Elm Street Development - City of Port Colborne, Traffic Impact & Parking Study

Paradigm Transportation Solutions Limited

November 2024
240031

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Project Summary

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Client:

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Elm Street Development, City of Port Colborne, Transportation Impact & Parking Study

Adrian Soo, P.Eng.

Disclaimer

Executive Summary

Content

Paradigm Transportation Solutions Limited (Paradigm) was retained to conduct this Transportation Impact Study (TIS) and Parking Study for a proposed residential development in the City of Port Colborne.

Official Plan Amendment, Zoning By-law Amendment, and Draft Plan of Subdivision applications are necessary to enable the proposed development. Additionally, future applications for Draft Plan of Condominium are likely needed to facilitate the development of the duplex, townhouse, and apartment blocks.

This study determines the impacts of the development traffic on the surrounding road network and identifies recommended improvements, if necessary, to accommodate the site generated traffic.

Development Concept

The subject lands are generally located south of Barrick Road between Elm Street and Steele Street in the City of Port Colborne.

The property owner is proposing to develop the currently vacant lands to construct approximately 361 residential units of various dwelling types. The concept plan includes:

- 20 single-family homes;
- 6 semi-detached units;
- 28 stacked duplex townhouse units;
- 4 stacked duplex semi-detached units;
- 66 stacked triplex townhouse units;
- 37 free-hold townhouse units; and
- 200 mid-rise apartment units.

Within the mid-rise building 403 m² (4,338 sq.ft.) of commercial/retail space is proposed.

Build-out is anticipated to occur by Year 2027, noting timing and final design is subject to change and market conditions.

Vehicle access is proposed by new municipal roadways to Elm Street, Steele Street, and Elmvale Crescent, as well as a private driveway to Barrick Road.

Conclusions

The main findings and conclusions of this study are as follows:

- **Study Area:** The intersections assessed in this study include:
  - Barrick Road & Highway 58 (West Side Road) (unsignalized);
  - Barrick Road & Elm Street (unsignalized);
  - Barrick Road & Steele Street (unsignalized);
  - Northland Avenue & Steele Street (unsignalized); and
  - The proposed municipal roadways to Elm Street, Steele Street, and Elmvale Crescent, as well as a private driveway to Barrick Road.
- **Existing Traffic Conditions:** The study area intersections are operating at acceptable levels of service and within capacity during the AM and PM peak hours.
- **Trip Generation:** The site's vehicular trip generation is estimated to be a total of 178 AM peak hour trips and 224 PM peak hour trips.
- **Background Traffic Conditions:** The study area intersections are forecast to continue to operate at acceptable levels of service and within capacity during the AM and PM peak hours.
- **Total Traffic Conditions:** With the addition of site generated traffic, several critical movements have been identified. During the PM peak hour, the eastbound and westbound approaches on the minor road approaches at the Barrick Road and West Side Road (Highway 58) intersection are characterized by LOS D and E, respectively. It is noted that both approaches operate well within capacity and that this is not an unusual condition where a minor road operating under stop control intersects with a major road.

  The site connection approaches to Barrick Road, Elmvale Crescent, Steele Street, and Elm Street are all forecast to operate at acceptable levels of service and movements within capacity.
- **Remedial Measures:** From an operational perspective, no major delay or capacity issues are identified. Regardless, existing forms of traffic control and the need for auxiliary turn lanes were reviewed.

  Traffic control signals are not warranted at the intersection of Barrick Road and Highway 58 (West Side Road).

Left-turn lanes at the proposed municipal street connections to Elmvale Crescent, Steele Street and Elm Street are not warranted.

Implementing left-turn lanes on Barrick Road at the Highway 58 (West Side Road) intersection is expected to reduce delays in the eastbound and westbound approaches under the five-year future horizon. Critical movements are still projected to be present in the left-turn lanes due to high traffic volumes along Highway 58 (West Side Road). Aforementioned, while the minor road approaches are characterized by LOS D/E, the approaches operate within capacity, and this is not an unusual condition where a minor road operating under stop control intersects with a major road.

The site driveway to Barrick Road is positioned and results with a corner clearance less than the spacing outlined in the TAC guide for driveways to a collector road.

The driveway's position may result in operational issues due to its proximity to the Barrick Road and Elm Street intersection. The driveway connection to Barrick Road should be closed to regular traffic and instead be designed as an emergency access only connection with gates and/or bollards.

The proposed removal of the site driveway aims to mitigate the impact of queues at the Barrick Road at Elm Street intersection and improve driveway accessibility. A sensitivity analysis examining the five-year total traffic conditions indicated minimal to no impact on forecast traffic operations, with delays nearly identical to the current proposed layout.

- **Neighbourhood Traffic Calming:** The roadways within the subdivision are designed with traffic calming features to promote reduced vehicular speeds, discourage infiltrating through traffic, minimize conflicts between road users, promote pedestrianization, and improve the overall neighbourhood environment/realm.

Recommendations

Based on the findings of this study, the following is recommended:

- The applicable road authorities monitor traffic volumes at the Barrick Road and Highway 58 (West Side Road) intersection to determine whether left-turn lanes are to be implemented on the side street approaches.
- The site driveway connection to Barrick Road be designed as an inbound emergency access only connection.

- Traffic calming features as outlined in Section 6.1 be considered for implemented into the site plan.

Contents

Appendices

Figures

Tables

1 Introduction

1000427593 Ontario Inc. retained Paradigm Transportation Solutions Limited (Paradigm) to conduct this Transportation Impact Study (TIS) and Parking Study for a proposed residential Draft Plan of Subdivision located generally south of Barrick Road between Elm Street and Steele Street, at PIN 641410386 and PIN 641410393 in the City of Port Colborne. Together, these parcels form the area designated for the proposed development and represent the "subject lands. **Figure 1.1** illustrates the site location.

Official Plan Amendment, Zoning By-law Amendment, and Draft Plan of Subdivision applications are necessary to enable the proposed development. Additionally, future applications for Draft Plan of Condominium are likely needed to facilitate the development of the duplex, townhouse, and apartment blocks.

The scope of the study includes:

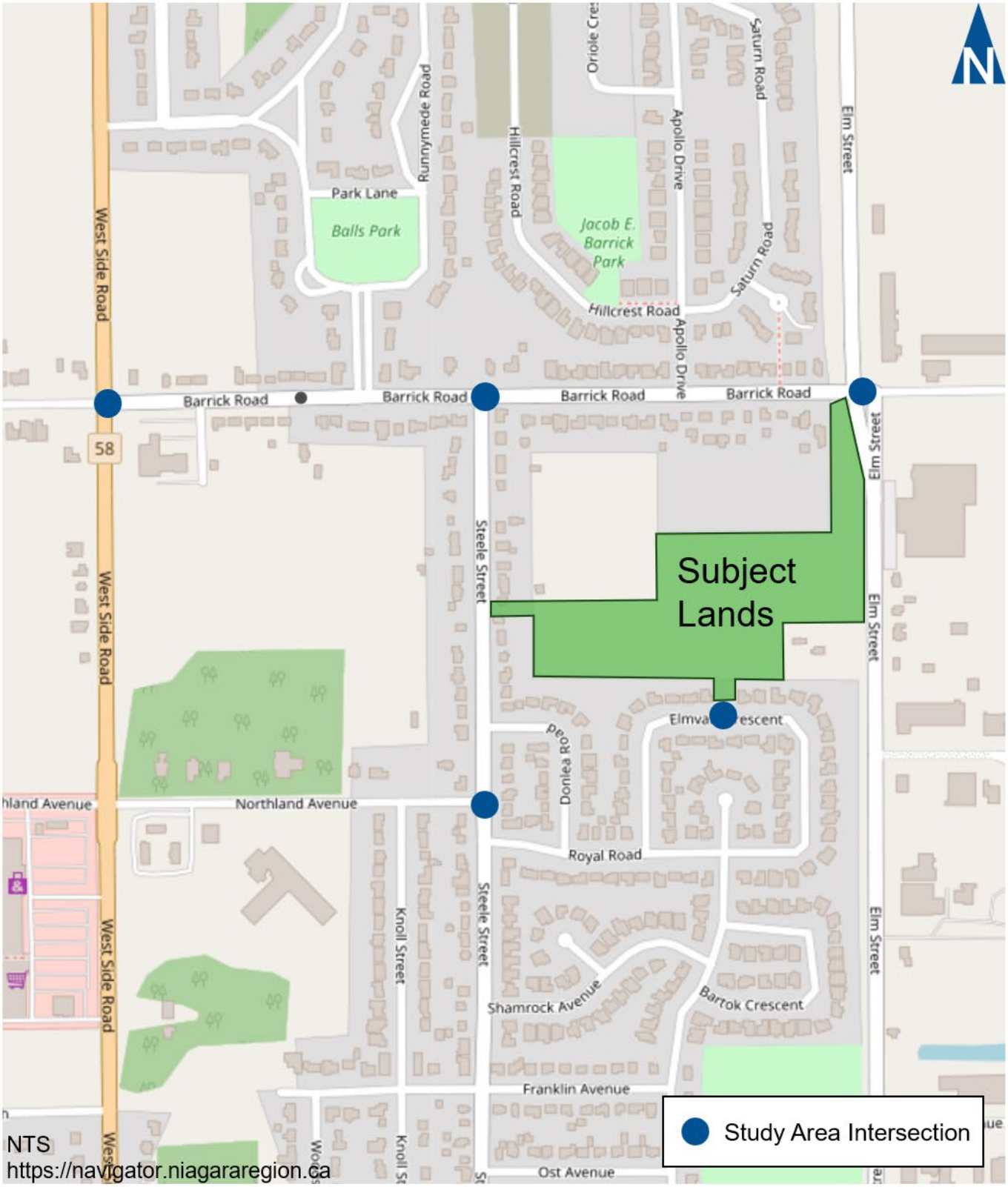
- Assessment of the current traffic conditions within the study area;
- Estimates of background traffic growth and site traffic contributions from in-stream or approved other area developments;
- Estimates of additional traffic generated by the subject lands;
- Analyses of the future traffic on the surrounding road network to determine the associated impact;
- Recommendations for improvements to mitigate any identified future traffic issues in a satisfactory manner;
- A review of the proposed parking provisions to confirm adequacy in serving the site, including a forecast of the site's anticipated parking demand; and
- Identify application traffic calming opportunities based on the design layout of the subject lands.

Pre-study consultation was conducted with the City of Port Colborne in April 2024. **Appendix A** contains the pre-study consultation correspondence.

The intersections assessed in this study include:

- Barrick Road & Highway 58 (West Side Road) (unsignalized);
- Barrick Road & Elm Street (unsignalized);

- Barrick Road & Steele Street (unsignalized);
- Northland Avenue & Steele Street (unsignalized); and
- The proposed municipal roadways to Elm Street, Steele Street, and Elmvale Crescent, as well as a private inbound only driveway from Barrick Road.



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Subject Lands Location

Elm Street Development, Port Colborne
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Figure 1.1

2 Existing Conditions

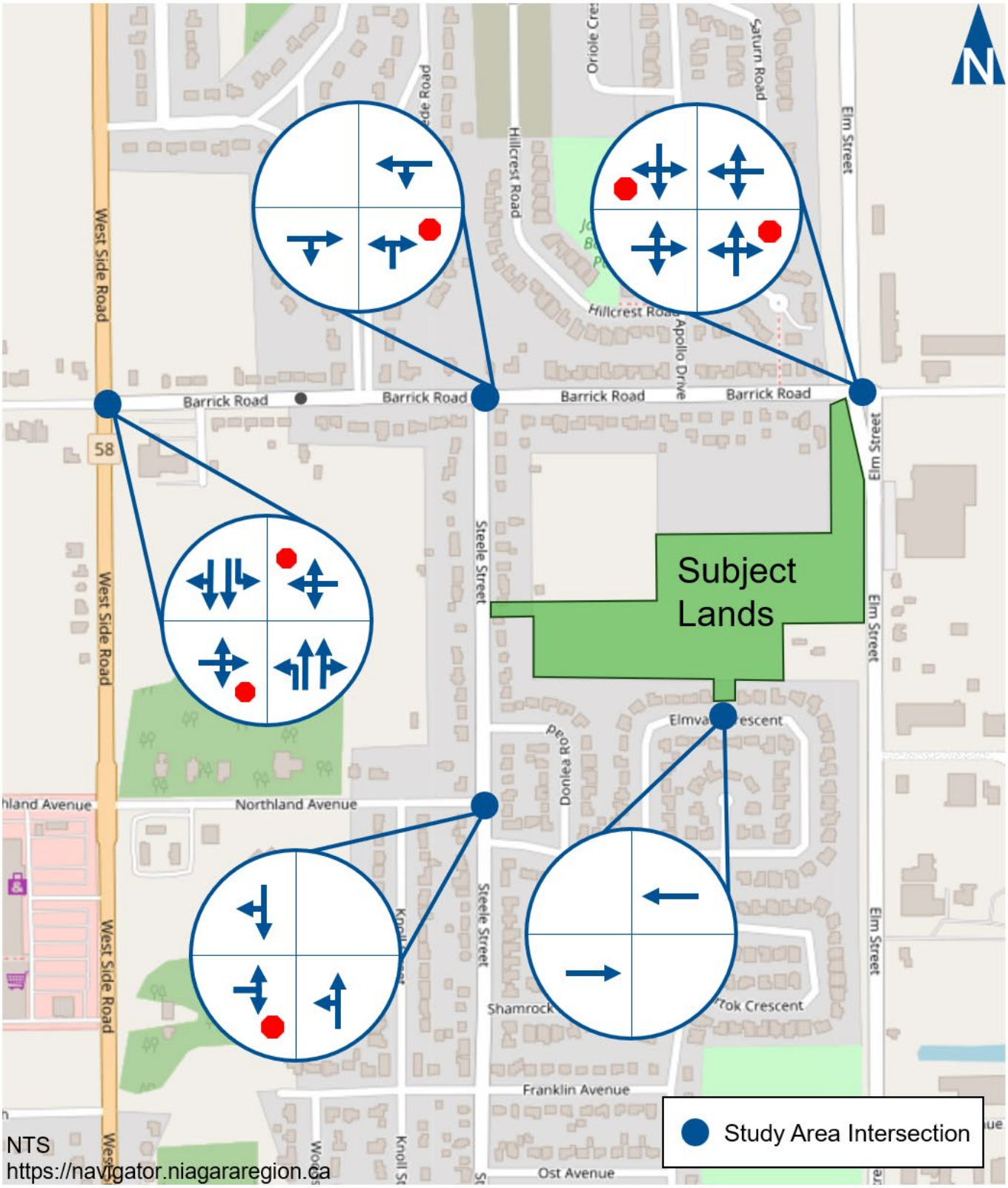
2.1 Roadway

The roadways of interest within the study area include:

- **Barrick Road** is an east-west collector roadway[1] with a two-lane cross-section and a posted speed limit of 50 km/h. Sidewalks are present on the north side of the road, between Hawthorne Boulevard and Elm Street. There are no dedicated cycling facilities along this roadway within the study area.
- **Highway 58 (West Side Road)** is a north-south provincial highway with a five-lane cross section with a posted speed limit of 70 km/h within the study area. The speed limit increases to 80 km/h north of Barrick Road and the road cross-section transitions to two lanes. There are no dedicated cycling facilities along this roadway within the study area. An asphalt curb faced walkway is provided along the east side of the roadway south of Barrick Road.
- **Steele Street** is a north-south collector roadway with a two-lane cross-section and a posted speed limit of 40 km/h. Sidewalk is present on the west side of the road between Barrick Road and Donlea Drive. Sidewalk is provided on the east side of the roadway from south of the Donlea Drive intersection. There are no dedicated cycling facilities along this roadway within the study area.
- **Northland Avenue** is an east-west collector roadway with a two-lane cross-section and an assumed statutory speed limit of 50 km/h. There are no dedicated pedestrian and cycling facilities present along this roadway within this study area. The exception would a short discontinuous piece of sidewalk on the south side of the roadway, east of Highway 58 (West Side Road).
- **Elm Street** is a north-south arterial road with a two-lane cross section and a posted speed limit of 60 km/h. There are no dedicated cycling or pedestrian facilities along this roadway within the study area.

Figure 2.1 illustrates the existing lane configurations and traffic control at the study area intersections.

[1] City of Port Colborne – Official Plan Schedule D: Transportation, August 2012



Existing Lane Configuration and Traffic Control

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Figure 2.1

2.2 Transit

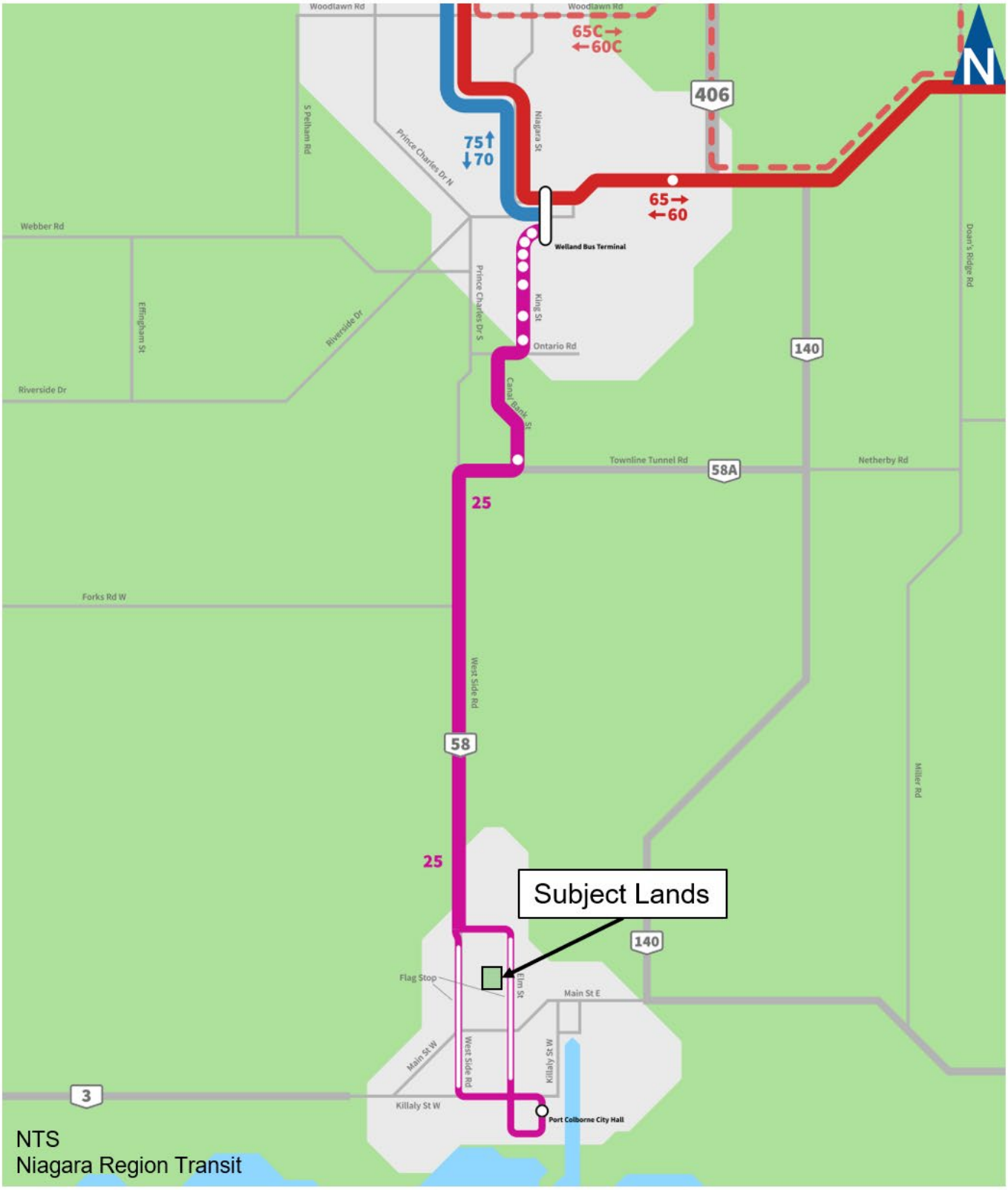
Transit service in the City of Port Colborne is provided by the Niagara Region Transit (NRT) OnDemand rideshare service, as well as the Port Colborne Link provided by Welland Transit.

The NRT OnDemand service allows for residents of Port Colborne to book a ride by selecting a pick-up and drop-off location within the service zone between the times of 7:00 AM to 10:00 PM, Monday to Saturday.

Figure 2.2 illustrates the Port Colborne Link transit network.

Route 25 (Port Colborne Link) provides service between Port Colborne City Hall and the Welland Terminal. Service is provided Monday to Saturday from approximately 6:30 AM to 10:30 PM with headways of 60-minutes.

The closest bus stops are located at the northeast corner of Barrick Road at Apollo Drive, and the southeast corner of Elm Street at Prosperity drive.



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Existing Transit Network

Elm Street Development, Port Colborne
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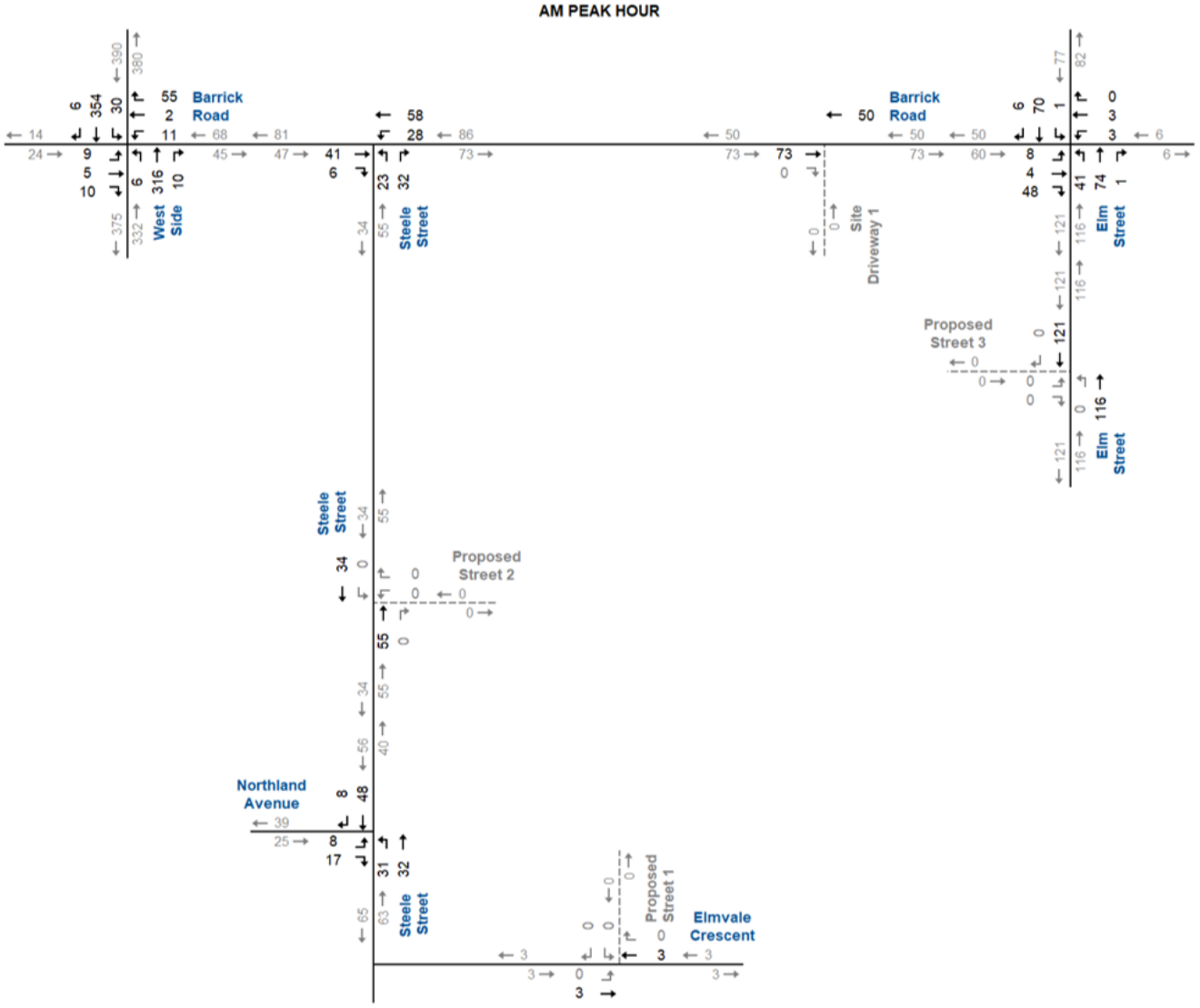
Figure 2.2

2.3 Traffic Volumes

Paradigm collected intersection Turning Movement Count (TMC) data at the study area intersections in August 2023, March 2024, and May 2024.

