significant pass-by traffic:

- variety store 0% AM (not typically open) and 34% PM;
- supermarket 0% AM (not typically open) and 51% PM;
- fast food with drive-thru 49% AM and 50% PM;
- shopping plaza 0% AM (not typically open) and 34% PM; and

In addition, given the range of uses within the site, some degree of shared/internal trips is expected. A shared/internal trip occurs when there is interaction between the uses on a single site (e.g. patrons of the restaurants may also visit the retail shops, residents of the site may work in one of the offices). For shared/internal trips, it is common practice to apply a reduction to the trip estimates in order to avoid double counting.

The assumed pass-by and internal/shared trips are summarized in Table 19. A 10% reduction for internal trips was applied to all uses; for pass-by trips, a 30% reduction was applied to most commercial uses, whereas 50% was applied to the restaurant uses.

Table 19: Trip Estimates – Pass-By & Internal/Shared Trips

BUILDING & LAND USE	TRIPS	WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR		
		In	Out	Total	In	Out	Total
1 Starbucks + D/T	50% pass-by	37	37	74	17	17	34
2 Dollarama	30% pass-by	5	5	10	10	10	20
3 commercial/retail	30% pass-by	3	3	6	6	6	12
residential	n/a	-	-	-	-	-	-
4 commercial/retail	30% pass-by	2	2	4	4	4	8
office	n/a	-	-	-	-	-	-
5 grocery store	30% pass-by	-	-	-	2	2	4
6 Pet Valu	30% pass-by	3	3	6	7	7	14
commercial/retail	30% pass-by	25	25	50	66	66	132
7 McDonalds + D/T	50% pass-by	45	45	90	34	34	68
Total Pass-by		120	120	240	146	146	292



BUILDING & LAND USE	TRIPS	WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR		
		In	Out	Total	In	Out	Total
All uses	10% internal /shared	32	28	60	46	46	92
Total Internal/Shared		32	28	60	46	46	92

The resulting new trips to be generated by the development (i.e. gross trips minus pass-by and internal/shared trips) are summarized in Table 20. These represent the new trips to the road system that are expected.

Table 20: Trip Estimates – New Trips

BUILDING & LAND USE	TRIPS	WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR		
		In	Out	Total	In	Out	Total
1 Starbucks + D/T	40% new trips	30	27	57	13	13	26
2 Dollarama	60% new trips	10	7	17	21	19	40
3 commercial/retail	60% new trips	5	2	7	12	13	25
residential	90% new trips	14	26	40	27	21	48
4 commercial/retail	60% new trips	4	2	6	9	9	18
office	90% new trips	14	3	17	8	15	23
5 grocery store	60% new trips	50	27	77	132	132	264
6 Pet Valu	60% new trips	-	-	-	4	4	8
commercial/retail	60% new trips	6	3	9	14	15	29
7 McDonalds + D/T	40% new trips	36	33	69	27	23	50
Total New Trips		169	130	299	267	264	531

4.11.2 Trip Distribution

New Trips

The distribution of the new trips generated by the site has been established based on the existing travel patterns observed at the study area intersection and consideration for development within



the immediate areas (recognizing that a significant amount of site patrons are likely to come from the residential developments in the immediate area). While there may be subtle differences in the AM and PM peak hours, a common distribution has been assumed for both.

The overall distribution of traffic was applied as follows:

- to/from the north via Hurontario Street 40%;
- to/from the south via County Road 124 10%;
- to/from the west via Poplar Sideroad 25%; and
- to/from the east via Poplar Sideroad 25%.

Pass-By Trips

As previously noted, pass-by trips are those trips already on the road system that are expected to stop at the site as they travel past. As such, the distribution of the pass-by trips was based on the directional volumes on Poplar Sideroad/County Road 32 and Hurontario Street/County Road 124 as observed at their respective intersection. The greatest approach volumes past the site will contribute the greatest number of pass-by trips. While the northbound to westbound and eastbound to southbound movements will not travel past the site per se, such have been considered as a source of pass-by traffic given their proximity to the site and ease of access (i.e. people will deviate from their initial path to accommodate a visit to the site).

4.11.3 Trip Assignment

The assignment of the trips generated by the development to the area road network and site access points is based on the trip distribution noted above with consideration given to the expected travel routes. In terms of access assignment, site trips have been assigned to the 2 access points based on the site layout and the location of each access in relation to the proposed building that is generating the trips.

The resulting site generated traffic volumes are illustrated in Figure 14, Figure 15 and Figure 16 for the new trips, pass-by trips and total trips. Additional details specific to the new trips and pass-by trips generated by each specific building and land use are provided in Appendix I.



5 Future Total Conditions

This chapter will address the resulting impacts of the proposed development on the adjacent road system with a focus on the following:

- operations of the study area road network, including the site access points;
- available sight lines at the proposed access points; and
- potential improvements to the study area road network, if necessary.

5.1 TRAFFIC VOLUMES

To assess the impacts of the increased traffic volumes resulting from the proposed development, the site generated traffic was combined with the 2030, 2035 and 2040 background traffic volumes. In addition, an interim horizon year of 2026 was also considered (corresponding to build out Phase 1). The resulting total traffic volumes are presented in Figure 17 through Figure 20 for the respective horizons.

5.2 TURN LANE REQUIREMENTS

Prior to assessing the operations of the study area intersections under the future total conditions (i.e. with the development traffic), the need for additional turn lanes to serve the site access points has been reviewed based on the following:

- MTO warrants/guidelines for auxiliary turn lanes at unsignalized intersections;
- a design speed of 60 km/h on Hurontario Street (posted speed of 50 km/h + 10 km/h);
- a design speed of 70 km/h on Poplar Sideroad/County Road 32 (posted speed of 60 km/h + 10 km/h); and
- the future total traffic volumes.

5.2.1 Right Turn Lanes

MTO guidelines suggest that an exclusive right turn lane be considered where right turn volumes exceed 60 vehicles per hour and impede the operations of through traffic. The projected right turn volumes are illustrated in Figure 17 through Figure 20 and summarized in Table 21 (the maximum of the AM and PM peak hour volumes under each horizon year are noted). Similarly, the results of the warrant analysis are also noted, with indication of time of need should a right turn lane be warranted.



Table 21: Site Access Right Turn Volumes & Warrants

ACCESS & MOVEMENT		2026 PHASE 1	2030 BUILD-OUT	2035	2040	WARRANTED
Access 1	NB right	30 turns	55	55	55	Not warranted
Access 2	WB right	35	70	70	70	Warranted in 2030

The right turn volumes at Access 1 do not meet the threshold and thus a right turn lane is not warranted.

The volume threshold is exceeded at Access 2 at 2030 horizon and thus a westbound right turn lane is required by the 2030 horizon, to be implemented in conjunction with full build-out of the site. A 60 metre taper is recommended to facilitate the right turns (which is consistent with the right turn taper provided at Hughes Street immediately to the east).

5.2.2 Left Turn Lanes

For left turns, the warrant analysis considers the following:

- volume of left turning traffic;
- volume of advancing and opposing traffic (i.e. volumes in both directions on the through road); and
- design speed of the through road.

There is currently a centre turn lane on Hurontario Street that will serve Access 1. In this regard, the need for a left turn lane was considered only at Access 2. The corresponding turn volumes and associated warrant analyses are summarized in Table 22 for each horizon. If warranted, the storage requirement of the left turn lane, which is also dependent on the noted factors, is reported considering the more critical of the AM and PM peak hour requirements (the MTO warrant nomographs are provided in Appendix J).

Table 22: Site Access Left Turn Lane Warrants

ACCESS & MOVEMENT		2026 PHASE 1	2030 BUILD-OUT	2035	2040
Access 2	EB left	55 turns Warranted 30 m storage	105 Warranted 50 m storage	105 Warranted 50 m storage	105 Warranted 50 m storage



As noted, a left turn lane is warranted at Access 2, to be implemented in conjunction with Phase 1. The ultimate storage requirement of 50 metres should be constructed at the onset.

In considering design standards for a 70 km/h design speed, the turn lane should also include a 115 metre taper and a 40 metre parallel lane. However, as Access 2 is only 150 metres from Hurontario Street, the effective separation distance is limited to 130 metres. In conjunction with this, a runout lane is required to transition back to the 2 lane configuration on Poplar Sideroad (to include a 30 metre parallel lane as measured from the centre of Access 2 and a 115 metre taper); the separation between Access 2 and Hughes Street to the east is approximately 120 metres (measured centre to centre), which is insufficient to accommodate the full runout lane length. In consideration of the constrained environment around Access 2, implementation of a two-way left turn lane between Hurontario Street and Hughes Street would be most practical. This would have the added benefit of improving outbound operations of Access 2, as outbound left turning traffic would be able to complete a two-step left turn (Step 1: turn into the centre turn lane; and Step 2 accelerate to speed and merge with eastbound travel) as required.

5.3 TRAFFIC OPERATIONS

5.3.1 Intersection Operations

The operations of the Poplar Sideroad/County Road 32 intersection with Hurontario Street/County Road 124 were again investigated considering the total traffic volumes for each horizon year, and considering any improvements identified as required under background conditions. In addition to this, the site access operations have also been reviewed, assuming single outbound lane, stop control upon exit of the site, and implementation of exclusive turn lanes as warranted, namely a westbound right turn taper and eastbound left turn lane at Access 2.

Summaries of the 2026, 2030, 2025 and 2040 intersection operations are provided in Table 23 through Table 26 with corresponding worksheets provided in Appendix K.



Table 23: Intersection Operations – 2026 Total Conditions

INTERSECTION, MOVEMENT & CONTROL			WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR		
			Delay	LOS	V/C	Delay	LOS	V/C
Poplar Sideroad/ County Road 32 & Hurontario Street/ County Road 124	EB L	signal	17	B	0.26	15	C	0.14
	EB TR	signal	39	D	0.87	43	D	0.92
	WB L	signal	18	B	0.37	19	C	0.48
	WB T	signal	27	C	0.69	19	B	0.52
	WB R	signal	19	B	0.15	17	B	0.12
	NB L	signal	16	B	0.39	19	C	0.41
	NB T	signal	16	B	0.31	19	C	0.27
	NB R	signal	15	B	0.07	17	C	0.04
	SB L	signal	32	C	0.67	37	C	0.73
	SB TR	signal	24	C	0.36	32	C	0.66
	overall	signal	26	C	0.70	29	C	0.77
Access 1 & Hurontario Street	WB LR	stop	13	B	0.12	12	B	0.09
Access 2 & Poplar Sideroad	SB LR	stop	17	C	0.27	17	C	0.22
L left lane T through lane R right lane LT left-through TR through-right LTR left-through-right								

Table 24: Intersection Operations – 2030 Total Conditions

INTERSECTION, MOVEMENT & CONTROL			WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR		
			Delay	LOS	V/C	Delay	LOS	V/C
Poplar Sideroad/ County Road 32 & Hurontario Street/ County Road 124	EB L	signal	17	B	0.30	15	B	0.19
	EB TR	signal	42	D	0.91	46	D	0.94
	WB L	signal	22	C	0.54	27	C	0.65
	WB T	signal	26	C	0.67	21	C	0.55
	WB R	signal	19	B	0.17	16	B	0.12



INTERSECTION, MOVEMENT & CONTROL			WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR		
			Delay	LOS	V/C	Delay	LOS	V/C
Poplar Sideroad/ County Road 32 & Hurontario Street/ County Road 124 (cont'd)	NB L	signal	20	C	0.48	29	C	0.61
	NB T	signal	19	B	0.37	25	C	0.34
	NB R	signal	18	B	0.08	22	C	0.05
	SB L	signal	43	D	0.78	56	E	0.84
	SB TR	signal	28	C	0.44	47	D	0.82
	overall	signal	29	C	0.79	34	C	0.85
Access 1 & Hurontario Street	WB LR	stop	14	B	0.25	18	C	0.44
Access 2 & Poplar Sideroad	SB LR	stop	22	C	0.41	38	E	0.70
L left lane T through lane R right lane LT left-through TR through-right LTR left-through-right								

Table 25: Intersection Operations – 2035 Total Conditions

INTERSECTION, MOVEMENT & CONTROL			WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR		
			Delay	LOS	V/C	Delay	LOS	V/C
Poplar Sideroad/ County Road 32 & Hurontario Street/ County Road 124	EB L	signal	17	B	0.35	15	C	0.21
	EB TR	signal	49	D	0.95	51	D	0.96
	WB L	signal	27	C	0.62	41	C	0.78
	WB T	signal	27	C	0.70	22	B	0.57
	WB R	signal	19	B	0.20	17	B	0.15
	NB L	signal	24	B	0.58	50	D	0.81
	NB T	signal	22	C	0.41	28	C	0.38
	NB R	signal	19	B	0.09	24	C	0.06
	SB L	signal	54	D	0.86	74	E	0.92
	SB TR	signal	30	C	0.48	60	E	0.90
	overall	signal	33	C	0.86	42	D	0.93



INTERSECTION, MOVEMENT & CONTROL			WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR		
			Delay	LOS	V/C	Delay	LOS	V/C
Access 1 & Hurontario Street	WB LR	stop	15	C	0.27	19	C	0.47
Access 2 & Poplar Sideroad	SB LR	stop	24	C	0.46	56	F	0.81
L left lane T through lane R right lane LT left-through TR through-right LTR left-through-right								

Table 26: Intersection Operations – 2040 Total Conditions

INTERSECTION, MOVEMENT & CONTROL			WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR		
			Delay	LOS	V/C	Delay	LOS	V/C
Poplar Sideroad/ County Road 32 & Hurontario Street/ County Road 124	EB L	signal	18	B	0.47	19	B	0.31
	EB T	signal	38	D	0.89	45	D	0.91
	EB R	signal	18	B	0.15	21	C	0.20
	WB L	signal	19	B	0.54	39	D	0.77
	WB T	signal	34	C	0.85	28	C	0.70
	WB R	signal	19	B	0.24	19	B	0.20
	NB L	signal	24	C	0.63	38	D	0.72
	NB T	signal	30	C	0.66	39	D	0.61
	NB R	signal	23	C	0.09	32	C	0.06
	SB L	signal	37	D	0.81	30	C	0.70
	SB TR	signal	27	C	0.54	53	D	0.88
	overall	signal	30	C	0.82	36	D	0.89
Access 1 & Hurontario Street	WB LR	stop	16	C	0.29	21	C	0.51
Access 2 & Poplar Sideroad	SB LR	stop	31	D	0.53	90	F	0.95
L left lane T through lane R right lane LT left-through TR through-right LTR left-through-right								



Analysis of Operations

Acceptable operations will be provided at the intersection of Poplar Sideroad/County Road 32 with Hurontario Street/County Road 124 (levels of service E or better on each movement) through the 2040 horizon with the timeline of improvements identified under background conditions. As discussed under the background conditions, implementation of the eastbound right turn lane and advanced southbound left turn phase at an earlier horizon will result in correspondingly improved operations at those horizons.

With respect to the site access operations, Access 1 (on Hurontario Street) will operate acceptably through the 2040 horizon, whereas Access 2 (on Poplar Sideroad) will operate acceptably through the 2030 horizon.

Beginning at the 2035 horizon, Access 2 will experience a delay of 55 seconds – amounting to a level of service F – during the weekday PM peak, with the delay worsening to 90 seconds by the 2040 horizon. This operating level is a result of the increased volumes on Poplar Sideroad (in both directions) and the difficulty in completing left turns from the site, despite the benefits afforded by the implementation of the centre two-way left turn lane. Signalization of the access intersection is not recommended due to its proximity to the signalized intersection at Hurontario Street (TAC recommends a minimum signalized intersection spacing of 200 metres). With the provision of separate left and right turn lanes exiting the site, the overall delays will be reduced, albeit the left turns will continue to experience delays in the order of 60 seconds (i.e. it will still operate at LOS F).

It is noted that Access 1 and the intersection of Poplar Sideroad with Hurontario Street have sufficient reserve capacity to accommodate some of the left-turning traffic (i.e. eastbound outbound traffic) from Access 2 during the weekday PM peak. Diversion of 35 of those trips via Access 1 was found to improve operations of Access 2 to an acceptable level (i.e. LOS E; less than 50 seconds delay) without significant impact to the operations of the other intersections. Considering this, it is expected that motorists experiencing high delays at Access 2 will redistribute through Access 1 until an equilibrium is reached.

5.3.2 Queue Operations

Queue operations were again investigated at the intersection of Poplar Sideroad/County Road 32 with Hurontario Street/County Road 124 for the 2040 total traffic conditions, the results of which are summarized in Table 27; worksheets are provided in Appendix L. Queues are also noted for each site access (for stop controlled intersections, only the 95th percentile queues are reported in the operational software). For the site access queues (internal queues) such are noted assuming single exit lanes. The noted queue lengths are provided in metres; an average vehicle in queue amounts to 7.5 metres (and thus a queue of 30 metres translates to 4 vehicles).



Table 27: Queue Operations – 2040 Total Conditions

INTERSECTION, CONTROL & MOVEMENT			WEEKDAY AM PEAK HOUR		WEEKDAY PM PEAK HOUR	
			50 th	95 th	50 th	95 th
Poplar Sideroad/ County Road 32 & Huronario Street/ County Road 124	WB Left	65 m	9 m	18 m	16 m	48 ¹ m
	WB Through	thru lane	79	133 ¹	96	136
	WB Right	45 m	5	20	8	24
	SB Left	TWLTL	30	52 ¹	42	64
	SB Through-Right	thru lane	36	56	89	142 ¹
Huronario Street & Access 1	WB Left-Right	internal	n/a	9	n/a	22
	SB Left	TWLTL	n/a	4	n/a	7
Poplar Sideroad/ County Road 32 & Access 2	SB Left-Right	internal	n/a	22	n/a	65
	EB Left	40	n/a	3	n/a	4

TWLTL – two-way left turn lane (centre lane)

¹ 95th percentile volume exceeds capacity, queue may be longer

At the Poplar Sideroad/County Road 32 intersection with Huronario Street/County Road 124, the westbound left and right turn queues can be accommodated within the existing storage lanes (the greatest left turn queue is 48 metres whereas the right turn queue is 24 metres). During the PM peak hour, the 95th percentile queue for the westbound through movement may extend beyond Access 2 (the queue length is 136 metres whereas the available separation distance will be approximately 130 metres, and thus 1 to 2 vehicles in the queue may extend beyond the access), albeit it is expected that motorists will operate accordingly (and not block the access).

Access 1 is to be located approximately 190 metres north of Poplar Sideroad with a queue separation distance of approximately 150 metres. During the PM peak hour, the 95th percentile queues are expected to be 64 metres for the southbound left turn on Huronario Street at Poplar Sideroad and 142 metres for the southbound through-right movement; this is less than the separation distance, thus southbound queues on Huronario Street are not expected to block Access 1.

Access 2 is to be located 150 metres east of Huronario Street which will provide approximately 130 metres of separation. In considering the combined westbound left queue at Huronario Street (48 metres) and the eastbound left queue at Access 2 (4 metres), such can be accommodated



(52 metres total vs 130 metres available). The outbound queue at Access 2 will be 65 metres, though this is assuming that no trips divert to Access 1 and that only a single outbound lane is provided. If some outbound trips divert, or if separated outbound left and right turn lanes are provided, the internal queues will be shorter.

5.3.3 Drive-Thru Operations

As per the site plan, there are 2 restaurants with drive-thru operations as follows:

- McDonalds (storage for 14 vehicles in queue);
- Starbucks (storage for 12 vehicles in queue); and

McDonalds

The analysis of the McDonalds drive-thru operations considers the number of vehicles expected to use the drive-thru, the drive-thru configuration and the associated services times.

The trip estimates to be generated by McDonalds are detailed in Section 4.11.1 and repeated in Table 28. As per research provided by the NPD Group¹⁶, 57% of customers at hamburger fast food restaurants use the drive-thru window. Given the location and configuration of the proposed McDonalds, and to ensure a conservative approach to the queue operations, it is assumed that 75% of all patrons will use the drive-thru, the resulting trips for which are illustrated in Table 28.

Table 28: Development Trip Estimates – McDonalds

BUILDING & LAND USE	TRIPS	WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR		
		IN	OUT	TOTAL	IN	OUT	TOTAL
7 McDonalds	Total	90	87	177	68	63	131
	Drive-Thru ¹	68	65	133	51	47	98

¹ assumes 75% to use the drive-thru for purposes of the drive-thru analysis

In considering the McDonalds drive-thru operations, there are effectively 3 separate service stations with established service times as follows¹⁷:

1. order board 25 to 30 seconds;

¹⁶ A customer at a hamburger fast food restaurant, such as Burger King or McDonald's, is more likely to use the drive-thru window than a customer at a quick-service Mexican restaurant, such as Del Taco or Taco Bell, or a chicken fast food restaurant, such as Kentucky Fried Chicken or Popeyes. About 57 percent of customers at hamburger fast food restaurants use the drive-thru window, compared to 40 percent at quick-service Mexican restaurants and 38 percent at chicken fast food restaurants, according to The NPD Group. (<https://smallbusiness.chron.com/percentage-sales-drive-through-windows-fast-food-restaurants-75713.html>)

¹⁷ McDonald's Project Parking and Drive-Thru Queue Analysis. Ganddini Group, Inc., April 17, 2019.



2. payment window 15 to 20 seconds; and
3. pick-up window 25 to 30 seconds.

A sample survey was completed at the Collingwood McDonalds on Thursday January 6, 2022, over the period 8:00 to 8:30. During this time, there were 2 order boards, a payment window and pick-up window in operation. A total of 58 vehicles were serviced at the pick-up window resulting in an average service time of 31 seconds. The service times at the order board and the payment window were not recorded, albeit it is noted that the service time at the payment window was observed to be less (in that vehicles were not often impeded at the payment window). The 30 second service time at the order board was also confirmed through a separate study¹⁸. In this regard, the above noted service time targets are considered appropriate.

The operations of the drive-thru and analysis of resulting queues has been based on the following:

- AM peak hour (given the increased traffic volumes and hence representing the more critical case);
- single channel queue with 3 phases (order board, payment window and pick-up window);
- arrivals assumed to follow a Poisson distribution with exponential services times (M/M/1 queue model); and
- service times of 30, 20 and 30 seconds for the order board, payment window and pick-up window (the order board service times are expected to be reduced given the provision of 2 parallel order boards, but 30 seconds has been assumed to maintain a conservative approach).

The results of the analysis are provided in Table 29, for both the average and 95th percentile queues (the 95th percentile queues will only be exceeded 5% of the time); queue worksheets are provided in Appendix M.

Table 29: Drive-Thru Operations – McDonalds

BUILDING & LAND USE		QUEUE	ORDER BOARD	PAY WINDOW	PICK-UP WINDOW	TOTAL
7	McDonalds	Average	1.3 veh	0.6 veh	1.3 veh	3.2 veh
		95 th Percentile	5.0	3.0	5.0	13.0

As indicated, and in considering each service point as a separate queue operation independent from the others and that all will experience peak queues simultaneously, the total 95th percentile

¹⁸ *Purcellville McDonalds Queuing Analysis*. Kimley Horn, July 14, 2014.



queue length for the McDonalds drive-thru is projected to be 13 vehicles. This equates to 84.5 metres assuming 6.5 metres per vehicle (which recognizes that vehicles in drive-thru queues will be more closely spaced as compared to more traditional queues on the road). The proposed drive-thru has approximately 95 metres of storage and thus can accommodate the projected queues.

It must also be acknowledged that the queue for the payment and pick-up windows will be effectively controlled or metered by the operations at the order board, and thus the order board queues are the more critical to ensure accommodation of. In this regard, a minimum of 5 vehicles should be accommodated prior to the order boards; as demonstrated on the site plan, a total of 6 vehicles are able to queue prior to the order boards.

Starbucks

The Starbucks drive-thru has been analyzed employing the same methodology of that of the McDonalds drive-thru, and considering:

- the AM peak hour (given the increased traffic volumes);
- 90% of the site traffic to utilize the drive-thru (increased use given the type of facility proposed);
- single channel queue with 2 phases (order board and payment/pick-up window);
- arrivals assumed to follow a Poisson distribution with exponential services times (M/M/1 queue model); and
- service times of 30 seconds for each of the order board and payment/pick-up window.

The associated Starbucks drive-thru volumes are summarized in Table 30 whereas the queue analyses are summarized in Table 31; queue worksheets are provided in Appendix M.

Table 30: Development Trip Estimates – Starbucks

BUILDING & LAND USE	TRIPS	WEEKDAY AM PEAK HOUR			WEEKDAY PM PEAK HOUR		
		IN	OUT	TOTAL	IN	OUT	TOTAL
1 Starbucks	Total	74	71	145	33	33	66
	Drive-Thru ¹	67	64	131	30	30	59

¹ assumes 90% to use the drive-thru for purposes of the drive-thru analysis



Table 31: Drive-Thru Operations – Starbucks

BUILDING & LAND USE		QUEUE	ORDER BOARD	PAY & PICK-UP WINDOW	TOTAL
1	Starbucks	Average	1.2 veh	1.2 veh	2.4 veh
		95 th Percentile	5.0	5.0	10.0

As noted, the average queue considering both operations together, is 2.4 vehicles whereas the 95th percentile queue is 10.0 vehicles. The latter queue amounts to a queue length of 65 metres based on 6.5 metres per vehicle, whereas 78 metres (12 vehicles) is proposed, thus accommodating the projected queues. As noted with the McDonalds drive-through, the payment/pick-up window will be effectively controlled or metered by the operations at the order board, and thus the order board queues are the more critical to ensure accommodation of. In this regard, a minimum of 5 vehicles should be accommodated prior to the order boards; as demonstrated on the site plan, a total of 4 vehicles are able to queue prior to the order boards

It is noted that the existing Collingwood Starbucks has a drive-thru lane of approximately 42 metres with 18 metres available prior to the order board (both measures extend past the sidewalk to the edge of First Street). This is sufficient to accommodate approximately 3 vehicles in advance of the order board and 3 to 4 vehicles between the order board and the payment/pick-up window. The queue often extends out to First Street which can result in vehicles queuing on the road. As previously noted, the proposed Starbucks will provide storage for 12 vehicles which represents an additional 5 vehicles. Further, should queues extend beyond this, they will remain within the development site and thus are not expected to impact operations on the external road system. It is also noted that there is ample and accessible parking within the immediate area and thus patrons have an opportunity to utilize walk-in service as opposed to drive-thru service.

5.4 SPEED LIMIT REVIEW

As discussed in Section 2.1.1 and illustrated in Figure 3, the speed limit on Hurontario Street/County Road 124 transitions from 70 to 50 km/h just north of Poplar Sideroad and prior to Access 1. To ensure approaching motorists have reduced their speeds accordingly, it is recommended that the speed transition be relocated to the south of Poplar Sideroad, thereby providing additional opportunity for motorists to ensure their approach speed complies with the speed limit. As it is, motorists approaching from the south are travelling at 70 km/h (if not greater) through the intersection, assuming they were not required to stop at the traffic signals, and will only start their deceleration at the 50 km/h speed sign.



5.5 ROAD NETWORK IMPROVEMENTS

5.5.1 Background Traffic Conditions

As outlined in Section 3.6, the following improvements are recommended to address the future background conditions (i.e. prior to consideration for the development)

- provide a southbound advance green signal phase (would provide immediate benefit); and
- provide an eastbound right turn lane on Poplar Sideroad (for 2040).

5.5.2 Site Access Turn Lanes

A right turn taper (60 metres) is recommended on Poplar Sideroad at Access 2.

An eastbound left turn lane is required to serve Access 2 on Poplar Sideroad. Rather than provide a dedicated turn lane, it is recommended that such be integrated into a centre turn lane on Poplar Sideroad as discussed below.

5.5.3 Hurontario Street Centre Turn Lane

There is an existing centre turn lane on Hurontario Street that transitions to a dedicated southbound left turn lane approximately 195 metres north of Poplar Sideroad. Access 1 is to be located approximately 190 metres north of Poplar Sideroad and thus it is recommended that the centre turn lane be extended an additional 100 metres thereby providing service to Access 1 (allowing outbound left turns to be completed in 2 stages). The transition would therefore occur approximately 95 metres north of the intersection, which would provide a dedicated southbound storage length of 80 metres (which is sufficient to accommodate the projected southbound left turn queue).

Given that the turn lane is continuous through the limits noted, this recommendation can be achieved solely through pavement markings and redesignation of the exiting lane.

5.5.4 Poplar Sideroad Centre Turn Lane

In consideration of the existing westbound left turn lane at Hurontario Street, the warranted eastbound left turn lane at Access 2, the desire to accommodate 2-stage outbound movements from Access 2 and the proximity of Hughes Street and Portland Street (the latter of which has an eastbound left turn lane), a continuous centre turn lane is recommended from Hurontario Street to Portland Street.

5.5.5 Recommended Improvements

The following improvements are recommended to address the future total conditions (i.e. with consideration for the development):



- Poplar Sideroad/County Road 32 intersection with Hurontario Street/County Road 124
 - provide a southbound advance green signal phase (warranted under existing conditions and thus not attributed to the proposed development);
 - provide an eastbound right turn lane on Poplar Sideroad (warranted under 2040 background conditions and thus not attributed to the proposed development);
- Hurontario Street
 - extend the 50 km/h speed zone on Hurontario Street to south of Poplar Sideroad (2026);
 - extend the centre turn lane on Hurontario Street 100 metres to the south (2026);
- Poplar Sideroad
 - construct a centre turn lane on Poplar Sideroad from Hurontario Street to Portland Street (2026);
- site access intersections
 - construct a westbound right taper (60 metres) at Access 2 (2026).



6 Summary

6.1 PROPOSED DEVELOPMENT

This study has addressed the transportation impacts associated with the proposed Gateway Centre development located at the intersection of Poplar Sideroad/County Road 32 and Hurontario Street/County Road 124 in the Town of Collingwood. The proposed development will consist of approximately 9,620 m² (103,590 ft²) of commercial and retail development space including McDonalds and Starbucks restaurants, 1,080 m² (11,600 ft²) of office space, and 165 residential apartment units. With respect to trip generation, the site will generate the following:

- gross trips: 597 during the AM peak hour and 916 during the PM peak hour;
- internal and shared trips (assumed as 10% of all site trips): 60 during the AM peak hour and 92 during the PM peak hour;
- pass-by trips: 239 during the AM peak hour and 294 during the PM peak hour; and
- new trips: 298 during the AM peak hour and 531 during the PM peak hour.

With respect to completion and build-out, the following has been assumed:

- Phase 1 (Buildings 1, 2 and 7) to be complete within the next 2 years (2026); and
- Phase 2 (Buildings 3 through 6) to be complete within the next 6 years (2030).

6.2 SITE PARKING, LOADING & CIRCULATION

The site plan was reviewed with respect to the parking provision, loading space provisions and circulation. All are considered appropriate in consideration of Town standard requirements and appropriate design vehicles.

6.3 EXTERNAL ROAD SYSTEM OPERATIONS

In addressing the study area traffic operations, the intersection of Poplar Sideroad/County Road 32 with Hurontario Street/County Road 124 was analysed under existing (2024) and future (2026, 2030, 2035, and 2040) horizon periods. The site access points were also reviewed under the noted future horizons. The review included an assessment of intersection operations and a review of exclusive turn lane requirements. Based on the assessment of existing, background and total conditions, the following improvements are recommended:

- 2030 Background Conditions
 - consider a southbound advance green on Hurontario Street at Poplar Sideroad;



- 2040 Background Conditions
 - provide an eastbound right turn lane on Poplar (subject to property acquisition);
- 2026 Total Conditions (Phase 1 of the development)
 - extend the 50 km/h speed zone on Hurontario Street to south of Poplar Sideroad;
 - extend the centre turn lane on Hurontario Street 100 metres to the south;
 - construct a centre turn lane on Poplar Sideroad from Hurontario Street to Portland Street; and
 - construct a westbound right taper (60 metres) at Access 2.

It is noted that the improvements identified herein under both background and total conditions are predicated on significant development occurring in the area and along the Poplar Sideroad corridor. Should development of the area not occur or be delayed, the improvements identified may not be required or may be deferred. Thus, it is recommended that ongoing monitoring of development and traffic levels be conducted to confirm the need for and timing of the recommended improvements.

6.4 INTERNAL DRIVE-THRU OPERATIONS

The drive-thrus proposed for the McDonalds and Starbucks were reviewed in context of the projected traffic volumes, service times and resulting queues. In consideration of the anticipated restaurant and drive thru operations, and in assessing the operations based on standard queue modelling methodologies, the proposed drive thru lanes are considered appropriate.

6.5 SIGHT LINES

The available sight lines along both Poplar Sideroad/County Road 32 and Hurontario Street/County Road 124 at the proposed site access points were reviewed and determined to exceed the Transportation Association of Canada and Simcoe County design guidelines for sight distance requirements.