A growth rate of 1% per annum has been applied to the 2023 count data for the intersections of Barrick Road with Elm Street and Highway 58 (West Side Road) to developed estimated 2024 base year conditions. **Appendix B** contains the existing count data.

Figure 2.3 illustrates the existing AM and PM peak hour traffic volumes



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Existing Year Traffic Volumes – AM Peak Hour

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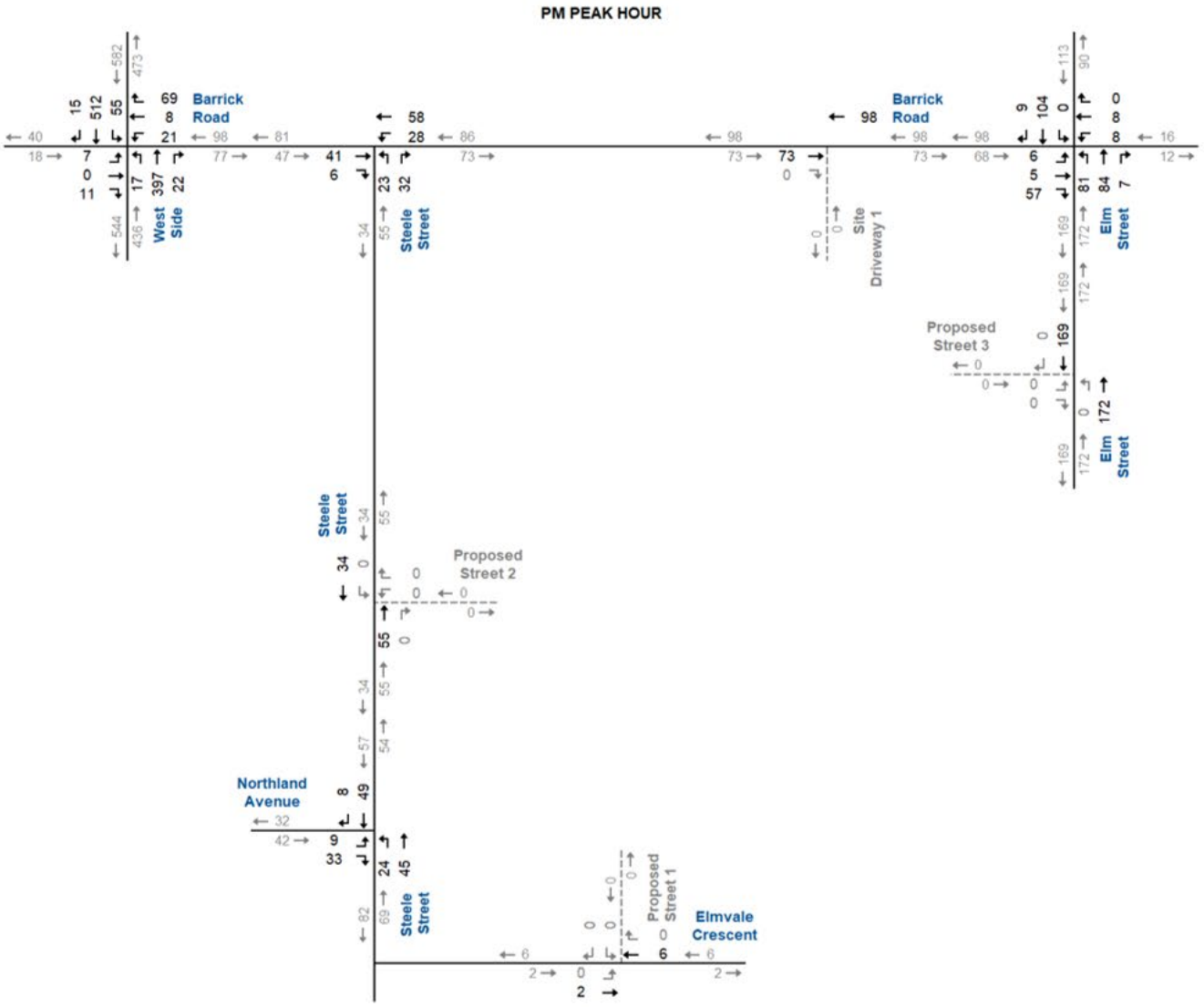
Figure 2.3A



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Existing Year Traffic Volumes – PM Peak Hour

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Figure 2.3B

2.4 Traffic Operations

Intersection level of service (LOS) is a recognized method of quantifying the efficiency of traffic flow at intersections. It is based on the delay experienced by individual vehicles executing the various movements. The delay is related to the number of vehicles desiring to make a movement, compared to the estimated capacity for that movement. The capacity is based on several criteria related to the opposing traffic flows. The highest possible rating is LOS A, under which the average total delay is equal or less than 10.0 seconds per vehicle. When the average delay exceeds 80 seconds at signalized intersections (50 seconds at unsignalized), the movement is considered to have a LOS F and remedial measures are usually implemented if they are feasible.

The operations of the study area intersections were evaluated under existing traffic volumes using Synchro 11 and Highway Capacity Manual (HCM) 2000 procedures. The intersection analysis considered the following measures of performance:

- The LOS for each turning movement. LOS is based on the average control delay per vehicle;
- The volume to capacity ratio (v/c) for each intersection; and
- 95th percentile queue length (metres) using Synchro.

Under Niagara Region's TIS Guidelines[2], the following criteria indicate critical conditions and signify that mitigation measures may need to be considered:

- At signalized intersections,
  - Movements increased to v/c 0.85 or above; and
  - Movements increased to a LOS "E" or worse.
- At unsignalized intersections,
  - LOS, based on average delay per vehicle, on individual movements is expected to operate at a LOS "D" or worse.
- At all intersections,
  - An exclusive turning movement in which the 95th percentile queue will exceed the available storage space.

[2] Niagara Region, *Guidelines for Traffic Impact Studies,* May 2012

- Exclusive left- and right turn lanes that are inaccessible due to the length of queues in the adjacent through lanes.

Table 2.1 summarizes the existing level of service conditions. The study area intersections are currently operating with acceptable levels of service and all movements are within capacity during the AM and PM peak hours. All intersections operate at movements operating at LOS B or better, and with reported 95th percentile queues of less than one vehicle.

Appendix C contains the detailed Synchro reports.

TABLE 2.1: EXISTING INTERSECTION OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach															
				Eastbound				Westbound				Northbound				Southbound			
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach
AM Peak Hour	West Side Road & Barrick Road	TWSC	LOS	<	B	>	**B**	<	B	>	**B**	A	A	>	**A**	A	A	>	**A**
			Delay	<	11	>	**11**	<	10	>	**10**	8	0	>	**0**	8	0	>	**1**
			V/C	<	0.04	>		<	0.10	>		0.01	0.13	>		0.03	0.15	>	
			Q	<	1	>		<	3	>		0	0	>		1	0	>	
			Stor.	<	-	>		<	-	>		30	-	>		110	-	>	
			Avail.	<	-	>		<	-	>		30	-	>		109	-	>	
	Steele Street & Barrick Road	TWSC	LOS		A	>	**A**	<	A		**A**	A		>	**A**				
			Delay		0	>	**0**	<	2		**2**	9		>	**9**				
			V/C		0.03	>		<	0.02			0.07		>					
			Q		0	>		<	1			2		>					
	Elm Street & Barrick Road	TWSC	LOS	<	A	>	**A**	<	B	>	**B**	<	A	>	**A**	<	A	>	**A**
			Delay	<	9	>	**9**	<	11	>	**11**	<	3	>	**3**	<	0	>	**0**
			V/C	<	0.08	>		<	0.01	>		<	0.03	>		<	0.00	>	
			Q	<	2	>		<	0	>		<	1	>		<	0	>	
	Steele Street & Northland Ave	TWSC	LOS	A		>	**A**					<	A		**A**		A	>	**A**
			Delay	9		>	**9**					<	4		**4**		0	>	**0**
			V/C	0.03		>						<	0.02				0.04	>	
			Q	1		>						<	1				0	>	
PM Peak Hour	West Side Road & Barrick Road	TWSC	LOS	<	B	>	**B**	<	B	>	**B**	A	A	>	**A**	A	A	>	**A**
			Delay	<	12	>	**12**	<	12	>	**12**	9	0	>	**0**	8	0	>	**1**
			V/C	<	0.04	>		<	0.17	>		0.02	0.16	>		0.05	0.21	>	
			Q	<	1	>		<	5	>		0	0	>		1	0	>	
			Stor.	<	-	>		<	-	>		30	-	>		110	-	>	
			Avail.	<	-	>		<	-	>		30	-	>		109	-	>	
	Steele Street & Barrick Road	TWSC	LOS		A	>	**A**	<	A		**A**	A		>	**A**				
			Delay		0	>	**0**	<	2		**2**	9		>	**9**				
			V/C		0.03	>		<	0.02			0.07		>					
			Q		0	>		<	1			2		>					
	Elm Street & Barrick Road	TWSC	LOS	<	A	>	**A**	<	B	>	**B**	<	A	>	**A**	<	A	>	**A**
			Delay	<	10	>	**10**	<	13	>	**13**	<	4	>	**4**	<	0	>	**0**
			V/C	<	0.10	>		<	0.04	>		<	0.07	>		<	0.00	>	
			Q	<	3	>		<	1	>		<	2	>		<	0	>	
	Steele Street & Northland Ave	TWSC	LOS	A		>	**A**					<	A		**A**		A	>	**A**
			Delay	9		>	**9**					<	3		**3**		0	>	**0**
			V/C	0.05		>						<	0.02				0.04	>	
			Q	1		>						<	0				0	>	

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds
V/C - Volume to Capacity Ratio
Q - 95th Percentile Queue Length (m)
Stor. - Existing Storage (m)
Avail. - Available Storage (m)
TWSC - Two-Way Stop Control
< / > - Shared with through movement

3 Development Concept

3.1 Development Description

The subject lands are generally located south of Barrick Road between Elm Street and Steele Street in the City of Port Colborne. **Figure 3.1** illustrates the development concept plan.

The development concept includes approximately 361 residential units of various dwelling types. The concept plan includes:

- 20 single-family homes;
- 6 semi-detached units;
- 28 stacked duplex townhouse units;
- 4 stacked duplex semi-detached units;
- 66 stacked triplex townhouse units;
- 37 free-hold townhouse units; and
- 200 mid-rise apartment units.

Within the mid-rise building 403 m² (4,338 sq.ft.) of commercial/retail space is proposed.

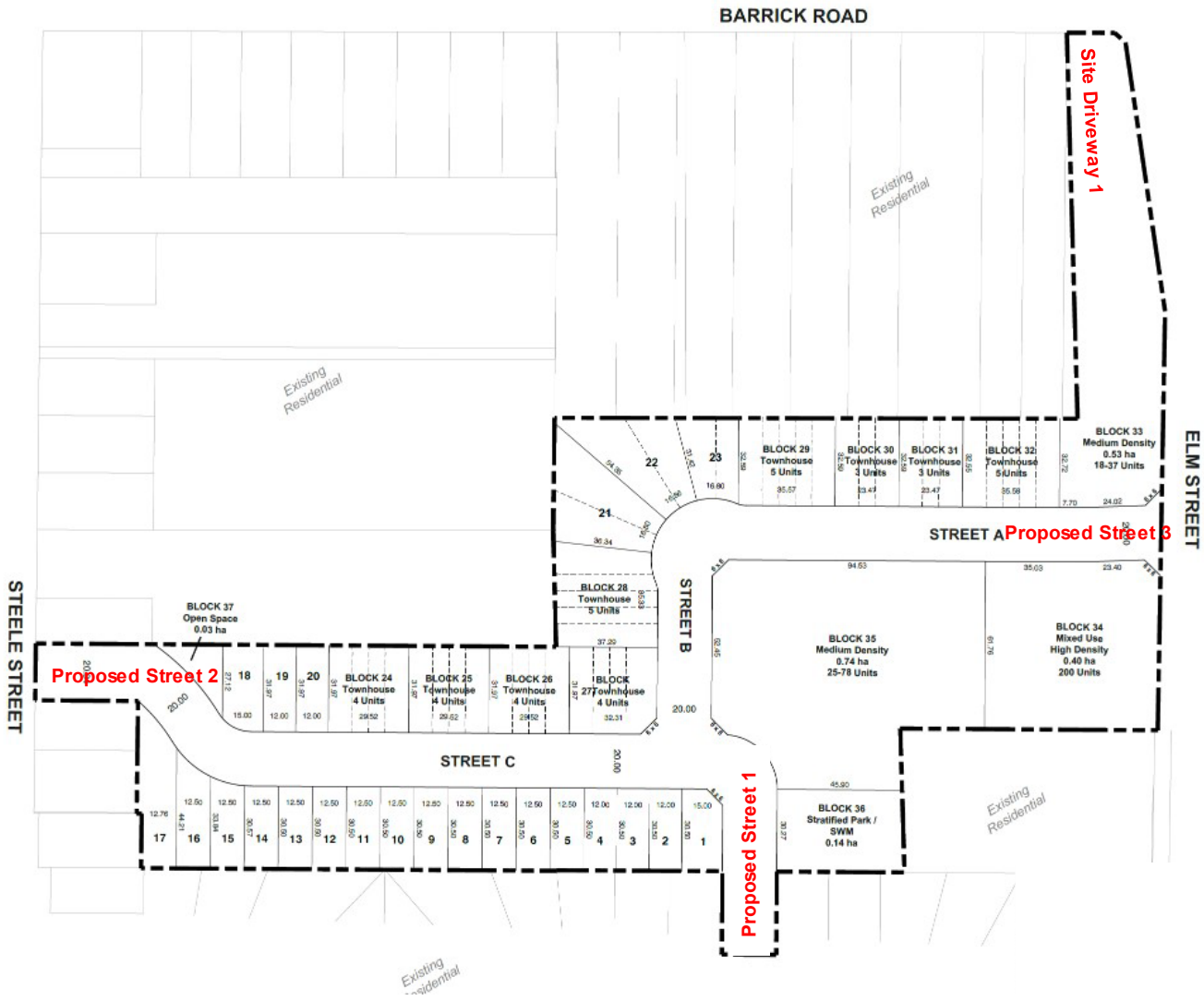
Build-out is anticipated to occur by Year 2027, with timing subject to change and market conditions.

Vehicle access is proposed by new municipal roadways to Elm Street, Steele Street, and Elmvale Crescent, as well as a private driveway connection to Barrick Road that will support right-in movement.

The proposed roadway connection to Elmvale Crescent is positioned between 41 and 35 Elmvale Crescent. The proposed roadway connection to Steele Street is positioned between 1023 and 1031 Steele Street. The proposed roadway to Elm Street aligns with the existing southern driveway for 993 Elm Street.

The private driveway connection with Barrick Road as proposed will have a corner clearance of approximately 15 meters from Elm Street. It is currently contemplated as an inbound access only.

All municipal roadway connections will function as unsignalized intersections, with stop signs installed on the minor roadway approaches.



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Concept Plan

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Figure 3.1

3.2 Trip Generation

The Institute of Transportation Engineers (ITE) Trip Generation Manual[3] data was referenced to estimate site-generated vehicular trips.

Land Use Codes (LUC) 210 (Single-Family Detached Housing), 215 (Single-Family Attached Housing), LUC 221 (Multifamily Housing (Mid-Rise)), and LUC 822 (Strip Retail Plaza (<40k)) were used to estimate the site trip generation.

Table 3.1 summarizes the forecast site-generated trips. The site's trip generation is estimated to be approximately 178 AM peak hour trips and 224 PM peak hour trips. To remain conservative, no reductions accounting for alternative modes of transportation (i.e., transit and active transportation) have been applied.

TABLE 3.1: ESTIMATED TRIP GENERATION

ITE Land Use Code / Number of Units	AM Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total
210 - Single-Family Detached Housing - 20 Units	4	13	**17**	14	8	**22**
215 - Single-Family Attached Housing - 141 Units	17	51	**68**	48	33	**81**
221 - Multifamily Housing (Mid-Rise) - 200 units	17	59	**76**	47	31	**78**
822 - Strip Retail Plaza (<40k) – 4,338 sq.ft	10	7	**17**	22	21	**43**
Total Generation	**48**	**130**	**178**	**131**	**93**	**224**

LUC 210 Eqn Per Unit AM Ln(T) = 0.91 Ln(X) + 0.12 | PM Ln(T) = 0.94 Ln(X) + 0.27
LUC 215 Eqn Per Unit AM T = 0.52(X) - 5.70 | PM T = 0.60(X) - 3.93
LUC 221 Eqn Per Unit AM T = 0.44(X) - 11.61 | PM T = 0.39(X) + 0.34
LUC 822 Eqn Per 1,000 sq.ft AM Ln(T) = 0.66 Ln(X) + 1.84 | PM Ln(T) = 0.71 Ln(X) + 2.72

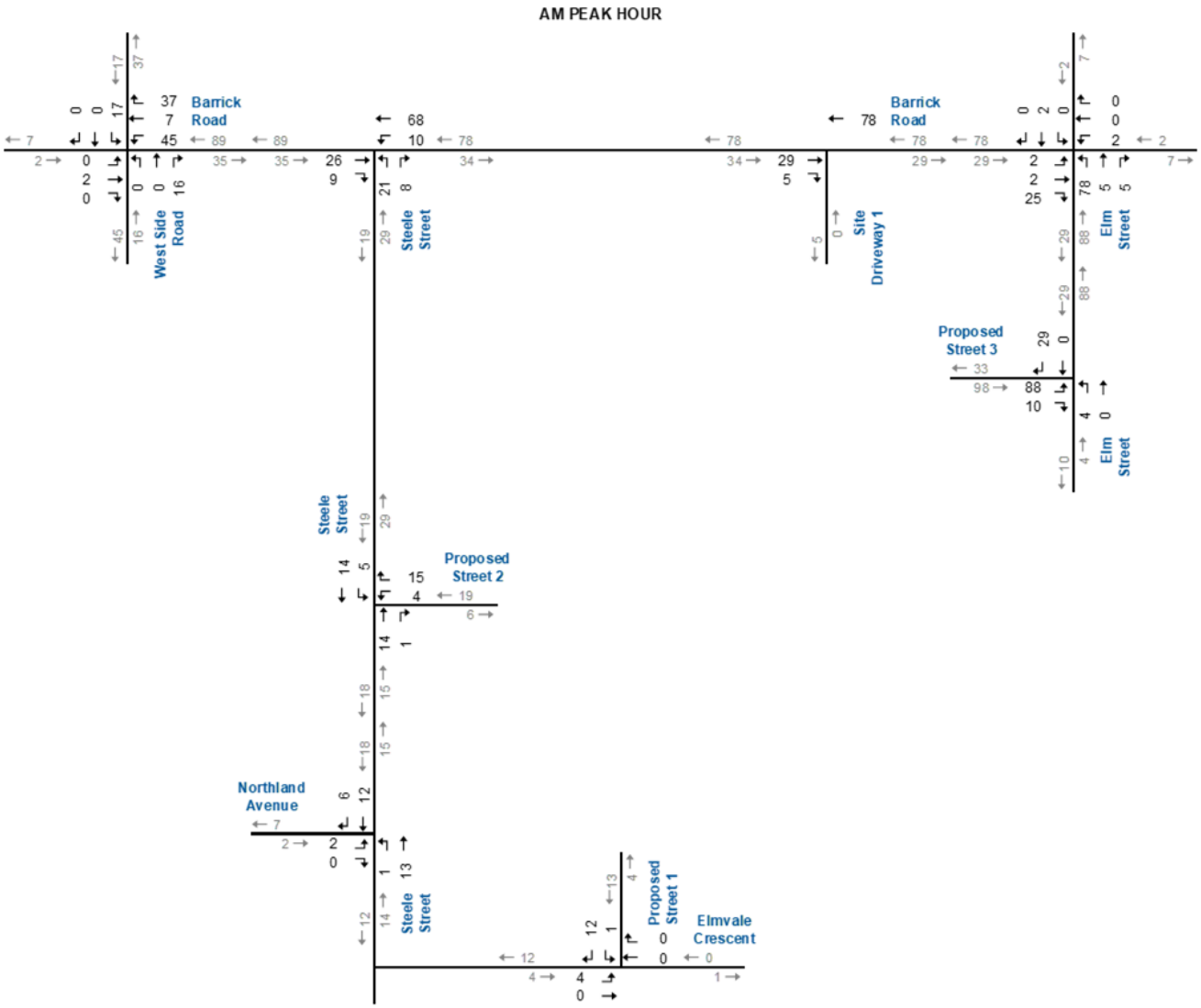
[3] Institute of Transportation Engineers, *Trip Generation Manual,* 11th ed., (Washington DC: ITE, 2021).

The site's trip distribution follows existing travel patterns observed from the collected traffic data as the surrounding area is primarily residential and would be reflective of commuter travel.

Table 3.2 summarizes the estimated trip distribution. **Figure 3.2** illustrates the site-generated traffic estimates assigned to the transportation network.