Source: Simcoe Maps

THE GATEWAY CENTRE - TRANSPORTATION IMPACT STUDY

Figure 1: Site Location





Source: Simcoe Maps

THE GATEWAY CENTRE - TRANSPORTATION IMPACT STUDY

Figure 2A: Area Road Network





Source: Simcoe Maps

THE GATEWAY CENTRE - TRANSPORTATION IMPACT STUDY

Figure 2B: Area Road Network





THE GATEWAY CENTRE - TRANSPORTATION IMPACT STUDY

Figure 3: Area Speed Limits & Intersection Control





Intersection of poplar Sideroad/County Road 32 & Hurontario Street/County Road 124

THE GATEWAY CENTRE - TRANSPORTATION IMPACT STUDY

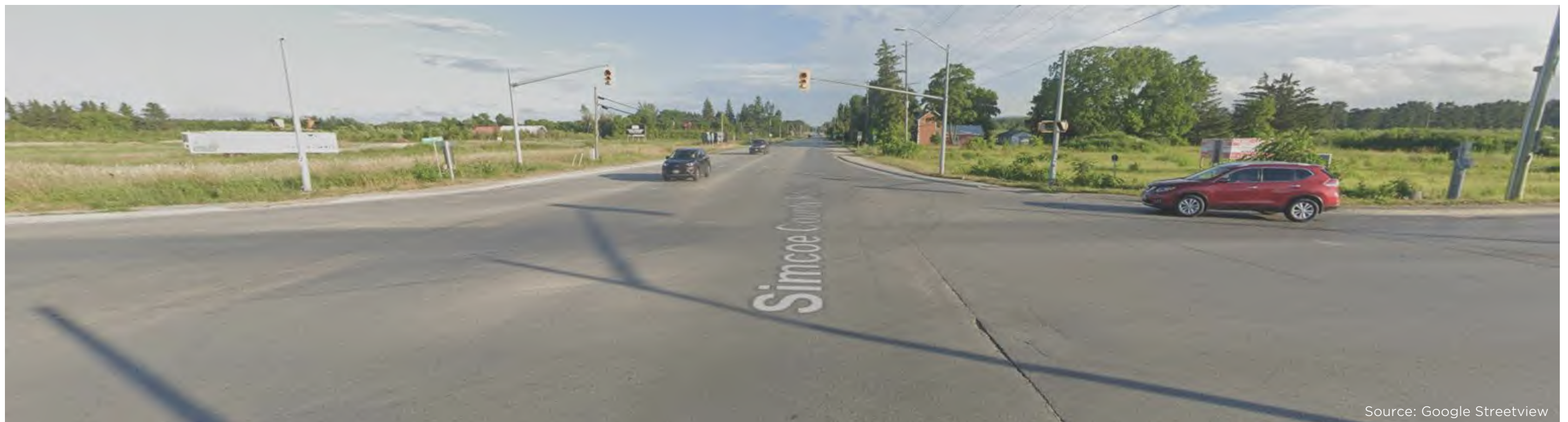
Figure 4A: Key Intersection





Source: Google Streetview

Looking north on Hurontario Street from intersection with Poplar Sideroad/County Road 32



Source: Google Streetview

Looking south on County Road 124 from intersection with Poplar Sideroad/County Road

THE GATEWAY CENTRE - TRANSPORTATION IMPACT STUDY

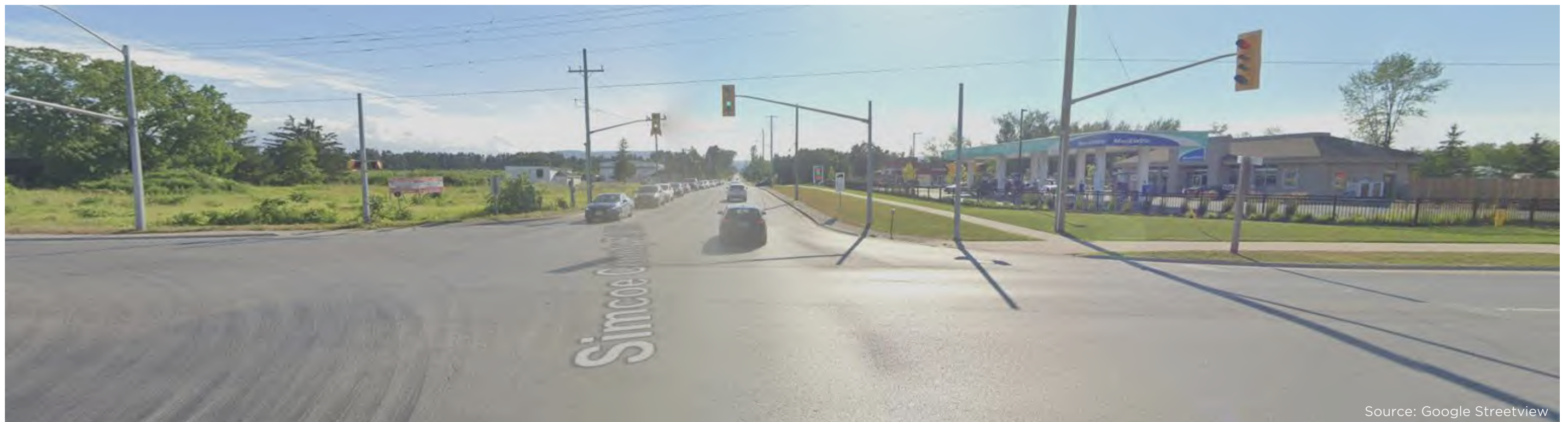
Figure 4B: Key Intersection





Source: Google Streetview

Looking east on Poplar Sideroad/County Road 32 from intersection with Hurontario Street/County Road 124



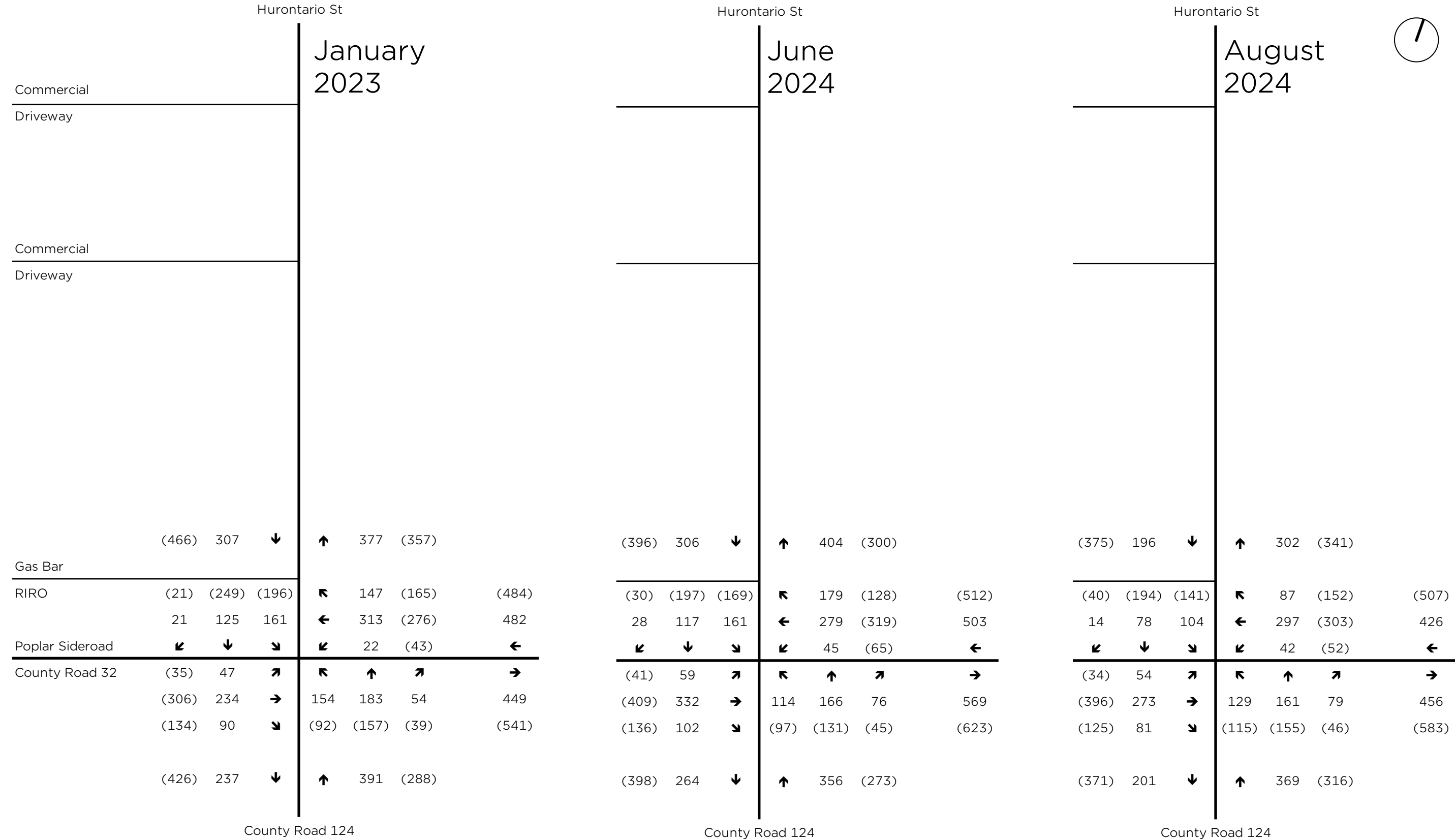
Source: Google Streetview

Looking west on Poplar Sideroad/County Road 32 from intersection with Hurontario Street/County Road 124

THE GATEWAY CENTRE - TRANSPORTATION IMPACT STUDY

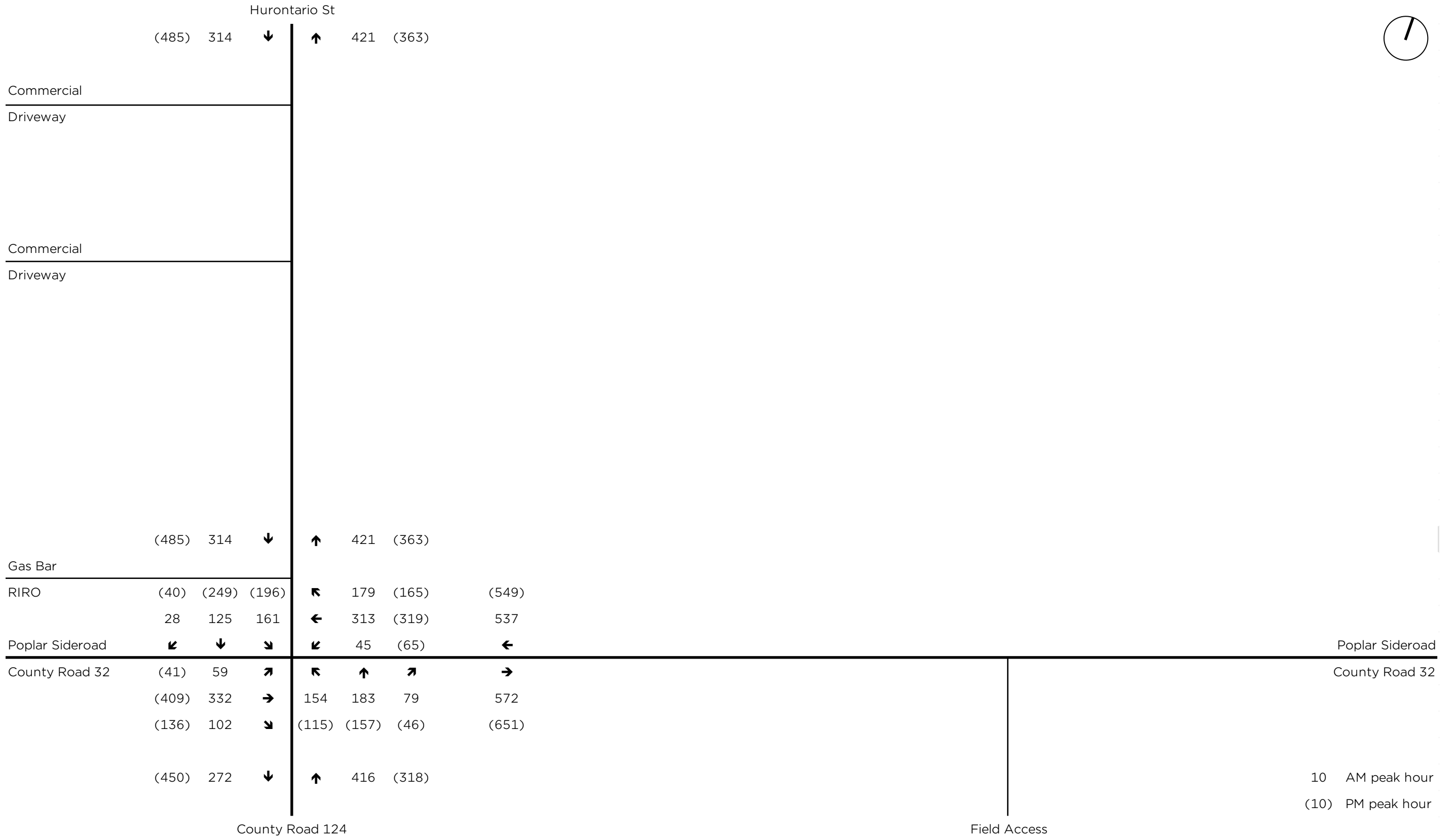
Figure 4C: Key Intersection





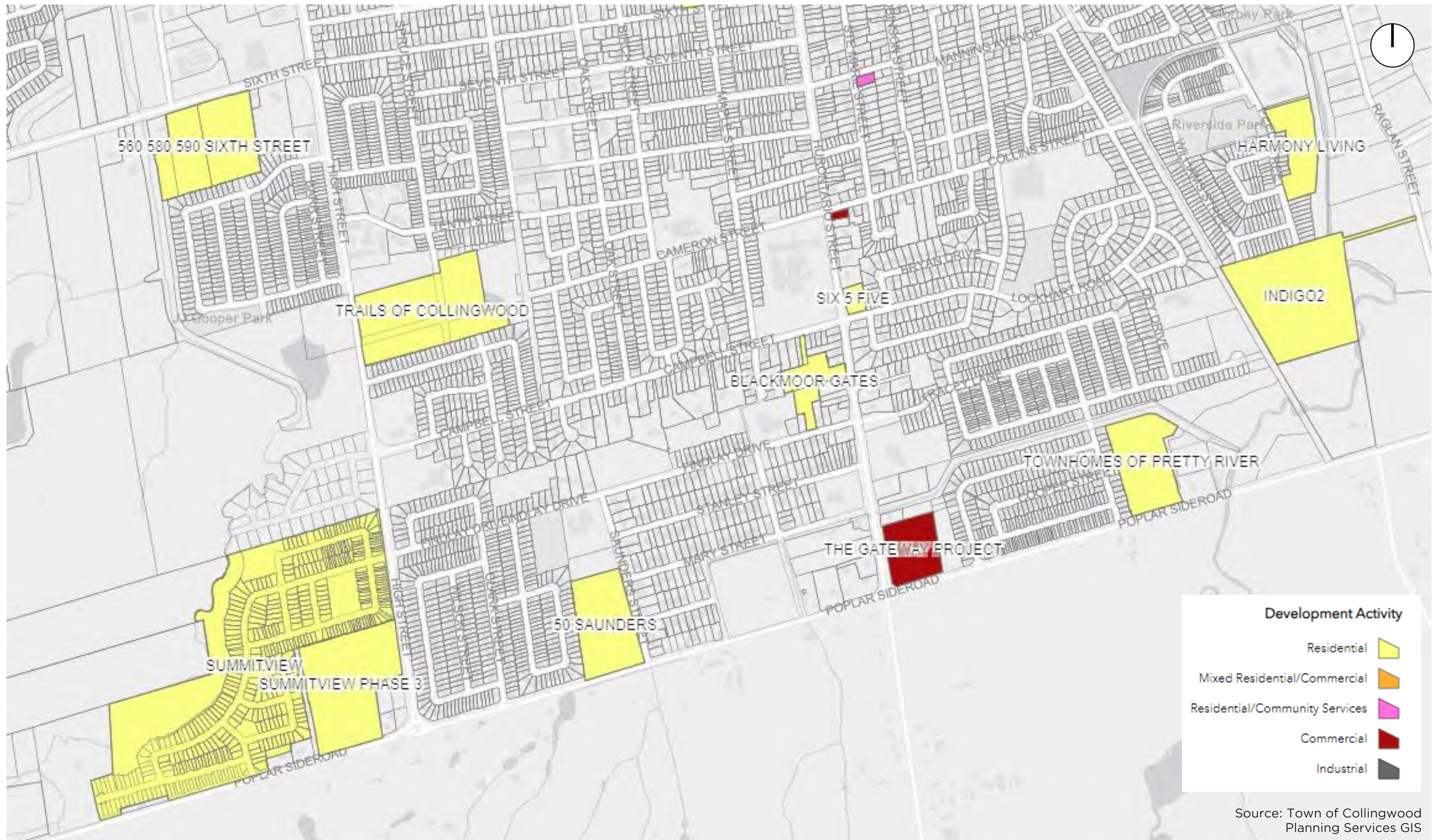
THE GATEWAY CENTRE - TRANSPORTATION IMPACT STUDY
Figure 5: 2023 & 2024 Traffic Counts





THE GATEWAY CENTRE - TRANSPORTATION IMPACT STUDY
Figure 6: Traffic Volumes – 2024

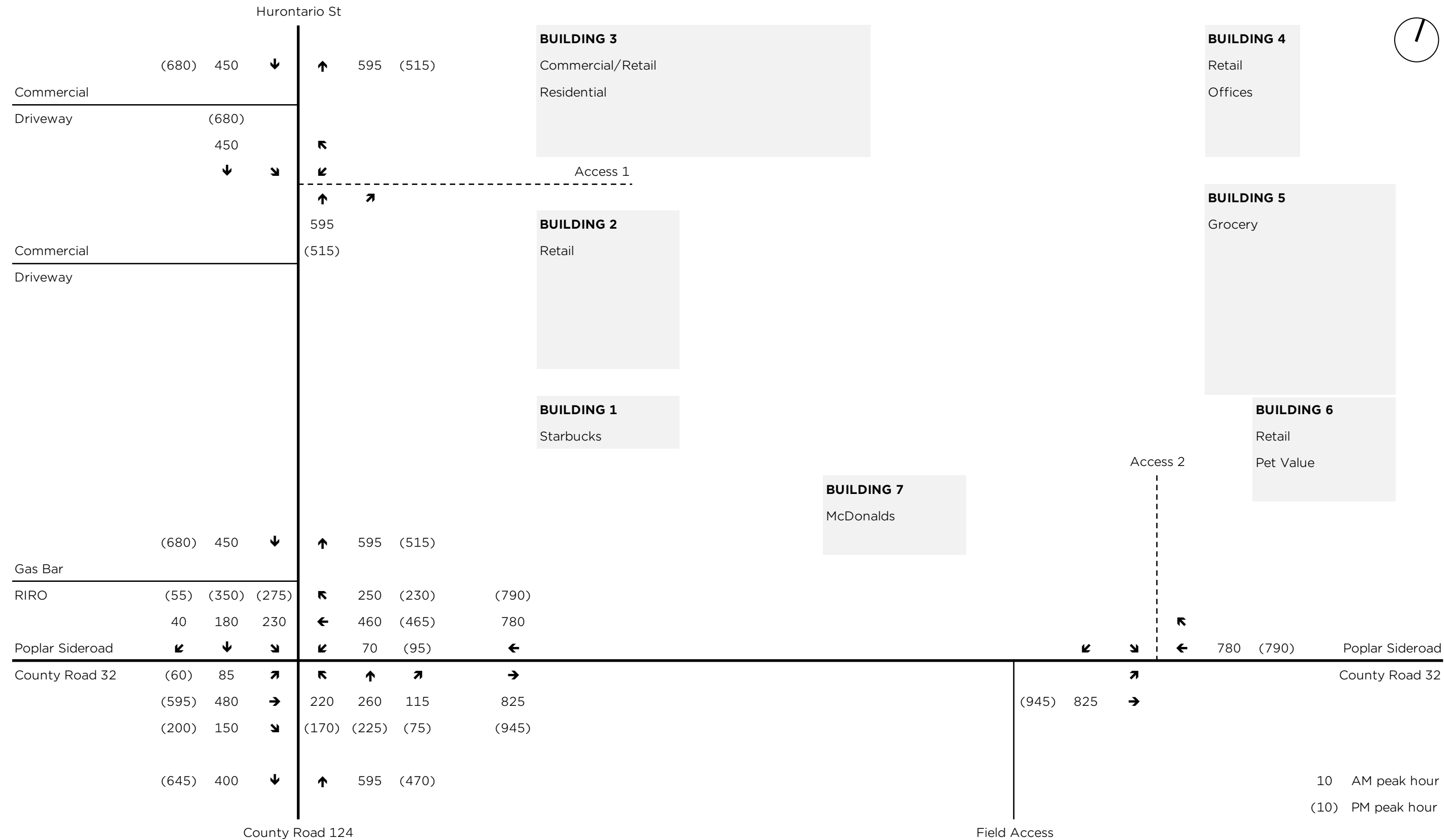




THE GATEWAY CENTRE - TRANSPORTATION IMPACT STUDY

Figure 7: Area Developments





THE GATEWAY CENTRE - TRANSPORTATION IMPACT STUDY
Figure 10: Traffic Volumes - 2040 Background



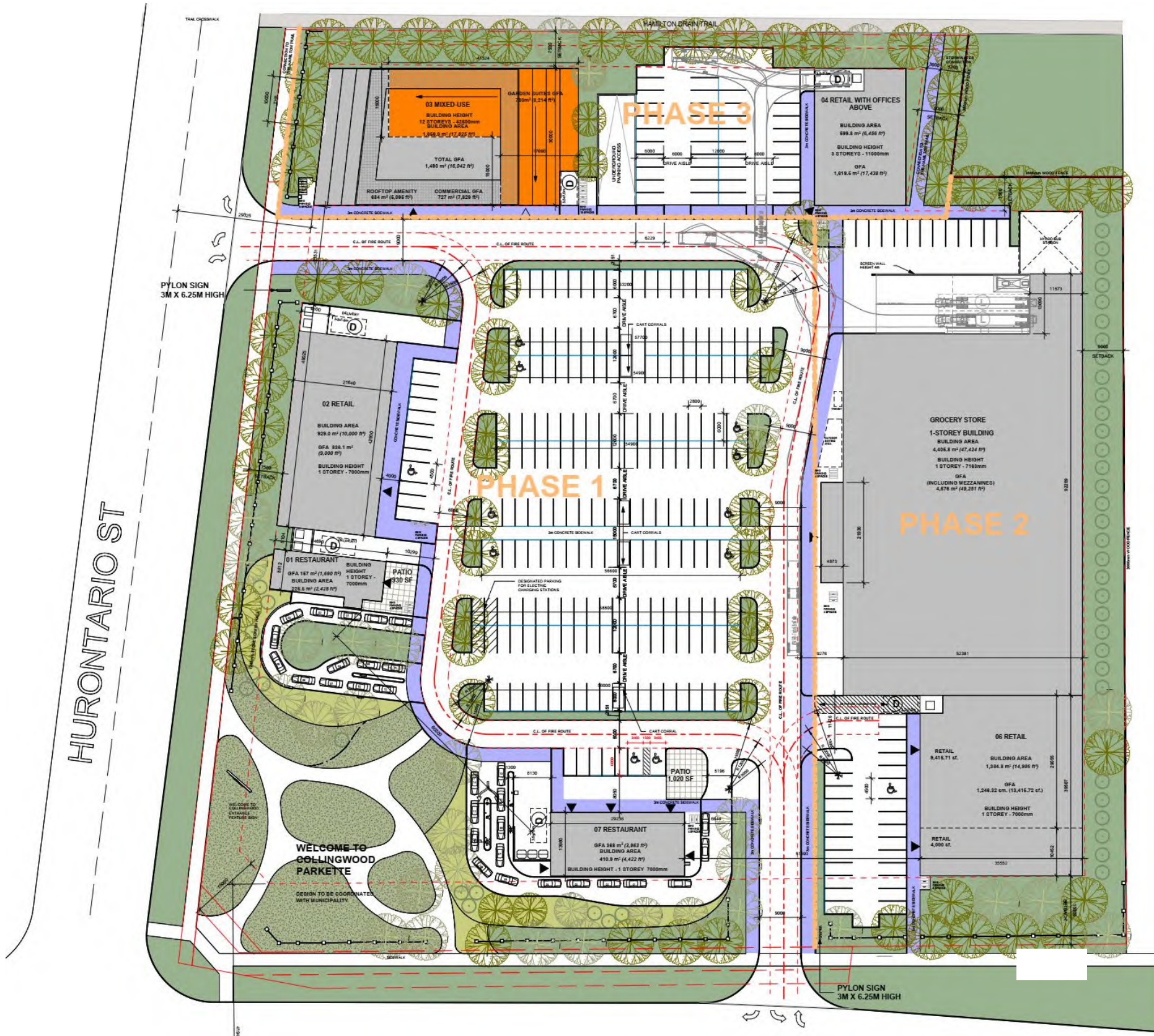


Figure 11: Site Plan





THE GATEWAY CENTRE - TRANSPORTATION IMPACT STUDY

Figure 12: Site Access



Source: Simcoe Maps



Looking north on Hurontario Street from proposed Access 1



Looking south on Hurontario Street from proposed Access 1

Source: Google Streetview

THE GATEWAY CENTRE - TRANSPORTATION IMPACT STUDY

Figure 13A: Sight Lines at Site Access Points – Access 1





Looking east on Poplar Sideroad from proposed Access 2



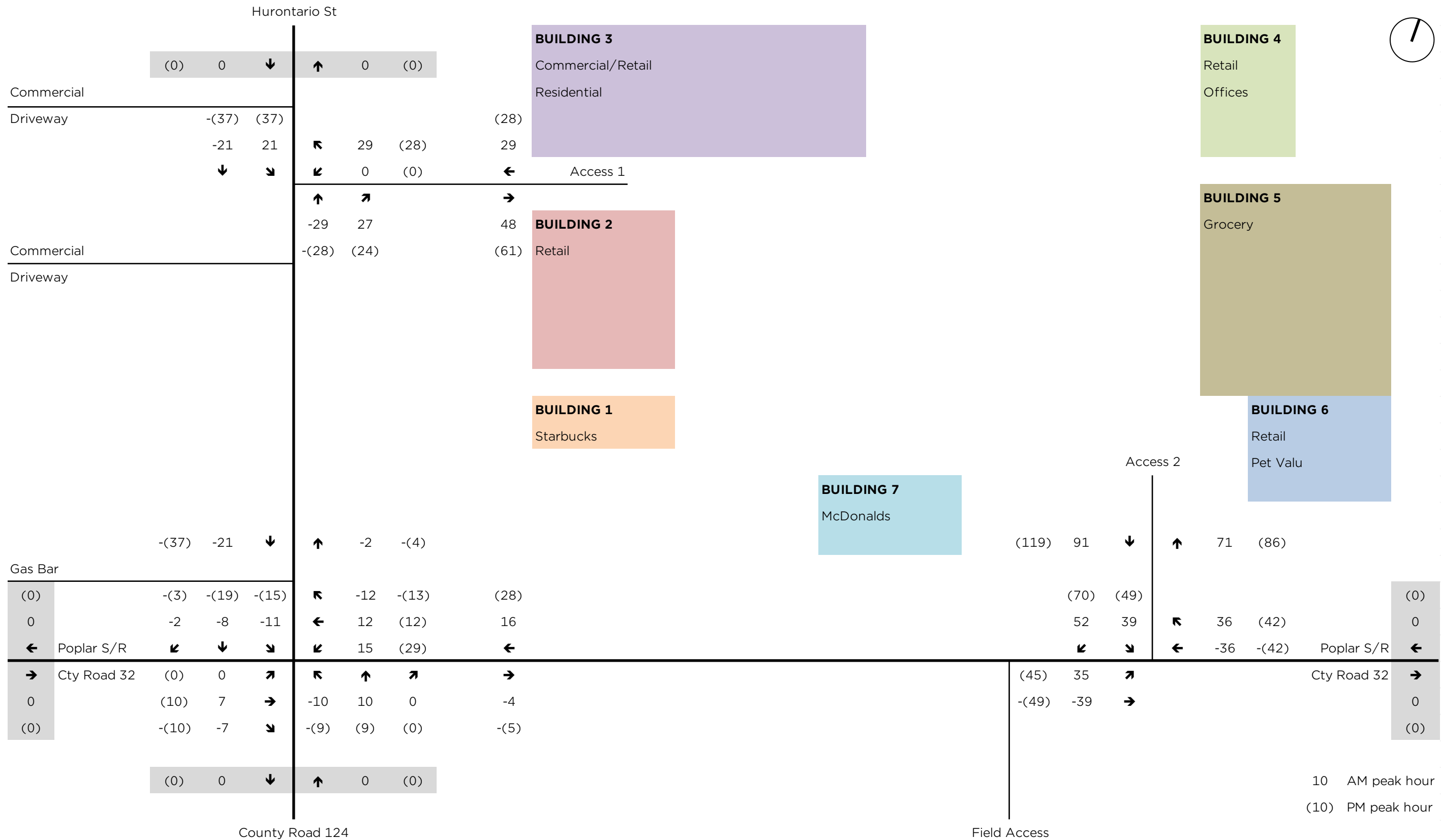
Looking west on Poplar Sideroad from proposed Access 2

Source: Google Streetview

THE GATEWAY CENTRE - TRANSPORTATION IMPACT STUDY

Figure 13B: Sight Lines at Site Access Points – Access 2





THE GATEWAY CENTRE - TRANSPORTATION IMPACT STUDY
Figure 15: Site Traffic – Pass-By Trips





Figure 17: Traffic Volumes – 2026 Total



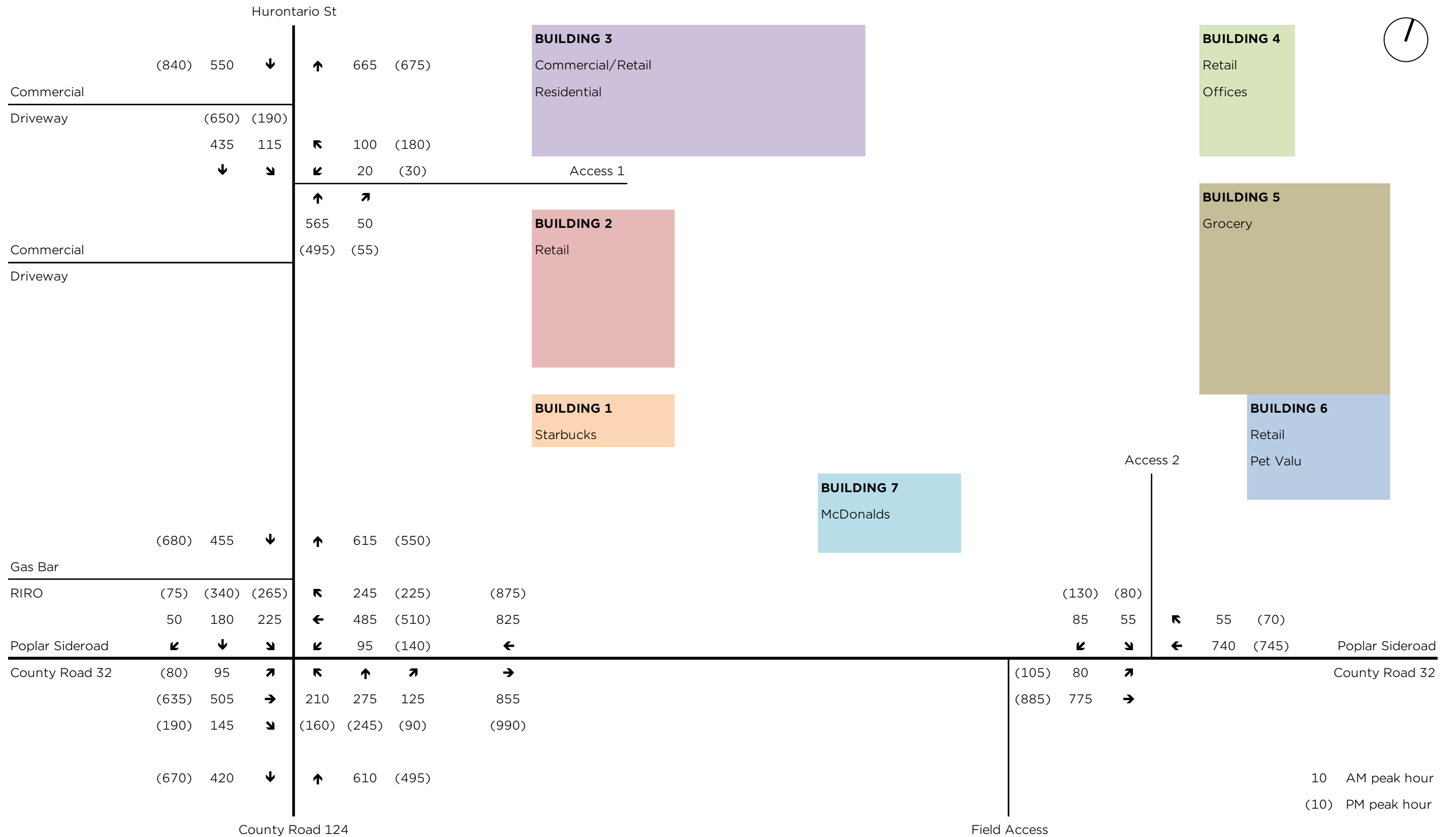


Figure 20: Traffic Volumes - 2040 Total



Appendix A: Traffic Counts

Morning Peak Diagram		Specified Period From: 7:00:00 To: 10:00:00	One Hour Peak From: 7:45:00 To: 8:45:00
Municipality: Collingwood Site #: 2410900001 Intersection: Poplar Sideroad & Hurontario St TFR File #: 1 Count date: 19-Jun-24		Weather conditions: Person counted: Person prepared: Person checked:	
** Signalized Intersection **		Major Road: Poplar Sideroad runs W/E	

North Leg Total: 710 North Entering: 306 North Peds: 1 Peds Cross:	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: right;">Heavys</td> <td style="text-align: right;">2</td> <td style="text-align: right;">4</td> <td style="text-align: right;">17</td> <td style="border-left: 1px solid black; text-align: right;">23</td> </tr> <tr> <td style="text-align: right;">Trucks</td> <td style="text-align: right;">1</td> <td style="text-align: right;">1</td> <td style="text-align: right;">1</td> <td style="border-left: 1px solid black; text-align: right;">3</td> </tr> <tr> <td style="text-align: right;">Cars</td> <td style="text-align: right;">25</td> <td style="text-align: right;">112</td> <td style="text-align: right;">143</td> <td style="border-left: 1px solid black; text-align: right;">280</td> </tr> <tr> <td style="text-align: right;">Totals</td> <td style="text-align: right;">28</td> <td style="text-align: right;">117</td> <td style="text-align: right;">161</td> <td style="border-left: 1px solid black;"></td> </tr> </table>	Heavys	2	4	17	23	Trucks	1	1	1	3	Cars	25	112	143	280	Totals	28	117	161		<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: right;">Heavys</td> <td style="text-align: right;">13</td> </tr> <tr> <td style="text-align: right;">Trucks</td> <td style="text-align: right;">6</td> </tr> <tr> <td style="text-align: right;">Cars</td> <td style="text-align: right;">385</td> </tr> <tr> <td style="text-align: right;">Totals</td> <td style="text-align: right;">404</td> </tr> </table>	Heavys	13	Trucks	6	Cars	385	Totals	404	East Leg Total: 1072 East Entering: 503 East Peds: 0 Peds Cross:
Heavys	2	4	17	23																											
Trucks	1	1	1	3																											
Cars	25	112	143	280																											
Totals	28	117	161																												
Heavys	13																														
Trucks	6																														
Cars	385																														
Totals	404																														

Heavys	Trucks	Cars	Totals
20	19	382	421

Hurontario St
 Poplar Sideroad

Cars	Trucks	Heavys	Totals
171	0	8	179
256	12	11	279
35	0	10	45
462	12	29	

Heavys	Trucks	Cars	Totals
0	0	59	59
8	6	318	332
6	2	94	102
14	8	471	

Hurontario St
 Poplar Sideroad

Cars	Trucks	Heavys	Totals
532	9	28	569

Peds Cross: West Peds: 0 West Entering: 493 West Leg Total: 914	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: right;">Cars</td> <td style="text-align: right;">241</td> </tr> <tr> <td style="text-align: right;">Trucks</td> <td style="text-align: right;">3</td> </tr> <tr> <td style="text-align: right;">Heavys</td> <td style="text-align: right;">20</td> </tr> <tr> <td style="text-align: right;">Totals</td> <td style="text-align: right;">264</td> </tr> </table>	Cars	241	Trucks	3	Heavys	20	Totals	264	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: right;">Cars</td> <td style="text-align: right;">101</td> <td style="text-align: right;">155</td> <td style="text-align: right;">71</td> <td style="border-left: 1px solid black; text-align: right;">327</td> </tr> <tr> <td style="text-align: right;">Trucks</td> <td style="text-align: right;">6</td> <td style="text-align: right;">6</td> <td style="text-align: right;">2</td> <td style="border-left: 1px solid black; text-align: right;">14</td> </tr> <tr> <td style="text-align: right;">Heavys</td> <td style="text-align: right;">7</td> <td style="text-align: right;">5</td> <td style="text-align: right;">3</td> <td style="border-left: 1px solid black; text-align: right;">15</td> </tr> <tr> <td style="text-align: right;">Totals</td> <td style="text-align: right;">114</td> <td style="text-align: right;">166</td> <td style="text-align: right;">76</td> <td style="border-left: 1px solid black;"></td> </tr> </table>	Cars	101	155	71	327	Trucks	6	6	2	14	Heavys	7	5	3	15	Totals	114	166	76		Peds Cross: South Peds: 0 South Entering: 356 South Leg Total: 620
Cars	241																														
Trucks	3																														
Heavys	20																														
Totals	264																														
Cars	101	155	71	327																											
Trucks	6	6	2	14																											
Heavys	7	5	3	15																											
Totals	114	166	76																												

Comments

Afternoon Peak Diagram		Specified Period From: 15:00:00 To: 18:00:00	One Hour Peak From: 16:30:00 To: 17:30:00
Municipality: Collingwood Site #: 2410900001 Intersection: Poplar Sideroad & Hurontario St TFR File #: 1 Count date: 19-Jun-24		Weather conditions: Person counted: Person prepared: Person checked:	
** Signalized Intersection **		Major Road: Poplar Sideroad runs W/E	

North Leg Total: 696 North Entering: 396 North Peds: 1 Peds Cross:	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="border-right: 1px solid black; padding: 2px 5px;">Heavys</td> <td style="padding: 2px 5px;">1</td> <td style="padding: 2px 5px;">1</td> <td style="padding: 2px 5px;">1</td> <td style="border-right: 1px solid black; padding: 2px 5px;">3</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 2px 5px;">Trucks</td> <td style="padding: 2px 5px;">0</td> <td style="padding: 2px 5px;">2</td> <td style="padding: 2px 5px;">0</td> <td style="border-right: 1px solid black; padding: 2px 5px;">2</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 2px 5px;">Cars</td> <td style="padding: 2px 5px;">29</td> <td style="padding: 2px 5px;">194</td> <td style="padding: 2px 5px;">168</td> <td style="border-right: 1px solid black; padding: 2px 5px;">391</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 2px 5px;">Totals</td> <td style="padding: 2px 5px;">30</td> <td style="padding: 2px 5px;">197</td> <td style="padding: 2px 5px;">169</td> <td style="border-right: 1px solid black; padding: 2px 5px;"></td> </tr> </table>	Heavys	1	1	1	3	Trucks	0	2	0	2	Cars	29	194	168	391	Totals	30	197	169		<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="border-right: 1px solid black; padding: 2px 5px;">Heavys</td> <td style="padding: 2px 5px;">2</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 2px 5px;">Trucks</td> <td style="padding: 2px 5px;">0</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 2px 5px;">Cars</td> <td style="padding: 2px 5px;">298</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 2px 5px;">Totals</td> <td style="padding: 2px 5px;">300</td> </tr> </table>	Heavys	2	Trucks	0	Cars	298	Totals	300	East Leg Total: 1135 East Entering: 512 East Peds: 0 Peds Cross:
Heavys	1	1	1	3																											
Trucks	0	2	0	2																											
Cars	29	194	168	391																											
Totals	30	197	169																												
Heavys	2																														
Trucks	0																														
Cars	298																														
Totals	300																														

Heavys	8	3	435	446
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Poplar Sideroad

Hurontario St

Hurontario St

Hurontario St

Poplar Sideroad

Poplar Sideroad

Poplar Sideroad

Poplar Sideroad

Peds Cross: West Peds: 3 West Entering: 586 West Leg Total: 1032	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="border-right: 1px solid black; padding: 2px 5px;">Cars</td> <td style="padding: 2px 5px;">384</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 2px 5px;">Trucks</td> <td style="padding: 2px 5px;">8</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 2px 5px;">Heavys</td> <td style="padding: 2px 5px;">6</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 2px 5px;">Totals</td> <td style="padding: 2px 5px;">398</td> </tr> </table>	Cars	384	Trucks	8	Heavys	6	Totals	398	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="border-right: 1px solid black; padding: 2px 5px;">Cars</td> <td style="padding: 2px 5px;">94</td> <td style="padding: 2px 5px;">129</td> <td style="padding: 2px 5px;">39</td> <td style="border-right: 1px solid black; padding: 2px 5px;">262</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 2px 5px;">Trucks</td> <td style="padding: 2px 5px;">0</td> <td style="padding: 2px 5px;">0</td> <td style="padding: 2px 5px;">1</td> <td style="border-right: 1px solid black; padding: 2px 5px;">1</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 2px 5px;">Heavys</td> <td style="padding: 2px 5px;">3</td> <td style="padding: 2px 5px;">2</td> <td style="padding: 2px 5px;">5</td> <td style="border-right: 1px solid black; padding: 2px 5px;">10</td> </tr> <tr> <td style="border-right: 1px solid black; padding: 2px 5px;">Totals</td> <td style="padding: 2px 5px;">97</td> <td style="padding: 2px 5px;">131</td> <td style="padding: 2px 5px;">45</td> <td style="border-right: 1px solid black; padding: 2px 5px;"></td> </tr> </table>	Cars	94	129	39	262	Trucks	0	0	1	1	Heavys	3	2	5	10	Totals	97	131	45		Peds Cross: South Peds: 0 South Entering: 273 South Leg Total: 671
Cars	384																														
Trucks	8																														
Heavys	6																														
Totals	398																														
Cars	94	129	39	262																											
Trucks	0	0	1	1																											
Heavys	3	2	5	10																											
Totals	97	131	45																												

Comments

Total Count Diagram

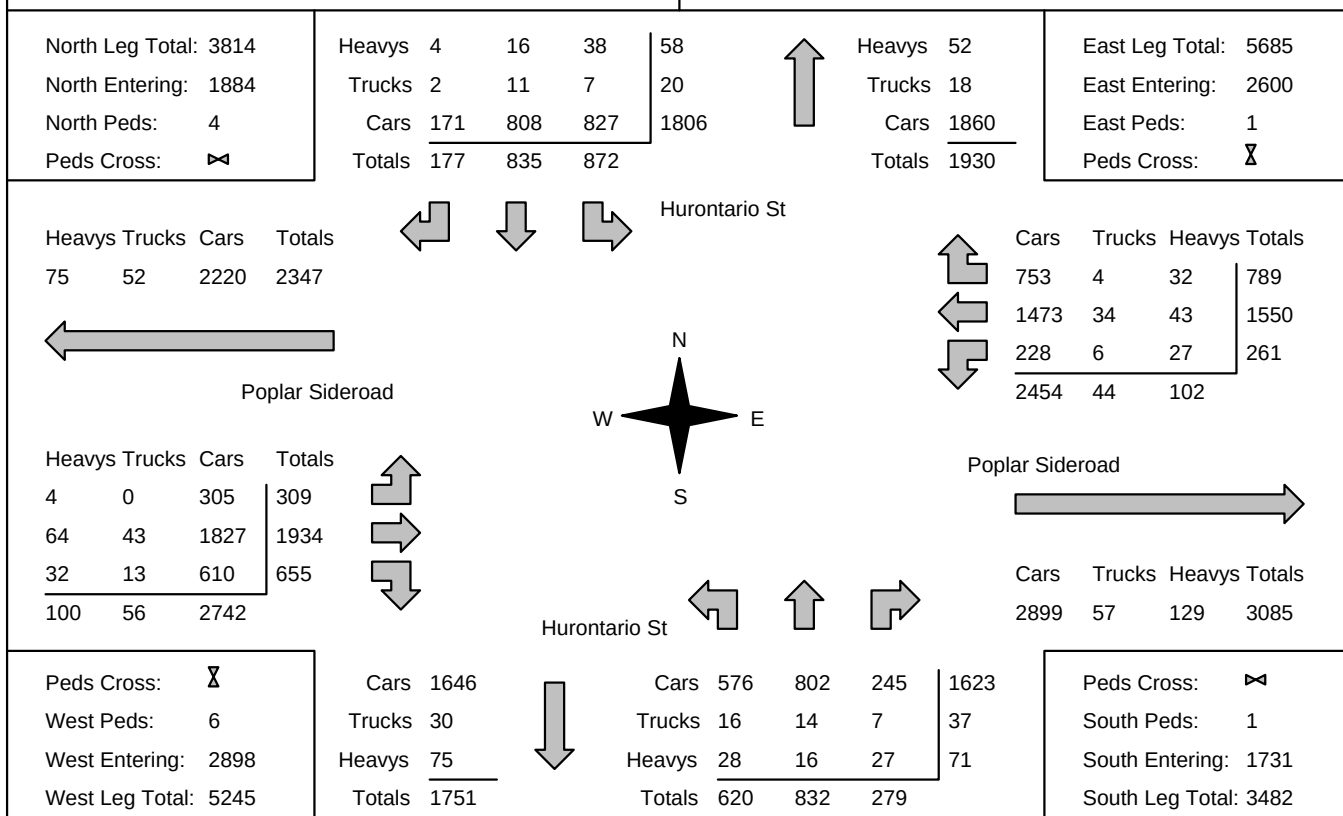
Municipality: Collingwood
Site #: 2410900001
Intersection: Poplar Sideroad & Hurontario St
TFR File #: 1
Count date: 19-Jun-24

Weather conditions:

Person counted:
Person prepared:
Person checked:

**** Signalized Intersection ****

Major Road: Poplar Sideroad runs W/E



Comments

Traffic Count Summary

Intersection: Poplar Sideroad & Hurontario St

Count Date: 19-Jun-24

Municipality: Collingwood

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	147	101	19	267	2	547	8:00:00	89	133	58	280	1
9:00:00	143	98	27	268	1	613	9:00:00	126	154	65	345	0
10:00:00	112	109	27	248	0	550	10:00:00	121	130	51	302	0
15:00:00	0	0	0	0	0	0	15:00:00	0	0	0	0	0
16:00:00	159	163	40	362	0	627	16:00:00	94	137	34	265	0
17:00:00	153	201	35	389	0	661	17:00:00	100	135	37	272	0
18:00:00	158	163	29	350	1	617	18:00:00	90	143	34	267	0



Count Date: 19-Jun-24 Site #: 2410900001																				
Interval Time	Passenger Cars - North Approach						Trucks - North Approach						Heavys - North Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		North Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	26	26	16	16	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30:00	47	21	39	23	5	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1
7:45:00	84	37	59	20	8	3	1	1	1	1	0	0	0	0	1	1	0	0	2	1
8:00:00	130	46	95	36	17	9	1	0	1	0	1	1	16	16	5	4	1	1	2	0
8:15:00	170	40	127	32	24	7	1	0	1	0	1	0	16	0	5	0	1	0	3	1
8:30:00	202	32	152	25	30	6	2	1	2	1	1	0	16	0	5	0	1	0	3	0
8:45:00	227	25	171	19	33	3	2	0	2	0	1	0	17	1	5	0	2	1	3	0
9:00:00	265	38	190	19	43	10	2	0	4	2	1	0	23	6	5	0	2	0	3	0
9:15:00	297	32	226	36	52	9	2	0	5	1	1	0	26	3	7	2	2	0	3	0
9:30:00	323	26	256	30	58	6	2	0	5	0	1	0	26	0	7	0	2	0	3	0
9:45:00	349	26	277	21	62	4	2	0	7	2	1	0	26	0	7	0	2	0	3	0
10:00:00	372	23	294	17	70	8	3	1	7	0	1	0	27	1	7	0	2	0	3	0
10:15:00	372	0	294	0	70	0	3	0	7	0	1	0	27	0	7	0	2	0	3	0
15:00:00	372	0	294	0	70	0	3	0	7	0	1	0	27	0	7	0	2	0	3	0
15:15:00	400	28	333	39	75	5	3	0	7	0	1	0	29	2	8	1	2	0	3	0
15:30:00	431	31	368	35	84	9	3	0	7	0	1	0	30	1	9	1	2	0	3	0
15:45:00	472	41	419	51	97	13	5	2	7	0	1	0	35	5	10	1	2	0	3	0
16:00:00	519	47	454	35	109	12	6	1	7	0	1	0	36	1	10	0	3	1	3	0
16:15:00	567	48	493	39	119	10	6	0	7	0	2	1	37	1	11	1	3	0	3	0
16:30:00	601	34	553	60	126	7	7	1	7	0	2	0	37	0	12	1	3	0	3	0
16:45:00	633	32	604	51	131	5	7	0	7	0	2	0	38	1	12	0	3	0	3	0
17:00:00	669	36	652	48	142	11	7	0	7	0	2	0	38	0	13	1	4	1	3	0
17:15:00	720	51	691	39	148	6	7	0	7	0	2	0	38	0	13	0	4	0	4	1
17:30:00	769	49	747	56	155	7	7	0	9	2	2	0	38	0	13	0	4	0	4	0
17:45:00	800	31	776	29	166	11	7	0	9	0	2	0	38	0	14	1	4	0	4	0
18:00:00	827	27	808	32	171	5	7	0	11	2	2	0	38	0	16	2	4	0	4	0
18:15:00	827	0	808	0	171	0	7	0	11	0	2	0	38	0	16	0	4	0	4	0
18:15:15	827	0	808	0	171	0	7	0	11	0	2	0	38	0	16	0	4	0	4	0
			</																	



Count Date: 19-Jun-24 Site #: 2410900001

Interval Time	Passenger Cars - South Approach						Trucks - South Approach						Heavys - South Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		South Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	19	19	13	13	12	12	0	0	1	1	0	0	0	0	1	1	1	1	0	0
7:30:00	42	23	39	26	19	7	1	1	1	0	0	0	2	2	1	0	2	1	0	0
7:45:00	60	18	73	34	26	7	2	1	3	2	1	1	3	1	6	5	4	2	1	1
8:00:00	79	19	118	45	52	26	4	2	6	3	1	0	6	3	9	3	5	1	1	0
8:15:00	97	18	154	36	69	17	5	1	6	0	1	0	7	1	11	2	5	0	1	0
8:30:00	135	38	189	35	87	18	7	2	7	1	1	0	8	1	11	0	6	1	1	0
8:45:00	161	26	228	39	97	10	8	1	9	2	3	2	10	2	11	0	7	1	1	0
9:00:00	194	33	267	39	110	13	8	0	9	0	4	1	13	3	11	0	9	2	1	0
9:15:00	226	32	303	36	120	10	10	2	9	0	4	0	15	2	12	1	11	2	1	0
9:30:00	260	34	346	43	134	14	11	1	10	1	4	0	15	0	12	0	15	4	1	0
9:45:00	289	29	370	24	143	9	13	2	11	1	4	0	17	2	12	0	17	2	1	0
10:00:00	304	15	393	23	150	7	14	1	12	1	5	1	18	1	12	0	19	2	1	0
10:15:00	304	0	393	0	150	0	14	0	12	0	5	0	18	0	12	0	19	0	1	0
15:00:00	304	0	393	0	150	0	14	0	12	0	5	0	18	0	12	0	19	0	1	0
15:15:00	323	19	414	21	159	9	14	0	12	0	5	0	20	2	12	0	20	1	1	0
15:30:00	347	24	452	38	164	5	15	1	13	1	6	1	21	1	12	0	21	1	1	0
15:45:00	362	15	480	28	171	7	15	0	13	0	6	0	22	1	13	1	22	1	1	0
16:00:00	392	30	528	48	180	9	15	0	13	0	6	0	23	1	13	0	22	0	1	0
16:15:00	411	19	564	36	187	7	16	1	13	0	6	0	24	1	13	0	22	0	1	0
16:30:00	443	32	600	36	194	7	16	0	13	0	6	0	25	1	13	0	22	0	1	0
16:45:00	459	16	626	26	203	9	16	0	13	0	6	0	28	3	13	0	24	2	1	0
17:00:00	486	27	661	35	215	12	16	0	13	0	6	0	28	0	15	2	24	0	1	0
17:15:00	511	25	705	44	228	13	16	0	13	0	7	1	28	0	15	0	25	1	1	0
17:30:00	537	26	729	24	233	5	16	0	13	0	7	0	28	0	15	0	27	2	1	0
17:45:00	552	15	760	31	241	8	16	0	14	1	7	0	28	0	15	0	27	0	1	0
18:00:00	576	24	802	42	245	4	16	0	14	0	7	0	28	0	16	1	27	0	1	0
18:15:00	576	0	802	0	245	0	16	0	14	0	7	0	28	0	16	0	27	0	1	0
18:15:15	576	0	802	0	245	0	16	0	14	0	7	0	28	0	16	0	27	0	1	0



Count Date: 19-Jun-24 Site #: 2410900001

Interval Time	Passenger Cars - West Approach						Trucks - West Approach						Heavys - West Approach						Pedestrians	
	Left		Thru		Right		Left		Thru		Right		Left		Thru		Right		West Cross	
	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr	Cum	Incr
7:00:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15:00	3	3	51	51	13	13	0	0	0	0	0	0	0	0	0	0	1	1	0	0
7:30:00	13	10	109	58	32	19	0	0	0	0	0	0	0	0	2	2	1	0	1	1
7:45:00	22	9	153	44	48	16	0	0	1	1	0	0	1	1	4	2	2	1	1	0
8:00:00	42	20	234	81	69	21	0	0	1	0	0	0	1	0	4	0	4	2	1	0
8:15:00	53	11	316	82	91	22	0	0	4	3	0	0	1	0	6	2	6	2	1	0
8:30:00	68	15	401	85	115	24	0	0	6	2	2	2	1	0	10	4	6	0	1	0
8:45:00	81	13	471	70	142	27	0	0	7	1	2	0	1	0	12	2	8	2	1	0
9:00:00	101	20	535	64	163	21	0	0	9	2	2	0	1	0	15	3	8	0	1	0
9:15:00	118	17	610	75	188	25	0	0	10	1	2	0	1	0	20	5	11	3	1	0
9:30:00	135	17	669	59	215	27	0	0	13	3	3	1	1	0	23	3	13	2	2	1
9:45:00	144	9	728	59	238	23	0	0	14	1	3	0	1	0	23	0	15	2	2	0
10:00:00	155	11	807	79	270	32	0	0	15	1	3	0	1	0	25	2	16	1	2	0
10:15:00	155	0	807	0	270	0	0	0	15	0	3	0	1	0	25	0	16	0	2	0
15:00:00	155	0	807	0	270	0	0	0	15	0	3	0	1	0	25	0	16	0	2	0
15:15:00	172	17	881	74	290	20	0	0	21	6	5	2	1	0	30	5	17	1	2	0
15:30:00	186	14	948	67	315	25	0	0	24	3	6	1	2	1	31	1	18	1	2	0
15:45:00	199	13	1041	93	346	31	0	0	27	3	7	1	3	1	36	5	20	2	2	0
16:00:00	216	17	1130	89	372	26	0	0	28	1	7	0	4	1	37	1	22	2	2	0
16:15:00	229	13	1237	107	404	32	0	0	28	0	7	0	4	0	39	2	25	3	2	0
16:30:00	246	17	1308	71	427	23	0	0	30	2	7	0	4	0	49	10	27	2	2	0
16:45:00	258	12	1399	91	456	29	0	0	33	3	10	3	4	0	53	4	28	1	5	3
17:00:00	267	9	1488	89	493	37	0	0	34	1	12	2	4	0	55	2	31	3	5	0
17:15:00	275	8	1599	111	515	22	0	0	39	5	13	1	4	0	62	7	31	0	5	0
17:30:00	287	12	1694	95	553	38	0	0	39	0	13	0	4	0	63	1	31	0	5	0
17:45:00	298	11	1769	75	589	36	0	0	41	2	13	0	4	0	63	0	31	0	6	1
18:00:00	305	7	1827	58	610	21	0	0	43	2	13	0	4	0	64	1	32	1	6	0
18:15:00	305	0	1827	0	610	0	0	0	43	0	13	0	4	0	64	0	32	0	6	0
18:15:15	305	0	1827	0	610	0	0	0	43	0	13	0	4	0	64	0	32	0	6	0

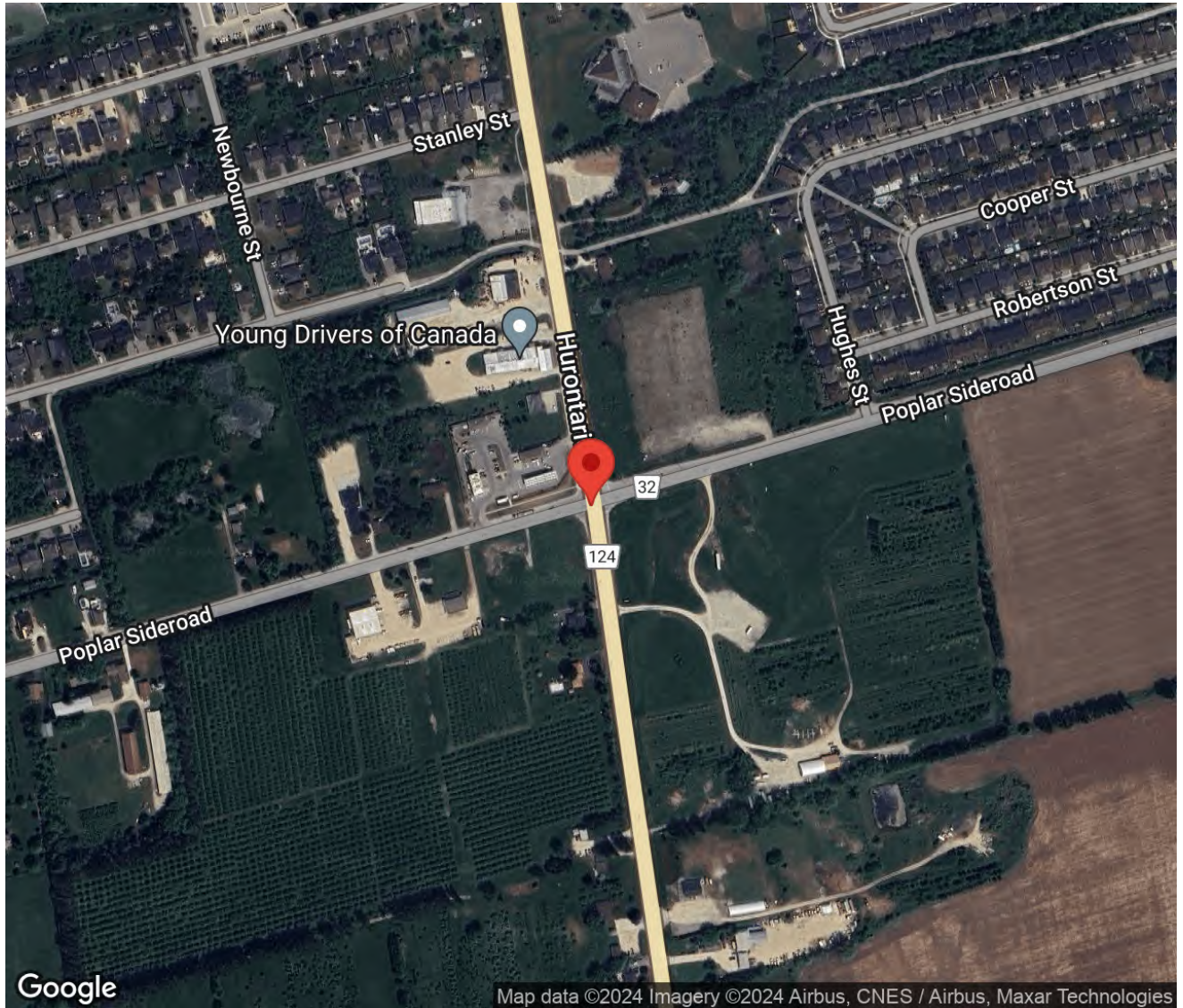
Project #24-321 - County of Simcoe

Intersection Count Report

Intersection: CR 124 & Poplar Sideroad
Municipality: Collingwood
Count Date: Thursday, Aug 01, 2024
Site Code: 2432100001
Count Categories: Cars, Light Trucks, Medium Trucks, Heavy Trucks, Bicycles, Peds
Count Period: 06:00-09:00, 11:00-13:00, 15:00-18:00
Weather: Clear
Comments:

Traffic Count Map

Intersection:	CR 124 & Poplar Sideroad
Site Code:	2432100001
Municipality:	Collingwood
Count Date:	Aug 01, 2024



Traffic Count Summary

Intersection: CR 124 & Poplar Sideroad
 Site Code: 2432100001
 Municipality: Collingwood
 Count Date: Aug 01, 2024

CR 124 - Traffic Summary

Hour	North Approach Totals						South Approach Totals						Total
	Includes Cars, Light Trucks, Medium Trucks, Heavy Trucks, Bicycles						Includes Cars, Light Trucks, Medium Trucks, Heavy Trucks, Bicycles						
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	
06:00 - 07:00	24	38	3	0	65	0	58	53	22	0	133	0	198
07:00 - 08:00	85	83	19	0	187	1	92	91	54	0	237	0	424
08:00 - 09:00	104	78	14	0	196	0	129	161	79	0	369	0	565
BREAK													
11:00 - 12:00	119	168	27	0	314	2	110	164	41	0	315	0	629
12:00 - 13:00	100	163	40	0	303	1	92	139	44	0	275	0	578
BREAK													
15:00 - 16:00	106	162	23	0	291	2	101	141	46	0	288	0	579
16:00 - 17:00	145	191	37	0	373	0	105	151	50	0	306	0	679
17:00 - 18:00	147	164	24	0	335	0	94	124	47	0	265	0	600
GRAND TOTAL	830	1047	187	0	2064	6	781	1024	383	0	2188	0	4252

Traffic Count Summary

Intersection: CR 124 & Poplar Sideroad
 Site Code: 2432100001
 Municipality: Collingwood
 Count Date: Aug 01, 2024

Poplar Sideroad - Traffic Summary

Hour	East Approach Totals						West Approach Totals						Total
	Includes Cars, Light Trucks, Medium Trucks, Heavy Trucks, Bicycles						Includes Cars, Light Trucks, Medium Trucks, Heavy Trucks, Bicycles						
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	
06:00 - 07:00	17	132	18	0	167	0	20	91	36	0	147	0	314
07:00 - 08:00	39	210	54	0	303	0	24	240	74	0	338	0	641
08:00 - 09:00	42	297	87	0	426	0	54	273	81	0	408	0	834
BREAK													
11:00 - 12:00	32	221	87	0	340	0	51	294	126	0	471	0	811
12:00 - 13:00	38	252	101	0	391	0	46	345	99	0	490	0	881
BREAK													
15:00 - 16:00	45	274	108	0	427	0	36	359	105	0	500	0	927
16:00 - 17:00	53	322	142	0	517	0	30	368	110	0	508	0	1025
17:00 - 18:00	53	274	111	0	438	0	28	378	99	0	505	1	943
GRAND TOTAL	319	1982	708	0	3009	0	289	2348	730	0	3367	1	6376

Traffic Count Data

Intersection: CR 124 & Poplar Sideroad
Site Code: 2432100001
Municipality: Collingwood
Count Date: Aug 01, 2024

North Approach - CR 124

	Cars					Light Trucks					Medium Trucks					Heavy Trucks					Bicycles						
Start Time					Total					Total					Total					Total					Total	Total Peds	
06:00	2	7	0	0	9	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0
06:15	2	5	0	0	7	2	2	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
06:30	4	5	1	0	10	2	4	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
06:45	5	9	2	0	16	6	5	0	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
07:00	15	14	5	0	34	7	5	3	0	15	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	
07:15	12	15	4	0	31	5	3	0	0	8	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	
07:30	19	18	0	0	37	6	4	0	0	10	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	
07:45	15	13	4	0	32	4	8	3	0	15	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	1	
08:00	17	16	1	0	34	4	4	1	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
08:15	20	11	2	0	33	7	5	0	0	12	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0	
08:30	15	13	3	0	31	5	6	0	0	11	0	1	0	0	1	1	0	0	0	0	1	0	0	0	0	0	
08:45	25	19	3	0	47	8	2	4	0	14	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	
SUBTOTAL	151	145	25	0	321	56	49	11	0	116	4	5	0	0	9	2	0	0	0	0	2	0	0	0	0	0	1

Traffic Count Data

Intersection: CR 124 & Poplar Sideroad
Site Code: 2432100001
Municipality: Collingwood
Count Date: Aug 01, 2024

North Approach - CR 124

Start Time	Cars					Light Trucks					Medium Trucks					Heavy Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
11:00	24	48	3	0	75	6	8	2	0	16	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
11:15	21	32	4	0	57	13	6	2	0	21	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	0
11:30	22	22	5	0	49	7	5	2	0	14	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
11:45	16	40	4	0	60	7	5	4	0	16	1	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0
12:00	20	27	8	0	55	5	11	2	0	18	1	3	0	0	4	0	0	0	0	0	0	0	0	0	0	0
12:15	18	38	5	0	61	5	11	2	0	18	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
12:30	22	29	2	0	53	3	9	5	0	17	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0
12:45	17	28	12	0	57	8	5	4	0	17	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0
SUBTOTAL	160	264	43	0	467	54	60	23	0	137	4	6	1	0	11	1	1	0	0	2	0	0	0	0	0	3

Traffic Count Data

Intersection: CR 124 & Poplar Sideroad
Site Code: 2432100001
Municipality: Collingwood
Count Date: Aug 01, 2024

North Approach - CR 124

Start Time	Cars					Light Trucks					Medium Trucks					Heavy Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
15:00	23	24	1	0	48	5	8	1	0	14	0	3	0	0	3	0	0	0	0	0	1	0	0	0	1	2
15:15	14	32	3	0	49	4	7	1	0	12	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
15:30	22	40	4	0	66	6	6	2	0	14	2	1	0	0	3	1	1	0	0	2	0	0	0	0	0	0
15:45	24	29	10	0	63	3	8	1	0	12	1	2	0	0	3	0	0	0	0	0	0	0	0	0	0	0
16:00	33	57	8	0	98	8	12	0	0	20	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
16:15	27	34	10	0	71	11	12	0	0	23	4	0	1	0	5	0	0	0	0	0	0	0	0	0	0	0
16:30	23	28	4	0	55	6	10	6	0	22	1	1	0	0	2	0	0	0	0	0	0	0	0	0	0	0
16:45	21	27	7	0	55	11	8	1	0	20	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0
17:00	24	34	6	0	64	10	5	1	0	16	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	0
17:15	29	35	3	0	67	8	8	2	0	18	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0
17:30	26	36	3	0	65	13	6	1	0	20	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
17:45	22	24	6	0	52	14	13	2	0	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	288	400	65	0	753	99	103	18	0	220	9	11	1	0	21	1	3	0	0	4	1	0	0	0	1	2
GRAND TOTAL	599	809	133	0	1541	209	212	52	0	473	17	22	2	0	41	4	4	0	0	8	1	0	0	0	1	6

Traffic Count Data

Intersection: CR 124 & Poplar Sideroad
Site Code: 2432100001
Municipality: Collingwood
Count Date: Aug 01, 2024

South Approach - CR 124

Start Time	Cars					Light Trucks					Medium Trucks					Heavy Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
06:00	4	5	0	0	9	4	2	1	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:15	6	8	1	0	15	3	3	0	0	6	0	0	0	0	0	3	0	2	0	5	0	0	0	0	0	0
06:30	7	14	4	0	25	7	4	3	0	14	0	2	0	0	2	2	0	1	0	3	0	0	0	0	0	0
06:45	11	10	6	0	27	9	5	3	0	17	1	0	0	0	1	1	0	1	0	2	0	0	0	0	0	0
07:00	13	17	3	0	33	6	3	6	0	15	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0
07:15	8	8	6	0	22	4	13	3	0	20	0	0	1	0	1	3	1	0	0	4	0	0	0	0	0	0
07:30	12	6	5	0	23	10	10	3	0	23	2	1	0	0	3	1	1	1	0	3	0	0	0	0	0	0
07:45	17	19	17	0	53	10	11	6	0	27	0	1	0	0	1	6	0	2	0	8	0	0	0	0	0	0
08:00	15	19	7	0	41	8	9	7	0	24	5	1	1	0	7	8	0	1	0	9	0	0	0	0	0	0
08:15	21	28	14	0	63	10	11	9	0	30	4	0	2	0	6	1	2	1	0	4	0	0	0	0	0	0
08:30	22	38	5	0	65	4	10	9	0	23	2	1	1	0	4	3	0	2	0	5	0	0	0	0	0	0
08:45	22	33	11	0	66	3	7	8	0	18	0	1	0	0	1	1	1	1	0	3	0	0	0	0	0	0
SUBTOTAL	158	205	79	0	442	78	88	58	0	224	14	7	5	0	26	29	5	13	0	47	0	0	0	0	0	0

Traffic Count Data

Intersection: CR 124 & Poplar Sideroad
Site Code: 2432100001
Municipality: Collingwood
Count Date: Aug 01, 2024

South Approach - CR 124

	Cars					Light Trucks					Medium Trucks					Heavy Trucks					Bicycles					Total Peds	
Start Time					Total					Total					Total					Total					Total		
11:00	16	28	3	0	47	6	5	4	0	15	1	1	1	0	3	0	0	2	0	2	0	1	0	0	0	0	1
11:15	14	39	8	0	61	7	7	2	0	16	2	1	0	0	3	4	1	1	0	6	0	1	0	0	0	1	0
11:30	18	35	5	0	58	9	8	2	0	19	0	1	1	0	2	1	0	0	0	1	0	0	0	0	0	0	0
11:45	20	24	6	0	50	7	11	6	0	24	0	1	0	0	1	5	0	0	0	5	0	0	0	0	0	0	0
12:00	12	15	2	0	29	6	10	1	0	17	1	2	0	0	3	4	1	2	0	7	0	0	0	0	0	0	0
12:15	14	31	11	0	56	7	11	5	0	23	1	1	0	0	2	4	0	0	0	4	0	0	0	0	0	0	0
12:30	10	26	6	0	42	6	6	4	0	16	2	0	0	0	2	3	0	0	0	3	0	0	0	0	0	0	0
12:45	17	31	8	0	56	4	5	4	0	13	1	0	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0
SUBTOTAL	121	229	49	0	399	52	63	28	0	143	8	7	2	0	17	21	2	6	0	29	0	2	0	0	0	2	0

Traffic Count Data

Intersection: CR 124 & Poplar Sideroad
Site Code: 2432100001
Municipality: Collingwood
Count Date: Aug 01, 2024

South Approach - CR 124

Start Time	Cars					Light Trucks					Medium Trucks					Heavy Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
15:00	21	27	7	0	55	4	6	4	0	14	2	0	0	0	2	1	0	0	0	1	0	0	0	0	0	0
15:15	16	24	2	0	42	2	6	4	0	12	0	0	0	0	0	1	0	4	0	5	0	0	0	0	0	0
15:30	11	26	8	0	45	4	12	4	0	20	0	1	0	0	1	5	0	1	0	6	0	1	0	0	1	0
15:45	25	28	7	0	60	3	9	1	0	13	2	0	2	0	4	4	1	2	0	7	0	0	0	0	0	0
16:00	12	25	5	0	42	8	10	2	0	20	0	1	0	0	1	0	0	1	0	1	0	0	0	0	0	0
16:15	24	28	10	0	62	6	12	3	0	21	0	1	0	0	1	1	0	0	0	1	0	0	0	0	0	0
16:30	21	36	7	0	64	5	4	2	0	11	0	0	1	0	1	4	0	3	0	7	0	0	0	0	0	0
16:45	18	24	11	0	53	5	10	4	0	19	0	0	0	0	0	1	0	1	0	2	0	0	0	0	0	0
17:00	14	29	8	0	51	7	6	3	0	16	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0
17:15	17	22	12	0	51	2	5	3	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	20	16	7	0	43	10	8	2	0	20	0	0	1	0	1	0	1	2	0	3	0	0	0	0	0	0
17:45	18	31	4	0	53	6	6	1	0	13	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0
SUBTOTAL	217	316	88	0	621	62	94	33	0	189	4	3	4	0	11	17	2	18	0	37	0	1	0	0	1	0
GRAND TOTAL	496	750	216	0	1462	192	245	119	0	556	26	17	11	0	54	67	9	37	0	113	0	3	0	0	3	0

Traffic Count Data

Intersection: CR 124 & Poplar Sideroad
Site Code: 2432100001
Municipality: Collingwood
Count Date: Aug 01, 2024

East Approach - Poplar Sideroad

	Cars					Light Trucks					Medium Trucks					Heavy Trucks					Bicycles					Total Peds
Start Time					Total					Total					Total					Total						
06:00	2	13	0	0	15	0	5	1	0	6	1	1	0	0	2	0	0	0	0	0	0					
06:15	5	12	2	0	19	0	7	0	0	7	0	0	0	0	0	0	0	0	0	0	0					
06:30	1	24	6	0	31	0	11	3	0	14	1	0	0	0	1	2	0	0	0	2	0					
06:45	3	36	2	0	41	0	19	2	0	21	1	2	0	0	3	1	0	0	0	1	0					
07:00	7	25	6	0	38	1	10	3	0	14	2	2	0	0	4	2	0	0	0	2	0					
07:15	2	24	12	0	38	2	24	5	0	31	1	0	0	0	1	2	1	0	0	3	0					
07:30	5	32	8	0	45	1	23	1	0	25	0	2	1	0	3	0	0	0	0	0	0					
07:45	10	43	12	0	65	3	18	4	0	25	0	3	1	0	4	1	3	0	0	4	0					
08:00	5	39	7	0	51	1	18	6	0	25	0	4	1	0	5	2	2	0	0	4	0					
08:15	6	54	15	0	75	3	16	6	0	25	0	2	1	0	3	0	4	0	0	4	0					
08:30	6	42	11	0	59	1	24	6	0	31	0	4	1	0	5	1	1	0	0	2	0					
08:45	11	62	28	0	101	4	22	5	0	31	2	1	0	0	3	0	1	0	0	1	0					
SUBTOTAL	63	406	109	0	578	16	197	42	0	255	8	21	5	0	34	11	12	0	0	23	0					

Traffic Count Data

Intersection: CR 124 & Poplar Sideroad
Site Code: 2432100001
Municipality: Collingwood
Count Date: Aug 01, 2024

East Approach - Poplar Sideroad

	Cars					Light Trucks					Medium Trucks					Heavy Trucks					Bicycles					Total Peds
Start Time					Total					Total					Total					Total						
11:00	3	44	11	0	58	3	9	4	0	16	0	5	1	0	6	0	0	0	0	0	0					
11:15	9	28	11	0	48	4	16	2	0	22	1	7	1	0	9	1	0	0	0	0	0					
11:30	1	35	20	0	56	0	12	6	0	18	1	0	2	0	3	0	1	0	0	0	0					
11:45	7	48	19	0	74	0	14	8	0	22	1	2	2	0	5	1	0	0	0	0	0					
12:00	4	49	22	0	75	5	19	5	0	29	1	1	0	0	2	0	0	0	0	0	0					
12:15	8	46	23	0	77	5	13	6	0	24	0	1	0	0	1	0	1	1	0	2	0					
12:30	7	45	13	0	65	1	19	7	0	27	0	0	1	0	1	0	4	0	0	4	0					
12:45	4	43	20	0	67	2	8	1	0	11	0	2	0	0	2	1	0	0	0	1	0					
SUBTOTAL	43	338	139	0	520	20	110	39	0	169	4	18	7	0	29	3	6	1	0	10	3					

Traffic Count Data

Intersection: CR 124 & Poplar Sideroad
Site Code: 2432100001
Municipality: Collingwood
Count Date: Aug 01, 2024