TABLE 3.2: ESTIMATED TRIP DISTRIBUTION

Origin/Destination	AM Peak Hour		PM Peak Hour	
	In	Out	In	Out
North via Elm Street	5%	5%	5%	5%
North via West Side Road	35%	30%	35%	30%
South via Elm Street	10%	10%	10%	10%
South via West Side Road	30%	35%	30%	35%
South via Steele Street	5%	5%	5%	5%
East via Barrick Road	5%	5%	5%	5%
West via Barrick Road	5%	5%	5%	5%
West via Northland Avenue	5%	5%	5%	5%
Total	**100%**	**100%**	**100%**	**100%**



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Forecast Site Generated Traffic – AM Peak Hour

Elm Street Development, Port Colborne
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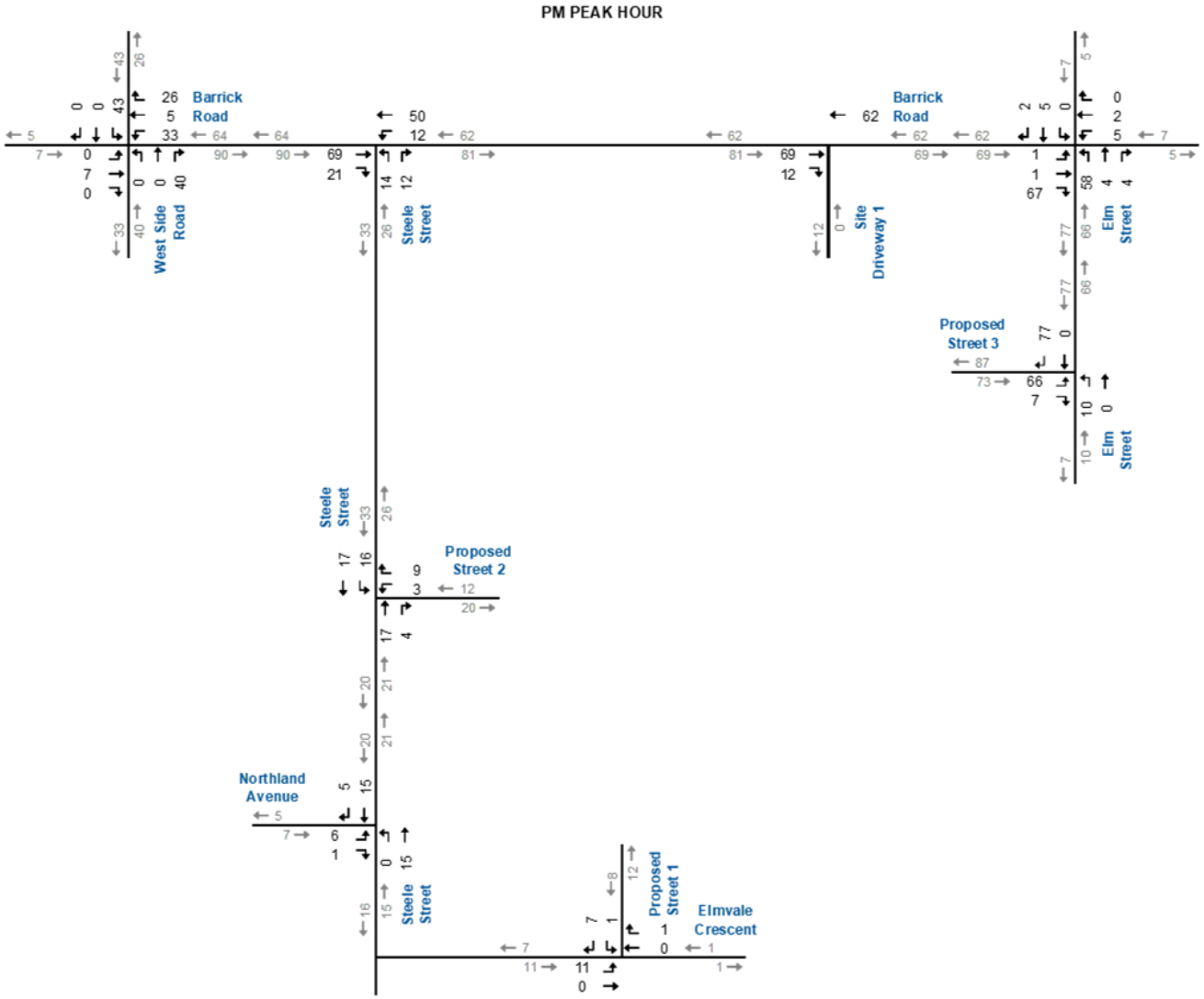
Figure 3.2A



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Forecast Site Generated Traffic – PM Peak Hour

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Figure 3.2B

3.3 Parking

Zoning By-Law 6575/30/18[4] is the current in-force By-law for the City of Port Colborne. The minimum parking requirements for townhouse and single-family homes are both 1.00 space per unit. Whereas apartment units have a minimum parking requirement of 1.25 spaces per unit, and commercial/retail stores require a minimum of 1.00 space per 20 m^2 GFA.

Table 3.3 summarizes the site's zoning by-law parking requirements. The site's parking supply is expected to comply with the City's zoning requirements.

TABLE 3.3: PARKING REQUIREMENTS

Land Use Number of Units	Rate	By-Law Requirement
Single Family Homes - 20 Units	1.00 per unit	20 spaces
Semi-detached Dwellings - 6 Units	1.00 per unit	6 spaces
Duplex Townhouses - 28 Units	1.00 per unit	28 Spaces
Duplex Semi - 4 Units	1.00 per unit	4 Spaces
Stacked Triplex Townhouses - 66 Units	1.00 per unit	66 Spaces
Free-hold Townhouses - 37 Units	1.00 per unit	37 Spaces
Mid-rise Residential - 200 Units	1.25 per unit	250 spaces
Commercial Unit - 403 m^2	1.00 Space per 20 m^2 GFA	20 spaces
Municipal Requirement		**431 Spaces**

[4] City of Port Colborne, Comprehensive Zoning By-Law 6575/30/18, Apr-2018

4 Future Conditions

The assessment of future conditions in this section includes the following components:

- Background traffic forecast;
- Total traffic forecast;
- Level of service analysis for background traffic (pre-development); and
- Level of service analysis for total traffic (post-development).

The Year 2032 horizon year is assessed in this study, representing a period of five-years from the anticipated opening date in Year 2027.

4.1 Forecast Traffic Volumes

Future traffic volumes near the subject lands are estimated to consist of:

- Site-traffic contributions generated by the following other area background developments:
  - **Northland Estates**[5] – Estimated to consist of 125 single family homes, 50 townhouse units, and 50 mid-rise apartment units with ground floor commercial space. The site is located on the south-west corner of the Barrick Road and Highway 58 (West Side Road) intersection;
  - **135 Coronation Drive** – Estimated to consist of 114 townhouse units. The site is located on the north-west corner of the Barrick Road and Coronation Drive intersection;
  - **250 West Side Road**[6]- Estimated to consist of 75 mid-rise apartment units. The site is located at the south-east corner of the Barrick Road and Coronation Drive intersection;
  - **Barrick Road and West Side Road** (East Development) [7] – Estimated to consist of 39 standard townhouse units, 40 back-to-back townhouse units, and a 6-storey apartment building consisting of 100 residential units. Site is located on

[5] R.V. Anderson Associates Limited, *Northland Estates Residential Development,* July 2022
[6] Paradigm Transportation Solutions Limited. *250 West Side Road Transportation Impact Study Update,* October 2018
[7] Paradigm Transportation Solutions Limited. *Barrick Road & Highway 58 Transportation Impact & Parking Study,* September 2023

the north-east corner the Barrick Road and Highway 58 intersection;

- **Barrick Road and West Side Road West** (West Development) – Estimated to consist of 53 single family homes, 98 townhouse units, and 182 medium/high density residential units. The site is located at the north-west corner of the Barrick Road and Highway 58 intersection; and
- **Rosedale Estates**[8] – Estimated to consist of 300 single family homes. The site is located at 100 Oxford Boulevard, approximately 750 metres north of Barrick Road;

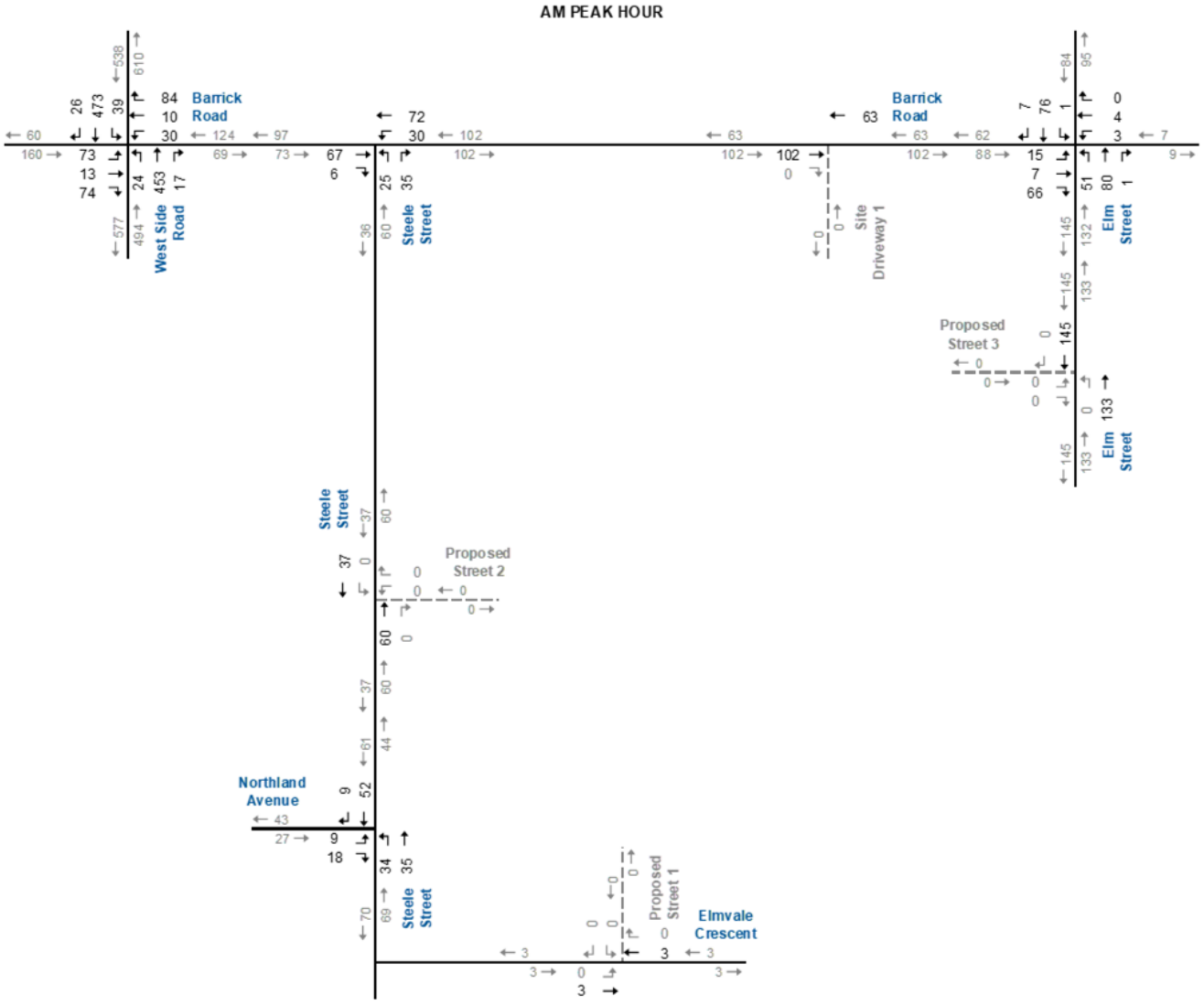
- Generalized background traffic growth. A growth rate of 1% compounded per annum, as identified during pre-study consultation; and
- Traffic generated by the subject lands.

Appendix D contains the components of the background traffic forecasts.

Figure 4.1 illustrates the five-year horizon background (pre-development) traffic volumes.

Figure 4.2 illustrates the five-year horizon total (post-development) traffic volumes.

[8] Development Information provided by City of Port Colborne.

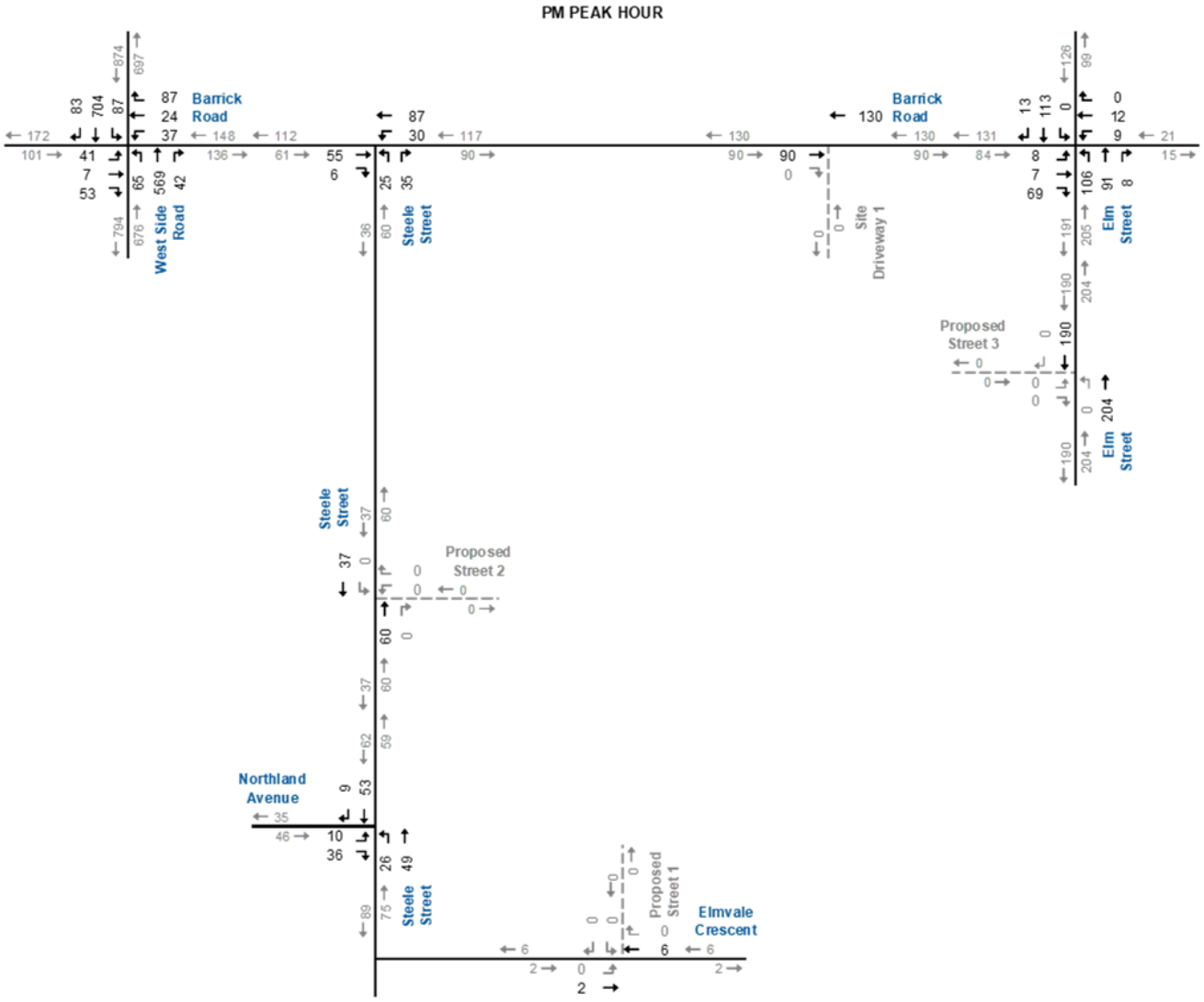


NTS

Background Traffic Five Year Horizon – AM Peak Hour

Elm Street Development, Port Colborne
240031

Figure 4.1A

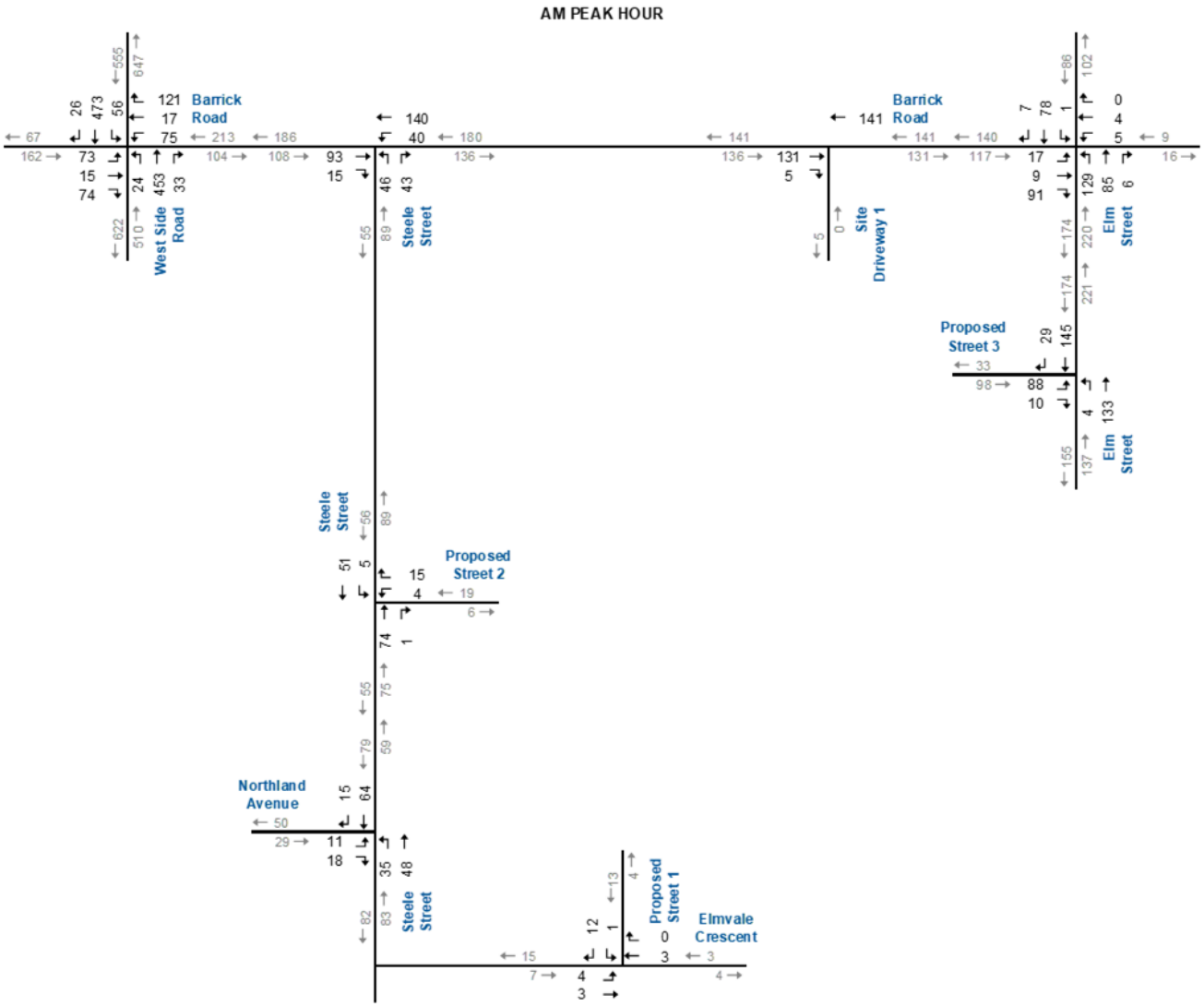


NTS

Background Traffic Five Year Horizon – PM Peak Hour

Elm Street Development, Port Colborne
240031

Figure 4.1B

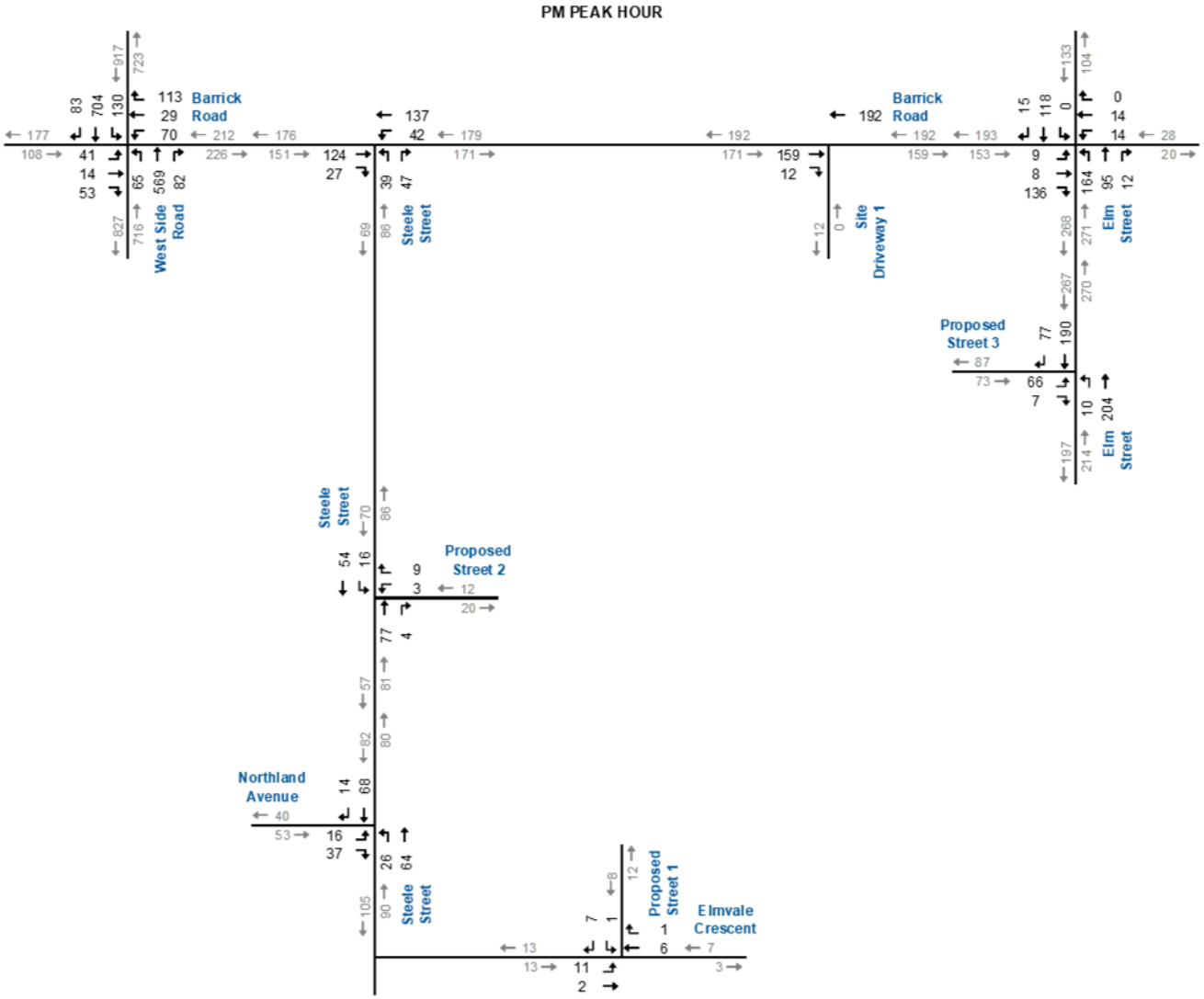


NTS

Total Traffic Five Year Horizon – AM Peak Hour

Elm Street Development, Port Colborne
240031

Figure 4.2A



NTS

Total Traffic Five Year Horizon – PM Peak Hour

Elm Street Development, Port Colborne
240031

Figure 4.2B

4.2 Five-Year Horizon

The study area intersection operational analysis follows the same methodology used for existing conditions. No changes to the existing lane configurations or traffic control are assumed.