East Approach - Poplar Sideroad

Start Time	Cars					Light Trucks					Medium Trucks					Heavy Trucks					Bicycles					Total Peds
	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	←	↑	→	↻	Total	
15:00	10	41	18	0	69	2	13	4	0	19	0	1	1	0	2	0	2	0	0	2	0	0	0	0	0	0
15:15	6	51	19	0	76	3	14	6	0	23	0	4	0	0	4	0	1	0	0	1	0	0	0	0	0	0
15:30	9	68	18	0	95	3	16	9	0	28	1	0	0	0	1	0	1	0	0	1	0	0	0	0	0	0
15:45	6	52	26	0	84	4	9	6	0	19	0	1	1	0	2	1	0	0	0	1	0	0	0	0	0	0
16:00	6	53	23	0	82	3	10	12	0	25	2	0	1	0	3	0	0	0	0	0	0	0	0	0	0	0
16:15	8	55	31	0	94	6	18	13	0	37	1	2	0	0	3	1	2	0	0	3	0	0	0	0	0	0
16:30	10	84	36	0	130	3	15	3	0	21	0	1	0	0	1	1	1	0	0	2	0	0	0	0	0	0
16:45	7	65	18	0	90	4	15	5	0	24	0	0	0	0	0	1	1	0	0	2	0	0	0	0	0	0
17:00	10	46	18	0	74	5	13	5	0	23	0	2	0	0	2	1	0	0	0	1	0	0	0	0	0	0
17:15	12	62	27	0	101	5	14	7	0	26	1	1	1	0	3	0	1	0	0	1	0	0	0	0	0	0
17:30	6	49	17	0	72	4	11	7	0	22	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	0
17:45	6	61	22	0	89	1	11	7	0	19	0	1	0	0	1	2	0	0	0	2	0	0	0	0	0	0
SUBTOTAL	96	687	273	0	1056	43	159	84	0	286	5	14	4	0	23	7	10	0	0	17	0	0	0	0	0	0
GRAND TOTAL	202	1431	521	0	2154	79	466	165	0	710	17	53	16	0	86	21	28	1	0	50	0	4	5	0	9	0

Traffic Count Data

Intersection: CR 124 & Poplar Sideroad
Site Code: 2432100001
Municipality: Collingwood
Count Date: Aug 01, 2024

West Approach - Poplar Sideroad

	Cars					Light Trucks					Medium Trucks					Heavy Trucks					Bicycles					Total Peds
Start Time					Total					Total					Total					Total						
06:00	0	10	5	0	15	0	7	0	0	7	0	1	0	0	1	0	1	0	0	1	0	0	0			
06:15	4	3	10	0	17	3	4	0	0	7	0	1	0	0	1	0	0	0	0	0	0	0	0			
06:30	3	12	6	0	21	2	10	3	0	15	0	2	0	0	2	0	1	0	0	1	0	0	0			
06:45	3	29	9	0	41	4	10	2	0	16	0	0	0	0	0	1	0	1	0	2	0	0	0			
07:00	2	32	9	0	43	2	16	5	0	23	0	0	0	0	0	0	1	3	0	4	0	0	0			
07:15	4	43	7	0	54	2	12	6	0	20	0	1	0	0	1	0	1	0	0	1	0	0	0			
07:30	4	38	15	0	57	2	8	9	0	19	0	1	1	0	2	0	0	1	0	1	0	0	0			
07:45	4	66	8	0	78	4	18	6	0	28	0	2	0	0	2	0	1	4	0	5	0	0	0			
08:00	7	38	19	0	64	1	10	9	0	20	1	3	1	0	5	0	0	0	0	0	0	0	0			
08:15	8	52	11	0	71	1	14	3	0	18	1	3	2	0	6	0	0	4	0	4	0	0	0			
08:30	9	48	10	0	67	5	7	6	0	18	1	1	1	0	3	1	2	1	0	4	0	1	0			
08:45	14	68	11	0	93	4	20	2	0	26	0	5	0	0	5	1	1	1	0	3	0	0	0			
SUBTOTAL	62	439	120	0	621	30	136	51	0	217	3	20	5	0	28	3	8	15	0	26	0	1	0			

Traffic Count Data

Intersection: CR 124 & Poplar Sideroad
Site Code: 2432100001
Municipality: Collingwood
Count Date: Aug 01, 2024

West Approach - Poplar Sideroad

	Cars					Light Trucks					Medium Trucks					Heavy Trucks					Bicycles					Total Peds
Start Time					Total					Total					Total					Total					Total	
11:00	8	67	20	0	95	3	15	9	0	27	0	2	2	0	4	0	2	7	0	9	0	0	0	0	0	0
11:15	7	55	14	0	76	0	8	7	0	15	1	1	0	0	2	0	2	2	0	4	0	0	0	0	0	0
11:30	11	60	28	0	99	3	16	10	0	29	2	5	0	0	7	0	0	0	0	0	0	0	0	0	0	0
11:45	9	44	19	0	72	7	11	7	0	25	0	4	0	0	4	0	2	1	0	3	0	0	0	0	0	0
12:00	8	60	12	0	80	4	9	6	0	19	0	3	0	0	3	1	1	4	0	6	0	0	0	0	0	0
12:15	6	65	17	0	88	5	19	6	0	30	0	3	0	0	3	0	3	3	0	6	0	0	0	0	0	0
12:30	3	80	16	0	99	2	7	8	0	17	0	1	0	0	1	0	5	1	0	6	0	0	0	0	0	0
12:45	14	62	21	0	97	3	23	5	0	31	0	1	0	0	1	0	3	0	0	3	0	0	0	0	0	0
SUBTOTAL	66	493	147	0	706	27	108	58	0	193	3	20	2	0	25	1	18	18	0	37	0	0	0	0	0	0

Traffic Count Data

Intersection: CR 124 & Poplar Sideroad
Site Code: 2432100001
Municipality: Collingwood
Count Date: Aug 01, 2024

West Approach - Poplar Sideroad

	Cars					Light Trucks					Medium Trucks					Heavy Trucks					Bicycles						
Start Time					Total					Total					Total					Total					Total	Total Peds	
15:00	10	52	17	0	79	2	16	4	0	22	0	4	0	0	4	0	0	5	0	5	0	0	0	0	0	0	0
15:15	4	58	12	0	74	3	21	5	0	29	0	1	2	0	3	0	0	1	0	1	0	0	0	0	0	0	0
15:30	6	71	15	0	92	0	29	8	0	37	0	2	1	0	3	0	0	1	0	1	0	0	0	0	0	0	0
15:45	8	77	24	0	109	2	24	7	0	33	1	4	2	0	7	0	0	1	0	1	0	0	0	0	0	0	0
16:00	8	49	14	0	71	3	34	5	0	42	0	2	0	0	2	0	1	3	0	4	0	0	0	0	0	0	0
16:15	3	70	25	0	98	2	23	8	0	33	0	2	0	0	2	0	2	2	0	4	0	0	0	0	0	0	0
16:30	5	74	25	0	104	2	30	7	0	39	0	3	0	0	3	0	1	2	0	3	0	0	0	0	0	0	0
16:45	6	49	11	0	66	1	27	6	0	34	0	1	2	0	3	0	0	0	0	0	0	0	0	0	0	0	0
17:00	3	75	19	0	97	1	24	6	0	31	0	1	1	0	2	0	1	0	0	1	0	0	0	0	0	0	0
17:15	6	88	23	0	117	1	22	3	0	26	0	4	0	0	4	0	0	0	0	0	0	0	0	0	0	0	1
17:30	8	58	24	0	90	3	25	5	0	33	0	3	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0
17:45	6	64	16	0	86	0	12	2	0	14	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0
SUBTOTAL	73	785	225	0	1083	20	287	66	0	373	1	27	8	0	36	0	6	15	0	21	0	0	0	0	0	0	1
GRAND TOTAL	201	1717	492	0	2410	77	531	175	0	783	7	67	15	0	89	4	32	48	0	84	0	1	0	0	1	1	1

Peak Hour Diagram

Specified Period

From: 06:00:00
To: 09:00:00

One Hour Peak

From: 08:00:00
To: 09:00:00

Intersection: CR 124 & Poplar Sideroad
Site Code: 2432100001
Count Date: Aug 01, 2024

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: Poplar Sideroad runs E/W

North Approach

	Out	In	Total
Car	145	217	362
LT	46	71	117
MT	4	9	13
HT	1	5	6
Bike	0	0	0
Totals	196	302	498

CR 124

Bike	0	0	0	0
HT	0	0	1	0
MT	0	2	2	0
LT	5	17	24	0
Car	9	59	77	0
Totals	14	78	104	0

East Approach

	Out	In	Total
Car	286	320	606
LT	112	108	220
MT	16	18	34
HT	11	9	20
Bike	1	1	2
Totals	426	456	882

Poplar Sideroad

	HT	MT	LT	Car	Totals
Car	0	0	0	0	0
LT	0	2	3	11	38
MT	1	3	12	51	206
HT	0	6	4	20	51
Totals	0	54	273	81	

Peds: 0



Poplar Sideroad

Totals	Car	LT	MT	HT	Bike
0	0	0	0	0	0
87	61	23	3	0	0
297	197	80	11	8	1
42	28	9	2	3	0

West Approach

	Out	In	Total
Car	295	286	581
LT	82	110	192
MT	19	22	41
HT	11	21	32
Bike	1	1	2
Totals	408	440	848

Totals	129	161	79	0
Car	80	118	37	0
LT	25	37	33	0
MT	11	3	4	0
HT	13	3	5	0
Bike	0	0	0	0

CR 124

South Approach

	Out	In	Total
Car	235	138	373
LT	95	46	141
MT	18	8	26
HT	21	9	30
Bike	0	0	0
Totals	369	201	570

Car - Cars

LT - Light Trucks

MT - Medium Trucks

HT - Heavy Trucks

Bike - Bicycles

Comments

Peak Hour Summary

Intersection: CR 124 & Poplar Sideroad
Site Code: 2432100001
Count Date: Aug 01, 2024
Period: 06:00 - 09:00

Peak Hour Data (08:00 - 09:00)

Start Time	North Approach CR 124						South Approach CR 124						East Approach Poplar Sideroad						West Approach Poplar Sideroad						Total Vehicles
	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	
08:00	21	20	2	0	0	43	36	29	16	0	0	81	8	63	14	0	0	85	9	51	29	0	0	89	298
08:15	28	17	2	0	0	47	36	41	26	0	0	103	9	76	22	0	0	107	10	69	20	0	0	99	356
08:30	21	20	3	0	0	44	31	49	17	0	0	97	8	72	18	0	0	98	16	59	18	0	0	93	332
08:45	34	21	7	0	0	62	26	42	20	0	0	88	17	86	33	0	0	136	19	94	14	0	0	127	413
Grand Total	104	78	14	0	0	196	129	161	79	0	0	369	42	297	87	0	0	426	54	273	81	0	0	408	1399
Approach %	53.1	39.8	7.1	0	-	-	35	43.6	21.4	0	-	-	9.9	69.7	20.4	0	-	-	13.2	66.9	19.9	0	-	-	-
Totals %	7.4	5.6	1	0	-	14	9.2	11.5	5.6	0	-	26.4	3	21.2	6.2	0	-	30.5	3.9	19.5	5.8	0	-	29.2	-
PHF	0.76	0.93	0.5	0	-	0.79	0.9	0.82	0.76	0	-	0.9	0.62	0.86	0.66	0	-	0.78	0.71	0.73	0.7	0	-	0.8	0.85
Cars	77	59	9	0	-	145	80	118	37	0	-	235	28	197	61	0	-	286	38	206	51	0	-	295	961
% Cars	74	75.6	64.3	0	-	74	62	73.3	46.8	0	-	63.7	66.7	66.3	70.1	0	-	67.1	70.4	75.5	63	0	-	72.3	68.7
Light Trucks	24	17	5	0	-	46	25	37	33	0	-	95	9	80	23	0	-	112	11	51	20	0	-	82	335
% Light Trucks	23.1	21.8	35.7	0	-	23.5	19.4	23	41.8	0	-	25.7	21.4	26.9	26.4	0	-	26.3	20.4	18.7	24.7	0	-	20.1	23.9
Medium Trucks	2	2	0	0	-	4	11	3	4	0	-	18	2	11	3	0	-	16	3	12	4	0	-	19	57
% Medium Trucks	1.9	2.6	0	0	-	2	8.5	1.9	5.1	0	-	4.9	4.8	3.7	3.4	0	-	3.8	5.6	4.4	4.9	0	-	4.7	4.1
Heavy Trucks	1	0	0	0	-	1	13	3	5	0	-	21	3	8	0	0	-	11	2	3	6	0	-	11	44
% Heavy Trucks	1	0	0	0	-	0.5	10.1	1.9	6.3	0	-	5.7	7.1	2.7	0	0	-	2.6	3.7	1.1	7.4	0	-	2.7	3.1
Bicycles	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	0	1	0	0	-	1	2
% Bicycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0.3	0	0	-	0.2	0	0.4	0	0	-	0.2	0.1
Peds	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	0
% Peds	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-

Peak Hour Diagram

Specified Period

From: 11:00:00
To: 13:00:00

One Hour Peak

From: 11:30:00
To: 12:30:00

Intersection: CR 124 & Poplar Sideroad
Site Code: 2432100001
Count Date: Aug 01, 2024

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: Poplar Sideroad runs E/W

North Approach

	Out	In	Total
	225	223	448
LT	66	84	150
MT	8	11	19
HT	0	3	3
	0	2	2
Totals	299	323	622

CR 124

	0	0	0	0
HT	0	0	0	0
MT	1	4	3	0
LT	10	32	24	0
	22	127	76	0
Totals	33	163	103	0

East Approach

	Out	In	Total
	282	329	611
LT	93	93	186
MT	11	19	30
HT	4	8	12
	3	0	3
Totals	393	449	842

Poplar Sideroad

	HT	MT	LT		Totals
	0	0	0	0	0
	0	1	2	34	56
	0	6	15	229	305
	0	8	0	76	113

Peds: 2



Poplar Sideroad

Totals		LT	MT	HT	
0	0	0	0	0	0
116	84	25	4	1	2
243	178	58	4	2	1
34	20	10	3	1	0

West Approach

	Out	In	Total
	339	264	603
LT	103	97	200
MT	17	7	24
HT	15	16	31
	0	1	1
Totals	474	385	859

	109	151	41	0
	64	105	24	0
LT	29	40	14	0
MT	2	5	1	0
HT	14	1	2	0
	0	0	0	0

CR 124

South Approach

	Out	In	Total
	193	223	416
LT	83	71	154
MT	8	7	15
HT	17	9	26
	0	0	0
Totals	301	310	611

- Cars

LT - Light Trucks

MT - Medium Trucks

HT - Heavy Trucks

- Bicycles

Comments

Peak Hour Summary

Intersection: CR 124 & Poplar Sideroad
Site Code: 2432100001
Count Date: Aug 01, 2024
Period: 11:00 - 13:00

Peak Hour Data (11:30 - 12:30)

Start Time	North Approach CR 124						South Approach CR 124						East Approach Poplar Sideroad						West Approach Poplar Sideroad						Total Vehicles
	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	
11:30	30	27	7	0	1	64	28	44	8	0	0	80	2	48	28	0	0	78	16	81	38	0	0	135	357
11:45	24	45	9	0	0	78	32	36	12	0	0	80	9	64	29	0	0	102	16	61	27	0	0	104	364
12:00	26	41	10	0	0	77	23	28	5	0	0	56	10	70	28	0	0	108	13	73	22	0	0	108	349
12:15	23	50	7	0	1	80	26	43	16	0	0	85	13	61	31	0	0	105	11	90	26	0	0	127	397
Grand Total	103	163	33	0	2	299	109	151	41	0	0	301	34	243	116	0	0	393	56	305	113	0	0	474	1467
Approach %	34.4	54.5	11	0	-	-	36.2	50.2	13.6	0	-	-	8.7	61.8	29.5	0	-	-	11.8	64.3	23.8	0	-	-	-
Totals %	7	11.1	2.2	0	-	20.4	7.4	10.3	2.8	0	-	20.5	2.3	16.6	7.9	0	-	26.8	3.8	20.8	7.7	0	-	32.3	-
PHF	0.86	0.82	0.83	0	-	0.93	0.85	0.86	0.64	0	-	0.89	0.65	0.87	0.94	0	-	0.91	0.88	0.85	0.74	0	-	0.88	0.92
Cars	76	127	22	0	-	225	64	105	24	0	-	193	20	178	84	0	-	282	34	229	76	0	-	339	1039
% Cars	73.8	77.9	66.7	0	-	75.3	58.7	69.5	58.5	0	-	64.1	58.8	73.3	72.4	0	-	71.8	60.7	75.1	67.3	0	-	71.5	70.8
Light Trucks	24	32	10	0	-	66	29	40	14	0	-	83	10	58	25	0	-	93	19	55	29	0	-	103	345
% Light Trucks	23.3	19.6	30.3	0	-	22.1	26.6	26.5	34.1	0	-	27.6	29.4	23.9	21.6	0	-	23.7	33.9	18	25.7	0	-	21.7	23.5
Medium Trucks	3	4	1	0	-	8	2	5	1	0	-	8	3	4	4	0	-	11	2	15	0	0	-	17	44
% Medium Trucks	2.9	2.5	3	0	-	2.7	1.8	3.3	2.4	0	-	2.7	8.8	1.6	3.4	0	-	2.8	3.6	4.9	0	0	-	3.6	3
Heavy Trucks	0	0	0	0	-	0	14	1	2	0	-	17	1	2	1	0	-	4	1	6	8	0	-	15	36
% Heavy Trucks	0	0	0	0	-	0	12.8	0.7	4.9	0	-	5.6	2.9	0.8	0.9	0	-	1	1.8	2	7.1	0	-	3.2	2.5
Bicycles	0	0	0	0	-	0	0	0	0	0	-	0	0	1	2	0	-	3	0	0	0	0	-	0	3
% Bicycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0.4	1.7	0	-	0.8	0	0	0	0	-	0	0.2
Peds	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	2
% Peds	-	-	-	-	100	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-

Peak Hour Diagram

Specified Period

From: 15:00:00
To: 18:00:00

One Hour Peak

From: 15:45:00
To: 16:45:00

Intersection: CR 124 & Poplar Sideroad
Site Code: 2432100001
Count Date: Aug 01, 2024

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: Poplar Sideroad runs E/W

North Approach

	Out	In	Total
Car	287	257	544
LT	77	78	155
MT	11	5	16
HT	0	1	1
Bike	0	0	0
Totals	375	341	716

CR 124

Bike	0	0	0	0
HT	0	0	0	0
MT	1	4	6	0
LT	7	42	28	0
Car	32	148	107	0
Totals	40	194	141	0






East Approach

	Out	In	Total
Car	390	406	796
LT	102	147	249
MT	9	20	29
HT	6	10	16
Bike	0	0	0
Totals	507	583	1090

Poplar Sideroad

	HT	MT	LT	Car	Totals
Bike	0	0	0	0	0
Car	0	0	1	9	24
LT	0	4	11	111	270
MT	0	8	2	27	88
Totals	0	34	396	125	






Peds: 0



Poplar Sideroad

Totals	Car	LT	MT	HT	Bike
0	0	0	0	0	0
152	116	34	2	0	0
303	244	52	4	3	0
52	30	16	3	3	0






West Approach

	Out	In	Total
Car	382	358	740
LT	147	81	228
MT	14	7	21
HT	12	12	24
Bike	0	0	0
Totals	555	458	1013

Totals	115	155	46	0
Car	82	117	29	0
LT	22	35	8	0
MT	2	2	3	0
HT	9	1	6	0
Bike	0	0	0	0






CR 124

South Approach

	Out	In	Total
Car	228	266	494
LT	65	85	150
MT	7	9	16
HT	16	11	27
Bike	0	0	0
Totals	316	371	687

Car - Cars

LT - Light Trucks

MT - Medium Trucks

HT - Heavy Trucks

Bike - Bicycles

Comments

Peak Hour Summary

Intersection: CR 124 & Poplar Sideroad
Site Code: 2432100001
Count Date: Aug 01, 2024
Period: 15:00 - 18:00

Peak Hour Data (15:45 - 16:45)

Start Time	North Approach CR 124						South Approach CR 124						East Approach Poplar Sideroad						West Approach Poplar Sideroad						Total Vehicles
	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	←	↑	→	↻	Peds	Total	
15:45	28	39	11	0	0	78	34	38	12	0	0	84	11	62	33	0	0	106	11	105	34	0	0	150	418
16:00	41	70	8	0	0	119	20	36	8	0	0	64	11	63	36	0	0	110	11	86	22	0	0	119	412
16:15	42	46	11	0	0	99	31	41	13	0	0	85	16	77	44	0	0	137	5	97	35	0	0	137	458
16:30	30	39	10	0	0	79	30	40	13	0	0	83	14	101	39	0	0	154	7	108	34	0	0	149	465
Grand Total	141	194	40	0	0	375	115	155	46	0	0	316	52	303	152	0	0	507	34	396	125	0	0	555	1753
Approach %	37.6	51.7	10.7	0	-	-	36.4	49.1	14.6	0	-	-	10.3	59.8	30	0	-	-	6.1	71.4	22.5	0	-	-	-
Totals %	8	11.1	2.3	0	-	21.4	6.6	8.8	2.6	0	-	18	3	17.3	8.7	0	-	28.9	1.9	22.6	7.1	0	-	31.7	-
PHF	0.84	0.69	0.91	0	-	0.79	0.85	0.95	0.88	0	-	0.93	0.81	0.75	0.86	0	-	0.82	0.77	0.92	0.89	0	-	0.93	0.94
Cars	107	148	32	0	-	287	82	117	29	0	-	228	30	244	116	0	-	390	24	270	88	0	-	382	1287
% Cars	75.9	76.3	80	0	-	76.5	71.3	75.5	63	0	-	72.2	57.7	80.5	76.3	0	-	76.9	70.6	68.2	70.4	0	-	68.8	73.4
Light Trucks	28	42	7	0	-	77	22	35	8	0	-	65	16	52	34	0	-	102	9	111	27	0	-	147	391
% Light Trucks	19.9	21.6	17.5	0	-	20.5	19.1	22.6	17.4	0	-	20.6	30.8	17.2	22.4	0	-	20.1	26.5	28	21.6	0	-	26.5	22.3
Medium Trucks	6	4	1	0	-	11	2	2	3	0	-	7	3	4	2	0	-	9	1	11	2	0	-	14	41
% Medium Trucks	4.3	2.1	2.5	0	-	2.9	1.7	1.3	6.5	0	-	2.2	5.8	1.3	1.3	0	-	1.8	2.9	2.8	1.6	0	-	2.5	2.3
Heavy Trucks	0	0	0	0	-	0	9	1	6	0	-	16	3	3	0	0	-	6	0	4	8	0	-	12	34
% Heavy Trucks	0	0	0	0	-	0	7.8	0.6	13	0	-	5.1	5.8	1	0	0	-	1.2	0	1	6.4	0	-	2.2	1.9
Bicycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
Peds	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	0
% Peds	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-

Appendix B: Level of Service Definitions

Level of Service – Unsignalized Intersections

Level of Service (LOS) for unsignalized intersections is defined in terms of control delay for each critical lane. Control delay includes initial deceleration, queue move-up time, stopped delay and final acceleration delay, and is a function of the service rate or capacity of the approach and degree of saturation.

The following table describes in detail the characteristics of each level of service, with A being the best and F being the worst.

LOS	EXPECTED DELAY TO STREET TRAFFIC	DELAY (sec/veh)
A	Little or no delays	$0 < d \leq 10$
B	Short traffic delays	$10 < d \leq 15$
C	Average traffic delays	$15 < d \leq 25$
D	Long traffic delays	$25 < d \leq 35$
E	Very long traffic delays	$35 < d \leq 50$
F	Extreme delays with queuing which may cause congestion affecting other traffic movements in the intersection	$50 < d$

source: 2010 Highway Capacity Manual

Level of Service – Signalized Intersections

Level of Service (LOS) for signalized intersections is defined in terms of delay, which is made up of a number of factors that relate to control, geometrics, traffic and incidents. Only the portion of total delay attributed to the control facility is quantified. This control delay includes initial deceleration, queue move-up time, stopped delay and final acceleration delay.

The following table describes in detail the characteristics of each level of service, with A being the best and F being the worst.

LOS	EXPECTED DELAY TO STREET TRAFFIC	DELAY (sec/veh)
A	This level of service occurs when progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all at this LOS. Short cycle lengths may also contribute to low delay.	$0 < d \leq 10$
B	This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop at this level than at LOS A, causing longer average delays.	$10 < d \leq 20$
C	These higher delays may result from fair progression, longer cycle length, or both. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant, though many still pass through the intersection without stopping.	$20 < d \leq 35$
D	At this level, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavourable progression, long cycle lengths, or high volume to capacity ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures become noticeable.	$35 < d \leq 55$
E	This level is considered by many agencies to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent occurrences.	$55 < d \leq 80$
F	At this level, oversaturation occurs when arrival flow rates exceed the design capacity of the intersection. It may also occur at high v/c ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing factors to such high delay levels. LOS F is considered to be unacceptable to most drivers.	$80 < d$

source: 2010 Highway Capacity Manual

Appendix C: Existing Intersection Operations

HCM Signalized Intersection Capacity Analysis

1: CR 124/Hurontario St & Poplar S/R

2024 Existing Conditions

Weekday AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	59	332	102	45	313	179	154	183	79	161	125	28
Future Volume (vph)	59	332	102	45	313	179	154	183	79	161	125	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0		3.0	6.0	6.0	3.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1755	1782		1659	1847	1512	1755	1847	1570	1659	1796	
Flt Permitted	0.36	1.00		0.24	1.00	1.00	0.57	1.00	1.00	0.62	1.00	
Satd. Flow (perm)	669	1782		418	1847	1512	1044	1847	1570	1091	1796	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	69	386	119	52	364	208	179	213	92	187	145	33
RTOR Reduction (vph)	0	13	0	0	0	141	0	0	54	0	9	0
Lane Group Flow (vph)	69	492	0	52	364	67	179	213	38	187	169	0
Heavy Vehicles (%)	4%	4%	4%	10%	4%	8%	4%	4%	4%	10%	4%	4%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8		5	2			6	
Permitted Phases	4			8		8	2		2	6		
Actuated Green, G (s)	31.4	26.1		28.4	24.6	24.6	31.9	31.9	31.9	21.7	21.7	
Effective Green, g (s)	31.4	26.1		28.4	24.6	24.6	31.9	31.9	31.9	21.7	21.7	
Actuated g/C Ratio	0.41	0.34		0.37	0.32	0.32	0.42	0.42	0.42	0.28	0.28	
Clearance Time (s)	3.0	6.0		3.0	6.0	6.0	3.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	348	605		215	591	484	500	767	652	308	507	
v/s Ratio Prot	c0.01	c0.28		c0.01	0.20		c0.03	0.12			0.09	
v/s Ratio Perm	0.07			0.08		0.04	0.12		0.02	c0.17		
v/c Ratio	0.20	0.81		0.24	0.62	0.14	0.36	0.28	0.06	0.61	0.33	
Uniform Delay, d1	14.5	23.1		16.8	22.1	18.6	14.7	14.8	13.5	23.9	21.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.3	8.2		0.6	1.9	0.1	0.4	0.2	0.0	3.4	0.4	
Delay (s)	14.8	31.4		17.4	24.0	18.7	15.1	15.0	13.5	27.2	22.2	
Level of Service	B	C		B	C	B	B	B	B	C	C	
Approach Delay (s)		29.4			21.7			14.8			24.8	
Approach LOS		C			C			B			C	
Intersection Summary												
HCM 2000 Control Delay			22.8			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.65									
Actuated Cycle Length (s)			76.8			Sum of lost time (s)			18.0			
Intersection Capacity Utilization			81.2%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

1: CR 124/Hurontario St & Poplar S/R

2024 Existing Conditions

Weekday PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	41	409	136	65	319	165	115	157	46	196	249	40
Future Volume (vph)	41	409	136	65	319	165	115	157	46	196	249	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0		3.0	6.0	6.0	3.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1789	1813		1789	1883	1601	1789	1883	1601	1789	1844	
Flt Permitted	0.48	1.00		0.16	1.00	1.00	0.36	1.00	1.00	0.65	1.00	
Satd. Flow (perm)	898	1813		302	1883	1601	685	1883	1601	1225	1844	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	44	440	146	70	343	177	124	169	49	211	268	43
RTOR Reduction (vph)	0	13	0	0	0	109	0	0	30	0	7	0
Lane Group Flow (vph)	44	573	0	70	343	68	124	169	19	211	304	0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8		5	2			6	
Permitted Phases	4			8		8	2		2	6		
Actuated Green, G (s)	33.3	29.5		36.1	30.9	30.9	30.2	30.2	30.2	22.0	22.0	
Effective Green, g (s)	33.3	29.5		36.1	30.9	30.9	30.2	30.2	30.2	22.0	22.0	
Actuated g/C Ratio	0.42	0.37		0.45	0.39	0.39	0.38	0.38	0.38	0.28	0.28	
Clearance Time (s)	3.0	6.0		3.0	6.0	6.0	3.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	416	669		233	728	619	330	711	605	337	507	
v/s Ratio Prot	0.01	c0.32		c0.02	0.18		c0.02	0.09			0.17	
v/s Ratio Perm	0.04			0.12		0.04	0.12		0.01	c0.17		
v/c Ratio	0.11	0.86		0.30	0.47	0.11	0.38	0.24	0.03	0.63	0.60	
Uniform Delay, d1	14.0	23.2		15.2	18.4	15.7	17.2	17.0	15.6	25.3	25.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.1	10.5		0.7	0.5	0.1	0.7	0.2	0.0	3.6	2.0	
Delay (s)	14.2	33.7		15.9	18.9	15.8	17.9	17.2	15.7	29.0	27.1	
Level of Service	B	C		B	B	B	B	B	B	C	C	
Approach Delay (s)		32.4			17.6			17.2			27.9	
Approach LOS		C			B			B			C	
Intersection Summary												
HCM 2000 Control Delay	24.6			HCM 2000 Level of Service			C					
HCM 2000 Volume to Capacity ratio	0.69											
Actuated Cycle Length (s)	79.9			Sum of lost time (s)			18.0					
Intersection Capacity Utilization	87.3%			ICU Level of Service			E					
Analysis Period (min)	15											
c Critical Lane Group												

Appendix D: Existing Queue Operations

Queues

2024 Existing Conditions

1: CR 124/Hurontario St & Poplar S/R

Weekday AM Peak

										
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	69	505	52	364	208	179	213	92	187	178
v/c Ratio	0.18	0.81	0.18	0.63	0.34	0.32	0.27	0.13	0.60	0.34
Control Delay	12.1	33.9	12.4	27.8	4.7	16.7	18.0	4.7	35.4	24.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.1	33.9	12.4	27.8	4.7	16.7	18.0	4.7	35.4	24.5
Queue Length 50th (m)	5.0	65.6	3.8	44.0	0.0	16.8	21.8	0.0	25.2	20.3
Queue Length 95th (m)	11.8	104.9	9.6	71.9	11.8	30.8	38.4	7.8	46.8	37.4
Internal Link Dist (m)		204.1		158.1			185.1			123.7
Turn Bay Length (m)	60.0		65.0		50.0	60.0		60.0	20.0	
Base Capacity (vph)	392	782	294	798	771	551	898	811	383	639
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.65	0.18	0.46	0.27	0.32	0.24	0.11	0.49	0.28
Intersection Summary										

Queues

2024 Existing Conditions

1: CR 124/Hurontario St & Poplar S/R

Weekday PM Peak



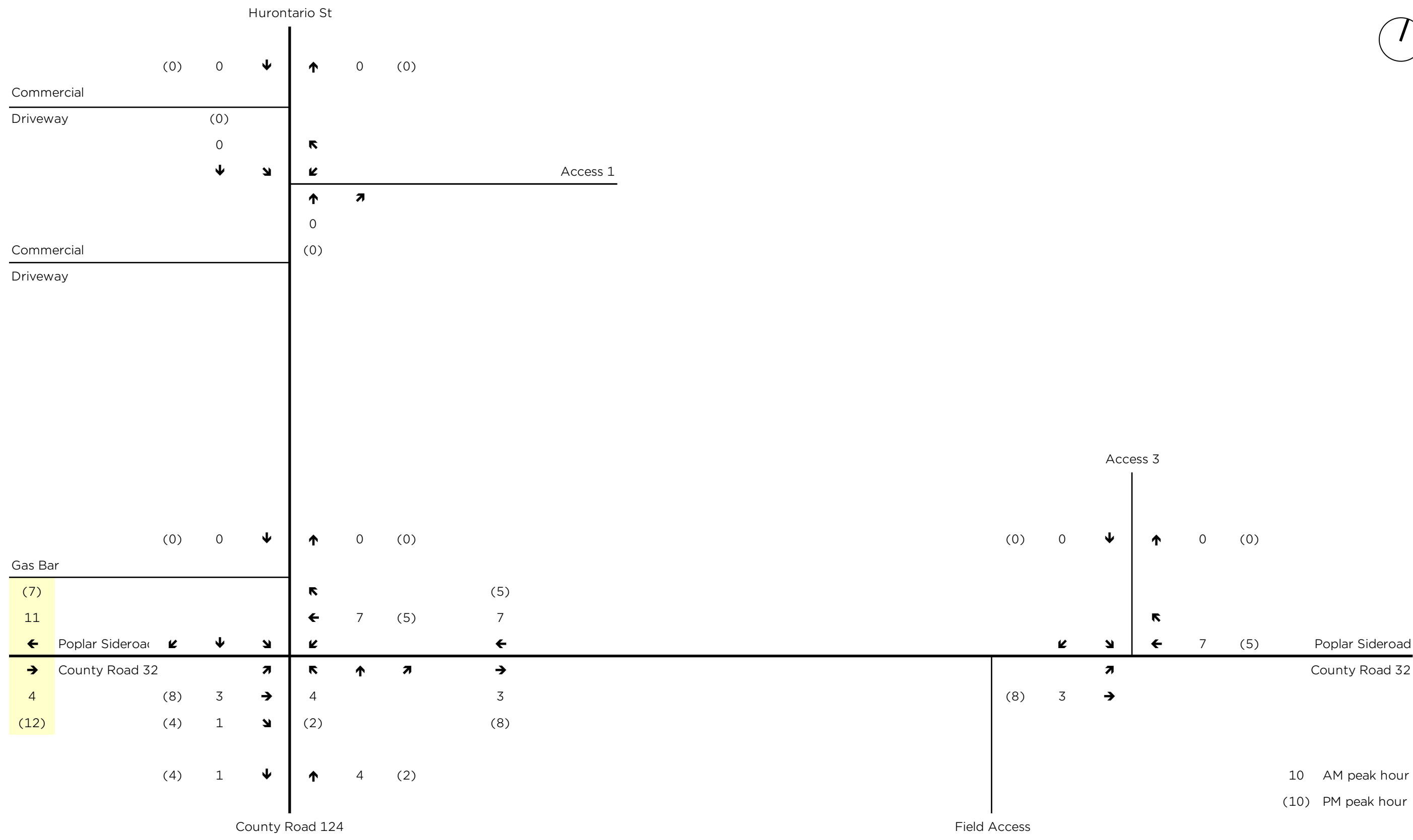
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	44	586	70	343	177	124	169	49	211	311
v/c Ratio	0.09	0.86	0.25	0.46	0.24	0.32	0.24	0.08	0.61	0.59
Control Delay	11.0	37.9	12.9	21.9	4.3	18.4	19.2	2.4	36.5	31.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.0	37.9	12.9	21.9	4.3	18.4	19.2	2.4	36.5	31.6
Queue Length 50th (m)	3.2	80.8	5.1	40.7	0.0	12.7	18.8	0.0	31.3	44.4
Queue Length 95th (m)	8.9	#152.6	12.6	71.2	12.6	23.4	32.5	3.8	54.4	70.2
Internal Link Dist (m)		204.1		158.1			185.1			123.7
Turn Bay Length (m)	60.0		65.0		50.0	60.0		60.0	20.0	
Base Capacity (vph)	509	782	282	831	805	388	900	803	422	642
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.75	0.25	0.41	0.22	0.32	0.19	0.06	0.50	0.48

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

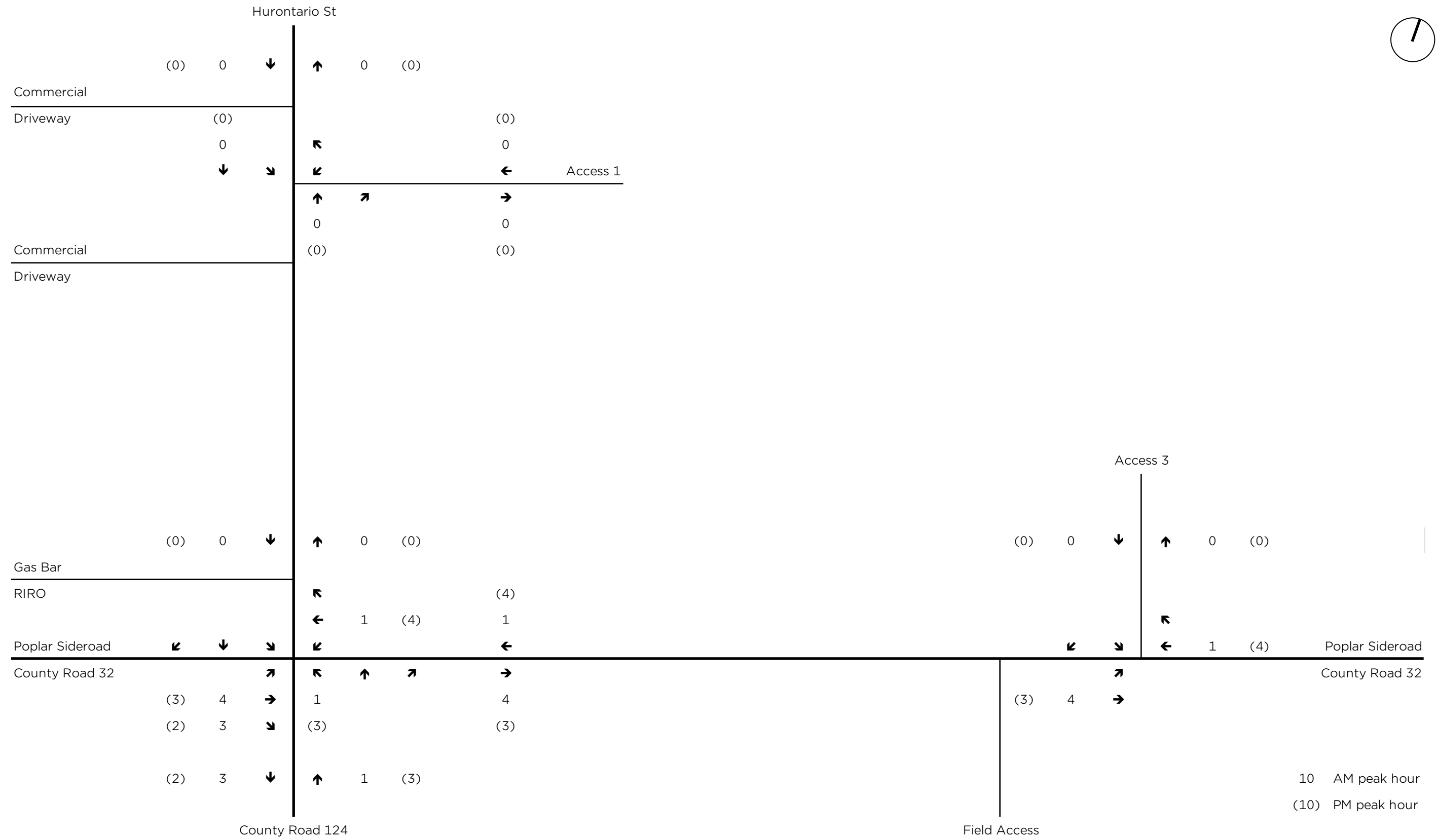
Queue shown is maximum after two cycles.

Appendix E: Background Development Traffic



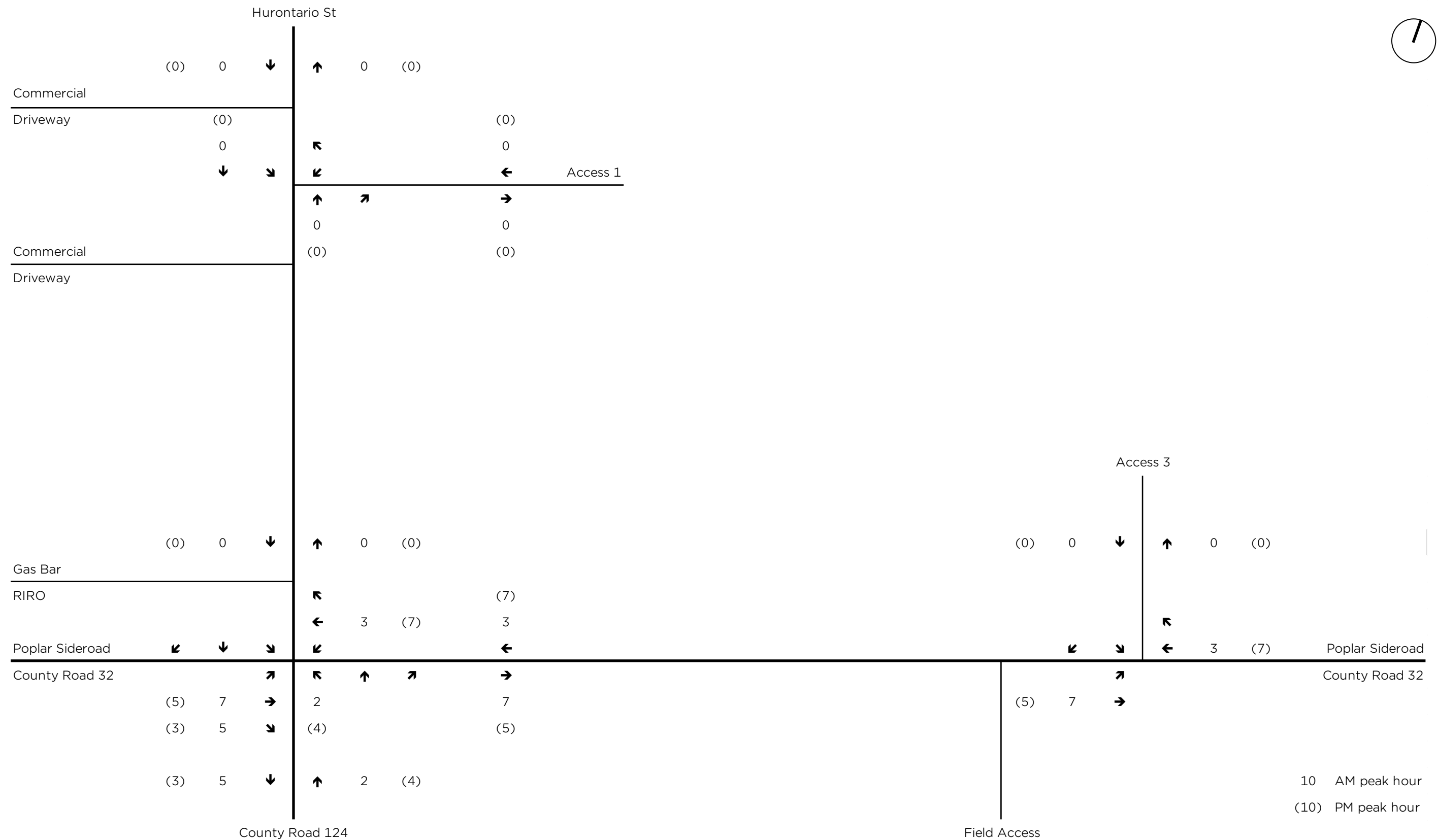
THE GATEWAY CENTRE - TRANSPORTATION IMPACT STUDY
Figure E1: Background Development - 50 Saunders Street





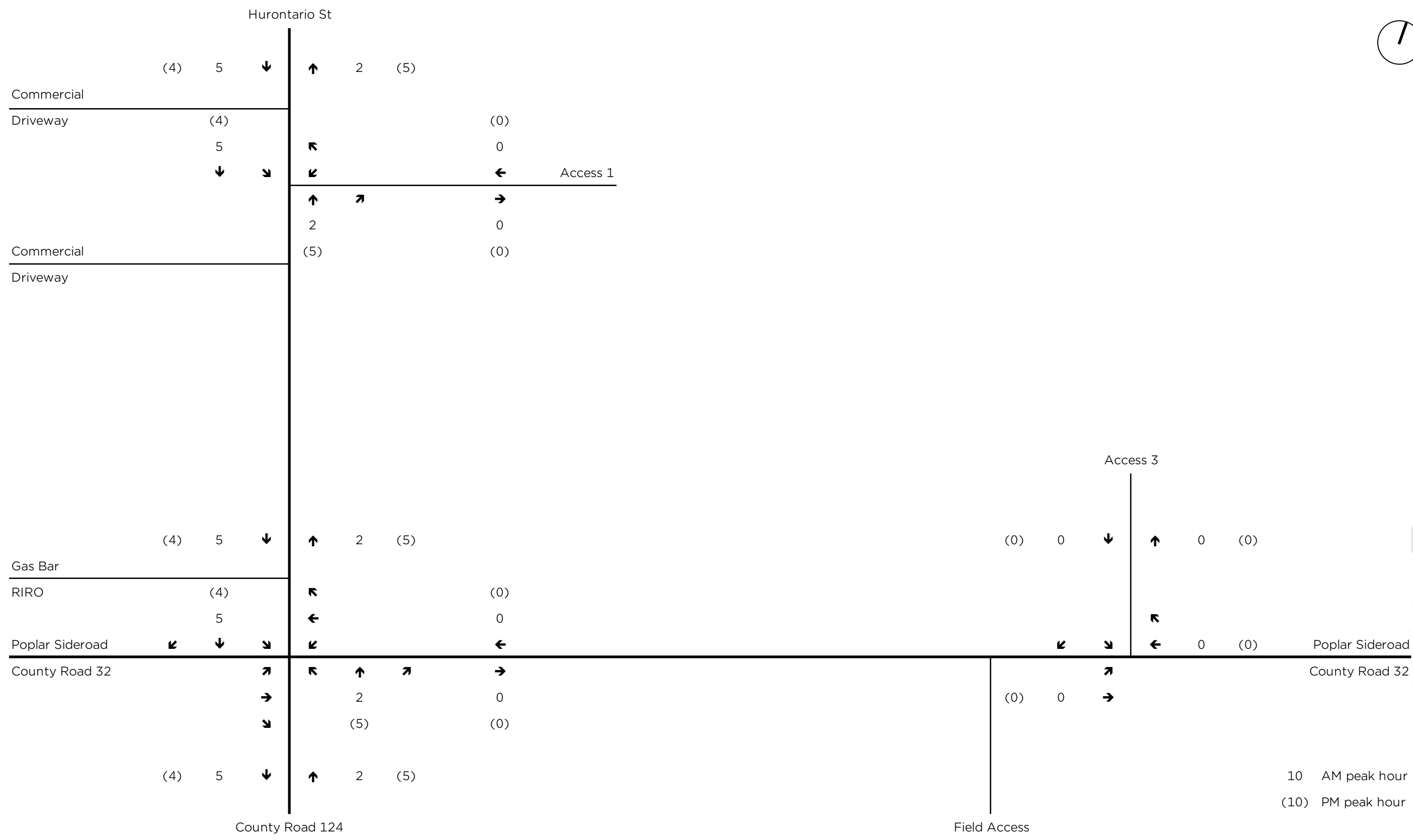
THE GATEWAY CENTRE - TRANSPORTATION IMPACT STUDY
Figure E2: Background Development - Summit View Phase 2





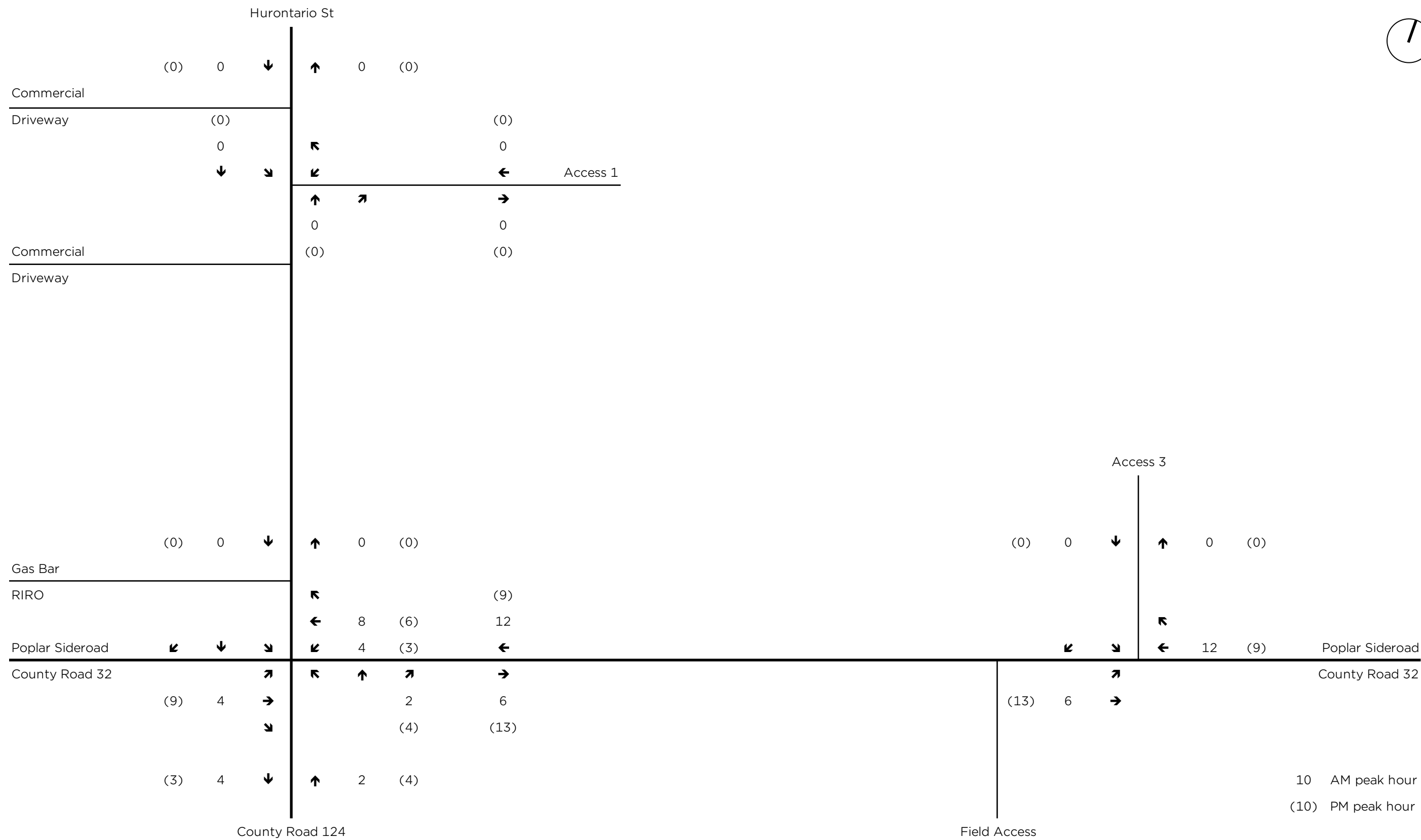
THE GATEWAY CENTRE - TRANSPORTATION IMPACT STUDY
Figure E3: Background Development - Summit View Phase 3





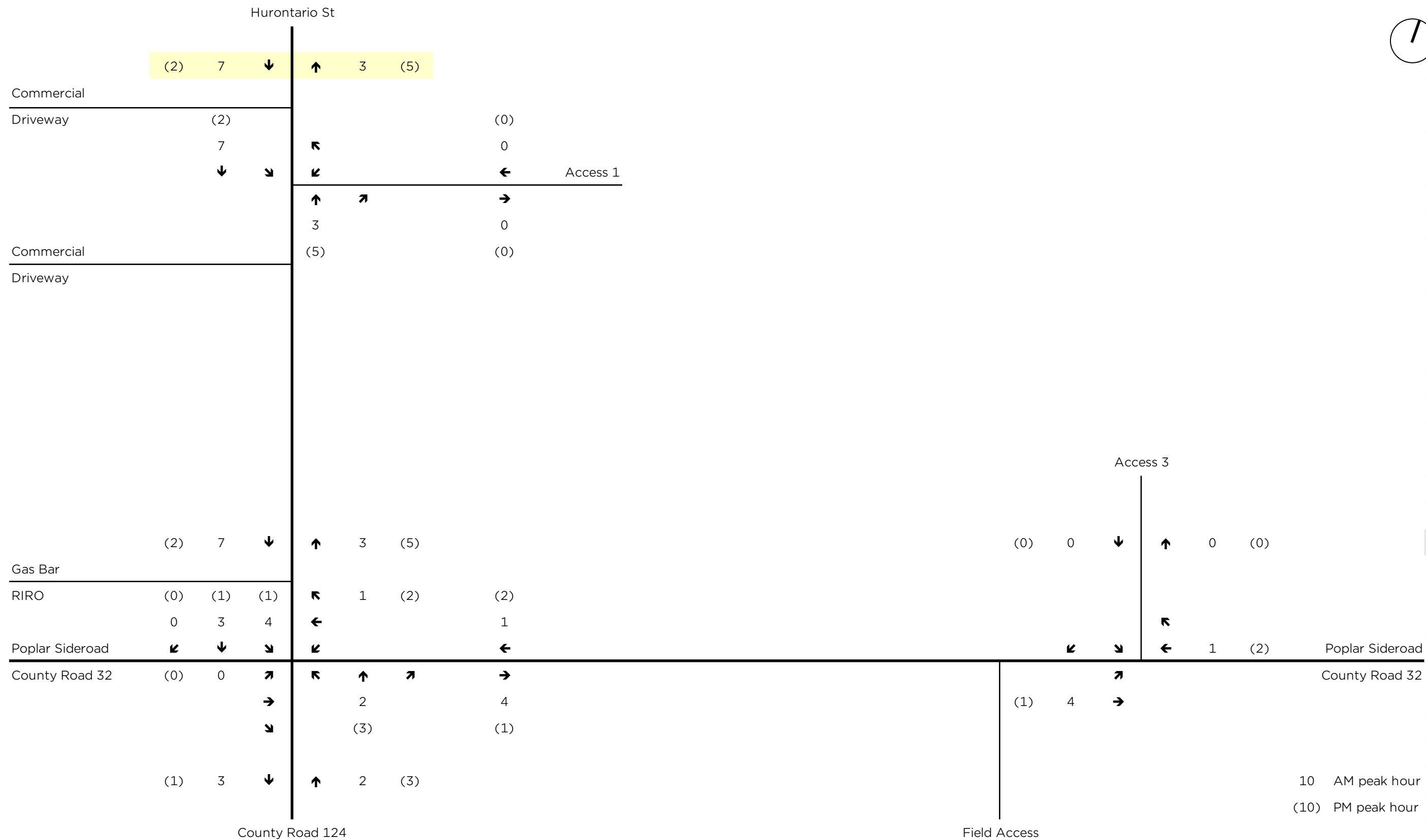
THE GATEWAY CENTRE - TRANSPORTATION IMPACT STUDY
Figure E4: Background Development – 655 Hurontario Street





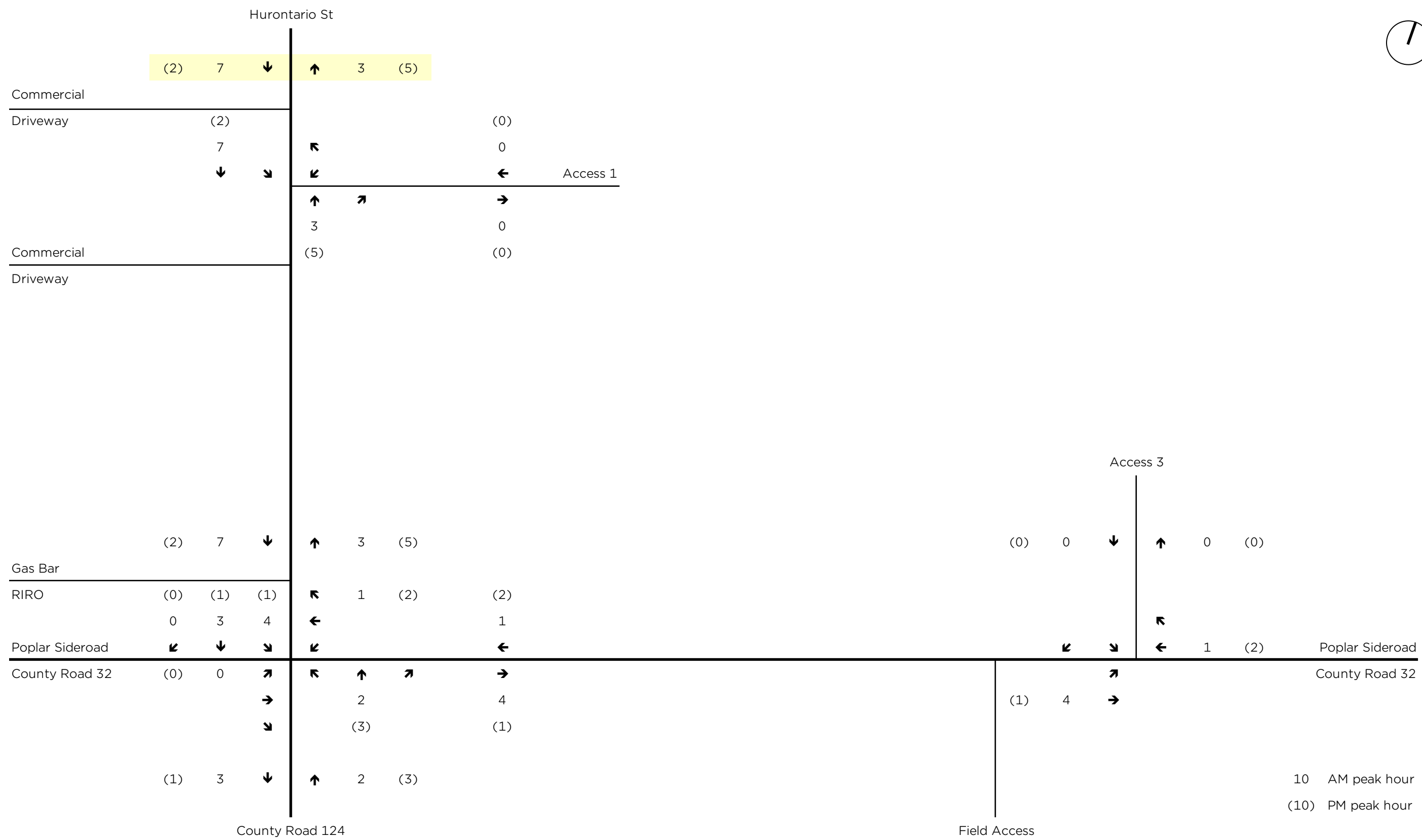
THE GATEWAY CENTRE - TRANSPORTATION IMPACT STUDY
Figure E5: Background Development – Townhomes of Pretty River





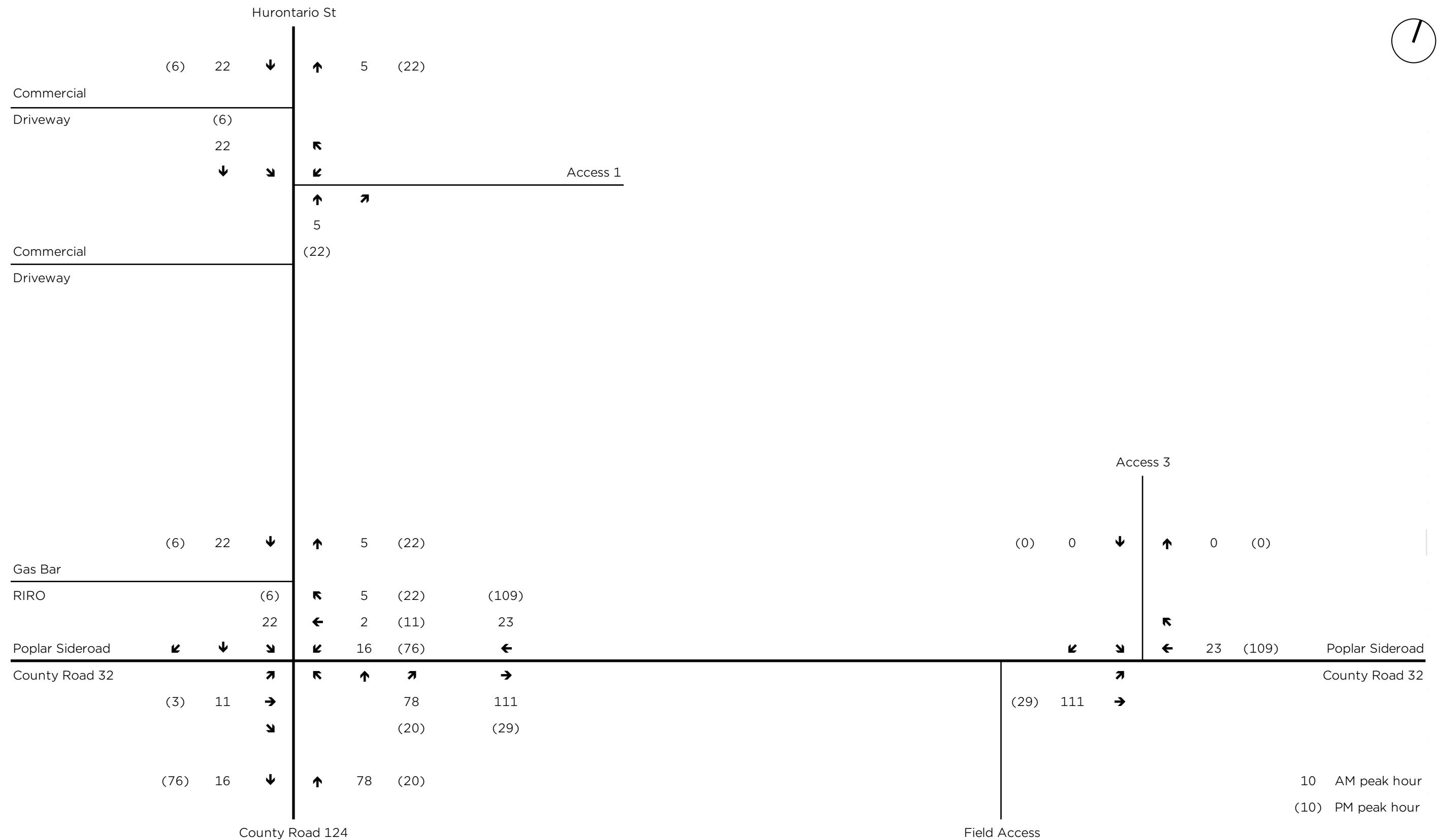
THE GATEWAY CENTRE - TRANSPORTATION IMPACT STUDY
Figure E6: Background Development - Blackmoor Gates





THE GATEWAY CENTRE - TRANSPORTATION IMPACT STUDY
Figure E7: Background Development - Indigo 2





THE GATEWAY CENTRE - TRANSPORTATION IMPACT STUDY
Figure E8: Background Development - Dipoce Industrial



Appendix F: Future Background Intersection Operations

HCM Signalized Intersection Capacity Analysis

2030 Background Conditions

1: CR 124/Hurontario St & Poplar S/R

Weekday AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	395	125	60	380	205	185	215	95	190	150	35
Future Volume (vph)	70	395	125	60	380	205	185	215	95	190	150	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0		3.0	6.0	6.0	3.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1755	1781		1659	1847	1512	1755	1847	1570	1659	1794	
Flt Permitted	0.32	1.00		0.13	1.00	1.00	0.50	1.00	1.00	0.60	1.00	
Satd. Flow (perm)	583	1781		233	1847	1512	921	1847	1570	1055	1794	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	81	459	145	70	442	238	215	250	110	221	174	41
RTOR Reduction (vph)	0	13	0	0	0	152	0	0	66	0	9	0
Lane Group Flow (vph)	81	591	0	70	442	86	215	250	44	221	206	0
Heavy Vehicles (%)	4%	4%	4%	10%	4%	8%	4%	4%	4%	10%	4%	4%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8		5	2			6	
Permitted Phases	4			8		8	2		2	6		
Actuated Green, G (s)	35.5	30.2		35.5	30.2	30.2	33.1	33.1	33.1	23.0	23.0	
Effective Green, g (s)	35.5	30.2		35.5	30.2	30.2	33.1	33.1	33.1	23.0	23.0	
Actuated g/C Ratio	0.42	0.36		0.42	0.36	0.36	0.40	0.40	0.40	0.28	0.28	
Clearance Time (s)	3.0	6.0		3.0	6.0	6.0	3.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	321	643		189	667	546	435	731	621	290	493	
v/s Ratio Prot	0.02	c0.33		c0.02	0.24		c0.04	0.14			0.11	
v/s Ratio Perm	0.09			0.13		0.06	0.15		0.03	c0.21		
v/c Ratio	0.25	0.92		0.37	0.66	0.16	0.49	0.34	0.07	0.76	0.42	
Uniform Delay, d1	15.4	25.5		17.3	22.4	18.1	17.6	17.6	15.7	27.8	24.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.4	18.2		1.2	2.5	0.1	0.9	0.3	0.0	11.2	0.6	
Delay (s)	15.8	43.7		18.6	24.9	18.2	18.5	17.9	15.7	39.0	25.4	
Level of Service	B	D		B	C	B	B	B	B	D	C	
Approach Delay (s)		40.4			22.2			17.7			32.3	
Approach LOS		D			C			B			C	
Intersection Summary												
HCM 2000 Control Delay			28.0			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.78									
Actuated Cycle Length (s)			83.6			Sum of lost time (s)			18.0			
Intersection Capacity Utilization			85.9%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

2030 Background Conditions

1: CR 124/Hurontario St & Poplar S/R

Weekday PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	490	165	80	385	190	140	185	65	225	290	50
Future Volume (vph)	50	490	165	80	385	190	140	185	65	225	290	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0		3.0	6.0	6.0	3.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1789	1812		1789	1883	1601	1789	1883	1601	1789	1842	
Flt Permitted	0.38	1.00		0.11	1.00	1.00	0.25	1.00	1.00	0.63	1.00	
Satd. Flow (perm)	714	1812		201	1883	1601	469	1883	1601	1192	1842	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	54	527	177	86	414	204	151	199	70	242	312	54
RTOR Reduction (vph)	0	12	0	0	0	120	0	0	44	0	6	0
Lane Group Flow (vph)	54	692	0	86	414	84	151	199	26	242	360	0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8		5	2			6	
Permitted Phases	4			8		8	2		2	6		
Actuated Green, G (s)	42.8	37.5		42.8	37.5	37.5	33.7	33.7	33.7	23.5	23.5	
Effective Green, g (s)	42.8	37.5		42.8	37.5	37.5	33.7	33.7	33.7	23.5	23.5	
Actuated g/C Ratio	0.47	0.41		0.47	0.41	0.41	0.37	0.37	0.37	0.26	0.26	
Clearance Time (s)	3.0	6.0		3.0	6.0	6.0	3.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	396	742		186	771	656	276	693	589	306	473	
v/s Ratio Prot	0.01	c0.38		c0.03	0.22		c0.04	0.11			0.20	
v/s Ratio Perm	0.06			0.19		0.05	0.16		0.02	c0.20		
v/c Ratio	0.14	0.93		0.46	0.54	0.13	0.55	0.29	0.04	0.79	0.76	
Uniform Delay, d1	14.0	25.8		18.6	20.4	16.8	21.3	20.4	18.6	31.7	31.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.2	18.4		1.8	0.7	0.1	2.2	0.2	0.0	13.0	7.1	
Delay (s)	14.1	44.2		20.4	21.2	16.9	23.5	20.6	18.6	44.7	38.5	
Level of Service	B	D		C	C	B	C	C	B	D	D	
Approach Delay (s)		42.1			19.8			21.3			41.0	
Approach LOS		D			B			C			D	
Intersection Summary												
HCM 2000 Control Delay			32.0			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.82									
Actuated Cycle Length (s)			91.5			Sum of lost time (s)			18.0			
Intersection Capacity Utilization			93.3%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

2035 Background Conditions

1: CR 124/Hurontario St & Poplar S/R

Weekday AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	435	140	65	420	225	200	235	105	205	165	35
Future Volume (vph)	75	435	140	65	420	225	200	235	105	205	165	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0		3.0	6.0	6.0	3.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1755	1780		1659	1847	1512	1755	1847	1570	1659	1798	
Flt Permitted	0.29	1.00		0.11	1.00	1.00	0.46	1.00	1.00	0.59	1.00	
Satd. Flow (perm)	534	1780		190	1847	1512	858	1847	1570	1033	1798	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	87	506	163	76	488	262	233	273	122	238	192	41
RTOR Reduction (vph)	0	11	0	0	0	145	0	0	75	0	8	0
Lane Group Flow (vph)	87	658	0	76	488	117	233	273	47	238	225	0
Heavy Vehicles (%)	4%	4%	4%	10%	4%	8%	4%	4%	4%	10%	4%	4%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8		5	2			6	
Permitted Phases	4			8		8	2		2	6		
Actuated Green, G (s)	42.0	36.7		42.0	36.7	36.7	35.8	35.8	35.8	25.7	25.7	
Effective Green, g (s)	42.0	36.7		42.0	36.7	36.7	35.8	35.8	35.8	25.7	25.7	
Actuated g/C Ratio	0.45	0.40		0.45	0.40	0.40	0.39	0.39	0.39	0.28	0.28	
Clearance Time (s)	3.0	6.0		3.0	6.0	6.0	3.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	311	703		169	730	597	399	712	605	286	497	
v/s Ratio Prot	0.02	c0.37		c0.03	0.26		c0.04	0.15			0.13	
v/s Ratio Perm	0.11			0.18		0.08	0.18		0.03	c0.23		
v/c Ratio	0.28	0.94		0.45	0.67	0.20	0.58	0.38	0.08	0.83	0.45	
Uniform Delay, d1	15.9	26.9		19.0	23.1	18.4	21.6	20.5	18.0	31.5	27.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.5	19.6		1.9	2.3	0.2	2.2	0.3	0.1	18.3	0.7	
Delay (s)	16.4	46.5		20.9	25.4	18.5	23.8	20.9	18.1	49.8	28.4	
Level of Service	B	D		C	C	B	C	C	B	D	C	
Approach Delay (s)		43.1			22.8			21.4			39.2	
Approach LOS		D			C			C			D	
Intersection Summary												
HCM 2000 Control Delay			31.1			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.83									
Actuated Cycle Length (s)			92.8			Sum of lost time (s)			18.0			
Intersection Capacity Utilization			88.9%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

2035 Background Conditions

1: CR 124/Hurontario St & Poplar S/R

Weekday PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	540	180	90	425	210	155	205	70	245	315	50
Future Volume (vph)	55	540	180	90	425	210	155	205	70	245	315	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0		3.0	6.0	6.0	3.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1789	1813		1789	1883	1601	1789	1883	1601	1789	1845	
Flt Permitted	0.35	1.00		0.09	1.00	1.00	0.20	1.00	1.00	0.62	1.00	
Satd. Flow (perm)	659	1813		179	1883	1601	369	1883	1601	1169	1845	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	59	581	194	97	457	226	167	220	75	263	339	54
RTOR Reduction (vph)	0	12	0	0	0	128	0	0	48	0	6	0
Lane Group Flow (vph)	59	763	0	97	457	98	167	220	27	263	387	0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8		5	2			6	
Permitted Phases	4			8		8	2		2	6		
Actuated Green, G (s)	47.6	42.2		47.6	42.2	42.2	34.4	34.4	34.4	24.4	24.4	
Effective Green, g (s)	47.6	42.2		47.6	42.2	42.2	34.4	34.4	34.4	24.4	24.4	
Actuated g/C Ratio	0.49	0.44		0.49	0.44	0.44	0.35	0.35	0.35	0.25	0.25	
Clearance Time (s)	3.0	6.0		3.0	6.0	6.0	3.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	386	788		177	819	696	233	667	567	294	464	
v/s Ratio Prot	0.01	c0.42		c0.03	0.24		c0.05	0.12			0.21	
v/s Ratio Perm	0.07			0.24		0.06	0.20		0.02	c0.22		
v/c Ratio	0.15	0.97		0.55	0.56	0.14	0.72	0.33	0.05	0.89	0.83	
Uniform Delay, d1	13.9	26.8		20.4	20.4	16.5	24.1	22.9	20.5	35.1	34.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.2	24.2		3.4	0.8	0.1	10.0	0.3	0.0	27.2	12.2	
Delay (s)	14.1	51.0		23.8	21.3	16.6	34.2	23.2	20.6	62.3	46.6	
Level of Service	B	D		C	C	B	C	C	C	E	D	
Approach Delay (s)		48.4			20.2			26.7			52.9	
Approach LOS		D			C			C			D	
Intersection Summary												
HCM 2000 Control Delay	37.8			HCM 2000 Level of Service			D					
HCM 2000 Volume to Capacity ratio	0.89											
Actuated Cycle Length (s)	97.0			Sum of lost time (s)			18.0					
Intersection Capacity Utilization	96.9%			ICU Level of Service			F					
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