4.2.1 Background Traffic Operations

Table 4.1 summarizes the Five-Year horizon background traffic level of service conditions.

The study area intersections are forecast to continue to operate with acceptable levels of service and all movements to be within capacity during the AM and PM peak hours. All projected vehicular queues would be contained within their available storage provisions and would not block or impede adjacent travel lanes. No critical movements are identified.

Appendix E contains the detailed Synchro 11 reports.

TABLE 4.1: FIVE YEAR HORIZON – BACKGROUND TRAFFIC OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach															
				Eastbound				Westbound				Northbound				Southbound			
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach
AM Peak Hour	West Side Road & Barrick Road	TWSC	LOS	<	C	>	**C**	<	B	>	**B**	A	A	>	**A**	A	A	>	**A**
			Delay	<	17	>	**17**	<	14	>	**14**	8	0	>	**0**	8	0	>	**1**
			V/C	<	0.36	>		<	0.24	>		0.02	0.19	>		0.04	0.20	>	
			Q	<	13	>		<	8	>		1	0	>		1	0	>	
			Stor.	<	-	>		<	-	>		30	-	>		110	-	>	
			Avail.	<	-	>		<	-	>		29	-	>		109	-	>	
	Steele Street & Barrick Road	TWSC	LOS		A	>	**A**	<	A		**A**	A		>	**A**				
			Delay		0	>	**0**	<	2		**2**	10		>	**10**				
			V/C		0.05	>		<	0.02			0.08		>					
			Q		0	>		<	1			2		>					
	Elm Street & Barrick Road	TWSC	LOS	<	A	>	**A**	<	B	>	**B**	<	A	>	**A**	<	A	>	**A**
			Delay	<	10	>	**10**	<	12	>	**12**	<	3	>	**3**	<	0	>	**0**
			V/C	<	0.12	>		<	0.01	>		<	0.04	>		<	0.00	>	
			Q	<	3	>		<	0	>		<	1	>		<	0	>	
	Steele Street & Northland Ave	TWSC	LOS	A		>	**A**					<	A		**A**		A	>	**A**
			Delay	9		>	**9**					<	4		**4**		0	>	**0**
			V/C	0.03		>						<	0.03				0.04	>	
			Q	1		>						<	1				0	>	
PM Peak Hour	West Side Road & Barrick Road	TWSC	LOS	<	C	>	**C**	<	C	>	**C**	A	A	>	**A**	A	A	>	**A**
			Delay	<	23	>	**23**	<	23	>	**23**	10	0	>	**1**	9	0	>	**1**
			V/C	<	0.35	>		<	0.44	>		0.08	0.23	>		0.10	0.29	>	
			Q	<	12	>		<	18	>		2	0	>		3	0	>	
			Stor.	<	-	>		<	-	>		30	-	>		110	-	>	
			Avail.	<	-	>		<	-	>		28	-	>		107	-	>	
	Steele Street & Barrick Road	TWSC	LOS		A	>	**A**	<	A		**A**	A		>	**A**				
			Delay		0	>	**0**	<	2		**2**	10		>	**10**				
			V/C		0.04	>		<	0.02			0.08		>					
			Q		0	>		<	1			2		>					
	Elm Street & Barrick Road	TWSC	LOS	<	B	>	**B**	<	B	>	**B**	<	A	>	**A**	<	A	>	**A**
			Delay	<	10	>	**10**	<	14	>	**14**	<	4	>	**4**	<	0	>	**0**
			V/C	<	0.13	>		<	0.06	>		<	0.09	>		<	0.00	>	
			Q	<	3	>		<	2	>		<	2	>		<	0	>	
	Steele Street & Northland Ave	TWSC	LOS	A		>	**A**					<	A		**A**		A	>	**A**
			Delay	9		>	**9**					<	3		**3**		0	>	**0**
			V/C	0.05		>						<	0.02				0.04	>	
			Q	1		>						<	1				0	>	

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds
V/C - Volume to Capacity Ratio
Q - 95th Percentile Queue Length (m)
Stor. - Existing Storage (m)
Avail. - Available Storage (m)
TWSC - Two-Way Stop Control
< / > - Shared with through movement

4.2.2 Total Traffic Operations

Table 4.2 summarizes the 5-year horizon total traffic level of service conditions.

With the addition of site-generated vehicular traffic, the study area intersections are forecast to continue operating at acceptable levels o service and with movements within capacity.

The exception would be during the PM peak hour, the eastbound and westbound approaches on the minor road approaches at the Barrick Road and West Side Road (Highway 58) intersection are characterized by LOS D and E, respectively. While the westbound approach operating under a LOS E would be classified as a critical movement, it is noted that both approaches operate well within capacity, and this is not an unusual condition where a minor road operating under stop control intersects with a major road.

The site connection approaches with Barrick Road, Elmvale Crescent, Steele Street, and Elm Street are all forecast to operate with acceptable levels of service. Delays on the approaches are forecast to be LOS B or better with v/c ratios less than 0.20. The 95th percentile queue length is expected to be less than one vehicle.

Appendix F contains the detailed Synchro 11 reports.

TABLE 4.2: FIVE YEAR HORIZON – TOTAL TRAFFIC OPERATIONS

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach															
				Eastbound				Westbound				Northbound				Southbound			
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach
AM Peak Hour	West Side Road & Barrick Road	TWSC	LOS	<	C	>	C	<	C	>	C	A	A	>	A	A	A	>	A
			Delay	<	19	>	19	<	19	>	19	8	0	>	0	9	0	>	1
			V/C	<	0.40	>		<	0.47	>		0.02	0.19	>		0.06	0.20	>	
			Q	<	15	>		<	20	>		1	0	>		1	0	>	
			Stor.	<	-	>		<	-	>		30	-	>		110	-	>	
			Avail.	<	-	>		<	-	>		29	-	>		109	-	>	
	Steele Street & Barrick Road	TWSC	LOS		A	>	A	<	A		A	B		>	B				
			Delay		0	>	0	<	2		2	11		>	11				
			V/C		0.07	>		<	0.03			0.14		>					
			Q		0	>		<	1			4		>					
	Elm Street & Barrick Road	TWSC	LOS	<	B	>	B	<	B	>	B	<	A	>	A	<	A	>	A
			Delay	<	11	>	11	<	15	>	15	<	5	>	5	<	0	>	0
			V/C	<	0.18	>		<	0.03	>		<	0.10	>		<	0.00	>	
			Q	<	5	>		<	1	>		<	3	>		<	0	>	
	Steele Street & Northland Ave	TWSC	LOS	A		>	A					<	A		A		A	>	A
			Delay	9		>	9					<	3		3		0	>	0
			V/C	0.04		>						<	0.03				0.05	>	
			Q	1		>						<	1				0	>	
	Elmvale Crescent & Proposed Street 1	TWSC	LOS	<	A		A		A	>	A					A		>	A
			Delay	<	4		4		0	>	0					8		>	8
			V/C	<	0.00				0.00	>						0.01		>	
			Q	<	0				0	>						0		>	
	Steele Street & Proposed Street 2	TWSC	LOS					A		>	A		A	>	A	<	A		A
			Delay					9		>	9		0	>	0	<	1		1
			V/C					0.02		>			0.05	>		<	0.00		
			Q					1		>			0	>		<	0		
	Elm Street & Proposed Street 3/Private Driveway	TWSC	LOS	<	B	>	B	<	A	>	A	<	A	>	A	<	A	>	A
			Delay	<	12	>	12	<	0	>	0	<	0	>	0	<	0	>	0
			V/C	<	0.17	>		<	0.00	>		<	0.00	>		<	0.00	>	
			Q	<	5	>		<	0	>		<	0	>		<	0	>	
PM Peak Hour	West Side Road & Barrick Road	TWSC	LOS	<	D	>	D	<	E	>	E	A	A	>	A	A	A	>	A
			Delay	<	33	>	33	<	49	>	49	10	0	>	1	10	0	>	1
			V/C	<	0.47	>		<	0.77	>		0.08	0.23	>		0.15	0.29	>	
			Q	<	19	>		<	47	>		2	0	>		4	0	>	
			Stor.	<	-	>		<	-	>		30	-	>		110	-	>	
			Avail.	<	-	>		<	-	>		28	-	>		106	-	>	
	Steele Street & Barrick Road	TWSC	LOS		A	>	A	<	A		A	B		>	B				
			Delay		0	>	0	<	2		2	11		>	11				
			V/C		0.10	>		<	0.03			0.14		>					
			Q		0	>		<	1			4		>					
	Elm Street & Barrick Road	TWSC	LOS	<	B	>	B	<	C	>	C	<	A	>	A	<	A	>	A
			Delay	<	11	>	11	<	20	>	20	<	5	>	5	<	0	>	0
			V/C	<	0.23	>		<	0.12	>		<	0.14	>		<	0.00	>	
			Q	<	7	>		<	3	>		<	4	>		<	0	>	
	Steele Street & Northland Ave	TWSC	LOS	A		>	A					<	A		A		A	>	A
			Delay	9		>	9					<	2		2		0	>	0
			V/C	0.07		>						<	0.02				0.05	>	
			Q	2		>						<	1				0	>	
	Elmvale Crescent & Proposed Street 1	TWSC	LOS	<	A		A		A	>	A					A		>	A
			Delay	<	6		6		0	>	0					8		>	8
			V/C	<	0.01				0.00	>						0.01		>	
			Q	<	0				0	>						0		>	
	Steele Street & Proposed Street 2	TWSC	LOS					A		>	A		A	>	A	<	A		A
			Delay					9		>	9		0	>	0	<	2		2
			V/C					0.01		>			0.05	>		<	0.01		
			Q					0		>			0	>		<	0		
	Elm Street & Prposed Street 3/Private Driveway	TWSC	LOS	<	B	>	B	<	A	>	A	<	A	>	A	<	A	>	A
			Delay	<	14	>	14	<	0	>	0	<	0	>	0	<	0	>	0
			V/C	<	0.16	>		<	0.00	>		<	0.01	>		<	0.00	>	
			Q	<	5	>		<	0	>		<	0	>		<	0	>	

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds
V/C - Volume to Capacity Ratio
Q - 95th Percentile Queue Length (m)
Stor. - Existing Storage (m)
Avail. - Available Storage (m)
TWSC - Two-Way Stop Control
< / > - Shared with through movement

5 Remedial Measures

5.1 Traffic Control Improvements

The Barrick Road intersection with Highway 58 (West Side Road) was assessed using the Ontario Traffic Manual[9] signal warrant procedures. **Appendix G** contains the warrant analysis.

Based on the warrant analysis, traffic signals are not warranted. The existing form of stop control continues to be an appropriate form of traffic control.

5.2 Left-Turn Lanes

The Ministry of Transportation's Design Supplement to the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads[10] provides guidance on the assessment of and/or need for auxiliary left-turn lanes at unsignalized intersections. The warrant nomograph is used to determine if a left-turn lane is needed based on the following criteria:

- Design speed of the road (assumed as posted speed limit + 10 km/h);
- Advancing Volume;
- Opposing Volume; and
- Percent of advancing vehicles performing a left-turn maneuver.

The need for turn lanes at the proposed street connections to Elmvale Crescent, Steele Street, and Elm Street were assessed using the forecast Five-Year total traffic volumes.

Tables 5.1A-C summarizes the results of the left turn lane warrant analyses. The percentages of left-turning vehicles in the approaching volume were rounded to the nearest five percent, as nomographs are only provided in five percent increments. **Appendix H** contains the nomographs. The analysis indicates left-turn lanes are not warranted. No changes to the existing lane configurations are recommended.

[9] (Ministry of Transportation Ontario). Ontario Traffic Manual Book 12 Traffic Signals, Justification 7. (Ontario, March 2012).
[10] Transportation Association of Canada, *MTO Design Supplement for TAC Geometric Design Guide for Canadian Roads – Appendix 9A*, Ministry of Transportation of Ontario, 2017.

TABLE 5.1A: LEFT-TURN LANE ANALYSIS ELMVALE CRESCENT AT STREET 1

Elmvale Crescent at Proposed Street 1		
Approach Direction	Eastbound	
Design Speed	60 km/hr	
Peak Hour	AM	PM
Advancing Volume	7	13
Opposing Volumes	3	7
Left Turning Traffic	4	11
% of Left Turning Traffic	57.14%	84.62%
Figure Used	9A-10 (40%)	9A-10 (40%)
Warranted	**No**	**No**
Storage Length Required	**N/A**	**N/A**

TABLE 5.1B: LEFT-TURN LANE ANALYSIS STEELE STREET AT STREET 2

Steele Street at Proposed Street 2		
Approach Direction	Southbound	
Design Speed	50 km/hr	
Peak Hour	AM	PM
Advancing Volume	56	70
Opposing Volumes	75	81
Left Turning Traffic	5	16
% of Left Turning Traffic	8.93%	22.86%
Figure Used	9A-3 (10%)	9A-5 (25%)
Warranted	**No**	**No**
Storage Length Required	**N/A**	**N/A**

TABLE 5.1C:LEFT-TURN LANE ANALYSIS ELM STREET AT STREET 3

Elm Street at Proposed Street 3		
Approach Direction	Northbound	
Design Speed	60 km/hr	
Peak Hour	AM	PM
Advancing Volume	137	214
Opposing Volumes	174	267
Left Turning Traffic	4	10
% of Left Turning Traffic	2.92%	4.67%
Figure Used	9A-7 (5%)	9A-7 (5%)
Warranted	**No**	**No**
Storage Length Required	**N/A**	**N/A**

5.3 Intersection Modifications

Under the future 5-year horizon, the eastbound and westbound approaches of Barrick Road to Highway 58 (West Side Road) are forecast to operate at LOS D and E, respectively, during the PM peak hour. Based upon threshold criteria the westbound approach operating at LOS E is classified as a critical movement, and applicable mitigation measures shall be investigated.

As previously mentioned, while the movement experiences high delays it is noted the approach operates within capacity and this is not an unusual condition where a minor road operating under stop control intersects with a major road.

Regardless, a sensitivity analysis was conducted, incorporating dedicated left-turn lanes, with storage lengths of 15 meters, for the westbound and eastbound approaches along Barrick Road.

Table 5.2 summarizes the results of implementing left-turn lanes to the intersection. **Appendix I** contains the detailed Synchro 11 reports.

Adjustments to the lane configurations are anticipated to improve operations by alleviating delays and queues generated by left turning vehicles along Barrick Road.

During the PM peak hour, the eastbound and westbound through movements are expected to improve to LOS C or better with 95th percentile queues of less than three vehicles. Critical movements are

still projected to be present in the left-turn lanes with LOS E and D respectively for the eastbound and westbound movements during the PM peak hour, due to high volumes of through vehicles along West Side Road.

In our professional opinion, the provision of multi-lane approaches at unsignalized stop controlled intersection is not recommended. The provision of eastbound and westbound approaches configured with a left lane and shared through/right lane may create new issues and increases opportunities for conflict.

For example, a westbound left turning vehicle obstructs the sight line for a westbound right turning vehicle, therefore requiring that vehicle to encroach further into the travelled section of Highway 58 (West Side Road) to obtain a clear sight line. As well, with multi-lane approaches, confusion compounds for right-of-way which increases the opportunity for turning movement conflicts as a result.

TABLE 5.2: SENSITIVITY ANALYSIS – INTERSECTION MODIFICATIONS

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach															
				Eastbound				Westbound				Northbound				Southbound			
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach
AM Peak Hour	West Side Road & Barrick Road	TWSC	LOS	C	B	>	**C**	C	B	>	**B**	A	A	>	**A**	A	A	>	**A**
			Delay	21	12	>	**16**	18	13	>	**15**	8	0	>	**0**	9	0	>	**1**
			V/C	0.25	0.15	>		0.23	0.24	>		0.02	0.19	>		0.06	0.20	>	
			Q	8	4	>		7	8	>		1	0	>		1	0	>	
			Stor.	15	-	>		15	-	>		30	-	>		110	-	>	
			Avail.	7	-	>		8	-	>		29	-	>		109	-	>	
PM Peak Hour	West Side Road & Barrick Road	TWSC	LOS	E	C	>	**D**	E	C	>	**C**	A	A	>	**A**	A	A	>	**A**
			Delay	40	16	>	**25**	35	20	>	**25**	10	0	>	**1**	10	0	>	**1**
			V/C	0.30	0.18	>		0.38	0.38	>		0.08	0.23	>		0.15	0.29	>	
			Q	9	5	>		13	14	>		2	0	>		4	0	>	
			Stor.	15	-	>		15	-	>		30	-	>		110	-	>	
			Avail.	6	-	>		2	-	>		28	-	>		106	-	>	

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds
V/C - Volume to Capacity Ratio
Q - 95th Percentile Queue Length (m)
Stor. - Existing Storage (m)
Avail. - Available Storage (m)
TWSC - Two-Way Stop Control
< / > - Shared with through movement

5.4 Barrick Road Site Driveway

The proposed site driveway connection with Barrick Road operates as a right-in only connection for the townhouse and apartment units located north of Proposed Street 3. Left-turns are restricted by the geometric design of the driveway. In addition, signage in accordance with the Ontario Traffic Manuals would also be required to encourage compliance.

The proposed driveway position has a corner clearance of approximately 15 meters from Elm Street, which is deficient from the recommended minimum corner clearance requirement as outlined in the Transportation Association of Canada (TAC) Geometric Design Guide[11] for a private driveway to a collector roadway.

The driveway's position may result in operational issues due to the proximity to the Barrick Road and Elm Street intersection.

It is recommended the driveway connection with Barrick Road be closed to regular traffic and it be designed as an emergency only access connection with gates and/or bollards.

A sensitivity analysis was conducted using the five-year total traffic volumes to analyze the impact of removing the Barrick Road site driveway.

Table 5.3 summarizes the results of the sensitivity analysis with the removal of the Barrick Road site connection. **Appendix J** contains the detailed Synchro 11 reports.

The removal of the site driveway connection with Barrick Road is expected to have minimal to no impact on the forecasted traffic operations under the five-year future horizon, with results nearly identical to those reported under the current proposed layout.

[11] Transportation Association of Canada. *TAC Geometric Design Guide for Canadian Roads. Chapter 8 – Figure 8.8.2: Suggested Minimum Corner Clearance.* (Washington. 2017).

TABLE 5.3: SENSITIVITY ANALYSIS – SITE DRIVEWAY REDUCTION

Analysis Period	Intersection	Control Type	MOE	Direction/Movement/Approach																
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	West Side Road & Barrick Road	TWSC	LOS	<	C	>	C	<	C	>	C	A	A	>	A	A	A	>	A	
			Delay	<	19	>	19	<	19	>	19	8	0	>	0	9	0	>	1	
			V/C	<	0.40	>		<	0.47	>		0.02	0.19	>		0.06	0.20	>		
			Q	<	15	>		<	19	>		1	0	>		1	0	>		
			Stor.	<	-	>		<	-	>		30	-	>		110	-	>		
			Avail.	<	-	>		<	-	>		29	-	>		109	-	>		
	Steele Street & Barrick Road	TWSC	LOS		A	>	A	<	A		A	B		>	B					
			Delay		0	>	0	<	2		2	11		>	11					
			V/C		0.07	>		<	0.03			0.14		>						
			Q		0	>		<	1			4		>						
	Elm Street & Barrick Road	TWSC	LOS	<	B	>	B	<	C	>	C	<	A	>	A	<	A	>	A	
			Delay	<	11	>	11	<	15	>	15	<	5	>	5	<	0	>	0	
			V/C	<	0.18	>		<	0.03	>		<	0.10	>		<	0.00	>		
			Q	<	5	>		<	1	>		<	3	>		<	0	>		
	Steele Street & Northland Ave	TWSC	LOS	A		>	A					<	A		A		A	>	A	
			Delay	9		>	9					<	3		3		0	>	0	
			V/C	0.04		>						<	0.03				0.05	>		
			Q	1		>						<	1				0	>		
	Elmvale Crescent & Proposed Street 1	TWSC	LOS	<	A		A		A	>	A					A		>	A	
			Delay	<	4		4		0	>	0					8		>	8	
			V/C	<	0.00				0.00	>						0.01		>		
			Q	<	0				0	>						0		>		
	Steele Street & Proposed Street 2	TWSC	LOS					A		>	A		A	>	A	<	A		A	
			Delay					9		>	9		0	>	0	<	1		1	
			V/C					0.02		>			0.05	>		<	0.00			
			Q					1		>			0	>		<	0			
	Elm Street & Proposed Street 3/Private Driveway	TWSC	LOS	<	B	>	B	<	A	>	A	<	A	>	A	<	A	>	A	
			Delay	<	12	>	12	<	0	>	0	<	0	>	0	<	0	>	0	
			V/C	<	0.17	>		<	0.00	>		<	0.00	>		<	0.00	>		
			Q	<	5	>		<	0	>		<	0	>		<	0	>		
PM Peak Hour	West Side Road & Barrick Road	TWSC	LOS	<	D	>	D	<	E	>	E	A	A	>	A	A	A	>	A	
			Delay	<	33	>	33	<	49	>	49	10	0	>	1	10	0	>	1	
			V/C	<	0.47	>		<	0.77	>		0.08	0.23	>		0.15	0.29	>		
			Q	<	19	>		<	47	>		2	0	>		4	0	>		
			Stor.	<	-	>		<	-	>		30	-	>		110	-	>		
			Avail.	<	-	>		<	-	>		28	-	>		106	-	>		
	Steele Street & Barrick Road	TWSC	LOS		A	>	A	<	A		A	B		>	B					
			Delay		0	>	0	<	2		2	11		>	11					
			V/C		0.10	>		<	0.03			0.14		>						
			Q		0	>		<	1			4		>						
	Elm Street & Barrick Road	TWSC	LOS	<	B	>	B	<	C	>	C	<	A	>	A	<	A	>	A	
			Delay	<	11	>	11	<	21	>	21	<	5	>	5	<	0	>	0	
			V/C	<	0.24	>		<	0.12	>		<	0.14	>		<	0.00	>		
			Q	<	8	>		<	3	>		<	4	>		<	0	>		
	Steele Street & Northland Ave	TWSC	LOS	A		>	A					<	A		A		A	>	A	
			Delay	9		>	9					<	2		2		0	>	0	
			V/C	0.07		>						<	0.02				0.05	>		
			Q	2		>						<	1				0	>		
	Elmvale Crescent & Proposed Street 1	TWSC	LOS	<	A		A		A	>	A					A		>	A	
			Delay	<	6		6		0	>	0					8		>	8	
			V/C	<	0.01				0.00	>						0.01		>		
			Q	<	0				0	>						0		>		
	Steele Street & Proposed Street 2	TWSC	LOS					A		>	A		A	>	A	<	A		A	
			Delay					9		>	9		0	>	0	<	2		2	
			V/C					0.01		>			0.05	>		<	0.01			
			Q					0		>			0	>		<	0			
	Elm Street & Proposed Street 3/Private Driveway	TWSC	LOS	<	B	>	B	<	A	>	A	<	A	>	A	<	A	>	A	
			Delay	<	14	>	14	<	0	>	0	<	0	>	0	<	0	>	0	
			V/C	<	0.16	>		<	0.00	>		<	0.01	>		<	0.00	>		
			Q	<	5	>		<	0	>		<	0	>		<	0	>		

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds
V/C - Volume to Capacity Ratio
Q - 95th Percentile Queue Length (m)
Stor. - Existing Storage (m)
Avail. - Available Storage (m)
TWSC - Two-Way Stop Control
< / > - Shared with through movement

6 Neighbourhood Traffic Calming

Road users, including pedestrians, cyclists, automobiles, transit, trucks, and service vehicles, are intended to co-exist in relative safety and harmony on urban residential roads. When problems related to high traffic speeds and high traffic volumes, poor roadway geometry, poor traffic operations, or any combination of these characteristics are experienced, residential streets are no longer perceived as pleasant for all road users (e.g. pedestrians, cyclists, and even drivers).

Some problems can be addressed by correcting deficiencies in the arterial road network, which may eliminate speeding or short-cutting on residential streets. However, additional solutions are sometimes required, which may include traffic calming.

Traffic calming is a contentious subject and should be dealt with in a clear, concise, and transparent process that should meet the needs and expectations of the community. This section outlines several measures to implement along the study area roadways.

The implementation of traffic calming should be well designed to minimize the inconvenience to residents and residents of local services such as garbage collection, snow plowing, etc. Also, there is value in incrementally adding traffic calming measures to respond to local traffic issues while avoiding creating an excess nuisance for community travel.

6.1 Measures

6.1.1 Speed Cushion

Speed cushions, as outlined by the Transportation Association of Canada (TAC) Guide to Traffic Calming[12], are raised areas on the road, similar to a speed hump, but do not cover the road's entire width. The width is designed to allow large vehicles, such as buses and emergency vehicles, to "straddle" the cushion, while light vehicles will have at least one side of the vehicle deflected upward. Speed cushions are intended to produce minor discomfort to limit passenger vehicle travel speeds and allow the driver to maintain vehicle control while allowing larger vehicles such as buses and emergency vehicles, to pass easily. The applicability of speed cushions as defined in TAC is as follows:

[12] Canadian Guide to Traffic Calming Second Edition, Prepared by Transportation Association of Canada, February 2018

- Road Classification: Local and collector streets
- Traffic Conditions: Posted speed limit ≤50 km/h; all traffic volumes.
- Roadway: Urban cross-section – curb and gutter
- Locations to avoid: Small turning radius curves and other areas with limited sight distance, intersections, and driveways; Traffic signals – located at least 75 metre distance from traffic signals so that the speed cushion is not within the decision or braking zones; Grades over 8%

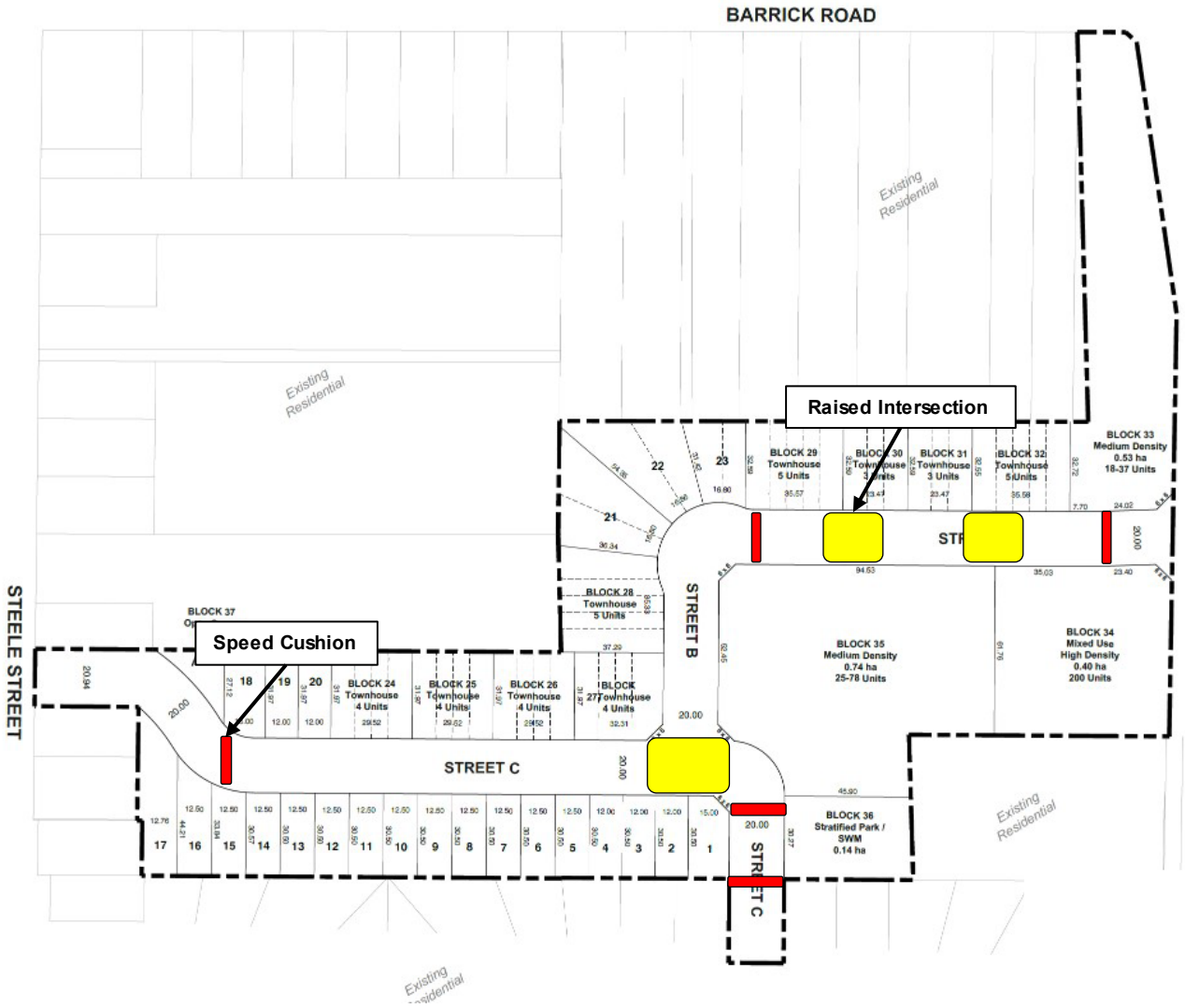
Figure 6.1 illustrates the suggested locations for speed cushions within the subject lands.

6.1.2 Raised Intersection

Raised intersections, as outlined by TAC, is an intersection, which may include crosswalks, constructed at a higher elevation than the adjacent approach roadways. This design forces vehicles to reduce their speed, preventing accidents and increasing safety for all road users. Additionally, the continuous surface eliminates curbs, aiding people with mobility issues, such as wheelchair users and those with strollers, in navigating the area. The raised surface also improves visibility, making pedestrians and cyclists more noticeable to drivers. The applicability of raised intersections as defined in TAC is as follows:

- Road Classification: Local and collector streets;
- Traffic Conditions: Posted speed limit ≤50 km/h; all traffic volumes;
- Roadway: Urban cross-section – curb and gutter; consider design carefully for roads wider than two lanes; and
- Locations to avoid: Designated emergency access routes.

Figure 6.1 illustrates the suggested locations for raised intersections within the subject lands.



paradigm TRANSPORTATION SOLUTIONS LIMITED

Proposed Neighbourhood Traffic Calming

Elm Street Development, Port Colborne
240031

Figure 6.1

7 Conclusions and Recommendations

7.1 Conclusions

The main findings and conclusions of this study are as follows:

- **Study Area:** The intersections assessed in this study include:
  - Barrick Road & Highway 58 (West Side Road) (unsignalized);
  - Barrick Road & Elm Street (unsignalized);
  - Barrick Road & Steele Street (unsignalized);
  - Northland Avenue & Steele Street (unsignalized); and
  - The proposed municipal roadways to Elm Street, Steele Street, and Elmvale Crescent, as well as a private driveway to Barrick Road.
- **Existing Traffic Conditions:** The study area intersections are operating at acceptable levels of service and within capacity during the AM and PM peak hours.
- **Trip Generation:** The site's vehicular trip generation is estimated to be a total of 178 AM peak hour trips and 224 PM peak hour trips.
- **Background Traffic Conditions:** The study area intersections are forecast to continue to operate at acceptable levels of service and within capacity during the AM and PM peak hours.
- **Total Traffic Conditions:** With the addition of site generated traffic, several critical movements have been identified. During the PM peak hour, the eastbound and westbound approaches on the minor road approaches at the Barrick Road and West Side Road (Highway 58) intersection are characterized by LOS D and E, respectively. It is noted that both approaches operate well within capacity and that this is not an unusual condition where a minor road operating under stop control intersects with a major road.

  The site connection approaches to Barrick Road, Elmvale Crescent, Steele Street, and Elm Street are all forecast to operate at acceptable levels of service and movements within capacity.
- **Remedial Measures:** From an operational perspective, no major delay or capacity issues are identified. Regardless, existing forms of traffic control and the need for auxiliary turn lanes were reviewed.

Traffic control signals are not warranted at the intersection of Barrick Road and Highway 58 (West Side Road).

Left-turn lanes at the proposed municipal street connections to Elmvale Crescent, Steele Street and Elm Street are not warranted.

Implementing left-turn lanes on Barrick Road at the Highway 58 (West Side Road) intersection is expected to reduce delays in the eastbound and westbound approaches under the five-year future horizon. Critical movements are still projected to be present in the left-turn lanes due to high traffic volumes along Highway 58 (West Side Road). Aforementioned, while the minor road approaches are characterized by LOS D/E, the approaches operate within capacity, and this is not an unusual condition where a minor road operating under stop control intersects with a major road.

The site driveway to Barrick Road is positioned and results with a corner clearance less than the spacing outlined in the TAC guide for driveways to a collector road.

The driveway's position may result in operational issues due to its proximity to the Barrick Road and Elm Street intersection. The driveway connection to Barrick Road should be closed to regular traffic and instead be designed as an emergency access only connection with gates and/or bollards.

The proposed removal of the site driveway aims to mitigate the impact of queues at the Barrick Road at Elm Street intersection and improve driveway accessibility. A sensitivity analysis examining the five-year total traffic conditions indicated minimal to no impact on forecast traffic operations, with delays nearly identical to the current proposed layout.

- **Neighbourhood Traffic Calming:** The roadways within the subdivision are designed with traffic calming features to promote reduced vehicular speeds, discourage infiltrating through traffic, minimize conflicts between road users, promote pedestrianization, and improve the overall neighbourhood environment/realm.

7.2 Recommendations

Based on the findings of this study, the following is recommended:

- The applicable road authorities monitor traffic volumes at the Barrick Road and Highway 58 (West Side Road) intersection to determine whether left-turn lanes are to be implemented on the side street approaches.
- The site driveway connection to Barrick Road be designed as an inbound emergency access only connection.
- Traffic calming features as outlined in Section 6.1 be considered for implemented into the site plan.

Appendix A

Terms of Reference

RE: 240031 (184 Elm St, Port Colborne - TIS & PS) Proposed Terms of Reference

Scott Catton <scatton@ptsl.com>

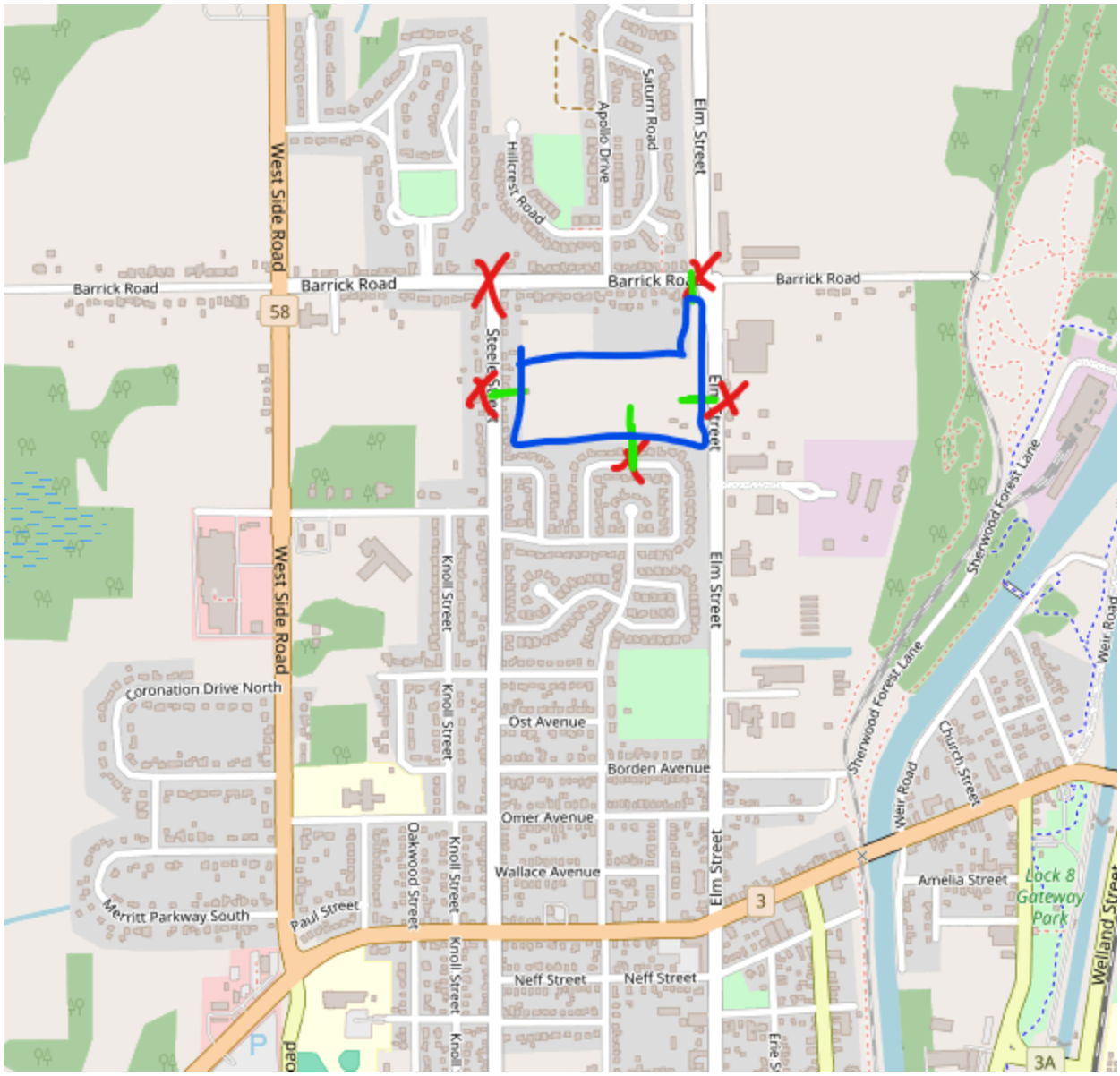
Tue 2024-05-21 1:57 PM

To:Adam Motchka <Adam.Motchka@portcolborne.ca>
Cc:David Schulz <David.Schulz@portcolborne.ca>;Brian Kim <bkim@ptsl.com>

Hi Adam,
Further to our phone call. Below is a map showing the subject site (blue), the proposed access points (diagrammatic locations in Green) and the proposed study area intersection (red x's).

The site's preliminary trip generation is estimated to be 145-155 trips. Can you please confirm the study area intersections, Background Traffic assumptions (Generalized growth rate of 2% per annum and any adjacent development applications to include in the traffic forecast.).

The detailed list of study assumptions is provided below in Brian's original email. Thanks



Scott Catton, C.E.T.
Senior Project Manager, Associate

5A-150 Pinebush Road, Cambridge ON, N1R 8J8
p: 905.381.2229 x302
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Vacation Notice: May 27th to May 30th

Paradigm operates on a four-day workweek. Our offices are closed on Fridays.

From: Adam Motchka <Adam.Motchka@portcolborne.ca>
Sent: Tuesday, May 21, 2024 12:09 PM
To: Scott Catton <scatton@ptsl.com>
Cc: David Schulz <David.Schulz@portcolborne.ca>
Subject: Re: 240031 (184 Elm St, Port Colborne - TIS & PS) Proposed Terms of Reference

Hi Scott, See attached

Adam Motchka
Development Services Supervisor
City of Port Colborne

66 Charlotte Street
Port Colborne, ON L3K 3C8
Phone 905-228-8132
Email Adam.Motchka@portcolborne.ca

www.portcolborne.ca

"To provide an exceptional small-town experience in a big way"

From: Scott Catton <scatton@ptsl.com>
Sent: Tuesday, May 21, 2024 12:07 PM
To: Adam Motchka <Adam.Motchka@portcolborne.ca>; David Schulz <David.Schulz@portcolborne.ca>; Brian Kim <bkim@ptsl.com>
Subject: RE: 240031 (184 Elm St, Port Colborne - TIS & PS) Proposed Terms of Reference

Hi Adam,
Nothing is attached to your email.

The document attached by David, is a very high level summary of what a typical traffic study should cover. Can we have comments on the finer details of the study that listed below, for example, study area intersections, development applications to include in the traffic forecast, etc.

Thanks

Scott Catton, C.E.T.
Senior Project Manager, Associate

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Vacation Notice: May 27th to May 30th

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From: Adam Motchka <Adam.Motchka@portcolborne.ca>
Sent: Tuesday, May 21, 2024 12:02 PM
To: Scott Catton <scatton@ptsl.com>; David Schulz <David.Schulz@portcolborne.ca>; Brian Kim <bkim@ptsl.com>
Subject: Re: 240031 (184 Elm St, Port Colborne - TIS & PS) Proposed Terms of Reference

HI Scott,

please see attached TOR for the TIS.

Adam Motchka
Development Services Supervisor
City of Port Colborne

66 Charlotte Street
Port Colborne, ON L3K 3C8
Phone 905-228-8132
Email Adam.Motchka@portcolborne.ca

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From: Scott Catton <scatton@ptsl.com>
Sent: Tuesday, May 21, 2024 11:55 AM
To: David Schulz <David.Schulz@portcolborne.ca>; Brian Kim <bkim@ptsl.com>; Adam Motchka <Adam.Motchka@portcolborne.ca>
Subject: RE: 240031 (184 Elm St, Port Colborne - TIS & PS) Proposed Terms of Reference

Thanks David.

Adam – do you have any comments on the TOR listed below for this TIS? Thank you.

Scott Catton, C.E.T.
Senior Project Manager, Associate

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Vacation Notice: May 27th to May 30th

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From: David Schulz <David.Schulz@portcolborne.ca>
Sent: Tuesday, May 21, 2024 11:48 AM
To: Brian Kim <bkim@ptsl.com>
Cc: Scott Catton <scatton@ptsl.com>
Subject: RE: 240031 (184 Elm St, Port Colborne - TIS & PS) Proposed Terms of Reference

Hi Brian,

Thank you again for your patience. Please find comments from our Engineering staff attached. For any questions, please reach out to Adam Motchka.

Thanks,

David

David Schulz BURPl, MCIP, RPP
Senior Planner
City of Port Colborne

66 Charlotte Street
Port Colborne, ON L3K 3C8
Phone 905-228-8117
Email David.Schulz@portcolborne.ca

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"To provide an exceptional small-town experience in a big way"

From: Brian Kim <bkim@ptsl.com>
Sent: Thursday, May 16, 2024 3:14 PM
To: David Schulz <David.Schulz@portcolborne.ca>
Cc: Scott Catton <scatton@ptsl.com>
Subject: Re: 240031 (184 Elm St, Port Colborne - TIS & PS) Proposed Terms of Reference

Hi David,

I hope everything's going well.

Just wanted to follow up again on whether or not your colleague had the time to review the TOR yet, as we have yet to receive a response.

Thanks,

Brian Kim

Transportation Consultant

paradigm TRANSPORTATION SOLUTIONS LIMITED

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From: David Schulz <David.Schulz@portcolborne.ca>
Sent: May 6, 2024 8:57 AM

To: Brian Kim <bkim@ptsl.com>
Cc: Scott Catton <scatton@ptsl.com>
Subject: RE: 240031 (184 Elm St, Port Colborne - TIS & PS) Proposed Terms of Reference

Hi Brian,

I followed up with another colleague to see if they can help out with this.

Sorry for the delay.

Regards,

David

David Schulz BURPI, MCIP, RPP
Senior Planner
City of Port Colborne

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"To provide an exceptional small-town experience in a big way"

From: Brian Kim <bkim@ptsl.com>
Sent: Thursday, May 2, 2024 3:45 PM
To: David Schulz <David.Schulz@portcolborne.ca>
Cc: Scott Catton <scatton@ptsl.com>
Subject: Re: 240031 (184 Elm St, Port Colborne - TIS & PS) Proposed Terms of Reference

Hi David,

I was wondering if you had any updates regarding the TOR review.

Thanks,

Brian Kim

Transportation Consultant

paradigm TRANSPORTATION SOLUTIONS LIMITED

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p: 905.381.2229 x301

e: bkim@ptsl.com

w: www.ptsl.com

Paradigm operates on a four-day workweek. Our offices are closed on Fridays.

From: David Schulz <David.Schulz@portcolborne.ca>
Sent: April 16, 2024 9:48 AM
To: Brian Kim <bkim@ptsl.com>
Cc: Scott Catton <scatton@ptsl.com>
Subject: RE: 240031 (184 Elm St, Port Colborne - TIS & PS) Proposed Terms of Reference

Hi Brian,

I have forwarded this to my colleague for review. I will keep you updated.

Thank you,

David

David Schulz BURPl, MCIP, RPP
Senior Planner
City of Port Colborne

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Port Colborne, ON L3K 3C8
Phone 905-228-8117
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"To provide an exceptional small-town experience in a big way"

From: Brian Kim <bkim@ptsl.com>
Sent: Monday, April 15, 2024 2:54 PM
To: David Schulz <David.Schulz@portcolborne.ca>
Cc: Scott Catton <scatton@ptsl.com>
Subject: 240031 (184 Elm St, Port Colborne - TIS & PS) Proposed Terms of Reference

Hi David,

Paradigm Transportation Solutions Limited has been retained to conduct a Traffic Impact and Parking Study for the proposed development at 184 Elm Street in the City of Port Colborne. The subject site is located generally south of Barrick Road between Elm Street and Steele Street.

The concept plan includes:

- 20 single family lots,
- 22 stacked townhouses,

- 40 free-hold townhouses and
- 255 mid-rise apartment units.

We'd like to prepare our report based on the following scope, subject to your comments:

Traffic Impact

Study Area Intersections:

- Barrick Road at Elm Street (unsignalized);
- Barrick Road at Steele Street (unsignalized); and
- The proposed municipal roadways to Elm Street, Steele Street, and Elmvale Crescent

- Analysis Periods:
  - Weekday AM peak hour; and
  - Weekday PM peak hour.

Existing Data:

- TMCs to be collected by Paradigm.