2040 Background Conditions

1: CR 124/Hurontario St & Poplar S/R

Weekday AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	480	150	70	460	250	220	260	115	230	180	40
Future Volume (vph)	85	480	150	70	460	250	220	260	115	230	180	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0		3.0	6.0	6.0	3.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1755	1781		1659	1847	1512	1755	1847	1570	1659	1796	
Flt Permitted	0.25	1.00		0.10	1.00	1.00	0.43	1.00	1.00	0.58	1.00	
Satd. Flow (perm)	458	1781		178	1847	1512	795	1847	1570	1006	1796	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	99	558	174	81	535	291	256	302	134	267	209	47
RTOR Reduction (vph)	0	11	0	0	0	144	0	0	83	0	8	0
Lane Group Flow (vph)	99	721	0	81	535	147	256	302	51	267	248	0
Heavy Vehicles (%)	4%	4%	4%	10%	4%	8%	4%	4%	4%	10%	4%	4%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8		5	2			6	
Permitted Phases	4			8		8	2		2	6		
Actuated Green, G (s)	44.7	39.3		44.7	39.3	39.3	37.2	37.2	37.2	27.2	27.2	
Effective Green, g (s)	44.7	39.3		44.7	39.3	39.3	37.2	37.2	37.2	27.2	27.2	
Actuated g/C Ratio	0.46	0.41		0.46	0.41	0.41	0.38	0.38	0.38	0.28	0.28	
Clearance Time (s)	3.0	6.0		3.0	6.0	6.0	3.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	283	722		164	749	613	374	709	602	282	504	
v/s Ratio Prot	0.02	c0.40		c0.03	0.29		c0.05	0.16			0.14	
v/s Ratio Perm	0.14			0.20		0.10	0.21		0.03	c0.27		
v/c Ratio	0.35	1.00		0.49	0.71	0.24	0.68	0.43	0.09	0.95	0.49	
Uniform Delay, d1	16.9	28.8		21.0	24.1	19.0	24.4	22.0	19.0	34.1	29.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.8	33.0		2.3	3.2	0.2	5.1	0.4	0.1	39.0	0.8	
Delay (s)	17.6	61.8		23.3	27.3	19.2	29.5	22.4	19.1	73.2	29.8	
Level of Service	B	E		C	C	B	C	C	B	E	C	
Approach Delay (s)		56.5			24.4			24.4			52.0	
Approach LOS		E			C			C			D	
Intersection Summary												
HCM 2000 Control Delay			38.3			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			0.92									
Actuated Cycle Length (s)			96.9			Sum of lost time (s)			18.0			
Intersection Capacity Utilization			91.9%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

2040 Background Conditions

1: CR 124/Hurontario St & Poplar S/R

Weekday PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	595	200	95	465	230	170	225	75	275	350	55
Future Volume (vph)	60	595	200	95	465	230	170	225	75	275	350	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0		3.0	6.0	6.0	3.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1789	1812		1789	1883	1601	1789	1883	1601	1789	1845	
Flt Permitted	0.33	1.00		0.08	1.00	1.00	0.14	1.00	1.00	0.61	1.00	
Satd. Flow (perm)	621	1812		148	1883	1601	270	1883	1601	1146	1845	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	65	640	215	102	500	247	183	242	81	296	376	59
RTOR Reduction (vph)	0	11	0	0	0	119	0	0	52	0	5	0
Lane Group Flow (vph)	65	844	0	102	500	128	183	242	29	296	430	0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8		5	2			6	
Permitted Phases	4			8		8	2		2	6		
Actuated Green, G (s)	55.2	49.6		58.0	51.0	51.0	39.0	39.0	39.0	29.0	29.0	
Effective Green, g (s)	55.2	49.6		58.0	51.0	51.0	39.0	39.0	39.0	29.0	29.0	
Actuated g/C Ratio	0.50	0.45		0.52	0.46	0.46	0.35	0.35	0.35	0.26	0.26	
Clearance Time (s)	3.0	6.0		3.0	6.0	6.0	3.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	369	812		181	868	738	191	663	564	300	483	
v/s Ratio Prot	0.01	c0.47		c0.04	0.27		c0.06	0.13			0.23	
v/s Ratio Perm	0.08			0.26		0.08	c0.28		0.02	0.26		
v/c Ratio	0.18	1.04		0.56	0.58	0.17	0.96	0.37	0.05	0.99	0.89	
Uniform Delay, d1	15.6	30.5		23.8	21.9	17.5	31.4	26.6	23.6	40.6	39.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.2	42.3		4.0	0.9	0.1	52.4	0.3	0.0	47.9	17.9	
Delay (s)	15.8	72.8		27.8	22.8	17.6	83.9	26.9	23.6	88.5	57.2	
Level of Service	B	E		C	C	B	F	C	C	F	E	
Approach Delay (s)		68.7			21.9			47.0			69.8	
Approach LOS		E			C			D			E	
Intersection Summary												
HCM 2000 Control Delay	52.1			HCM 2000 Level of Service			D					
HCM 2000 Volume to Capacity ratio	1.00											
Actuated Cycle Length (s)	110.6			Sum of lost time (s)			18.0					
Intersection Capacity Utilization	101.0%			ICU Level of Service			G					
Analysis Period (min)	15											
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

1: CR 124/Hurontario St & Poplar S/R

2040 Background Conditions

Weekday AM Peak + Improvements

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	480	150	70	460	250	220	260	115	230	180	40
Future Volume (vph)	85	480	150	70	460	250	220	260	115	230	180	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1755	1847	1570	1659	1847	1512	1755	1847	1570	1659	1796	
Flt Permitted	0.20	1.00	1.00	0.17	1.00	1.00	0.50	1.00	1.00	0.42	1.00	
Satd. Flow (perm)	370	1847	1570	303	1847	1512	919	1847	1570	734	1796	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	99	558	174	81	535	291	256	302	134	267	209	47
RTOR Reduction (vph)	0	0	96	0	0	166	0	0	98	0	10	0
Lane Group Flow (vph)	99	558	78	81	535	125	256	302	36	267	246	0
Heavy Vehicles (%)	4%	4%	4%	10%	4%	8%	4%	4%	4%	10%	4%	4%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		
Actuated Green, G (s)	33.0	27.7	27.7	33.0	27.7	27.7	28.2	21.1	21.1	28.2	21.1	
Effective Green, g (s)	33.0	27.7	27.7	33.0	27.7	27.7	28.2	21.1	21.1	28.2	21.1	
Actuated g/C Ratio	0.42	0.35	0.35	0.42	0.35	0.35	0.36	0.27	0.27	0.36	0.27	
Clearance Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	246	645	549	216	645	528	402	492	418	344	478	
v/s Ratio Prot	c0.03	c0.30		0.02	0.29		0.06	0.16		c0.07	0.14	
v/s Ratio Perm	0.14		0.05	0.13		0.08	0.17		0.02	c0.21		
v/c Ratio	0.40	0.87	0.14	0.38	0.83	0.24	0.64	0.61	0.09	0.78	0.52	
Uniform Delay, d1	16.1	24.0	17.6	16.2	23.6	18.2	20.0	25.5	21.8	21.4	24.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.1	11.7	0.1	1.1	8.7	0.2	3.3	2.3	0.1	10.5	0.9	
Delay (s)	17.1	35.7	17.7	17.3	32.3	18.5	23.3	27.7	21.9	31.9	25.6	
Level of Service	B	D	B	B	C	B	C	C	C	C	C	
Approach Delay (s)		29.7			26.5			25.0			28.8	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			27.5			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.78									
Actuated Cycle Length (s)			79.2			Sum of lost time (s)			18.0			
Intersection Capacity Utilization			77.2%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

1: CR 124/Hurontario St & Poplar S/R

2040 Background Conditions

Weekday PM Peak + Improvements

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	595	200	95	465	230	170	225	75	275	350	55
Future Volume (vph)	60	595	200	95	465	230	170	225	75	275	350	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1789	1883	1601	1789	1883	1601	1789	1883	1601	1789	1845	
Flt Permitted	0.25	1.00	1.00	0.12	1.00	1.00	0.23	1.00	1.00	0.48	1.00	
Satd. Flow (perm)	479	1883	1601	222	1883	1601	430	1883	1601	901	1845	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	65	640	215	102	500	247	183	242	81	296	376	59
RTOR Reduction (vph)	0	0	93	0	0	136	0	0	59	0	6	0
Lane Group Flow (vph)	65	640	122	102	500	111	183	242	22	296	429	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		
Actuated Green, G (s)	39.2	33.9	33.9	39.2	33.9	33.9	32.6	24.6	24.6	35.0	25.8	
Effective Green, g (s)	39.2	33.9	33.9	39.2	33.9	33.9	32.6	24.6	24.6	35.0	25.8	
Actuated g/C Ratio	0.43	0.37	0.37	0.43	0.37	0.37	0.36	0.27	0.27	0.38	0.28	
Clearance Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	282	701	596	186	701	596	273	509	432	436	523	
v/s Ratio Prot	0.01	c0.34		c0.03	0.27		0.06	0.13		c0.07	c0.23	
v/s Ratio Perm	0.09		0.08	0.20		0.07	0.18		0.01	0.19		
v/c Ratio	0.23	0.91	0.20	0.55	0.71	0.19	0.67	0.48	0.05	0.68	0.82	
Uniform Delay, d1	16.8	27.1	19.4	19.7	24.4	19.2	22.1	27.8	24.6	21.7	30.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.4	16.3	0.2	3.3	3.4	0.2	6.3	0.7	0.0	4.2	10.0	
Delay (s)	17.2	43.4	19.6	23.0	27.8	19.4	28.5	28.5	24.6	25.9	40.4	
Level of Service	B	D	B	C	C	B	C	C	C	C	D	
Approach Delay (s)		36.0			24.8			27.9			34.5	
Approach LOS		D			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			31.1									
HCM 2000 Volume to Capacity ratio			0.84									
Actuated Cycle Length (s)			91.0									
Intersection Capacity Utilization			85.7%									
Analysis Period (min)			15									
c Critical Lane Group												

Appendix G: Future Background Queue Operations

Queues

1: CR 124/Hurontario St & Poplar S/R

2040 Background Conditions

Weekday AM Peak + Improvements

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	99	558	174	81	535	291	256	302	134	267	256
v/c Ratio	0.34	0.86	0.27	0.31	0.82	0.42	0.58	0.61	0.26	0.71	0.52
Control Delay	13.7	39.1	6.1	13.6	35.9	5.9	24.2	33.4	6.4	31.8	29.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.7	39.1	6.1	13.6	35.9	5.9	24.2	33.4	6.4	31.8	29.8
Queue Length 50th (m)	7.3	77.7	2.7	6.0	73.3	3.5	28.4	44.0	0.0	30.1	34.4
Queue Length 95th (m)	15.2	#126.8	13.9	12.9	110.8	17.4	43.8	66.0	11.2	#51.1	53.9
Internal Link Dist (m)	204.1			136.4			185.1			123.7	
Turn Bay Length (m)	60.0		50.0	65.0		50.0	60.0		60.0	20.0	
Base Capacity (vph)	294	764	736	261	764	775	440	621	617	375	612
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.73	0.24	0.31	0.70	0.38	0.58	0.49	0.22	0.71	0.42

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues

1: CR 124/Hurontario St & Poplar S/R

2040 Background Conditions

Weekday PM Peak + Improvements

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	65	640	215	102	500	247	183	242	81	296	435
v/c Ratio	0.20	0.91	0.31	0.45	0.71	0.34	0.63	0.47	0.16	0.63	0.82
Control Delay	13.6	46.3	8.7	18.9	31.4	5.7	29.6	32.8	5.0	26.9	45.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.6	46.3	8.7	18.9	31.4	5.7	29.6	32.8	5.0	26.9	45.5
Queue Length 50th (m)	5.8	109.4	7.9	9.2	76.8	3.5	21.9	38.7	0.0	38.2	76.5
Queue Length 95th (m)	12.8	#179.8	23.8	18.4	117.2	18.8	#38.5	61.2	7.9	59.0	#123.4
Internal Link Dist (m)	204.1				136.4				185.1		123.7
Turn Bay Length (m)	60.0		50.0	65.0		50.0	60.0		60.0	20.0	
Base Capacity (vph)	326	808	772	227	808	811	292	596	573	468	610
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.79	0.28	0.45	0.62	0.30	0.63	0.41	0.14	0.63	0.71

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Appendix H: Future Background Intersection Operations with Improvements

HCM Signalized Intersection Capacity Analysis

1: CR 124/Hurontario St & Poplar S/R

2040 Background Conditions

Weekday AM Peak + Improvements

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	480	150	70	460	250	220	260	115	230	180	40
Future Volume (vph)	85	480	150	70	460	250	220	260	115	230	180	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1755	1847	1570	1659	1847	1512	1755	1847	1570	1659	1796	
Flt Permitted	0.20	1.00	1.00	0.17	1.00	1.00	0.50	1.00	1.00	0.42	1.00	
Satd. Flow (perm)	370	1847	1570	303	1847	1512	919	1847	1570	734	1796	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	99	558	174	81	535	291	256	302	134	267	209	47
RTOR Reduction (vph)	0	0	96	0	0	166	0	0	98	0	10	0
Lane Group Flow (vph)	99	558	78	81	535	125	256	302	36	267	246	0
Heavy Vehicles (%)	4%	4%	4%	10%	4%	8%	4%	4%	4%	10%	4%	4%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		
Actuated Green, G (s)	33.0	27.7	27.7	33.0	27.7	27.7	28.2	21.1	21.1	28.2	21.1	
Effective Green, g (s)	33.0	27.7	27.7	33.0	27.7	27.7	28.2	21.1	21.1	28.2	21.1	
Actuated g/C Ratio	0.42	0.35	0.35	0.42	0.35	0.35	0.36	0.27	0.27	0.36	0.27	
Clearance Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	246	645	549	216	645	528	402	492	418	344	478	
v/s Ratio Prot	c0.03	c0.30		0.02	0.29		0.06	0.16		c0.07	0.14	
v/s Ratio Perm	0.14		0.05	0.13		0.08	0.17		0.02	c0.21		
v/c Ratio	0.40	0.87	0.14	0.38	0.83	0.24	0.64	0.61	0.09	0.78	0.52	
Uniform Delay, d1	16.1	24.0	17.6	16.2	23.6	18.2	20.0	25.5	21.8	21.4	24.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.1	11.7	0.1	1.1	8.7	0.2	3.3	2.3	0.1	10.5	0.9	
Delay (s)	17.1	35.7	17.7	17.3	32.3	18.5	23.3	27.7	21.9	31.9	25.6	
Level of Service	B	D	B	B	C	B	C	C	C	C	C	
Approach Delay (s)		29.7			26.5			25.0			28.8	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			27.5			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.78									
Actuated Cycle Length (s)			79.2			Sum of lost time (s)			18.0			
Intersection Capacity Utilization			77.2%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

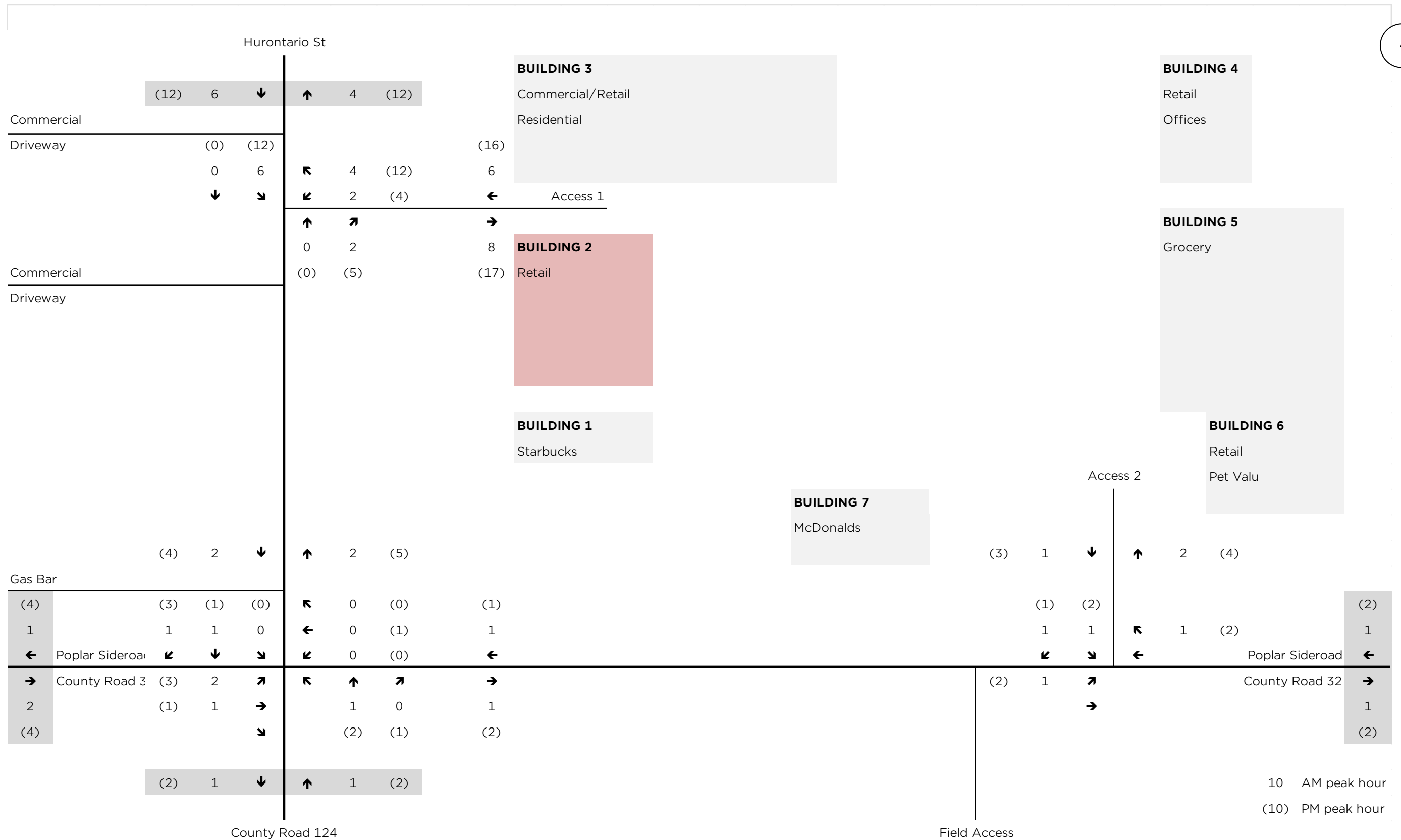
1: CR 124/Hurontario St & Poplar S/R

2040 Background Conditions

Weekday PM Peak + Improvements

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	60	595	200	95	465	230	170	225	75	275	350	55
Future Volume (vph)	60	595	200	95	465	230	170	225	75	275	350	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1789	1883	1601	1789	1883	1601	1789	1883	1601	1789	1845	
Flt Permitted	0.25	1.00	1.00	0.12	1.00	1.00	0.23	1.00	1.00	0.48	1.00	
Satd. Flow (perm)	479	1883	1601	222	1883	1601	430	1883	1601	901	1845	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	65	640	215	102	500	247	183	242	81	296	376	59
RTOR Reduction (vph)	0	0	93	0	0	136	0	0	59	0	6	0
Lane Group Flow (vph)	65	640	122	102	500	111	183	242	22	296	429	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		
Actuated Green, G (s)	39.2	33.9	33.9	39.2	33.9	33.9	32.6	24.6	24.6	35.0	25.8	
Effective Green, g (s)	39.2	33.9	33.9	39.2	33.9	33.9	32.6	24.6	24.6	35.0	25.8	
Actuated g/C Ratio	0.43	0.37	0.37	0.43	0.37	0.37	0.36	0.27	0.27	0.38	0.28	
Clearance Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	282	701	596	186	701	596	273	509	432	436	523	
v/s Ratio Prot	0.01	c0.34		c0.03	0.27		0.06	0.13		c0.07	c0.23	
v/s Ratio Perm	0.09		0.08	0.20		0.07	0.18		0.01	0.19		
v/c Ratio	0.23	0.91	0.20	0.55	0.71	0.19	0.67	0.48	0.05	0.68	0.82	
Uniform Delay, d1	16.8	27.1	19.4	19.7	24.4	19.2	22.1	27.8	24.6	21.7	30.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.4	16.3	0.2	3.3	3.4	0.2	6.3	0.7	0.0	4.2	10.0	
Delay (s)	17.2	43.4	19.6	23.0	27.8	19.4	28.5	28.5	24.6	25.9	40.4	
Level of Service	B	D	B	C	C	B	C	C	C	C	D	
Approach Delay (s)		36.0			24.8			27.9			34.5	
Approach LOS		D			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			31.1				HCM 2000 Level of Service			C		
HCM 2000 Volume to Capacity ratio			0.84									
Actuated Cycle Length (s)			91.0				Sum of lost time (s)			18.0		
Intersection Capacity Utilization			85.7%				ICU Level of Service			E		
Analysis Period (min)			15									
c Critical Lane Group												

Appendix I: Site Traffic



THE GATEWAY CENTRE - TRANSPORTATION IMPACT STUDY

Figure I3: Site Traffic - Building 2, Retail New Trips

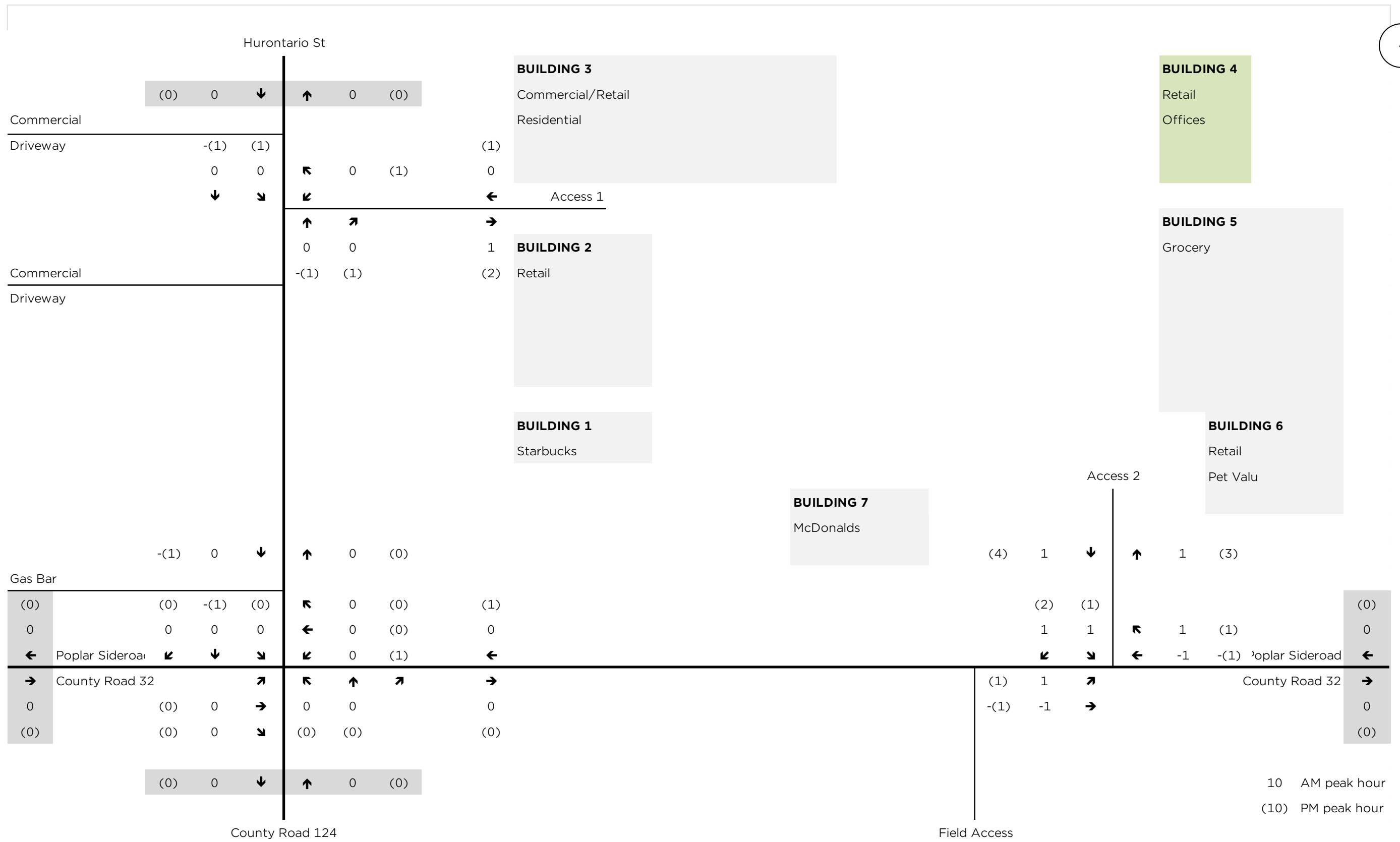




THE GATEWAY CENTRE - TRANSPORTATION IMPACT STUDY

Figure I7: Site Traffic – Building 3, Residential New Trips

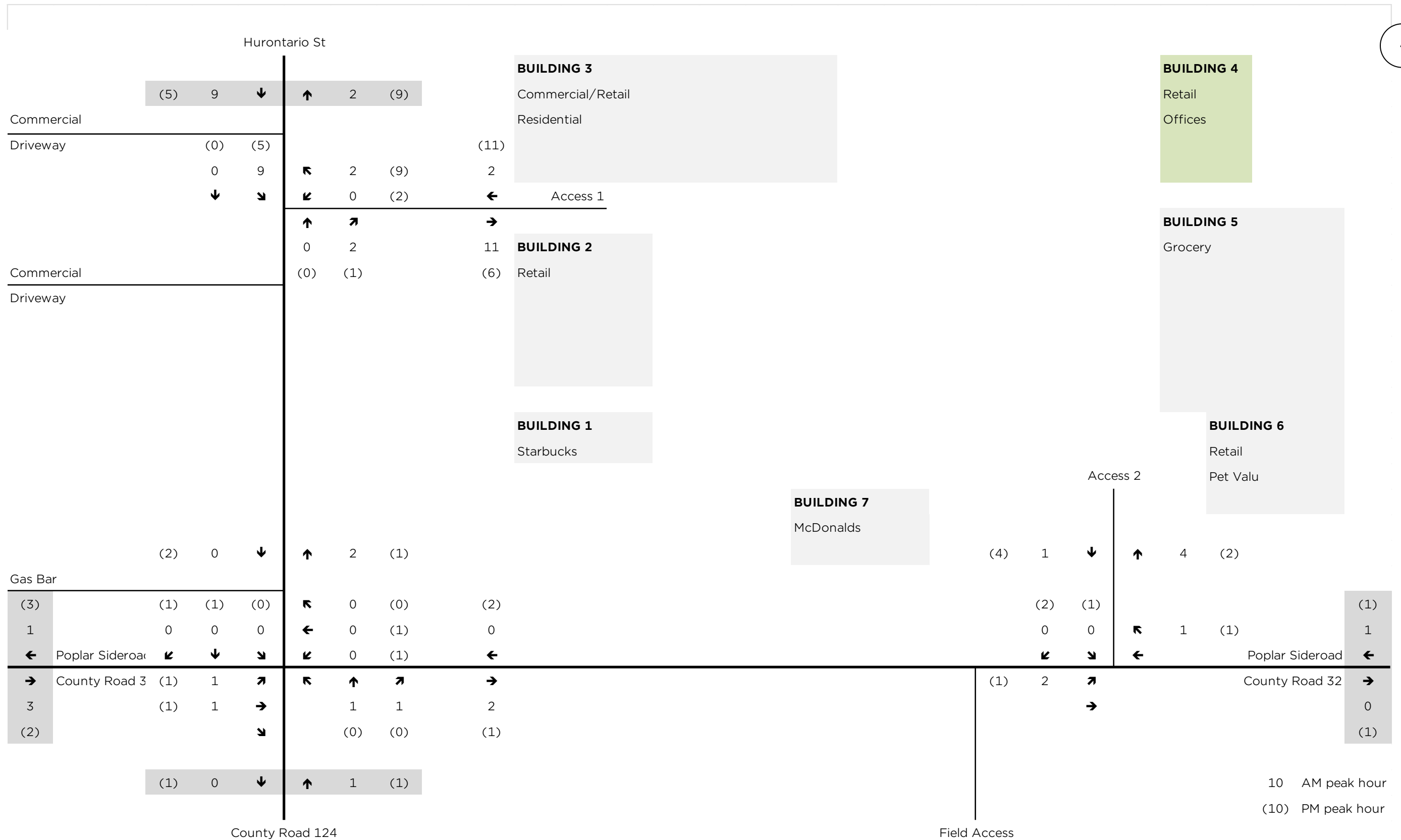




THE GATEWAY CENTRE - TRANSPORTATION IMPACT STUDY

Figure I9: Site Traffic - Building 4, Retail Pass-by Trips





THE GATEWAY CENTRE - TRANSPORTATION IMPACT STUDY

Figure I10: Site Traffic – Building 4, Office New Trips





THE GATEWAY CENTRE - TRANSPORTATION IMPACT STUDY

Figure I11: Site Traffic - Building 5, Supermarket New Trips



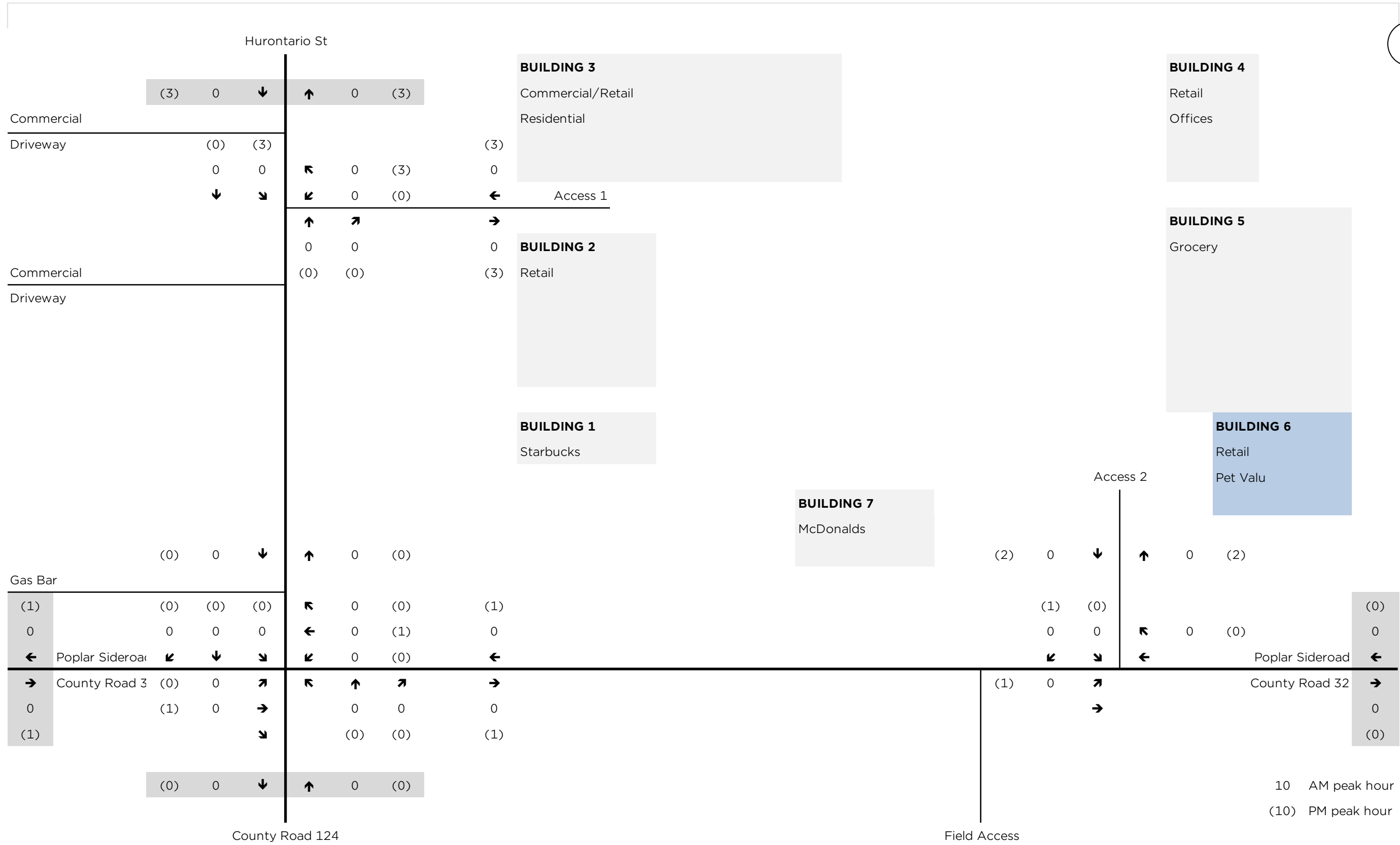
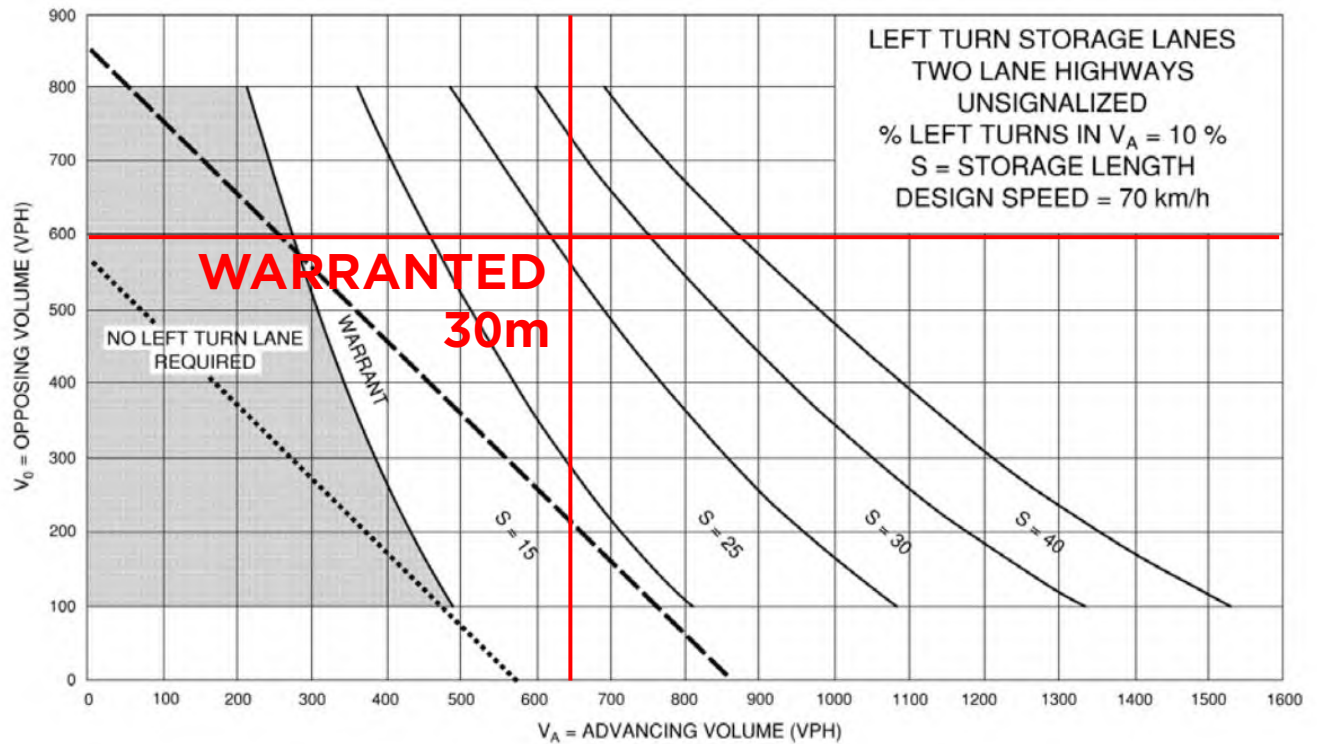