Horizon Years

- Existing Conditions; and
- 5-Years from the build-out date (Year 2031); and

Analysis

- Synchro 11, HCM 2000 analysis
- SimTraffic queuing analysis (five 60-minute simulation with 15 minutes of seed time)

- Background Traffic
  - Generalized growth rate of 2% per annum
  - **Please identify any adjacent development applications to include in the traffic forecast.**

Road Network Improvements

- None, unless identified

- Trip Generation
  - ITE Trip Generation Data 11th Edition estimates
    - Single-Family Detached Housing (LUC 210) – single family lots
    - Single-Family Attached Housing (LUC 215) – townhouse units (all types)
    - Multifamily Housing (Mid-Rise) (LUC 221) – mid-rise apartment units
  - No modal split reductions.
  - Preliminary Trip Generation Estimate
    - AM Peak Hour 145 trips (34 in + 111 out)
    - PM Peak Hour 155 trips (95 in + 60 out)

Site Traffic Distribution

- Existing travel patterns

Parking Study

- ITE Parking Generation Manual 6th Edition
- Proxy site data collected by Paradigm for similar land uses.
- Transportation Demand Management (TDM)

- Neighbourhood Traffic Calming
  - Identify possible Neighbourhood Traffic Calming Options for the site

Report

- Report documenting the study methodologies, findings, conclusions, and recommendations.

-
- Thank you,

Brian Kim

Transportation Consultant

5A-150 Pinebush Road, Cambridge ON, N1R 8J8

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w: www.ptsl.com

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Appendix B

Existing Traffic Data

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Barrick Road & Steele Street
Site Code: 240031
Start Date: 02/28/2024

Turning Movement Data

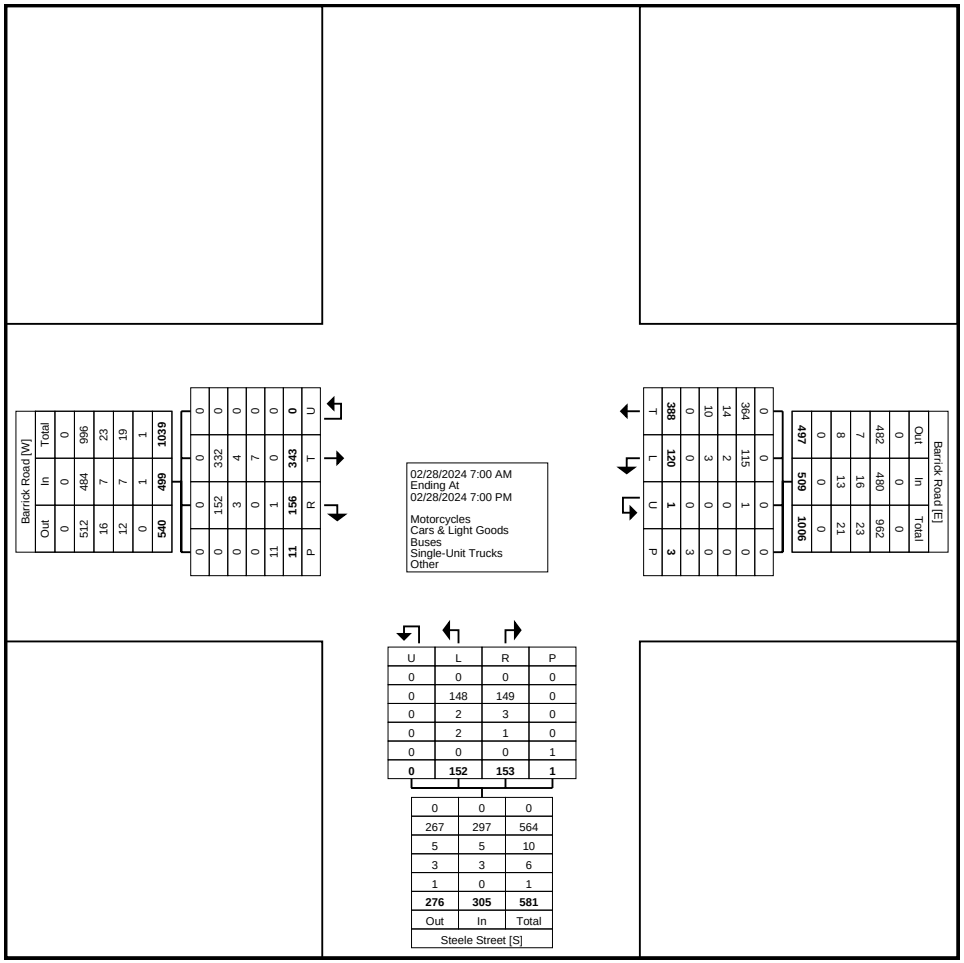
Start Time	Barrick Road Eastbound					Barrick Road Westbound					Steele Street Northbound					
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
7:00 AM	6	0	0	0	6	2	8	0	0	10	4	6	0	0	10	26
7:15 AM	7	3	0	0	10	4	10	0	0	14	4	5	0	0	9	33
7:30 AM	14	2	0	0	16	1	14	0	0	15	8	4	0	0	12	43
7:45 AM	7	1	0	0	8	2	10	0	0	12	6	0	0	0	6	26
Hourly Total	34	6	0	0	40	9	42	0	0	51	22	15	0	0	37	128
8:00 AM	11	3	0	0	14	1	13	0	0	14	6	5	0	0	11	39
8:15 AM	8	0	0	0	8	11	12	1	0	24	3	4	0	0	7	39
8:30 AM	5	3	0	0	8	9	21	0	0	30	6	7	0	0	13	51
8:45 AM	16	2	0	0	18	5	8	0	0	13	11	12	0	0	23	54
Hourly Total	40	8	0	0	48	26	54	1	0	81	26	28	0	0	54	183
9:00 AM	12	1	0	0	13	2	17	0	0	19	3	9	0	0	12	44
9:15 AM	6	4	0	0	10	5	9	0	0	14	6	2	0	0	8	32
9:30 AM	7	1	0	0	8	2	12	0	0	14	1	2	0	0	3	25
9:45 AM	9	2	0	0	11	6	6	0	0	12	3	7	0	0	10	33
Hourly Total	34	8	0	0	42	15	44	0	0	59	13	20	0	0	33	134
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:30 AM	12	2	0	1	14	6	12	0	0	18	8	4	0	0	12	44
11:45 AM	11	3	0	0	14	3	18	0	0	21	4	5	0	0	9	44
Hourly Total	23	5	0	1	28	9	30	0	0	39	12	9	0	0	21	88
12:00 PM	13	4	0	0	17	6	18	0	0	24	10	3	0	0	13	54
12:15 PM	18	11	0	1	29	3	7	0	0	10	5	7	0	0	12	51
12:30 PM	15	3	0	1	18	3	11	0	1	14	2	7	0	0	9	41
12:45 PM	12	5	0	0	17	1	9	0	0	10	8	6	0	0	14	41
Hourly Total	58	23	0	2	81	13	45	0	1	58	25	23	0	0	48	187
1:00 PM	8	0	0	1	8	4	10	0	0	14	3	4	0	0	7	29
1:15 PM	8	7	0	1	15	5	7	0	0	12	8	6	0	0	14	41
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	16	7	0	2	23	9	17	0	0	26	11	10	0	0	21	70
4:00 PM	16	9	0	0	25	4	19	0	0	23	8	3	0	0	11	59
4:15 PM	17	10	0	0	27	3	18	0	0	21	1	6	0	0	7	55
4:30 PM	13	12	0	0	25	6	17	0	0	23	1	6	0	0	7	55
4:45 PM	11	9	0	0	20	5	11	0	0	16	4	6	0	0	10	46
Hourly Total	57	40	0	0	97	18	65	0	0	83	14	21	0	0	35	215
5:00 PM	5	16	0	6	21	5	14	0	0	19	2	2	0	1	4	44
5:15 PM	12	4	0	0	16	3	12	0	0	15	4	4	0	0	8	39
5:30 PM	12	6	0	0	18	2	13	0	0	15	2	2	0	0	4	37

5:45 PM	6	3	0	0	9	1	7	0	0	8	3	4	0	0	7	24
Hourly Total	35	29	0	6	64	11	46	0	0	57	11	12	0	1	23	144
6:00 PM	18	6	0	0	24	4	12	0	0	16	4	3	0	0	7	47
6:15 PM	10	12	0	0	22	2	17	0	2	19	6	7	0	0	13	54
6:30 PM	12	9	0	0	21	3	9	0	0	12	4	2	0	0	6	39
6:45 PM	6	3	0	0	9	1	7	0	0	8	4	3	0	0	7	24
Hourly Total	46	30	0	0	76	10	45	0	2	55	18	15	0	0	33	164
Grand Total	343	156	0	11	499	120	388	1	3	509	152	153	0	1	305	1313
Approach %	68.7	31.3	0.0	-	-	23.6	76.2	0.2	-	-	49.8	50.2	0.0	-	-	-
Total %	26.1	11.9	0.0	-	38.0	9.1	29.6	0.1	-	38.8	11.6	11.7	0.0	-	23.2	-
Motorcycles	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	332	152	0	-	484	115	364	1	-	480	148	149	0	-	297	1261
% Cars & Light Goods	96.8	97.4	-	-	97.0	95.8	93.8	100.0	-	94.3	97.4	97.4	-	-	97.4	96.0
Buses	4	3	0	-	7	2	14	0	-	16	2	3	0	-	5	28
% Buses	1.2	1.9	-	-	1.4	1.7	3.6	0.0	-	3.1	1.3	2.0	-	-	1.6	2.1
Single-Unit Trucks	7	0	0	-	7	3	10	0	-	13	2	1	0	-	3	23
% Single-Unit Trucks	2.0	0.0	-	-	1.4	2.5	2.6	0.0	-	2.6	1.3	0.7	-	-	1.0	1.8
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	0	1	0	-	1	0	0	0	-	0	0	0	0	-	0	1
% Bicycles on Road	0.0	0.6	-	-	0.2	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	1	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	9.1	-	-	-	-	0.0	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	10	-	-	-	-	3	-	-	-	-	1	-	-
% Pedestrians	-	-	-	90.9	-	-	-	-	100.0	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Barrick Road & Steele Street
Site Code: 240031
Start Date: 02/28/2024



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Barrick Road & Steele Street
Site Code: 240031
Start Date: 02/28/2024

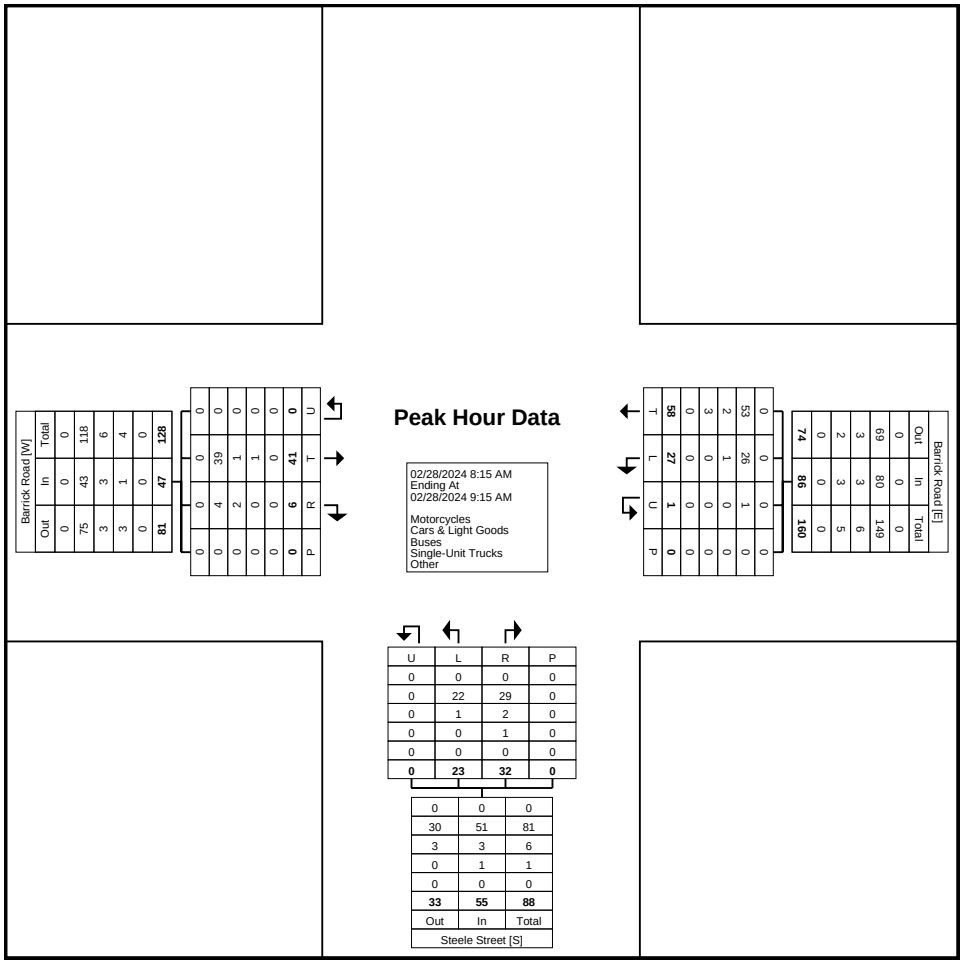
Turning Movement Peak Hour Data (8:15 AM)

Start Time	Barrick Road Eastbound					Barrick Road Westbound					Steele Street Northbound					
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
8:15 AM	8	0	0	0	8	11	12	1	0	24	3	4	0	0	7	39
8:30 AM	5	3	0	0	8	9	21	0	0	30	6	7	0	0	13	51
8:45 AM	16	2	0	0	18	5	8	0	0	13	11	12	0	0	23	54
9:00 AM	12	1	0	0	13	2	17	0	0	19	3	9	0	0	12	44
Total	41	6	0	0	47	27	58	1	0	86	23	32	0	0	55	188
Approach %	87.2	12.8	0.0	-	-	31.4	67.4	1.2	-	-	41.8	58.2	0.0	-	-	-
Total %	21.8	3.2	0.0	-	25.0	14.4	30.9	0.5	-	45.7	12.2	17.0	0.0	-	29.3	-
PHF	0.641	0.500	0.000	-	0.653	0.614	0.690	0.250	-	0.717	0.523	0.667	0.000	-	0.598	0.870
Motorcycles	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	39	4	0	-	43	26	53	1	-	80	22	29	0	-	51	174
% Cars & Light Goods	95.1	66.7	-	-	91.5	96.3	91.4	100.0	-	93.0	95.7	90.6	-	-	92.7	92.6
Buses	1	2	0	-	3	1	2	0	-	3	1	2	0	-	3	9
% Buses	2.4	33.3	-	-	6.4	3.7	3.4	0.0	-	3.5	4.3	6.3	-	-	5.5	4.8
Single-Unit Trucks	1	0	0	-	1	0	3	0	-	3	0	1	0	-	1	5
% Single-Unit Trucks	2.4	0.0	-	-	2.1	0.0	5.2	0.0	-	3.5	0.0	3.1	-	-	1.8	2.7
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Barrick Road & Steele Street
Site Code: 240031
Start Date: 02/28/2024



Turning Movement Peak Hour Data Plot (8:15 AM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Barrick Road & Steele Street
Site Code: 240031
Start Date: 02/28/2024

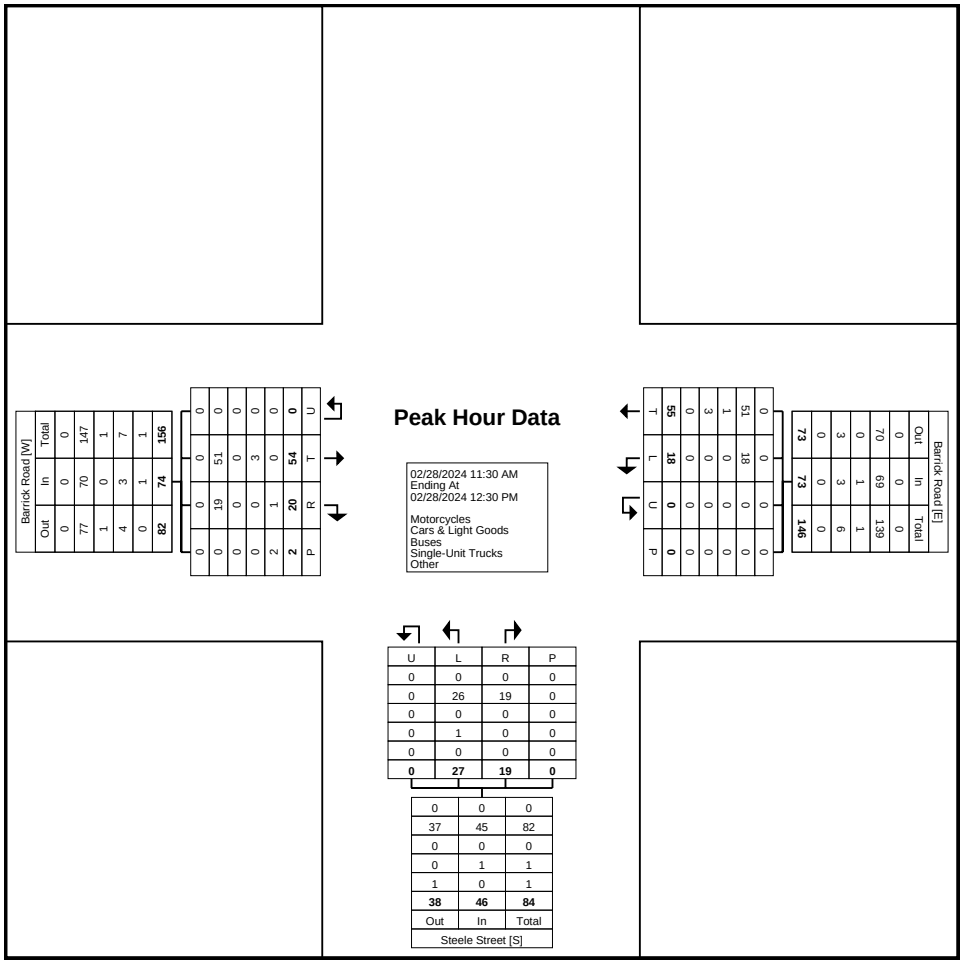
Turning Movement Peak Hour Data (11:30 AM)

Start Time	Barrick Road Eastbound					Barrick Road Westbound					Steele Street Northbound					
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
11:30 AM	12	2	0	1	14	6	12	0	0	18	8	4	0	0	12	44
11:45 AM	11	3	0	0	14	3	18	0	0	21	4	5	0	0	9	44
12:00 PM	13	4	0	0	17	6	18	0	0	24	10	3	0	0	13	54
12:15 PM	18	11	0	1	29	3	7	0	0	10	5	7	0	0	12	51
Total	54	20	0	2	74	18	55	0	0	73	27	19	0	0	46	193
Approach %	73.0	27.0	0.0	-	-	24.7	75.3	0.0	-	-	58.7	41.3	0.0	-	-	-
Total %	28.0	10.4	0.0	-	38.3	9.3	28.5	0.0	-	37.8	14.0	9.8	0.0	-	23.8	-
PHF	0.750	0.455	0.000	-	0.638	0.750	0.764	0.000	-	0.760	0.675	0.679	0.000	-	0.885	0.894
Motorcycles	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	51	19	0	-	70	18	51	0	-	69	26	19	0	-	45	184
% Cars & Light Goods	94.4	95.0	-	-	94.6	100.0	92.7	-	-	94.5	96.3	100.0	-	-	97.8	95.3
Buses	0	0	0	-	0	0	1	0	-	1	0	0	0	-	0	1
% Buses	0.0	0.0	-	-	0.0	0.0	1.8	-	-	1.4	0.0	0.0	-	-	0.0	0.5
Single-Unit Trucks	3	0	0	-	3	0	3	0	-	3	1	0	0	-	1	7
% Single-Unit Trucks	5.6	0.0	-	-	4.1	0.0	5.5	-	-	4.1	3.7	0.0	-	-	2.2	3.6
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	0	1	0	-	1	0	0	0	-	0	0	0	0	-	0	1
% Bicycles on Road	0.0	5.0	-	-	1.4	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.5
Bicycles on Crosswalk	-	-	-	1	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	50.0	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	1	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	50.0	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Barrick Road & Steele Street
Site Code: 240031
Start Date: 02/28/2024



Turning Movement Peak Hour Data Plot (11:30 AM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Barrick Road & Steele Street
Site Code: 240031
Start Date: 02/28/2024

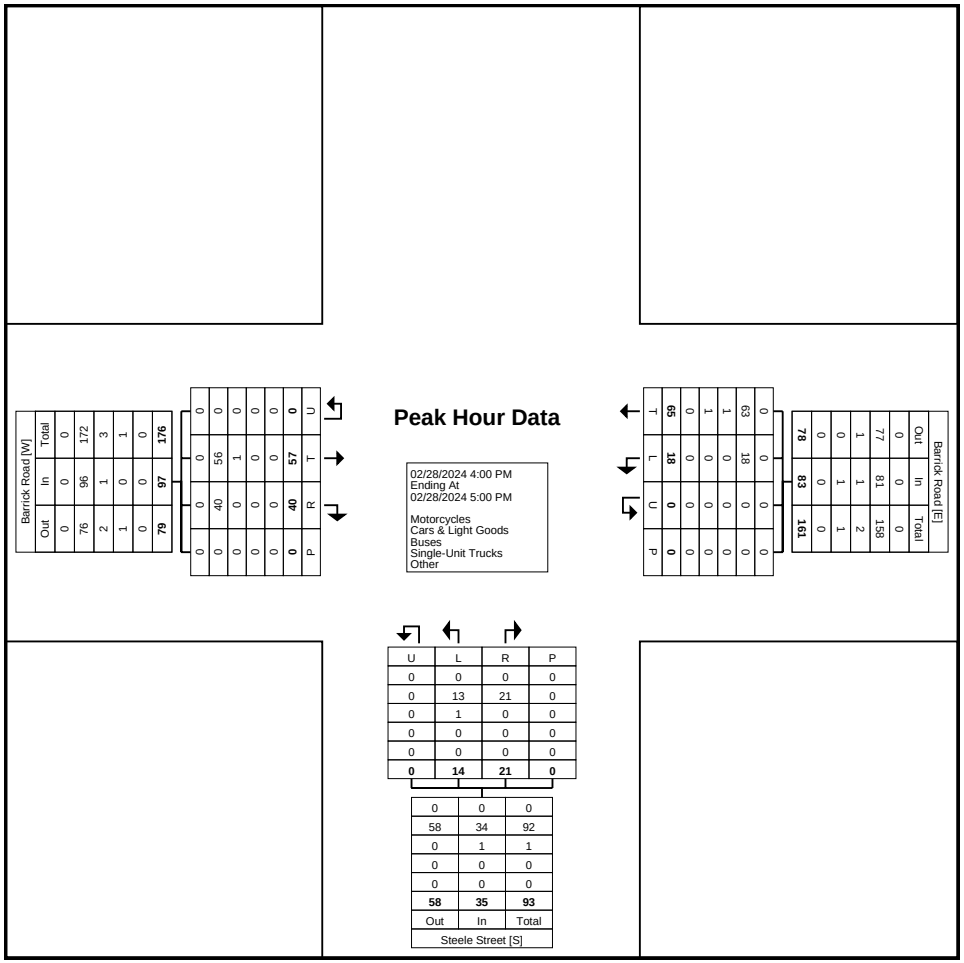
Turning Movement Peak Hour Data (4:00 PM)

Start Time	Barrick Road Eastbound					Barrick Road Westbound					Steele Street Northbound					
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
4:00 PM	16	9	0	0	25	4	19	0	0	23	8	3	0	0	11	59
4:15 PM	17	10	0	0	27	3	18	0	0	21	1	6	0	0	7	55
4:30 PM	13	12	0	0	25	6	17	0	0	23	1	6	0	0	7	55
4:45 PM	11	9	0	0	20	5	11	0	0	16	4	6	0	0	10	46
Total	57	40	0	0	97	18	65	0	0	83	14	21	0	0	35	215
Approach %	58.8	41.2	0.0	-	-	21.7	78.3	0.0	-	-	40.0	60.0	0.0	-	-	-
Total %	26.5	18.6	0.0	-	45.1	8.4	30.2	0.0	-	38.6	6.5	9.8	0.0	-	16.3	-
PHF	0.838	0.833	0.000	-	0.898	0.750	0.855	0.000	-	0.902	0.438	0.875	0.000	-	0.795	0.911
Motorcycles	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	56	40	0	-	96	18	63	0	-	81	13	21	0	-	34	211
% Cars & Light Goods	98.2	100.0	-	-	99.0	100.0	96.9	-	-	97.6	92.9	100.0	-	-	97.1	98.1
Buses	1	0	0	-	1	0	1	0	-	1	1	0	0	-	1	3
% Buses	1.8	0.0	-	-	1.0	0.0	1.5	-	-	1.2	7.1	0.0	-	-	2.9	1.4
Single-Unit Trucks	0	0	0	-	0	0	1	0	-	1	0	0	0	-	0	1
% Single-Unit Trucks	0.0	0.0	-	-	0.0	0.0	1.5	-	-	1.2	0.0	0.0	-	-	0.0	0.5
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Barrick Road & Steele Street
Site Code: 240031
Start Date: 02/28/2024



Barrick Road [W]	U	T	R	P	Total
In	0	56	40	0	96
Out	0	76	2	1	79
Total	0	172	3	1	176

Barrick Road [E]	U	T	R	P	Total
In	0	81	0	0	81
Out	0	77	0	0	77
Total	0	158	0	0	158

U	L	R	P
0	0	0	0
0	13	21	0
0	1	0	0
0	0	0	0
0	0	0	0
0	**14**	**21**	**0**

Steele Street [S]		
0	0	0
58	34	92
0	1	1
0	0	0
0	0	0
58	**35**	**93**
Out	In	Total

Turning Movement Peak Hour Data Plot (4:00 PM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Elmvale Crescent & Proposed New Street
Site Code: 240031
Start Date: 02/28/2024

Direction (Westbound)

Start Time	Motorcycles	Cars & Light Goods	Buses	Single-Unit Trucks	Articulated Trucks	Bicycles on Road	Total
7:00 AM	0	0	0	0	0	0	0
7:15 AM	0	1	0	0	0	0	1
7:30 AM	0	2	0	0	0	0	2
7:45 AM	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0
8:15 AM	0	1	0	0	0	0	1
8:30 AM	0	1	0	0	0	0	1
8:45 AM	0	1	0	0	0	0	1
9:00 AM	0	0	0	0	0	0	0
9:15 AM	0	1	0	0	0	0	1
9:30 AM	0	1	0	0	0	0	1
9:45 AM	0	1	0	0	0	0	1
11:30 AM	0	1	0	0	0	0	1
11:45 AM	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0
12:30 PM	0	1	0	0	0	0	1
12:45 PM	0	0	0	0	0	0	0
1:00 PM	0	0	0	0	0	0	0
1:15 PM	0	1	0	0	0	0	1
4:00 PM	0	0	0	0	0	0	0
4:15 PM	0	2	0	0	0	0	2
4:30 PM	0	0	0	0	0	0	0
4:45 PM	0	1	0	0	0	0	1
5:00 PM	0	3	0	0	0	0	3
5:15 PM	0	1	0	0	0	0	1
5:30 PM	0	1	0	0	0	0	1
5:45 PM	0	1	0	0	0	0	1
6:00 PM	0	2	0	0	0	0	2
6:15 PM	0	0	0	0	0	0	0
6:30 PM	0	0	0	0	0	0	0
6:45 PM	0	0	0	0	0	0	0
Total	0	23	0	0	0	0	23
Total %	0.0	100.0	0.0	0.0	0.0	0.0	100.0
AM Times	7:00 AM	8:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM	8:00 AM
AM Peaks	0	3	0	0	0	0	3
PM Times	12:00 PM	4:15 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	4:15 PM
PM Peaks	0	6	0	0	0	0	6

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Elmvale Crescent & Proposed New Street
Site Code: 240031
Start Date: 02/28/2024

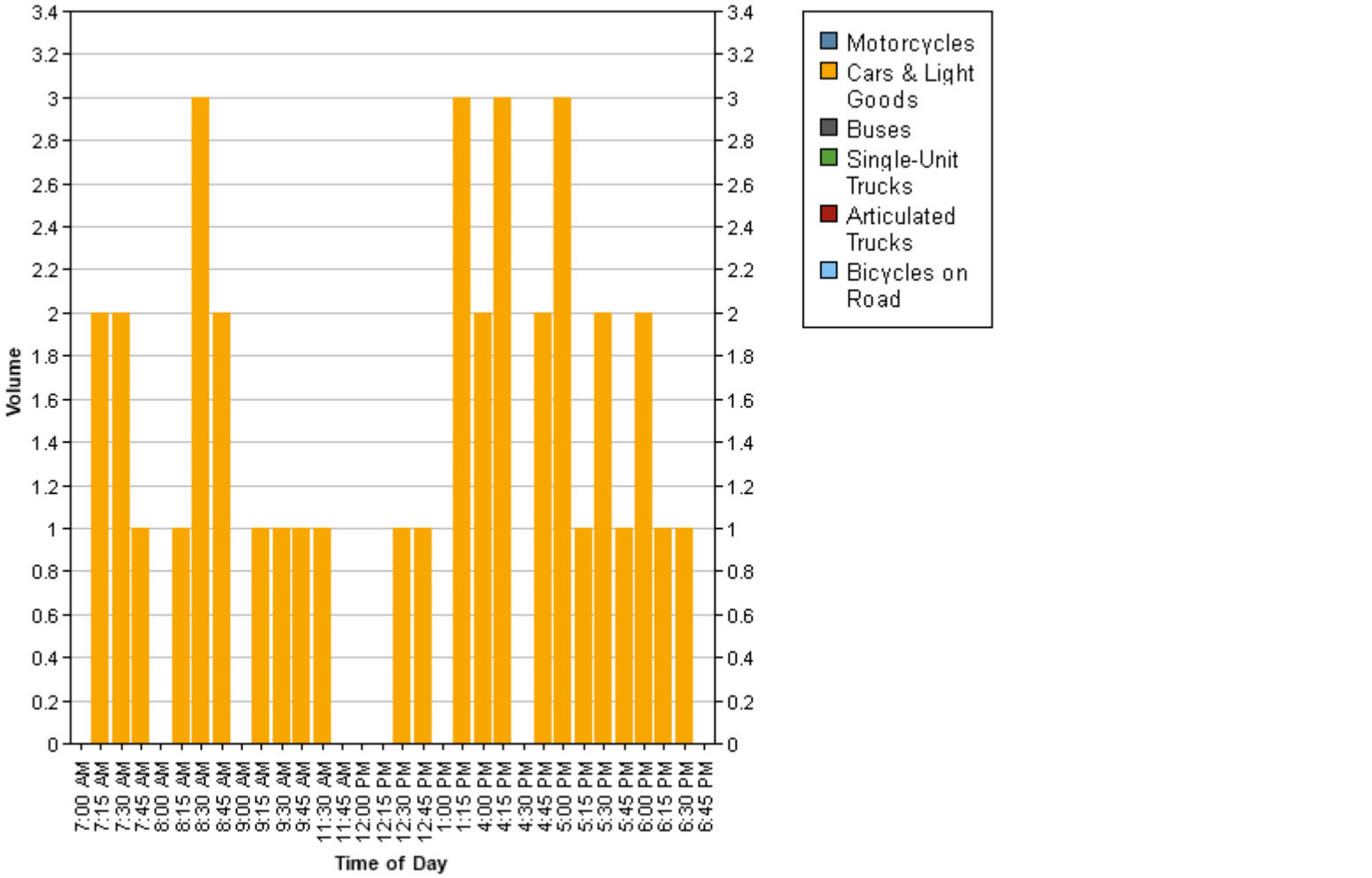
Direction (Eastbound)

Start Time	Motorcycles	Cars & Light Goods	Buses	Single-Unit Trucks	Articulated Trucks	Bicycles on Road	Total
7:00 AM	0	0	0	0	0	0	0
7:15 AM	0	1	0	0	0	0	1
7:30 AM	0	0	0	0	0	0	0
7:45 AM	0	1	0	0	0	0	1
8:00 AM	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0
8:30 AM	0	2	0	0	0	0	2
8:45 AM	0	1	0	0	0	0	1
9:00 AM	0	0	0	0	0	0	0
9:15 AM	0	0	0	0	0	0	0
9:30 AM	0	0	0	0	0	0	0
9:45 AM	0	0	0	0	0	0	0
11:30 AM	0	0	0	0	0	0	0
11:45 AM	0	0	0	0	0	0	0
12:00 PM	0	0	0	0	0	0	0
12:15 PM	0	0	0	0	0	0	0
12:30 PM	0	0	0	0	0	0	0
12:45 PM	0	1	0	0	0	0	1
1:00 PM	0	0	0	0	0	0	0
1:15 PM	0	2	0	0	0	0	2
4:00 PM	0	2	0	0	0	0	2
4:15 PM	0	1	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0
4:45 PM	0	1	0	0	0	0	1
5:00 PM	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0
5:30 PM	0	1	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0
6:00 PM	0	0	0	0	0	0	0
6:15 PM	0	1	0	0	0	0	1
6:30 PM	0	1	0	0	0	0	1
6:45 PM	0	0	0	0	0	0	0
Total	0	15	0	0	0	0	15
Total %	0.0	100.0	0.0	0.0	0.0	0.0	100.0
AM Times	7:00 AM	8:00 AM	7:00 AM	7:00 AM	7:00 AM	7:00 AM	8:00 AM
AM Peaks	0	3	0	0	0	0	3
PM Times	12:00 PM	4:15 PM	12:00 PM	12:00 PM	12:00 PM	12:00 PM	4:15 PM
PM Peaks	0	2	0	0	0	0	2

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Elmvale Crescent & Proposed New Street
Site Code: 240031
Start Date: 02/28/2024



Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Steele Street & Northland Avenue
Site Code: 240031
Start Date: 05/28/2024

Turning Movement Data

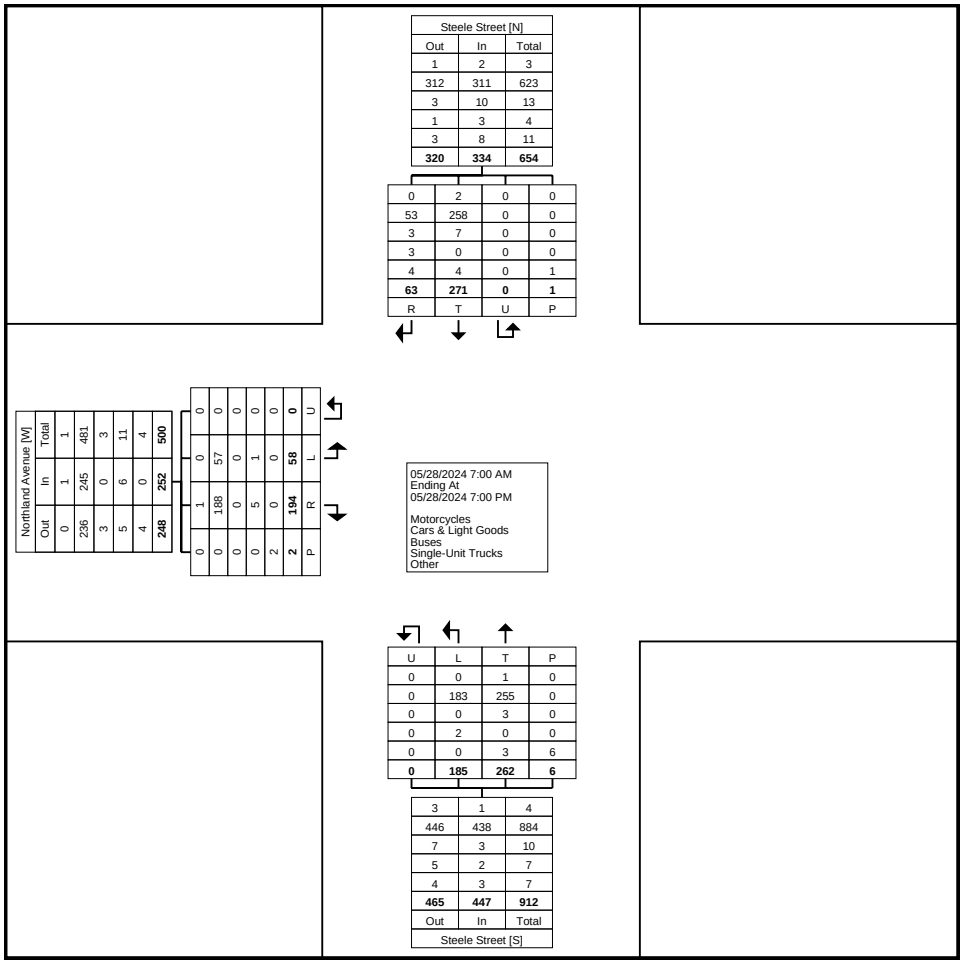
Start Time	Northland Avenue Eastbound					Steele Street Northbound					Steele Street Southbound					
	Left	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Int. Total
7:00 AM	1	3	0	0	4	5	6	0	0	11	2	1	0	0	3	18
7:15 AM	0	2	0	0	2	7	3	0	0	10	7	2	0	0	9	21
7:30 AM	0	1	0	0	1	8	5	0	2	13	7	0	0	0	7	21
7:45 AM	2	6	0	0	8	8	7	0	0	15	10	1	0	0	11	34
Hourly Total	3	12	0	0	15	28	21	0	2	49	26	4	0	0	30	94
8:00 AM	3	5	0	0	8	14	7	0	0	21	9	4	0	0	13	42
8:15 AM	2	4	0	0	6	5	9	0	1	14	12	2	0	0	14	34
8:30 AM	1	2	0	0	3	4	9	0	0	13	17	1	0	0	18	34
8:45 AM	1	4	0	0	5	5	5	0	0	10	5	2	0	0	7	22
Hourly Total	7	15	0	0	22	28	30	0	1	58	43	9	0	0	52	132
9:00 AM	0	4	0	0	4	9	8	0	0	17	8	0	0	0	8	29
9:15 AM	2	3	0	0	5	8	9	0	0	17	7	2	0	0	9	31
9:30 AM	2	3	0	1	5	4	9	0	3	13	6	2	0	0	8	26
9:45 AM	1	5	0	0	6	8	12	0	0	20	4	4	0	0	8	34
Hourly Total	5	15	0	1	20	29	38	0	3	67	25	8	0	0	33	120
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:30 AM	2	4	0	1	6	6	6	0	0	12	9	5	0	1	14	32
11:45 AM	0	7	0	0	7	4	8	0	0	12	12	1	0	0	13	32
Hourly Total	2	11	0	1	13	10	14	0	0	24	21	6	0	1	27	64
12:00 PM	2	8	0	0	10	5	9	0	0	14	6	3	0	0	9	33
12:15 PM	2	8	0	0	10	3	12	0	0	15	6	2	0	0	8	33
12:30 PM	2	7	0	0	9	12	12	0	0	24	11	2	0	0	13	46
12:45 PM	2	9	0	0	11	6	12	0	0	18	9	0	0	0	9	38
Hourly Total	8	32	0	0	40	26	45	0	0	71	32	7	0	0	39	150
1:00 PM	6	9	0	0	15	6	4	0	0	10	14	3	0	0	17	42
1:15 PM	1	9	0	0	10	5	4	0	0	9	7	2	0	0	9	28
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	7	18	0	0	25	11	8	0	0	19	21	5	0	0	26	70
4:00 PM	4	8	0	0	12	3	10	0	0	13	8	3	0	0	11	36
4:15 PM	2	7	0	0	9	10	17	0	0	27	11	0	0	0	11	47
4:30 PM	1	8	0	0	9	7	4	0	0	11	11	3	0	0	14	34
4:45 PM	3	9	0	0	12	3	12	0	0	15	17	2	0	0	19	46
Hourly Total	10	32	0	0	42	23	43	0	0	66	47	8	0	0	55	163
5:00 PM	3	9	0	0	12	4	12	0	0	16	10	3	0	0	13	41
5:15 PM	1	9	0	0	10	3	7	0	0	10	5	4	0	0	9	29
5:30 PM	4	11	0	0	15	2	13	0	0	15	8	1	0	0	9	39

5:45 PM	1	6	0	0	7	6	9	0	0	15	7	1	0	0	8	30
Hourly Total	9	35	0	0	44	15	41	0	0	56	30	9	0	0	39	139
6:00 PM	0	4	0	0	4	5	7	0	0	12	8	4	0	0	12	28
6:15 PM	3	8	0	0	11	4	7	0	0	11	9	0	0	0	9	31
6:30 PM	1	5	0	0	6	4	3	0	0	7	3	2	0	0	5	18
6:45 PM	3	7	0	0	10	2	5	0	0	7	6	1	0	0	7	24
Hourly Total	7	24	0	0	31	15	22	0	0	37	26	7	0	0	33	101
Grand Total	58	194	0	2	252	185	262	0	6	447	271	63	0	1	334	1033
Approach %	23.0	77.0	0.0	-	-	41.4	58.6	0.0	-	-	81.1	18.9	0.0	-	-	-
Total %	5.6	18.8	0.0	-	24.4	17.9	25.4	0.0	-	43.3	26.2	6.1	0.0	-	32.3	-
Motorcycles	0	1	0	-	1	0	1	0	-	1	2	0	0	-	2	4
% Motorcycles	0.0	0.5	-	-	0.4	0.0	0.4	-	-	0.2	0.7	0.0	-	-	0.6	0.4
Cars & Light Goods	57	188	0	-	245	183	255	0	-	438	258	53	0	-	311	994
% Cars & Light Goods	98.3	96.9	-	-	97.2	98.9	97.3	-	-	98.0	95.2	84.1	-	-	93.1	96.2
Buses	0	0	0	-	0	0	3	0	-	3	7	3	0	-	10	13
% Buses	0.0	0.0	-	-	0.0	0.0	1.1	-	-	0.7	2.6	4.8	-	-	3.0	1.3
Single-Unit Trucks	1	5	0	-	6	2	0	0	-	2	0	3	0	-	3	11
% Single-Unit Trucks	1.7	2.6	-	-	2.4	1.1	0.0	-	-	0.4	0.0	4.8	-	-	0.9	1.1
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	0	0	0	-	0	0	3	0	-	3	4	4	0	-	8	11
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	1.1	-	-	0.7	1.5	6.3	-	-	2.4	1.1
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	2	-	-	-	-	6	-	-	-	-	1	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Steele Street & Northland Avenue
Site Code: 240031
Start Date: 05/28/2024



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Steele Street & Northland Avenue
Site Code: 240031
Start Date: 05/28/2024

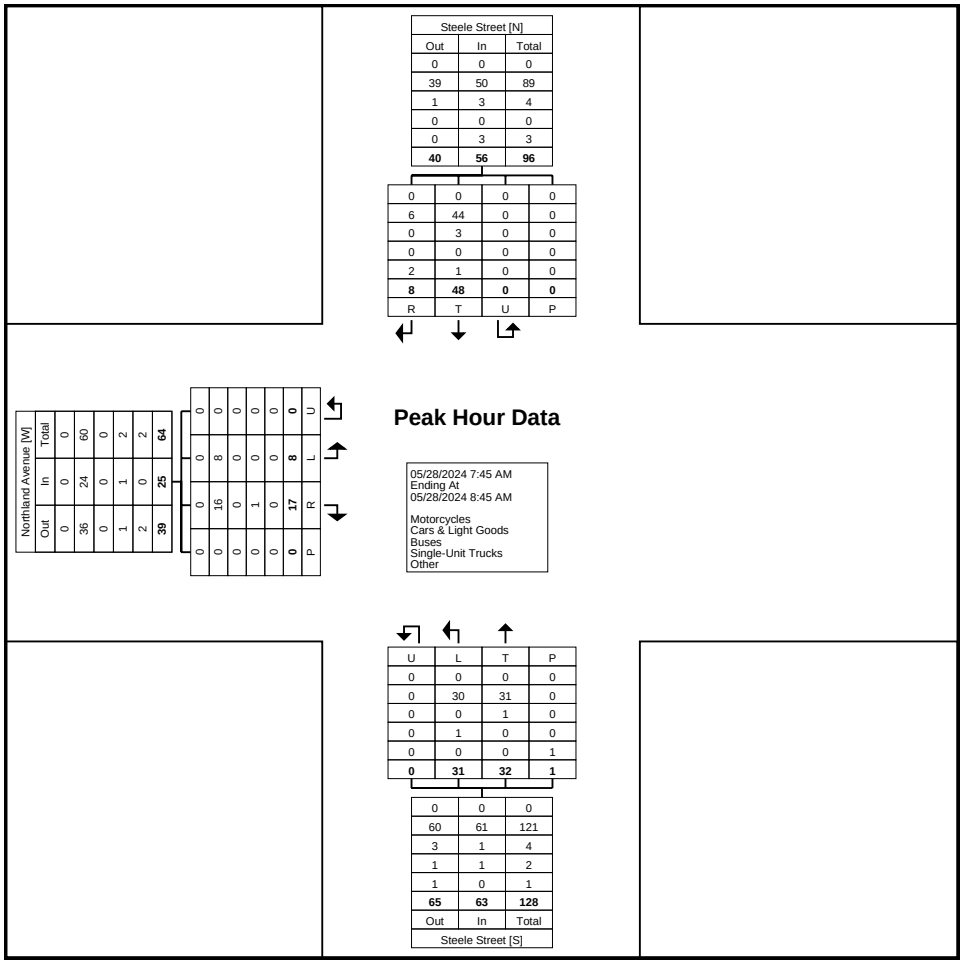
Turning Movement Peak Hour Data (7:45 AM)