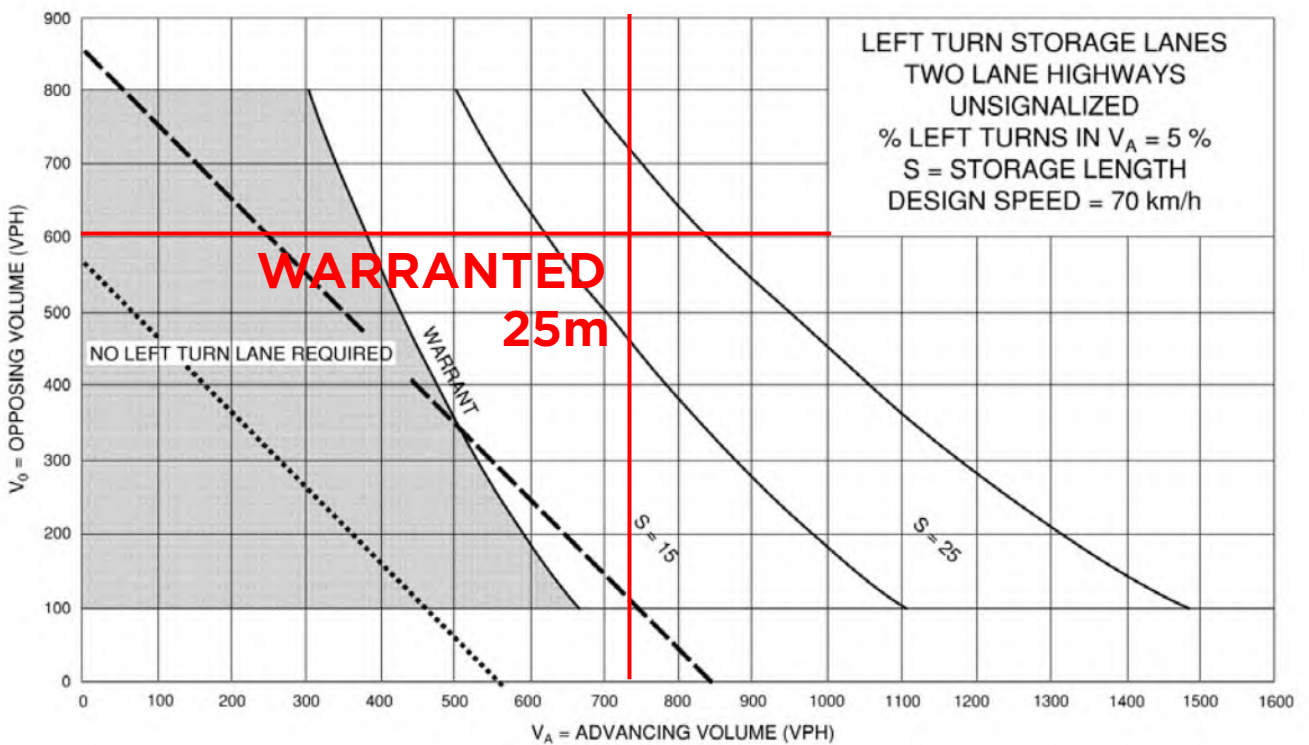
Figure I12: Site Traffic – Building 6, Pet Value New Trips



Appendix J: Left Turn Lane Nomographs



Weekday AM Peak Hour

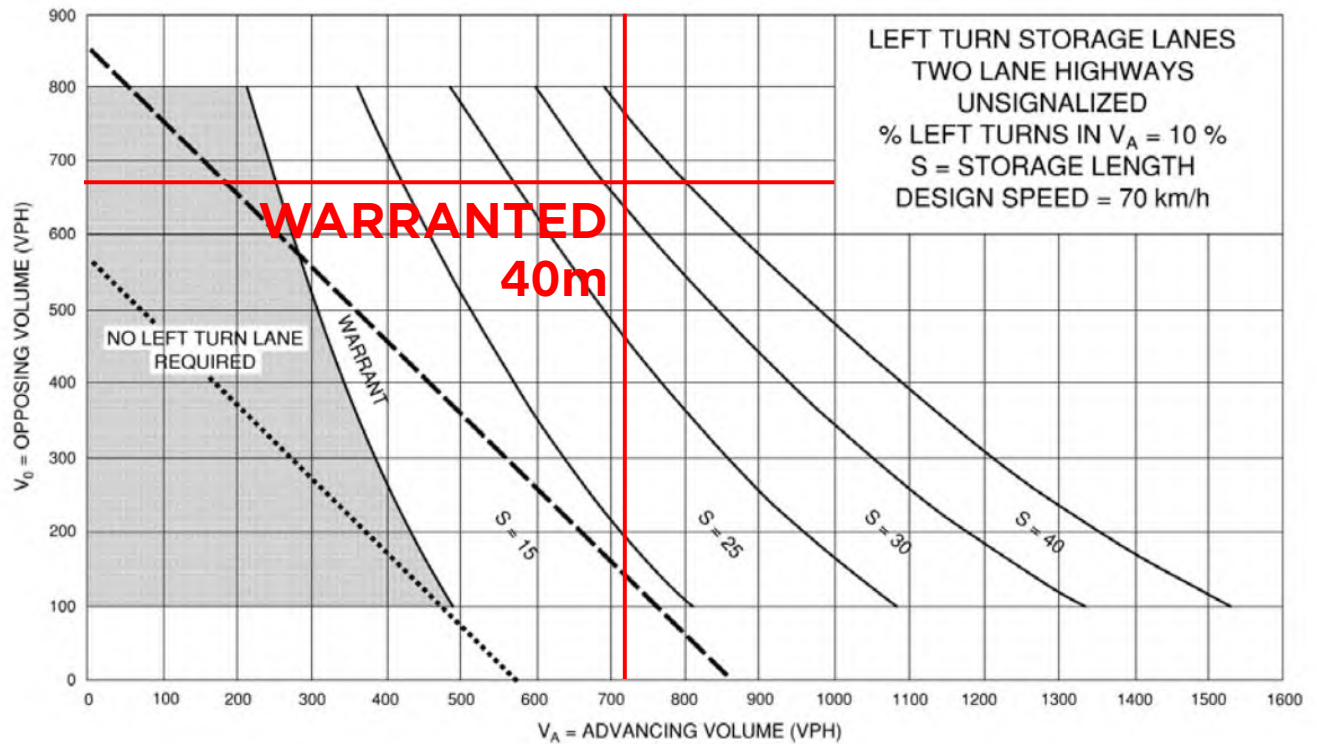


Weekday PM Peak Hour

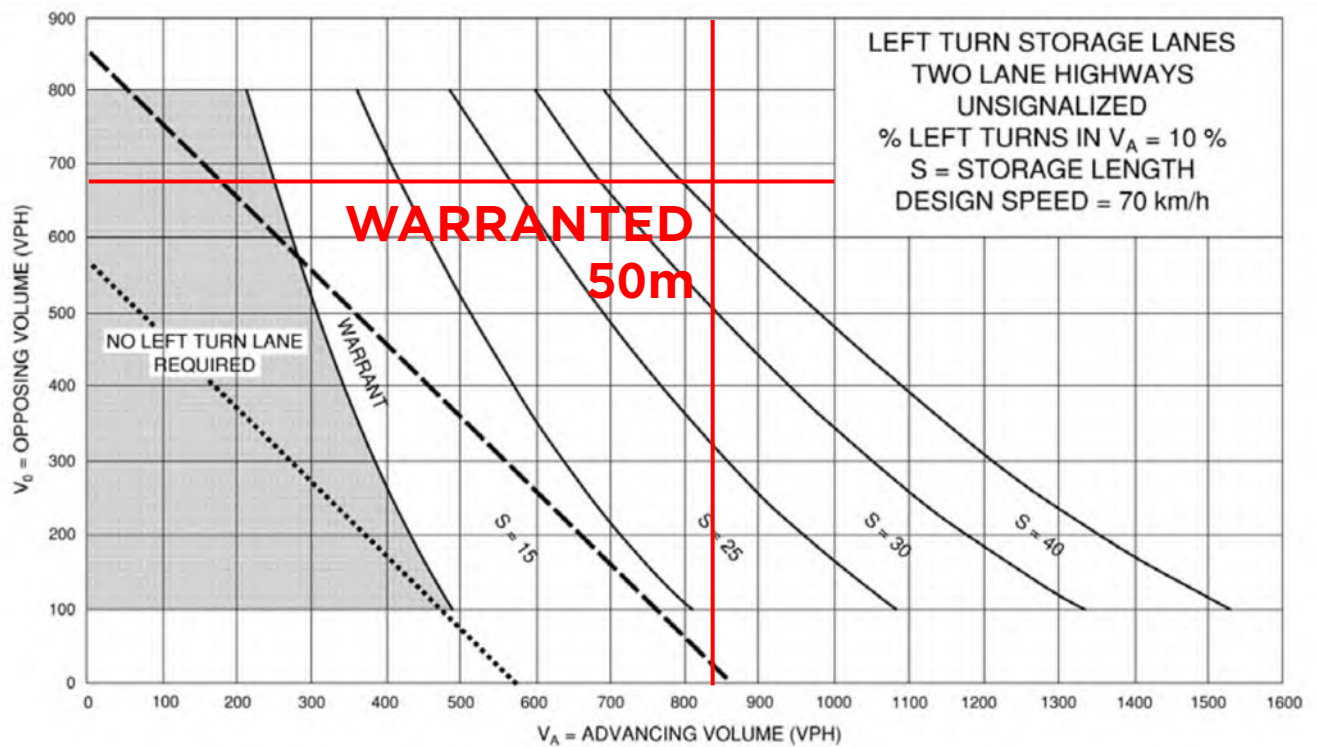
THE GATEWAY CENTRE TIS

Figure J1: Access 2 – 2026 Total Conditions





Weekday AM Peak Hour

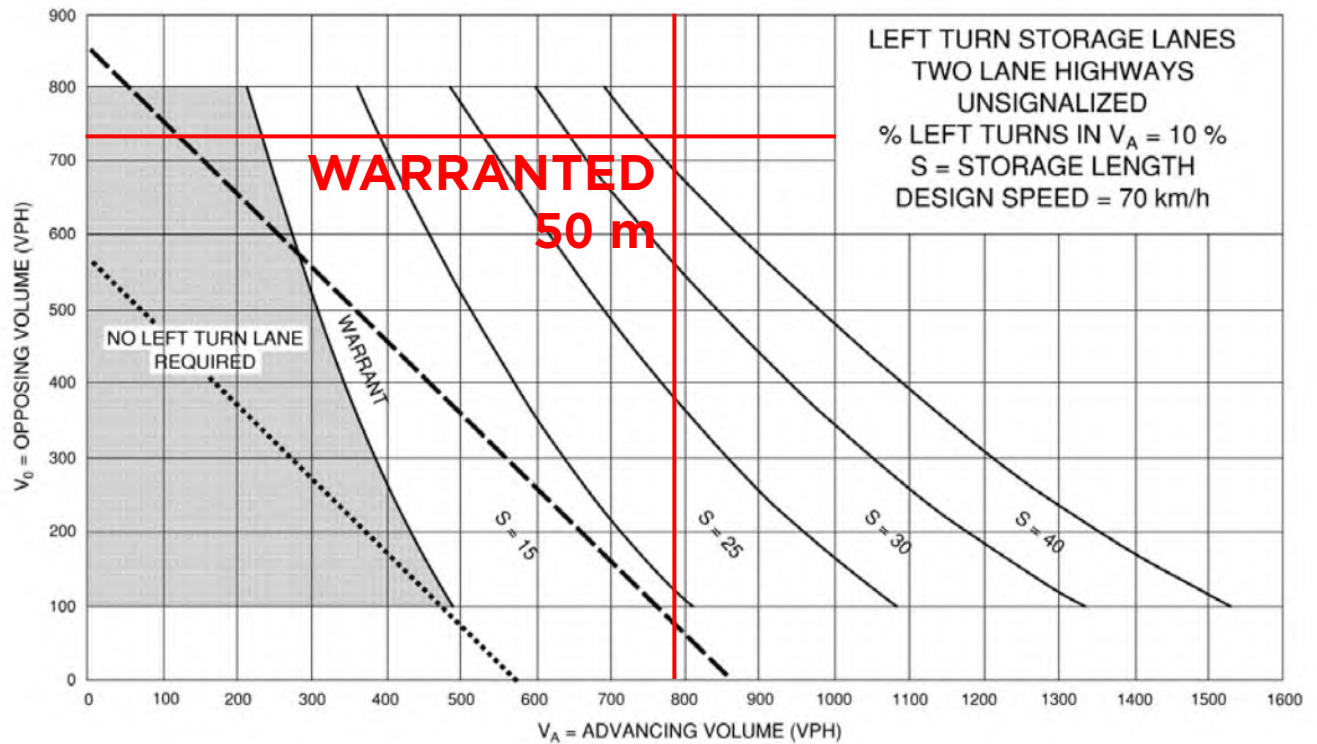


Weekday PM Peak Hour

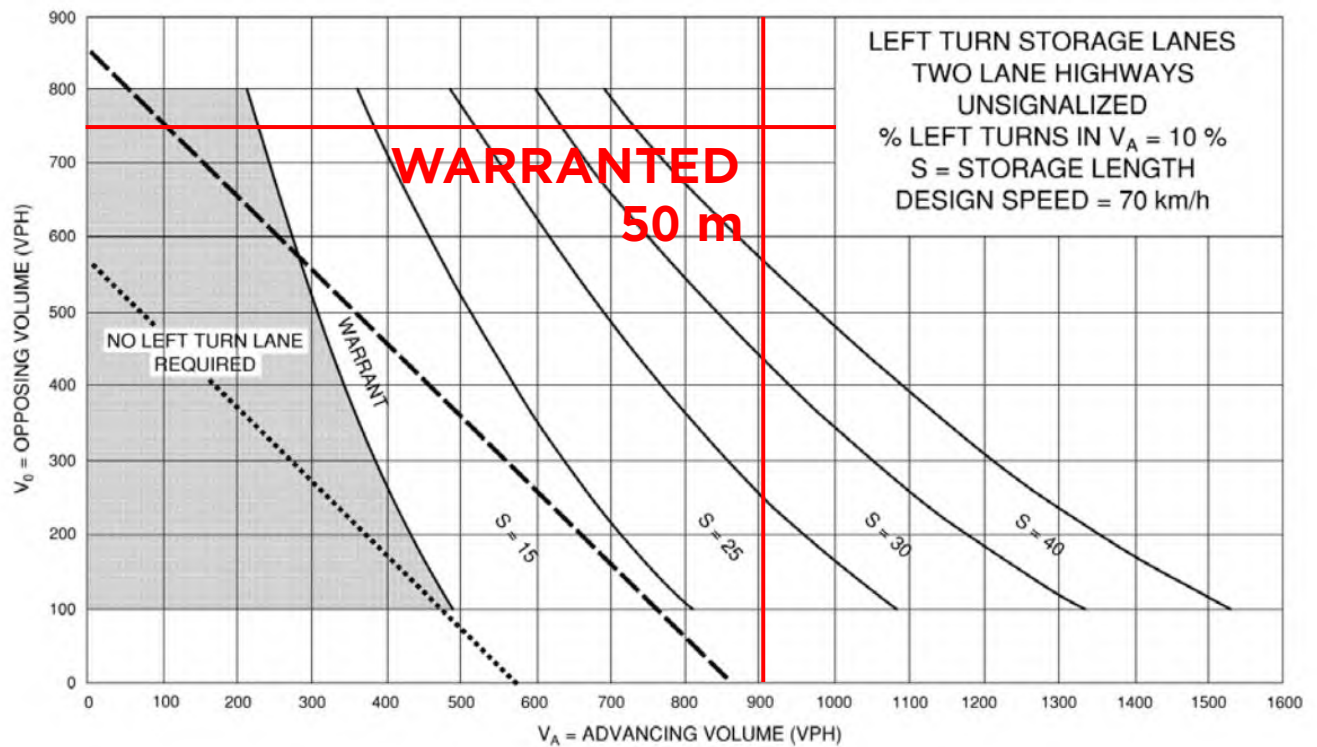
THE GATEWAY CENTRE TIS

Figure J1: Access 2 – 2030 Total Conditions





Weekday AM Peak Hour

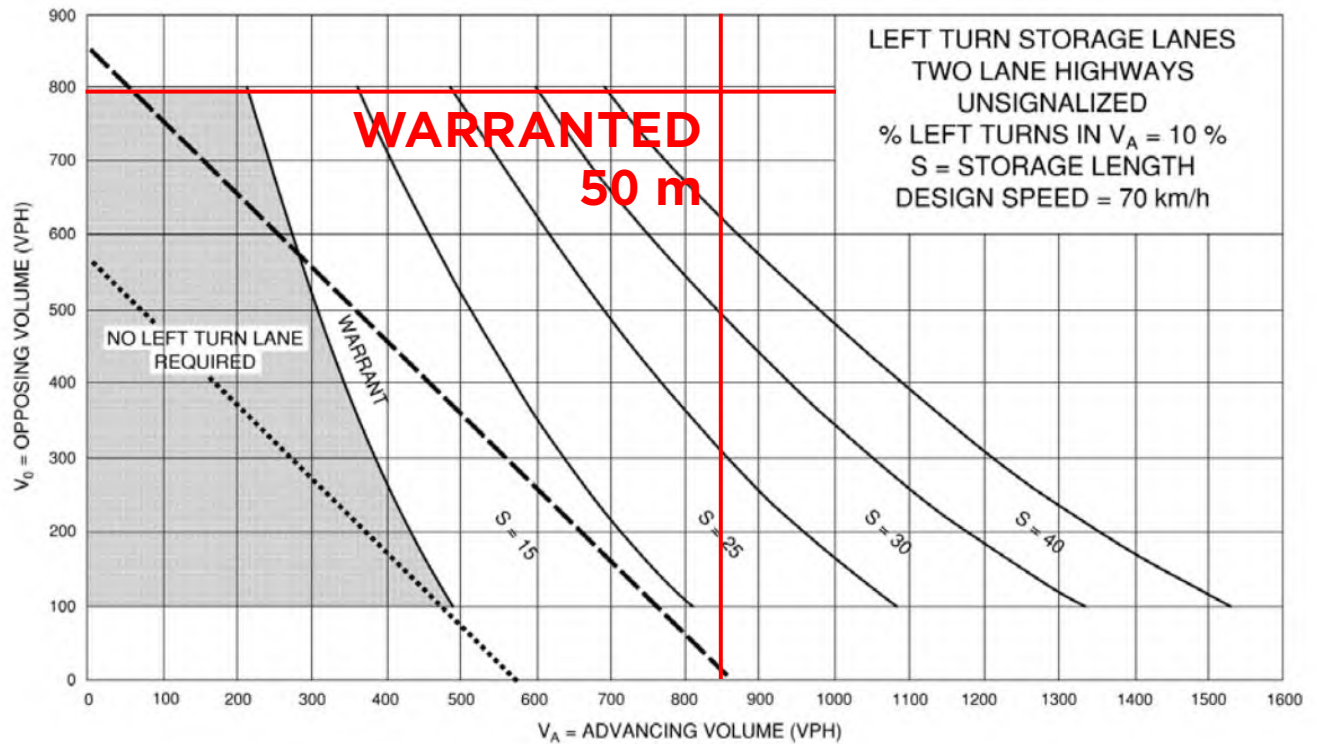


Weekday PM Peak Hour

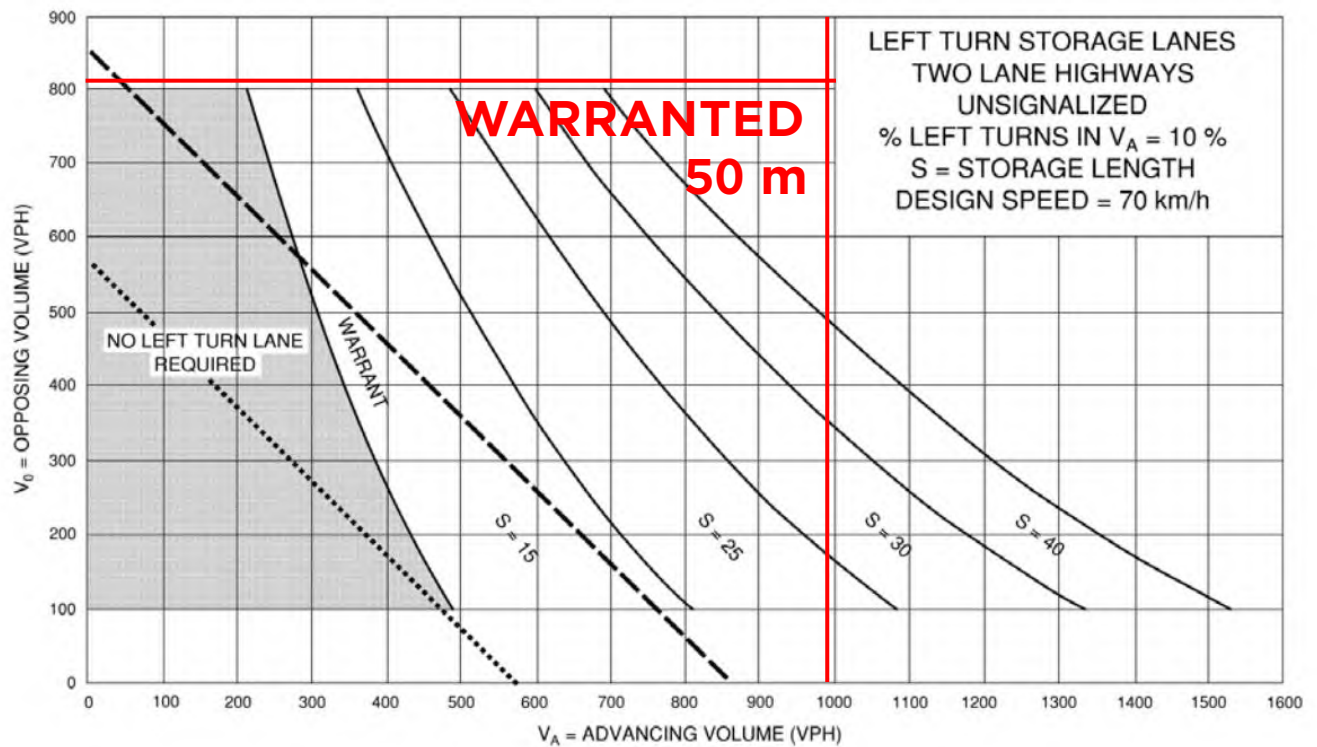
THE GATEWAY CENTRE TIS

Figure J1: Access 2 – 2035 Total Conditions





Weekday AM Peak Hour



Weekday PM Peak Hour

THE GATEWAY CENTRE TIS

Figure J1: Access 2 – 2040 Total Conditions



Appendix K: Future Total Intersection Operations

HCM Signalized Intersection Capacity Analysis

1: CR 124/Hurontario St & Poplar S/R

2026 Total Conditions

Weekday AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	345	110	70	365	190	160	205	90	175	130	35
Future Volume (vph)	70	345	110	70	365	190	160	205	90	175	130	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0		3.0	6.0	6.0	3.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1755	1780		1659	1847	1512	1755	1847	1570	1659	1788	
Flt Permitted	0.31	1.00		0.18	1.00	1.00	0.54	1.00	1.00	0.61	1.00	
Satd. Flow (perm)	580	1780		321	1847	1512	1001	1847	1570	1067	1788	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	81	401	128	81	424	221	186	238	105	203	151	41
RTOR Reduction (vph)	0	13	0	0	0	147	0	0	62	0	11	0
Lane Group Flow (vph)	81	516	0	81	424	74	186	238	43	203	181	0
Heavy Vehicles (%)	4%	4%	4%	10%	4%	8%	4%	4%	4%	10%	4%	4%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8		5	2			6	
Permitted Phases	4			8		8	2		2	6		
Actuated Green, G (s)	31.7	26.4		31.7	26.4	26.4	32.6	32.6	32.6	22.4	22.4	
Effective Green, g (s)	31.7	26.4		31.7	26.4	26.4	32.6	32.6	32.6	22.4	22.4	
Actuated g/C Ratio	0.40	0.33		0.40	0.33	0.33	0.41	0.41	0.41	0.28	0.28	
Clearance Time (s)	3.0	6.0		3.0	6.0	6.0	3.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	310	592		217	614	503	479	759	645	301	505	
v/s Ratio Prot	0.02	c0.29		c0.02	0.23		c0.04	0.13			0.10	
v/s Ratio Perm	0.09			0.12		0.05	0.12		0.03	c0.19		
v/c Ratio	0.26	0.87		0.37	0.69	0.15	0.39	0.31	0.07	0.67	0.36	
Uniform Delay, d1	15.7	24.9		16.8	22.9	18.5	15.5	15.8	14.1	25.2	22.7	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.5	13.2		1.1	3.3	0.1	0.5	0.2	0.0	5.9	0.4	
Delay (s)	16.2	38.1		17.9	26.3	18.7	16.0	16.0	14.2	31.1	23.2	
Level of Service	B	D		B	C	B	B	B	B	C	C	
Approach Delay (s)		35.2			23.0			15.7			27.2	
Approach LOS		D			C			B			C	
Intersection Summary												
HCM 2000 Control Delay			25.3			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.70									
Actuated Cycle Length (s)			79.3			Sum of lost time (s)			18.0			
Intersection Capacity Utilization			82.3%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

2: Hurontario St & Access 1

2026 Total Conditions
Weekday AM Peak

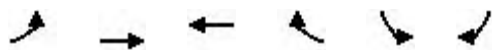
						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	10	55	435	30	55	330
Future Volume (Veh/h)	10	55	435	30	55	330
Sign Control	Stop		Free		Free	Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	60	473	33	60	359
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLT		TWLT	
Median storage veh			2		2	
Upstream signal (m)			148			
pX, platoon unblocked	0.93	0.93			0.93	
vC, conflicting volume	968	490			506	
vC1, stage 1 conf vol	490					
vC2, stage 2 conf vol	479					
vCu, unblocked vol	928	413			431	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	90			94	
cM capacity (veh/h)	477	594			1049	
Direction, Lane #	WB 1	NB 1	SB 1	SB 2		
Volume Total	71	506	60	359		
Volume Left	11	0	60	0		
Volume Right	60	33	0	0		
cSH	572	1700	1049	1700		
Volume to Capacity	0.12	0.30	0.06	0.21		
Queue Length 95th (m)	3.2	0.0	1.4	0.0		
Control Delay (s)	12.2	0.0	8.6	0.0		
Lane LOS	B		A			
Approach Delay (s)	12.2	0.0	1.2			
Approach LOS	B					
Intersection Summary						
Average Delay			1.4			
Intersection Capacity Utilization			42.0%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

3: Poplar S/R & Access 2

2026 Total Conditions

Weekday AM Peak



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	55	585	560	35	40	65
Future Volume (Veh/h)	55	585	560	35	40	65
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)	60	636	609	38	43	71
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLT	TWLT			
Median storage veh)		2	2			
Upstream signal (m)		182				
pX, platoon unblocked					0.72	
vC, conflicting volume	647				1365	609
vC1, stage 1 conf vol					609	
vC2, stage 2 conf vol					756	
vCu, unblocked vol	647				1312	609
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	94				88	86
cM capacity (veh/h)	939				345	495
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	60	636	609	38	114	
Volume Left	60	0	0	0	43	
Volume Right	0	0	0	38	71	
cSH	939	1700	1700	1700	425	
Volume to Capacity	0.06	0.37	0.36	0.02	0.27	
Queue Length 95th (m)	1.6	0.0	0.0	0.0	8.1	
Control Delay (s)	9.1	0.0	0.0	0.0	16.5	
Lane LOS	A				C	
Approach Delay (s)	0.8		0.0		16.5	
Approach LOS					C	
Intersection Summary						
Average Delay			1.7			
Intersection Capacity Utilization			49.0%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis

1: CR 124/Hurontario St & Poplar S/R

2026 Total Conditions

Weekday PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	460	145	90	360	180	125	175	60	210	255	45
Future Volume (vph)	50	460	145	90	360	180	125	175	60	210	255	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0		3.0	6.0	6.0	3.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1789	1816		1789	1883	1601	1789	1883	1601	1789	1841	
Flt Permitted	0.43	1.00		0.12	1.00	1.00	0.32	1.00	1.00	0.64	1.00	
Satd. Flow (perm)	801	1816		222	1883	1601	609	1883	1601	1204	1841	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	54	495	156	97	387	194	134	188	65	226	274	48
RTOR Reduction (vph)	0	12	0	0	0	117	0	0	41	0	7	0
Lane Group Flow (vph)	54	639	0	97	387	77	134	188	24	226	315	0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8		5	2			6	
Permitted Phases	4			8		8	2		2	6		
Actuated Green, G (s)	36.5	32.5		39.3	33.9	33.9	32.0	32.0	32.0	22.0	22.0	
Effective Green, g (s)	36.5	32.5		39.3	33.9	33.9	32.0	32.0	32.0	22.0	22.0	
Actuated g/C Ratio	0.43	0.38		0.46	0.40	0.40	0.38	0.38	0.38	0.26	0.26	
Clearance Time (s)	3.0	6.0		3.0	6.0	6.0	3.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	390	695		202	751	639	326	709	603	311	477	
v/s Ratio Prot	0.01	c0.35		c0.03	0.21		c0.03	0.10			0.17	
v/s Ratio Perm	0.05			0.19		0.05	0.12		0.02	c0.19		
v/c Ratio	0.14	0.92		0.48	0.52	0.12	0.41	0.27	0.04	0.73	0.66	
Uniform Delay, d1	14.5	24.9		17.1	19.3	16.1	18.6	18.3	16.7	28.7	28.1	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.2	17.1		1.8	0.6	0.1	0.8	0.2	0.0	8.2	3.3	
Delay (s)	14.7	42.1		18.9	19.9	16.2	19.4	18.5	16.8	36.9	31.4	
Level of Service	B	D		B	B	B	B	B	B	D	C	
Approach Delay (s)		40.0			18.7			18.5			33.7	
Approach LOS		D			B			B			C	
Intersection Summary												
HCM 2000 Control Delay	28.7			HCM 2000 Level of Service			C					
HCM 2000 Volume to Capacity ratio	0.77											
Actuated Cycle Length (s)	84.9			Sum of lost time (s)			18.0					
Intersection Capacity Utilization	90.5%			ICU Level of Service			E					
Analysis Period (min)	15											
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

2: Hurontario St & Access 1

2026 Total Conditions
Weekday PM Peak

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	10	40	385	20	45	500
Future Volume (Veh/h)	10	40	385	20	45	500
Sign Control	Stop		Free		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)	11	43	418	22	49	543
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLT		TWLT	
Median storage veh			2		2	
Upstream signal (m)			148			
pX, platoon unblocked	0.94	0.94			0.94	
vC, conflicting volume	1070	429			440	
vC1, stage 1 conf vol	429					
vC2, stage 2 conf vol	641					
vCu, unblocked vol	1043	362			374	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	93			96	
cM capacity (veh/h)	438	642			1115	
Direction, Lane #	WB 1	NB 1	SB 1	SB 2		
Volume Total	54	440	49	543		
Volume Left	11	0	49	0		
Volume Right	43	22	0	0		
cSH	587	1700	1115	1700		
Volume to Capacity	0.09	0.26	0.04	0.32		
Queue Length 95th (m)	2.3	0.0	1.0	0.0		
Control Delay (s)	11.8	0.0	8.4	0.0		
Lane LOS	B		A			
Approach Delay (s)	11.8	0.0	0.7			
Approach LOS	B					
Intersection Summary						
Average Delay			1.0			
Intersection Capacity Utilization			38.1%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

3: Poplar S/R & Access 2

2026 Total Conditions

Weekday PM Peak



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	40	690	580	25	30	50
Future Volume (Veh/h)	40	690	580	25	30	50
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)	43	750	630	27	33	54
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLT	TWLT			
Median storage (veh)		2	2			
Upstream signal (m)		182				
pX, platoon unblocked					0.61	
vC, conflicting volume	657				1466	630
vC1, stage 1 conf vol					630	
vC2, stage 2 conf vol					836	
vCu, unblocked vol	657				1444	630
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	95				90	89
cM capacity (veh/h)	931				315	482
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	43	750	630	27	87	
Volume Left	43	0	0	0	33	
Volume Right	0	0	0	27	54	
cSH	931	1700	1700	1700	401	
Volume to Capacity	0.05	0.44	0.37	0.02	0.22	
Queue Length 95th (m)	1.1	0.0	0.0	0.0	6.2	
Control Delay (s)	9.1	0.0	0.0	0.0	16.4	
Lane LOS	A				C	
Approach Delay (s)	0.5		0.0		16.4	
Approach LOS					C	
Intersection Summary						
Average Delay			1.2			
Intersection Capacity Utilization			47.7%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis

1: CR 124/Hurontario St & Poplar S/R

2030 Total Conditions

Weekday AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	425	120	85	410	205	170	230	105	190	150	45
Future Volume (vph)	80	425	120	85	410	205	170	230	105	190	150	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0		3.0	6.0	6.0	3.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1755	1786		1659	1847	1512	1755	1847	1570	1659	1783	
Flt Permitted	0.29	1.00		0.13	1.00	1.00	0.48	1.00	1.00	0.59	1.00	
Satd. Flow (perm)	542	1786		226	1847	1512	878	1847	1570	1039	1783	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	93	494	140	99	477	238	198	267	122	221	174	52
RTOR Reduction (vph)	0	10	0	0	0	140	0	0	75	0	11	0
Lane Group Flow (vph)	93	624	0	99	477	98	198	267	47	221	215	0
Heavy Vehicles (%)	4%	4%	4%	10%	4%	8%	4%	4%	4%	10%	4%	4%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8		5	2			6	
Permitted Phases	4			8		8	2		2	6		
Actuated Green, G (s)	39.7	34.4		39.7	34.4	34.4	34.7	34.7	34.7	24.5	24.5	
Effective Green, g (s)	39.7	34.4		39.7	34.4	34.4	34.7	34.7	34.7	24.5	24.5	
Actuated g/C Ratio	0.44	0.38		0.44	0.38	0.38	0.39	0.39	0.39	0.27	0.27	
Clearance Time (s)	3.0	6.0		3.0	6.0	6.0	3.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	312	687		185	710	581	411	716	609	284	488	
v/s Ratio Prot	0.02	c0.35		c0.03	0.26		c0.04	0.14			0.12	
v/s Ratio Perm	0.11			0.21		0.07	0.15		0.03	c0.21		
v/c Ratio	0.30	0.91		0.54	0.67	0.17	0.48	0.37	0.08	0.78	0.44	
Uniform Delay, d1	15.8	26.0		18.4	22.8	18.1	19.1	19.6	17.3	29.9	26.8	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.5	15.7		3.0	2.5	0.1	0.9	0.3	0.1	12.6	0.6	
Delay (s)	16.3	41.7		21.3	25.3	18.2	20.0	19.9	17.3	42.5	27.4	
Level of Service	B	D		C	C	B	C	B	B	D	C	
Approach Delay (s)		38.4			22.8			19.4			34.9	
Approach LOS		D			C			B			C	
Intersection Summary												
HCM 2000 Control Delay			28.5			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.79									
Actuated Cycle Length (s)			89.4			Sum of lost time (s)			18.0			
Intersection Capacity Utilization			87.2%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

2: Hurontario St & Access 1

2030 Total Conditions

Weekday AM Peak

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	20	100	465	50	115	365
Future Volume (Veh/h)	20	100	465	50	115	365
Sign Control	Stop		Free		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)	22	109	505	54	125	397
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLT		TWLT	
Median storage veh			2		2	
Upstream signal (m)			148			
pX, platoon unblocked	0.91	0.91			0.91	
vC, conflicting volume	1179	532			559	
vC1, stage 1 conf vol	532					
vC2, stage 2 conf vol	647					
vCu, unblocked vol	1146	433			463	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	94	81			87	
cM capacity (veh/h)	387	565			997	
Direction, Lane #	WB 1	NB 1	SB 1	SB 2		
Volume Total	131	559	125	397		
Volume Left	22	0	125	0		
Volume Right	109	54	0	0		
cSH	524	1700	997	1700		
Volume to Capacity	0.25	0.33	0.13	0.23		
Queue Length 95th (m)	7.4	0.0	3.3	0.0		
Control Delay (s)	14.1	0.0	9.1	0.0		
Lane LOS	B		A			
Approach Delay (s)	14.1	0.0	2.2			
Approach LOS	B					
Intersection Summary						
Average Delay		2.5				
Intersection Capacity Utilization		51.2%		ICU Level of Service	A	
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

3: Poplar S/R & Access 2

2030 Total Conditions

Weekday AM Peak



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	80	640	615	55	55	85
Future Volume (Veh/h)	80	640	615	55	55	85
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)	87	696	668	60	60	92
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLT	TL			
Median storage (veh)		2	2			
Upstream signal (m)		182				
pX, platoon unblocked					0.66	
vC, conflicting volume	728				1538	668
vC1, stage 1 conf vol					668	
vC2, stage 2 conf vol					870	
vCu, unblocked vol	728				1558	668
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	90				79	80
cM capacity (veh/h)	876				286	458
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	87	696	668	60	152	
Volume Left	87	0	0	0	60	
Volume Right	0	0	0	60	92	
cSH	876	1700	1700	1700	370	
Volume to Capacity	0.10	0.41	0.39	0.04	0.41	
Queue Length 95th (m)	2.5	0.0	0.0	0.0	14.8	
Control Delay (s)	9.6	0.0	0.0	0.0	21.3	
Lane LOS	A				C	
Approach Delay (s)	1.1		0.0		21.3	
Approach LOS					C	
Intersection Summary						
Average Delay			2.5			
Intersection Capacity Utilization			55.1%		ICU Level of Service	B
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis

1: CR 124/Hurontario St & Poplar S/R

2030 Total Conditions

Weekday PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	535	155	125	430	185	135	205	80	220	280	65
Future Volume (vph)	70	535	155	125	430	185	135	205	80	220	280	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0		3.0	6.0	6.0	3.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1789	1820		1789	1883	1601	1789	1883	1601	1789	1830	
Flt Permitted	0.37	1.00		0.09	1.00	1.00	0.21	1.00	1.00	0.62	1.00	
Satd. Flow (perm)	697	1820		171	1883	1601	394	1883	1601	1169	1830	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	75	575	167	134	462	199	145	220	86	237	301	70
RTOR Reduction (vph)	0	10	0	0	0	110	0	0	56	0	11	0
Lane Group Flow (vph)	75	732	0	134	462	89	145	220	30	237	360	0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8		5	2			6	
Permitted Phases	4			8		8	2		2	6		
Actuated Green, G (s)	47.5	42.2		51.3	44.1	44.1	33.9	33.9	33.9	23.7	23.7	
Effective Green, g (s)	47.5	42.2		51.3	44.1	44.1	33.9	33.9	33.9	23.7	23.7	
Actuated g/C Ratio	0.48	0.43		0.52	0.45	0.45	0.34	0.34	0.34	0.24	0.24	
Clearance Time (s)	3.0	6.0		3.0	6.0	6.0	3.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	395	781		207	844	718	238	649	552	281	441	
v/s Ratio Prot	0.01	c0.40		c0.05	0.25		c0.04	0.12			0.20	
v/s Ratio Perm	0.08			0.29		0.06	0.17		0.02	c0.20		
v/c Ratio	0.19	0.94		0.65	0.55	0.12	0.61	0.34	0.05	0.84	0.82	
Uniform Delay, d1	14.3	26.8		19.6	19.8	15.8	24.5	23.9	21.5	35.5	35.2	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.2	18.5		6.8	0.7	0.1	4.4	0.3	0.0	20.0	11.1	
Delay (s)	14.6	45.3		26.4	20.5	15.9	28.9	24.2	21.5	55.5	46.3	
Level of Service	B	D		C	C	B	C	C	C	E	D	
Approach Delay (s)		42.5			20.4			25.2			49.9	
Approach LOS		D			C			C			D	
Intersection Summary												
HCM 2000 Control Delay	34.7			HCM 2000 Level of Service			C					
HCM 2000 Volume to Capacity ratio	0.85											
Actuated Cycle Length (s)	98.3			Sum of lost time (s)			18.0					
Intersection Capacity Utilization	96.2%			ICU Level of Service			F					
Analysis Period (min)	15											
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

2: Hurontario St & Access 1

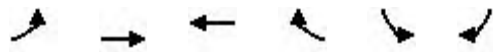
2030 Total Conditions
Weekday PM Peak

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	30	180	405	55	190	535
Future Volume (Veh/h)	30	180	405	55	190	535
Sign Control	Stop		Free		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)	33	196	440	60	207	582
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLT		TWLT	
Median storage veh			2		2	
Upstream signal (m)			148			
pX, platoon unblocked	0.92	0.92			0.92	
vC, conflicting volume	1466	470			500	
vC1, stage 1 conf vol	470					
vC2, stage 2 conf vol	996					
vCu, unblocked vol	1463	377			410	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	88	68			80	
cM capacity (veh/h)	266	614			1054	
Direction, Lane #	WB 1	NB 1	SB 1	SB 2		
Volume Total	229	500	207	582		
Volume Left	33	0	207	0		
Volume Right	196	60	0	0		
cSH	517	1700	1054	1700		
Volume to Capacity	0.44	0.29	0.20	0.34		
Queue Length 95th (m)	17.1	0.0	5.5	0.0		
Control Delay (s)	17.4	0.0	9.2	0.0		
Lane LOS	C		A			
Approach Delay (s)	17.4	0.0	2.4			
Approach LOS	C					
Intersection Summary						
Average Delay			3.9			
Intersection Capacity Utilization			58.0%		ICU Level of Service	B
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

3: Poplar S/R & Access 2

2030 Total Conditions
Weekday PM Peak



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	105	730	610	70	80	130
Future Volume (Veh/h)	105	730	610	70	80	130
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)	114	793	663	76	87	141
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLT	TL			
Median storage (veh)		2	2			
Upstream signal (m)		182				
pX, platoon unblocked					0.56	
vC, conflicting volume	739				1684	663
vC1, stage 1 conf vol					663	
vC2, stage 2 conf vol					1021	
vCu, unblocked vol	739				1830	663
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	87				61	69
cM capacity (veh/h)	867				222	461
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	114	793	663	76	228	
Volume Left	114	0	0	0	87	
Volume Right	0	0	0	76	141	
cSH	867	1700	1700	1700	327	
Volume to Capacity	0.13	0.47	0.39	0.04	0.70	
Queue Length 95th (m)	3.4	0.0	0.0	0.0	37.5	
Control Delay (s)	9.8	0.0	0.0	0.0	37.8	
Lane LOS	A				E	
Approach Delay (s)	1.2		0.0		37.8	
Approach LOS					E	
Intersection Summary						
Average Delay			5.2			
Intersection Capacity Utilization			60.3%		ICU Level of Service	B
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis

1: CR 124/Hurontario St & Poplar S/R

2035 Total Conditions

Weekday AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	465	130	90	445	225	190	250	115	205	165	45
Future Volume (vph)	90	465	130	90	445	225	190	250	115	205	165	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0		3.0	6.0	6.0	3.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1755	1787		1659	1847	1512	1755	1847	1570	1659	1788	
Flt Permitted	0.27	1.00		0.11	1.00	1.00	0.44	1.00	1.00	0.58	1.00	
Satd. Flow (perm)	490	1787		185	1847	1512	821	1847	1570	1016	1788	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	105	541	151	105	517	262	221	291	134	238	192	52
RTOR Reduction (vph)	0	10	0	0	0	137	0	0	83	0	10	0
Lane Group Flow (vph)	105	682	0	105	517	125	221	291	51	238	234	0
Heavy Vehicles (%)	4%	4%	4%	10%	4%	8%	4%	4%	4%	10%	4%	4%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8		5	2			6	
Permitted Phases	4			8		8	2		2	6		
Actuated Green, G (s)	43.1	37.8		43.1	37.8	37.8	35.8	35.8	35.8	25.7	25.7	
Effective Green, g (s)	43.1	37.8		43.1	37.8	37.8	35.8	35.8	35.8	25.7	25.7	
Actuated g/C Ratio	0.46	0.40		0.46	0.40	0.40	0.38	0.38	0.38	0.27	0.27	
Clearance Time (s)	3.0	6.0		3.0	6.0	6.0	3.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	296	719		168	743	608	383	704	598	278	489	
v/s Ratio Prot	0.02	c0.38		c0.04	0.28		c0.04	0.16			0.13	
v/s Ratio Perm	0.14			0.25		0.08	0.18		0.03	c0.23		
v/c Ratio	0.35	0.95		0.62	0.70	0.20	0.58	0.41	0.09	0.86	0.48	
Uniform Delay, d1	16.3	27.1		19.8	23.3	18.3	21.9	21.3	18.6	32.3	28.5	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.7	21.6		7.1	2.8	0.2	2.1	0.4	0.1	21.9	0.7	
Delay (s)	17.0	48.7		26.9	26.1	18.4	24.0	21.7	18.6	54.2	29.2	
Level of Service	B	D		C	C	B	C	C	B	D	C	
Approach Delay (s)		44.5			23.9			21.9			41.6	
Approach LOS		D			C			C			D	
Intersection Summary												
HCM 2000 Control Delay			32.3			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.86									
Actuated Cycle Length (s)			93.9			Sum of lost time (s)			18.0			
Intersection Capacity Utilization			89.9%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

2: Hurontario St & Access 1

2035 Total Conditions

Weekday AM Peak

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	20	100	515	50	115	395
Future Volume (Veh/h)	20	100	515	50	115	395
Sign Control	Stop		Free		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)	22	109	560	54	125	429
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLT		TWLT	
Median storage veh			2		2	
Upstream signal (m)			148			
pX, platoon unblocked	0.89	0.89			0.89	
vC, conflicting volume	1266	587			614	
vC1, stage 1 conf vol	587					
vC2, stage 2 conf vol	679					
vCu, unblocked vol	1237	472			503	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	94	79			87	
cM capacity (veh/h)	363	526			943	
Direction, Lane #	WB 1	NB 1	SB 1	SB 2		
Volume Total	131	614	125	429		
Volume Left	22	0	125	0		
Volume Right	109	54	0	0		
cSH	489	1700	943	1700		
Volume to Capacity	0.27	0.36	0.13	0.25		
Queue Length 95th (m)	8.1	0.0	3.5	0.0		
Control Delay (s)	15.0	0.0	9.4	0.0		
Lane LOS	C		A			
Approach Delay (s)	15.0	0.0	2.1			
Approach LOS	C					
Intersection Summary						
Average Delay			2.4			
Intersection Capacity Utilization			53.8%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

3: Poplar S/R & Access 2

2035 Total Conditions

Weekday AM Peak



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	80	705	675	55	55	85
Future Volume (Veh/h)	80	705	675	55	55	85
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)	87	766	734	60	60	92
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLT	TWLT			
Median storage (veh)		2	2			
Upstream signal (m)		182				
pX, platoon unblocked					0.60	
vC, conflicting volume	794				1674	734
vC1, stage 1 conf vol					734	
vC2, stage 2 conf vol					940	
vCu, unblocked vol	794				1791	734
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	89				76	78
cM capacity (veh/h)	827				251	420
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	87	766	734	60	152	
Volume Left	87	0	0	0	60	
Volume Right	0	0	0	60	92	
cSH	827	1700	1700	1700	332	
Volume to Capacity	0.11	0.45	0.43	0.04	0.46	
Queue Length 95th (m)	2.7	0.0	0.0	0.0	17.5	
Control Delay (s)	9.9	0.0	0.0	0.0	24.7	
Lane LOS	A				C	
Approach Delay (s)	1.0		0.0		24.7	
Approach LOS					C	
Intersection Summary						
Average Delay			2.6			
Intersection Capacity Utilization			58.2%		ICU Level of Service	B
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis

1: CR 124/Hurontario St & Poplar S/R

2035 Total Conditions

Weekday PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	585	170	135	470	205	145	225	85	240	310	70
Future Volume (vph)	75	585	170	135	470	205	145	225	85	240	310	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0		3.0	6.0	6.0	3.0	6.0	6.0	6.0	6.0	
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1789	1820		1789	1883	1601	1789	1883	1601	1789	1832	
Flt Permitted	0.34	1.00		0.08	1.00	1.00	0.15	1.00	1.00	0.61	1.00	
Satd. Flow (perm)	635	1820		149	1883	1601	283	1883	1601	1146	1832	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	81	629	183	145	505	220	156	242	91	258	333	75
RTOR Reduction (vph)	0	9	0	0	0	104	0	0	60	0	8	0
Lane Group Flow (vph)	81	803	0	145	505	116	156	242	31	258	400	0
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8		5	2			6	
Permitted Phases	4			8		8	2		2	6		
Actuated Green, G (s)	54.4	49.0		57.6	50.6	50.6	36.1	36.1	36.1	26.1	26.1	
Effective Green, g (s)	54.4	49.0		57.6	50.6	50.6	36.1	36.1	36.1	26.1	26.1	
Actuated g/C Ratio	0.51	0.46		0.54	0.47	0.47	0.34	0.34	0.34	0.24	0.24	
Clearance Time (s)	3.0	6.0		3.0	6.0	6.0	3.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	380	832		187	889	756	193	634	539	279	446	
v/s Ratio Prot	0.01	c0.44		c0.05	0.27		c0.05	0.13			0.22	
v/s Ratio Perm	0.10			0.37		0.07	0.22		0.02	c0.23		
v/c Ratio	0.21	0.96		0.78	0.57	0.15	0.81	0.38	0.06	0.92	0.90	
Uniform Delay, d1	14.6	28.2		22.6	20.4	16.1	28.2	27.0	24.0	39.5	39.2	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.3	22.8		18.0	0.8	0.1	21.4	0.4	0.0	34.3	20.3	
Delay (s)	14.9	51.0		40.6	21.2	16.2	49.6	27.4	24.0	73.9	59.5	
Level of Service	B	D		D	C	B	D	C	C	E	E	
Approach Delay (s)		47.7			23.2			33.9			65.1	
Approach LOS		D			C			C			E	
Intersection Summary												
HCM 2000 Control Delay			42.0									HCM 2000 Level of Service D
HCM 2000 Volume to Capacity ratio			0.93									
Actuated Cycle Length (s)			107.1									Sum of lost time (s) 18.0
Intersection Capacity Utilization			100.3%									ICU Level of Service G
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

2: Hurontario St & Access 1

2035 Total Conditions
Weekday PM Peak

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	30	180	450	55	190	590
Future Volume (Veh/h)	30	180	450	55	190	590
Sign Control	Stop		Free		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)	33	196	489	60	207	641
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLT		TWLT	
Median storage veh			2		2	
Upstream signal (m)			148			
pX, platoon unblocked	0.90	0.90			0.90	
vC, conflicting volume	1574	519			549	
vC1, stage 1 conf vol	519					
vC2, stage 2 conf vol	1055					
vCu, unblocked vol	1582	414			448	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	87	66			79	
cM capacity (veh/h)	245	576			1005	
Direction, Lane #	WB 1	NB 1	SB 1	SB 2		
Volume Total	229	549	207	641		
Volume Left	33	0	207	0		
Volume Right	196	60	0	0		
cSH	482	1700	1005	1700		
Volume to Capacity	0.47	0.32	0.21	0.38		
Queue Length 95th (m)	19.1	0.0	5.9	0.0		
Control Delay (s)	19.0	0.0	9.5	0.0		
Lane LOS	C		A			
Approach Delay (s)	19.0	0.0	2.3			
Approach LOS	C					
Intersection Summary						
Average Delay			3.9			
Intersection Capacity Utilization			60.3%		ICU Level of Service	B
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

3: Poplar S/R & Access 2

2035 Total Conditions

Weekday PM Peak



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	105	805	680	70	80	130
Future Volume (Veh/h)	105	805	680	70	80	130
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)	114	875	739	76	87	141
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLT	TL			
Median storage veh		2	2			
Upstream signal (m)		182				
pX, platoon unblocked					0.49	
vC, conflicting volume	815				1842	739
vC1, stage 1 conf vol					739	
vC2, stage 2 conf vol					1103	
vCu, unblocked vol	815				2198	739
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	86				53	66
cM capacity (veh/h)	812				184	417
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	
Volume Total	114	875	739	76	228	
Volume Left	114	0	0	0	87	
Volume Right	0	0	0	76	141	
cSH	812	1700	1700	1700	282	
Volume to Capacity	0.14	0.51	0.43	0.04	0.81	
Queue Length 95th (m)	3.7	0.0	0.0	0.0	49.3	
Control Delay (s)	10.2	0.0	0.0	0.0	55.5	
Lane LOS	B				F	
Approach Delay (s)	1.2		0.0		55.5	
Approach LOS					F	
Intersection Summary						
Average Delay			6.8			
Intersection Capacity Utilization			64.0%		ICU Level of Service	C
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis

1: CR 124/Hurontario St & Poplar S/R

2040 Total Conditions

Weekday AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	505	145	95	485	245	210	275	125	225	180	50
Future Volume (vph)	95	505	145	95	485	245	210	275	125	225	180	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1755	1847	1570	1659	1847	1512	1755	1847	1570	1659	1787	
Flt Permitted	0.18	1.00	1.00	0.15	1.00	1.00	0.47	1.00	1.00	0.39	1.00	
Satd. Flow (perm)	327	1847	1570	265	1847	1512	875	1847	1570	673	1787	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	110	587	169	110	564	285	244	320	145	262	209	58
RTOR Reduction (vph)	0	0	87	0	0	153	0	0	107	0	12	0
Lane Group Flow (vph)	110	587	82	110	564	132	244	320	38	262	255	0
Heavy Vehicles (%)	4%	4%	4%	10%	4%	8%	4%	4%	4%	10%	4%	4%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		
Actuated Green, G (s)	34.2	28.9	28.9	34.2	28.9	28.9	28.4	21.3	21.3	28.4	21.3	
Effective Green, g (s)	34.2	28.9	28.9	34.2	28.9	28.9	28.4	21.3	21.3	28.4	21.3	
Actuated g/C Ratio	0.42	0.36	0.36	0.42	0.36	0.36	0.35	0.26	0.26	0.35	0.26	
Clearance Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	232	662	562	204	662	542	385	488	414	323	472	
v/s Ratio Prot	0.03	c0.32		c0.04	0.31		0.06	0.17		c0.07	0.14	
v/s Ratio Perm	0.17		0.05	0.19		0.09	0.17		0.02	c0.21		
v/c Ratio	0.47	0.89	0.15	0.54	0.85	0.24	0.63	0.66	0.09	0.81	0.54	
Uniform Delay, d1	16.5	24.3	17.5	16.9	23.9	18.2	20.4	26.4	22.4	22.3	25.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.5	13.6	0.1	2.7	10.3	0.2	3.4	3.2	0.1	14.3	1.3	
Delay (s)	18.0	37.9	17.6	19.7	34.2	18.4	23.8	29.6	22.5	36.6	26.7	
Level of Service	B	D	B	B	C	B	C	C	C	D	C	
Approach Delay (s)		31.4			27.8			26.1			31.6	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM 2000 Control Delay			29.1			HCM 2000 Level of Service				C		
HCM 2000 Volume to Capacity ratio			0.82									
Actuated Cycle Length (s)			80.6			Sum of lost time (s)			18.0			
Intersection Capacity Utilization			78.2%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

2: Hurontario St & Access 1

2040 Total Conditions
Weekday AM Peak

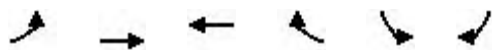
						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	20	100	565	50	115	435
Future Volume (Veh/h)	20	100	565	50	115	435
Sign Control	Stop		Free		Free	Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	22	109	614	54	125	473
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLT		TWLT	
Median storage veh			2		2	
Upstream signal (m)			148			
pX, platoon unblocked	0.85	0.85			0.85	
vC, conflicting volume	1364	641			668	
vC1, stage 1 conf vol	641					
vC2, stage 2 conf vol	723					
vCu, unblocked vol	1340	490			522	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	93	78			86	
cM capacity (veh/h)	337	492			888	
Direction, Lane #	WB 1	NB 1	SB 1	SB 2		
Volume Total	131	668	125	473		
Volume Left	22	0	125	0		
Volume Right	109	54	0	0		
cSH	457	1700	888	1700		
Volume to Capacity	0.29	0.39	0.14	0.28		
Queue Length 95th (m)	8.9	0.0	3.7	0.0		
Control Delay (s)	16.0	0.0	9.7	0.0		
Lane LOS	C		A			
Approach Delay (s)	16.0	0.0	2.0			
Approach LOS	C					
Intersection Summary						
Average Delay		2.4				
Intersection Capacity Utilization		56.4%		ICU Level of Service		B
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

3: Poplar S/R & Access 2

2040 Total Conditions

Weekday AM Peak



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	80	775	740	55	55	85
Future Volume (Veh/h)	80	775	740	55	55	85
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)	87	842	804	60	60	92
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLT	TWLT			
Median storage veh		2	2			
Upstream signal (m)		160				
pX, platoon unblocked					0.61	
vC, conflicting volume	864				1850	834
vC1, stage 1 conf vol					834	
vC2, stage 2 conf vol					1016	
vCu, unblocked vol	864				2075	834
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	89				72	75
cM capacity (veh/h)	779				218	368
Direction, Lane #	EB 1	EB 2	WB 1	SB 1		
Volume Total	87	842	864	152		
Volume Left	87	0	0	60		
Volume Right	0	0	60	92		
cSH	779	1700	1700	289		
Volume to Capacity	0.11	0.50	0.51	0.53		
Queue Length 95th (m)	2.9	0.0	0.0	21.7		
Control Delay (s)	10.2	0.0	0.0	30.5		
Lane LOS	B			D		
Approach Delay (s)	1.0		0.0	30.5		
Approach LOS				D		
Intersection Summary						
Average Delay			2.8			
Intersection Capacity Utilization			65.0%		ICU Level of Service	C
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis

1: CR 124/Hurontario St & Poplar S/R

2040 Total Conditions

Weekday PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	635	190	140	510	225	160	245	90	265	340	75
Future Volume (vph)	80	635	190	140	510	225	160	245	90	265	340	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1789	1883	1601	1789	1883	1601	1789	1883	1601	1789	1832	
Flt Permitted	0.25	1.00	1.00	0.09	1.00	1.00	0.20	1.00	1.00	0.36	1.00	
Satd. Flow (perm)	471	1883	1601	176	1883	1601	371	1883	1601	677	1832	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	86	683	204	151	548	242	172	263	97	285	366	81
RTOR Reduction (vph)	0	0	75	0	0	108	0	0	75	0	7	0
Lane Group Flow (vph)	86	683	129	151	548	134	172	263	22	285	440	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		
Actuated Green, G (s)	46.4	41.0	41.0	49.8	42.7	42.7	32.5	23.6	23.6	39.9	28.0	
Effective Green, g (s)	46.4	41.0	41.0	49.8	42.7	42.7	32.5	23.6	23.6	39.9	28.0	
Actuated g/C Ratio	0.45	0.40	0.40	0.48	0.41	0.41	0.32	0.23	0.23	0.39	0.27	
Clearance Time (s)	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	6.0	3.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	281	749	637	196	780	663	239	431	366	405	498	
v/s Ratio Prot	0.02	c0.36		c0.05	0.29		0.06	0.14		c0.09	c0.24	
v/s Ratio Perm	0.12		0.08	0.32		0.08	0.16		0.01	0.18		
v/c Ratio	0.31	0.91	0.20	0.77	0.70	0.20	0.72	0.61	0.06	0.70	0.88	
Uniform Delay, d1	18.2	29.3	20.3	21.7	24.9	19.3	27.9	35.6	31.0	23.7	35.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.6	15.3	0.2	16.9	2.9	0.2	9.9	2.6	0.1	5.5	16.7	
Delay (s)	18.8	44.6	20.5	38.6	27.8	19.4	37.8	38.1	31.1	29.2	52.7	
Level of Service	B	D	C	D	C	B	D	D	C	C	D	
Approach Delay (s)		37.3			27.4			36.8			43.5	
Approach LOS		D			C			D			D	
Intersection Summary												
HCM 2000 Control Delay			35.7			HCM 2000 Level of Service				D		
HCM 2000 Volume to Capacity ratio			0.89									
Actuated Cycle Length (s)			103.0			Sum of lost time (s)				18.0		
Intersection Capacity Utilization			89.2%			ICU Level of Service				E		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

2: Hurontario St & Access 1

2040 Total Conditions

Weekday PM Peak

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	30	180	495	55	190	650
Future Volume (Veh/h)	30	180	495	55	190	650
Sign Control	Stop		Free		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)	33	196	538	60	207	707
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			TWLT		TWLT	
Median storage veh			2		2	
Upstream signal (m)			148			
pX, platoon unblocked	0.87	0.87			0.87	
vC, conflicting volume	1689	568			598	
vC1, stage 1 conf vol	568					
vC2, stage 2 conf vol	1121					
vCu, unblocked vol	1717	429			464	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)	5.4					
tF (s)	3.5	3.3			2.2	
p0 queue free %	85	64			78	
cM capacity (veh/h)	224	545			955	
Direction, Lane #	WB 1	NB 1	SB 1	SB 2		
Volume Total	229	598	207	707		
Volume Left	33	0	207	0		
Volume Right	196	60	0	0		
cSH	451	1700	955	1700		
Volume to Capacity	0.51	0.35	0.22	0.42		
Queue Length 95th (m)	21.3	0.0	6.3	0.0		
Control Delay (s)	20.9	0.0	9.8	0.0		
Lane LOS	C		A			
Approach Delay (s)	20.9	0.0	2.2			
Approach LOS	C					
Intersection Summary						
Average Delay			3.9			
Intersection Capacity Utilization			62.7%		ICU Level of Service	B
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

3: Poplar S/R & Access 2

2040 Total Conditions

Weekday PM Peak



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	105	885	745	70	80	130
Future Volume (Veh/h)	105	885	745	70	80	130
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)	114	962	810	76	87	141
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		TWLT	TL			
Median storage veh		2	2			
Upstream signal (m)		160				
pX, platoon unblocked					0.53	
vC, conflicting volume	886				2038	848
vC1, stage 1 conf vol					848	
vC2, stage 2 conf vol					1190	
vCu, unblocked vol	886				2518	848
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	85				44	61
cM capacity (veh/h)	764				156	361
Direction, Lane #	EB 1	EB 2	WB 1	SB 1		
Volume Total	114	962	886	228		
Volume Left	114	0	0	87		
Volume Right	0	0	76	141		
cSH	764	1700	1700	240		
Volume to Capacity	0.15	0.57	0.52	0.95		
Queue Length 95th (m)	4.0	0.0	0.0	64.8		
Control Delay (s)	10.5	0.0	0.0	89.5		
Lane LOS	B			F		
Approach Delay (s)	1.1		0.0	89.5		
Approach LOS				F		
Intersection Summary						
Average Delay			9.9			
Intersection Capacity Utilization			71.7%		ICU Level of Service	C
Analysis Period (min)			15			

Appendix L: Future Total Queue Operations

Queues

1: CR 124/Hurontario St & Poplar S/R

2040 Total Conditions

Weekday AM Peak

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	110	587	169	110	564	285	244	320	145	262	267
v/c Ratio	0.40	0.88	0.26	0.45	0.85	0.41	0.58	0.65	0.28	0.75	0.55
Control Delay	15.0	41.4	6.7	16.7	38.0	6.5	24.3	35.0	6.2	34.8	30.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.0	41.4	6.7	16.7	38.0	6.5	24.3	35.0	6.2	34.8	30.3
Queue Length 50th (m)	8.2	83.6	3.4	8.2	78.9	4.7	27.0	47.5	0.0	29.6	35.9
Queue Length 95th (m)	17.1	#140.9	15.0	17.3	#132.3	19.2	41.6	69.9	11.4	#51.5	55.8
Internal Link Dist (m)	204.1				136.4				185.1		123.7
Turn Bay Length (m)	60.0		50.0	65.0		50.0	60.0		60.0	20.0	
Base Capacity (vph)	278	749	717	246	749	754	421	608	614	351	599
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.78	0.24	0.45	0.75	0.38	0.58	0.53	0.24	0.75	0.45

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues

1: CR 124/Hurontario St & Poplar S/R

2040 Total Conditions

Weekday PM Peak

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	86	683	204	151	548	242	172	263	97	285	447
v/c Ratio	0.27	0.92	0.29	0.76	0.70	0.31	0.69	0.61	0.21	0.67	0.88
Control Delay	14.9	49.2	9.8	42.3	31.4	7.0	36.8	43.2	5.1	30.3	55.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.9	49.2	9.8	42.3	31.4	7.0	36.8	43.2	5.1	30.3	55.7
Queue Length 50th (m)	8.7	132.9	10.3	15.9	95.9	7.3	23.3	50.3	0.0	41.6	89.0
Queue Length 95th (m)	16.6	#201.9	25.6	#47.2	136.0	23.2	#41.7	76.9	8.9	63.1	#141.7
Internal Link Dist (m)		204.1			136.4			185.1			123.7
Turn Bay Length (m)	60.0		50.0	65.0		50.0	60.0		60.0	20.0	
Base Capacity (vph)	323	836	780	199	836	814	255	483	499	436	567
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.82	0.26	0.76	0.66	0.30	0.67	0.54	0.19	0.65	0.79

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Appendix M: Drive-Thru Operations

INPUT DATA		McDonalds order board		AM
total inbound peak hour trips	T =	90	vehicles per hour (vph)	
% of trips to use drive-thru	DT =	75%	vehicles per hour (vph)	
arrival rate	λ =	68	vehicles per hour (vph)	
service time	t =	30	seconds	
length of vehicle	L =	6.5	metres	
available queue storage	S =	37	metres	5 vehicles
service rate	μ =	120	vehicles per hour (vph)	
arrival rate ÷ service rate	r =	0.56	note: if r>1, queues will grow indefinitely	

QUEUE CALCULATIONS				
Average vehicles in system (in queue + in service)	$E(n) = \frac{\lambda}{\mu - \lambda} =$	1.3	vehicles	(8.4 metres)
Average vehicles in queue (not including in service)	$E(m) = \frac{\lambda^2}{\mu(\mu - \lambda)} =$	0.7	vehicles	(4.7 metres)
95 th percentile vehicles in system (in queue + in service)	$S^{95} =$	5.0	vehicles	(32.5 metres)
95 th percentile vehicles in queue (not including in service)	$Q^{95} =$	4.0	vehicles	(26 metres)
Average time in system (in queue + in service time)	$E(v) = \frac{1}{\mu - \lambda} =$	69	seconds	(1.1 minutes)
Average time in queue (not including in service time)	$E(n) = \frac{\lambda}{\mu(\mu - \lambda)} =$	39	seconds	(0.6 minutes)

CONCLUSIONS				
There will be 0 vehicles in the overall system (vehicles in service + in queue)		44%	of the time	
The available storage length of	37 metres	will accommodate queues	97%	of the time
The average queue of	1 vehicle	CAN be accommodated given the available storage.		
The 95 th percentile queue of	4 vehicles	CAN be accommodated given the available storage.		

Notes

1. There is only a single service provider.
2. Service is provided on a first come, first serve basis (ie. first-into the queue = first-out of the queue).
3. Vehicle arrivals have a Poisson distribution.
4. Service times are exponentially distributed.
5. Length of vehicle considers bumper to bumper length (ie. vehicle + space between vehicles).
6. 95th percentile queue refers to queue length that will accommodate the queues 95% of the time.

INPUT DATA		McDonalds pmt window		AM
total inbound peak hour trips	T =	90	vehicles per hour (vph)	
% of trips to use drive-thru	DT =	75%	vehicles per hour (vph)	
arrival rate	λ =	68	vehicles per hour (vph)	
service time	t =	20	seconds	
length of vehicle	L =	6.5	metres	
available queue storage	S =	35	metres	5 vehicles
service rate	μ =	180	vehicles per hour (vph)	
arrival rate ÷ service rate	r =	0.38	note: if r>1, queues will grow indefinitely	

QUEUE CALCULATIONS				
Average vehicles in system (in queue + in service)	$E(n) = \frac{\lambda}{\mu - \lambda} =$	0.6	vehicles	(3.9 metres)
Average vehicles in queue (not including in service)	$E(m) = \frac{\lambda^2}{\mu(\mu - \lambda)} =$	0.2	vehicles	(1.5 metres)
95 th percentile vehicles in system (in queue + in service)	$S^{95} =$	3.0	vehicles	(19.5 metres)
95 th percentile vehicles in queue (not including in service)	$Q^{95} =$	2.0	vehicles	(13 metres)
Average time in system (in queue + in service time)	$E(v) = \frac{1}{\mu - \lambda} =$	32	seconds	(0.5 minutes)
Average time in queue (not including in service time)	$E(n) = \frac{\lambda}{\mu(\mu - \lambda)} =$	12	seconds	(0.2 minutes)

CONCLUSIONS				
There will be 0 vehicles in the overall system (vehicles in service + in queue)		62%	of the time	
The available storage length of	35 metres	will accommodate queues	100%	of the time
The average queue of	0 vehicle	CAN be accommodated given the available storage.		
The 95 th percentile queue of	2 vehicles	CAN be accommodated given the available storage.		

Notes

1. There is only a single service provider.
2. Service is provided on a first come, first serve basis (ie. first-into the queue = first-out of the queue).
3. Vehicle arrivals have a Poisson distribution.
4. Service times are exponentially distributed.
5. Length of vehicle considers bumper to bumper length (ie. vehicle + space between vehicles).
6. 95th percentile queue refers to queue length that will accommodate the queues 95% of the time.

INPUT DATA		McDonalds pick-up window		AM
total inbound peak hour trips	T =	90	vehicles per hour (vph)	
% of trips to use drive-thru	DT =	75%	vehicles per hour (vph)	
arrival rate	λ =	68	vehicles per hour (vph)	
service time	t =	30	seconds	
length of vehicle	L =	6.5	metres	
available queue storage	S =	22	metres	3 vehicles
service rate	μ =	120	vehicles per hour (vph)	
arrival rate ÷ service rate	r =	0.56	note: if r>1, queues will grow indefinitely	

QUEUE CALCULATIONS				
Average vehicles in system (in queue + in service)	$E(n) = \frac{\lambda}{\mu - \lambda} =$	1.3	vehicles	(8.4 metres)
Average vehicles in queue (not including in service)	$E(m) = \frac{\lambda^2}{\mu(\mu - \lambda)} =$	0.7	vehicles	(4.7 metres)
95 th percentile vehicles in system (in queue + in service)	$S^{95} =$	5.0	vehicles	(32.5 metres)
95 th percentile vehicles in queue (not including in service)	$Q^{95} =$	4.0	vehicles	(26 metres)
Average time in system (in queue + in service time)	$E(v) = \frac{1}{\mu - \lambda} =$	69	seconds	(1.1 minutes)
Average time in queue (not including in service time)	$E(n) = \frac{\lambda}{\mu(\mu - \lambda)} =$	39	seconds	(0.6 minutes)

CONCLUSIONS				
There will be 0 vehicles in the overall system (vehicles in service + in queue)		44%	of the time	
The available storage length of	22 metres	will accommodate queues	90%	of the time
The average queue of	1 vehicle	CAN be accommodated given the available storage.		
The 95 th percentile queue of	4 vehicles	CANNOT be accommodated given the available storage.		

Notes

1. There is only a single service provider.
2. Service is provided on a first come, first serve basis (ie. first-into the queue = first-out of the queue).
3. Vehicle arrivals have a Poisson distribution.
4. Service times are exponentially distributed.
5. Length of vehicle considers bumper to bumper length (ie. vehicle + space between vehicles).
6. 95th percentile queue refers to queue length that will accommodate the queues 95% of the time.

INPUT DATA		Starbucks order board		AM
total inbound peak hour trips	T =	74	vehicles per hour (vph)	
% of trips to use drive-thru	DT =	90%	vehicles per hour (vph)	
arrival rate	λ =	67	vehicles per hour (vph)	
service time	t =	30	seconds	
length of vehicle	L =	6.5	metres	
available queue storage	S =	78	metres	12 vehicles
service rate	μ =	120	vehicles per hour (vph)	
arrival rate ÷ service rate	r =	0.56	note: if r>1, queues will grow indefinitely	

QUEUE CALCULATIONS				
Average vehicles in system (in queue + in service)	$E(n) = \frac{\lambda}{\mu - \lambda} =$	1.2	vehicles	(8.1 metres)
Average vehicles in queue (not including in service)	$E(m) = \frac{\lambda^2}{\mu(\mu - \lambda)} =$	0.7	vehicles	(4.5 metres)
95 th percentile vehicles in system (in queue + in service)	$S^{95} =$	5.0	vehicles	(32.5 metres)
95 th percentile vehicles in queue (not including in service)	$Q^{95} =$	4.0	vehicles	(26 metres)
Average time in system (in queue + in service time)	$E(v) = \frac{1}{\mu - \lambda} =$	67	seconds	(1.1 minutes)
Average time in queue (not including in service time)	$E(n) = \frac{\lambda}{\mu(\mu - \lambda)} =$	37	seconds	(0.6 minutes)

CONCLUSIONS				
There will be 0 vehicles in the overall system (vehicles in service + in queue)		44%	of the time	
The available storage length of	78 metres	will accommodate queues	100%	of the time
The average queue of	1 vehicle	CAN be accommodated given the available storage.		
The 95 th percentile queue of	4 vehicles	CAN be accommodated given the available storage.		

Notes

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6. 95th percentile queue refers to queue length that will accommodate the queues 95% of the time.

INPUT DATA		Starbucks pmt/pick-up window		AM
total inbound peak hour trips	T =	74	vehicles per hour (vph)	
% of trips to use drive-thru	DT =	90%	vehicles per hour (vph)	
arrival rate	λ =	67	vehicles per hour (vph)	
service time	t =	30	seconds	
length of vehicle	L =	6.5	metres	
available queue storage	S =	78	metres	12 vehicles
service rate	μ =	120	vehicles per hour (vph)	
arrival rate ÷ service rate	r =	0.56	note: if r>1, queues will grow indefinitely	

QUEUE CALCULATIONS				
Average vehicles in system (in queue + in service)	$E(n) = \frac{\lambda}{\mu - \lambda} =$	1.2	vehicles	(8.1 metres)
Average vehicles in queue (not including in service)	$E(m) = \frac{\lambda^2}{\mu(\mu - \lambda)} =$	0.7	vehicles	(4.5 metres)
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95 th percentile vehicles in queue (not including in service)	$Q^{95} =$	4.0	vehicles	(26 metres)
Average time in system (in queue + in service time)	$E(v) = \frac{1}{\mu - \lambda} =$	67	seconds	(1.1 minutes)
Average time in queue (not including in service time)	$E(n) = \frac{\lambda}{\mu(\mu - \lambda)} =$	37	seconds	(0.6 minutes)

CONCLUSIONS				
There will be 0 vehicles in the overall system (vehicles in service + in queue)		44%	of the time	
The available storage length of	78 metres	will accommodate queues	100%	of the time
The average queue of	1 vehicle	CAN be accommodated given the available storage.		
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