Start Time	Northland Avenue Eastbound					Steele Street Northbound					Steele Street Southbound					
	Left	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Int. Total
7:45 AM	2	6	0	0	8	8	7	0	0	15	10	1	0	0	11	34
8:00 AM	3	5	0	0	8	14	7	0	0	21	9	4	0	0	13	42
8:15 AM	2	4	0	0	6	5	9	0	1	14	12	2	0	0	14	34
8:30 AM	1	2	0	0	3	4	9	0	0	13	17	1	0	0	18	34
Total	8	17	0	0	25	31	32	0	1	63	48	8	0	0	56	144
Approach %	32.0	68.0	0.0	-	-	49.2	50.8	0.0	-	-	85.7	14.3	0.0	-	-	-
Total %	5.6	11.8	0.0	-	17.4	21.5	22.2	0.0	-	43.8	33.3	5.6	0.0	-	38.9	-
PHF	0.667	0.708	0.000	-	0.781	0.554	0.889	0.000	-	0.750	0.706	0.500	0.000	-	0.778	0.857
Motorcycles	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	8	16	0	-	24	30	31	0	-	61	44	6	0	-	50	135
% Cars & Light Goods	100.0	94.1	-	-	96.0	96.8	96.9	-	-	96.8	91.7	75.0	-	-	89.3	93.8
Buses	0	0	0	-	0	0	1	0	-	1	3	0	0	-	3	4
% Buses	0.0	0.0	-	-	0.0	0.0	3.1	-	-	1.6	6.3	0.0	-	-	5.4	2.8
Single-Unit Trucks	0	1	0	-	1	1	0	0	-	1	0	0	0	-	0	2
% Single-Unit Trucks	0.0	5.9	-	-	4.0	3.2	0.0	-	-	1.6	0.0	0.0	-	-	0.0	1.4
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	1	2	0	-	3	3
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	2.1	25.0	-	-	5.4	2.1
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	1	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Steele Street & Northland Avenue
Site Code: 240031
Start Date: 05/28/2024



Turning Movement Peak Hour Data Plot (7:45 AM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Steele Street & Northland Avenue
Site Code: 240031
Start Date: 05/28/2024

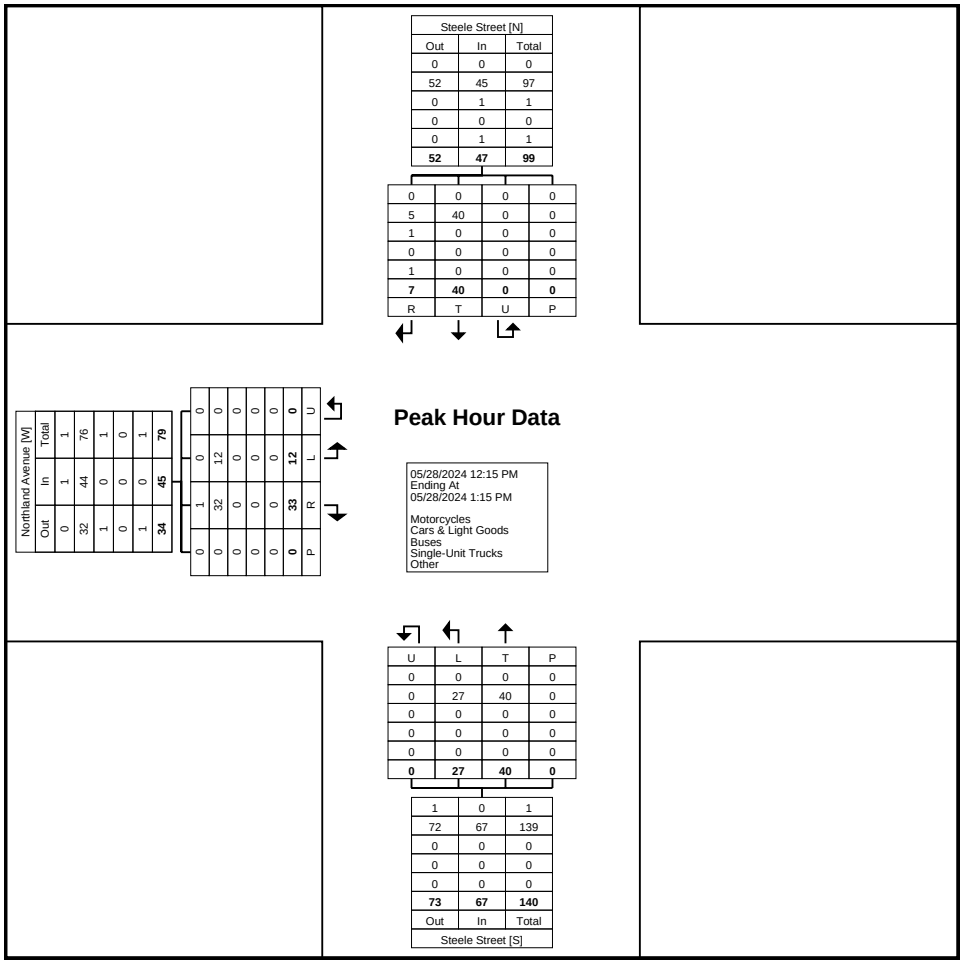
Turning Movement Peak Hour Data (12:15 PM)

Start Time	Northland Avenue Eastbound					Steele Street Northbound					Steele Street Southbound					
	Left	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Int. Total
12:15 PM	2	8	0	0	10	3	12	0	0	15	6	2	0	0	8	33
12:30 PM	2	7	0	0	9	12	12	0	0	24	11	2	0	0	13	46
12:45 PM	2	9	0	0	11	6	12	0	0	18	9	0	0	0	9	38
1:00 PM	6	9	0	0	15	6	4	0	0	10	14	3	0	0	17	42
Total	12	33	0	0	45	27	40	0	0	67	40	7	0	0	47	159
Approach %	26.7	73.3	0.0	-	-	40.3	59.7	0.0	-	-	85.1	14.9	0.0	-	-	-
Total %	7.5	20.8	0.0	-	28.3	17.0	25.2	0.0	-	42.1	25.2	4.4	0.0	-	29.6	-
PHF	0.500	0.917	0.000	-	0.750	0.563	0.833	0.000	-	0.698	0.714	0.583	0.000	-	0.691	0.864
Motorcycles	0	1	0	-	1	0	0	0	-	0	0	0	0	-	0	1
% Motorcycles	0.0	3.0	-	-	2.2	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.6
Cars & Light Goods	12	32	0	-	44	27	40	0	-	67	40	5	0	-	45	156
% Cars & Light Goods	100.0	97.0	-	-	97.8	100.0	100.0	-	-	100.0	100.0	71.4	-	-	95.7	98.1
Buses	0	0	0	-	0	0	0	0	-	0	0	1	0	-	1	1
% Buses	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	14.3	-	-	2.1	0.6
Single-Unit Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Single-Unit Trucks	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	1	0	-	1	1
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	14.3	-	-	2.1	0.6
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Steele Street & Northland Avenue
Site Code: 240031
Start Date: 05/28/2024



Turning Movement Peak Hour Data Plot (12:15 PM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Steele Street & Northland Avenue
Site Code: 240031
Start Date: 05/28/2024

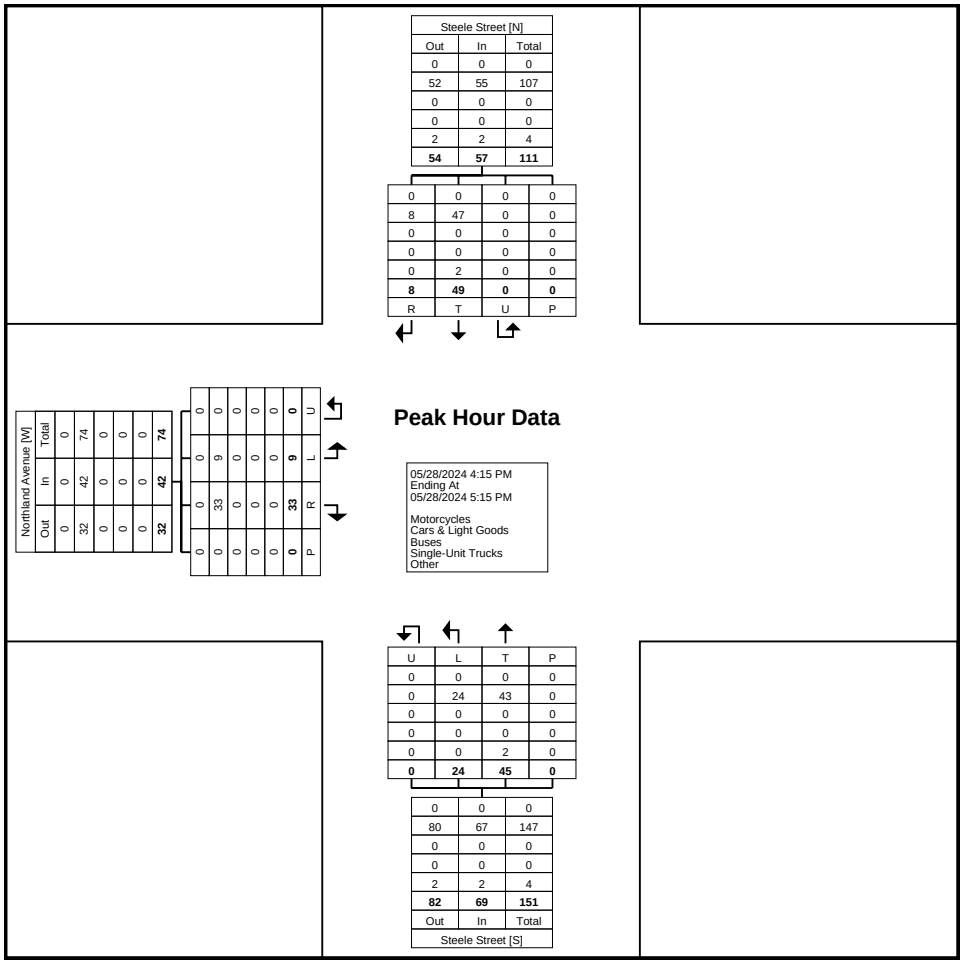
Turning Movement Peak Hour Data (4:15 PM)

Start Time	Northland Avenue Eastbound					Steele Street Northbound					Steele Street Southbound					
	Left	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Int. Total
4:15 PM	2	7	0	0	9	10	17	0	0	27	11	0	0	0	11	47
4:30 PM	1	8	0	0	9	7	4	0	0	11	11	3	0	0	14	34
4:45 PM	3	9	0	0	12	3	12	0	0	15	17	2	0	0	19	46
5:00 PM	3	9	0	0	12	4	12	0	0	16	10	3	0	0	13	41
Total	9	33	0	0	42	24	45	0	0	69	49	8	0	0	57	168
Approach %	21.4	78.6	0.0	-	-	34.8	65.2	0.0	-	-	86.0	14.0	0.0	-	-	-
Total %	5.4	19.6	0.0	-	25.0	14.3	26.8	0.0	-	41.1	29.2	4.8	0.0	-	33.9	-
PHF	0.750	0.917	0.000	-	0.875	0.600	0.662	0.000	-	0.639	0.721	0.667	0.000	-	0.750	0.894
Motorcycles	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	9	33	0	-	42	24	43	0	-	67	47	8	0	-	55	164
% Cars & Light Goods	100.0	100.0	-	-	100.0	100.0	95.6	-	-	97.1	95.9	100.0	-	-	96.5	97.6
Buses	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Buses	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Single-Unit Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Single-Unit Trucks	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	0	0	0	-	0	0	2	0	-	2	2	0	0	-	2	4
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	4.4	-	-	2.9	4.1	0.0	-	-	3.5	2.4
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Steele Street & Northland Avenue
Site Code: 240031
Start Date: 05/28/2024



Turning Movement Peak Hour Data Plot (4:15 PM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Barrick Road & Elm Street
Site Code: 230423
Start Date: 08/01/2023

Turning Movement Data

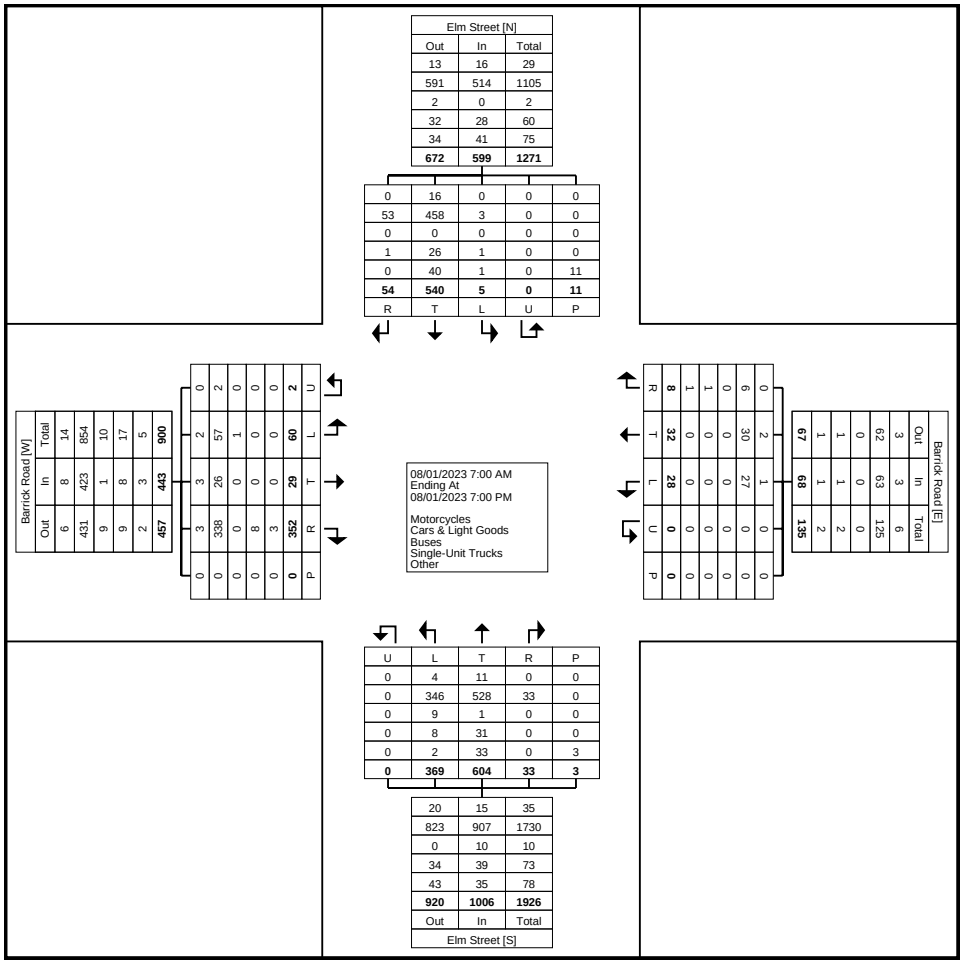
Start Time	Barrick Road Eastbound						Barrick Road Westbound						Elm Street Northbound						Elm Street Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	4	3	11	0	0	18	0	0	0	0	0	0	4	12	1	0	0	17	1	10	0	0	1	11	46
7:15 AM	1	1	7	0	0	9	0	1	0	0	0	1	4	21	1	0	0	26	1	10	1	0	0	12	48
7:30 AM	1	1	8	0	0	10	0	0	2	0	0	2	4	23	2	0	0	29	0	2	1	0	0	3	44
7:45 AM	2	2	11	0	0	15	0	2	0	0	0	2	10	31	0	0	0	41	0	7	0	0	0	7	65
Hourly Total	8	7	37	0	0	52	0	3	2	0	0	5	22	87	4	0	0	113	2	29	2	0	1	33	203
8:00 AM	1	1	8	0	0	10	2	0	3	0	0	5	5	14	1	0	0	20	0	9	0	0	0	9	44
8:15 AM	3	1	4	0	0	8	1	1	0	0	0	2	8	10	0	0	1	18	0	13	3	0	0	16	44
8:30 AM	0	1	9	0	0	10	0	1	0	0	0	1	4	14	0	0	0	18	0	10	0	0	1	10	39
8:45 AM	2	2	13	0	0	17	1	2	0	0	0	3	9	17	0	0	0	26	0	24	3	0	1	27	73
Hourly Total	6	5	34	0	0	45	4	4	3	0	0	11	26	55	1	0	1	82	0	56	6	0	2	62	200
9:00 AM	2	0	8	0	0	10	1	1	0	0	0	2	8	14	0	0	0	22	1	18	2	0	0	21	55
9:15 AM	4	2	15	0	0	21	0	0	0	0	0	0	13	25	0	0	0	38	0	14	1	0	0	15	74
9:30 AM	0	0	12	0	0	12	1	0	0	0	0	1	11	17	1	0	0	29	0	13	0	0	0	13	55
9:45 AM	1	0	10	0	0	11	2	0	0	0	0	2	12	20	0	0	0	32	0	14	0	0	1	14	59
Hourly Total	7	2	45	0	0	54	4	1	0	0	0	5	44	76	1	0	0	121	1	59	3	0	1	63	243
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:30 AM	2	1	9	0	0	12	1	2	0	0	0	3	14	23	2	0	0	39	0	14	5	0	0	19	73
11:45 AM	2	0	16	0	0	18	1	5	0	0	0	6	9	13	3	0	0	25	1	22	2	0	0	25	74
Hourly Total	4	1	25	0	0	30	2	7	0	0	0	9	23	36	5	0	0	64	1	36	7	0	0	44	147
12:00 PM	5	1	9	1	0	16	2	2	1	0	0	5	18	28	3	0	0	49	0	32	2	0	0	34	104
12:15 PM	1	3	8	0	0	12	0	0	0	0	0	0	7	24	2	0	0	33	0	28	3	0	0	31	76
12:30 PM	7	1	16	0	0	24	0	2	0	0	0	2	15	26	0	0	0	41	0	18	3	0	0	21	88
12:45 PM	6	0	15	0	0	21	2	0	0	0	0	2	9	19	3	0	0	31	0	23	0	0	1	23	77
Hourly Total	19	5	48	1	0	73	4	4	1	0	0	9	49	97	8	0	0	154	0	101	8	0	1	109	345
1:00 PM	2	3	6	0	0	11	1	0	0	0	0	1	10	29	0	0	0	39	0	13	1	0	0	14	65
1:15 PM	1	0	11	0	0	12	1	1	0	0	0	2	12	23	0	0	0	35	1	21	2	0	0	24	73
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	3	3	17	0	0	23	2	1	0	0	0	3	22	52	0	0	0	74	1	34	3	0	0	38	138
4:00 PM	3	0	17	0	0	20	0	1	0	0	0	1	27	27	2	0	1	56	0	31	1	0	0	32	109
4:15 PM	0	1	15	1	0	17	2	3	0	0	0	5	15	22	2	0	0	39	0	17	1	0	0	18	79
4:30 PM	2	2	10	0	0	14	2	2	0	0	0	4	17	17	1	0	0	35	0	35	6	0	0	41	94
4:45 PM	1	2	14	0	0	17	4	2	0	0	0	6	21	17	2	0	0	40	0	20	1	0	0	21	84
Hourly Total	6	5	56	1	0	68	8	8	0	0	0	16	80	83	7	0	1	170	0	103	9	0	0	112	366
5:00 PM	0	0	10	0	0	10	1	0	1	0	0	2	22	33	1	0	0	56	0	27	2	0	0	29	97
5:15 PM	1	0	13	0	0	14	1	0	0	0	0	1	17	14	0	0	0	31	0	21	3	0	0	24	70

5:30 PM	1	0	13	0	0	14	1	0	0	0	0	1	16	13	0	0	0	29	0	21	4	0	0	25	69
5:45 PM	1	1	17	0	0	19	0	0	0	0	0	0	12	14	3	0	0	29	0	7	1	0	2	8	56
Hourly Total	3	1	53	0	0	57	3	0	1	0	0	4	67	74	4	0	0	145	0	76	10	0	2	86	292
6:00 PM	1	0	11	0	0	12	0	1	1	0	0	2	9	14	2	0	0	25	0	12	0	0	0	12	51
6:15 PM	0	0	8	0	0	8	0	0	0	0	0	0	7	9	1	0	0	17	0	11	0	0	2	11	36
6:30 PM	1	0	9	0	0	10	1	3	0	0	0	4	9	12	0	0	0	21	0	13	4	0	2	17	52
6:45 PM	2	0	9	0	0	11	0	0	0	0	0	0	11	9	0	0	1	20	0	10	2	0	0	12	43
Hourly Total	4	0	37	0	0	41	1	4	1	0	0	6	36	44	3	0	1	83	0	46	6	0	4	52	182
Grand Total	60	29	352	2	0	443	28	32	8	0	0	68	369	604	33	0	3	1006	5	540	54	0	11	599	2116
Approach %	13.5	6.5	79.5	0.5	-	-	41.2	47.1	11.8	0.0	-	-	36.7	60.0	3.3	0.0	-	-	0.8	90.2	9.0	0.0	-	-	-
Total %	2.8	1.4	16.6	0.1	-	20.9	1.3	1.5	0.4	0.0	-	3.2	17.4	28.5	1.6	0.0	-	47.5	0.2	25.5	2.6	0.0	-	28.3	-
Motorcycles	2	3	3	0	-	8	1	2	0	0	-	3	4	11	0	0	-	15	0	16	0	0	-	16	42
% Motorcycles	3.3	10.3	0.9	0.0	-	1.8	3.6	6.3	0.0	-	-	4.4	1.1	1.8	0.0	-	-	1.5	0.0	3.0	0.0	-	-	2.7	2.0
Cars & Light Goods	57	26	338	2	-	423	27	30	6	0	-	63	346	528	33	0	-	907	3	458	53	0	-	514	1907
% Cars & Light Goods	95.0	89.7	96.0	100.0	-	95.5	96.4	93.8	75.0	-	-	92.6	93.8	87.4	100.0	-	-	90.2	60.0	84.8	98.1	-	-	85.8	90.1
Buses	1	0	0	0	-	1	0	0	0	0	-	0	9	1	0	0	-	10	0	0	0	0	-	0	11
% Buses	1.7	0.0	0.0	0.0	-	0.2	0.0	0.0	0.0	-	-	0.0	2.4	0.2	0.0	-	-	1.0	0.0	0.0	0.0	-	-	0.0	0.5
Single-Unit Trucks	0	0	8	0	-	8	0	0	1	0	-	1	8	31	0	0	-	39	1	26	1	0	-	28	76
% Single-Unit Trucks	0.0	0.0	2.3	0.0	-	1.8	0.0	0.0	12.5	-	-	1.5	2.2	5.1	0.0	-	-	3.9	20.0	4.8	1.9	-	-	4.7	3.6
Articulated Trucks	0	0	0	0	-	0	0	0	1	0	-	1	1	29	0	0	-	30	1	34	0	0	-	35	66
% Articulated Trucks	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	12.5	-	-	1.5	0.3	4.8	0.0	-	-	3.0	20.0	6.3	0.0	-	-	5.8	3.1
Bicycles on Road	0	0	3	0	-	3	0	0	0	0	-	0	1	4	0	0	-	5	0	6	0	0	-	6	14
% Bicycles on Road	0.0	0.0	0.9	0.0	-	0.7	0.0	0.0	0.0	-	-	0.0	0.3	0.7	0.0	-	-	0.5	0.0	1.1	0.0	-	-	1.0	0.7
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	66.7	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	11	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	33.3	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Barrick Road & Elm Street
Site Code: 230423
Start Date: 08/01/2023



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Barrick Road & Elm Street
Site Code: 230423
Start Date: 08/01/2023

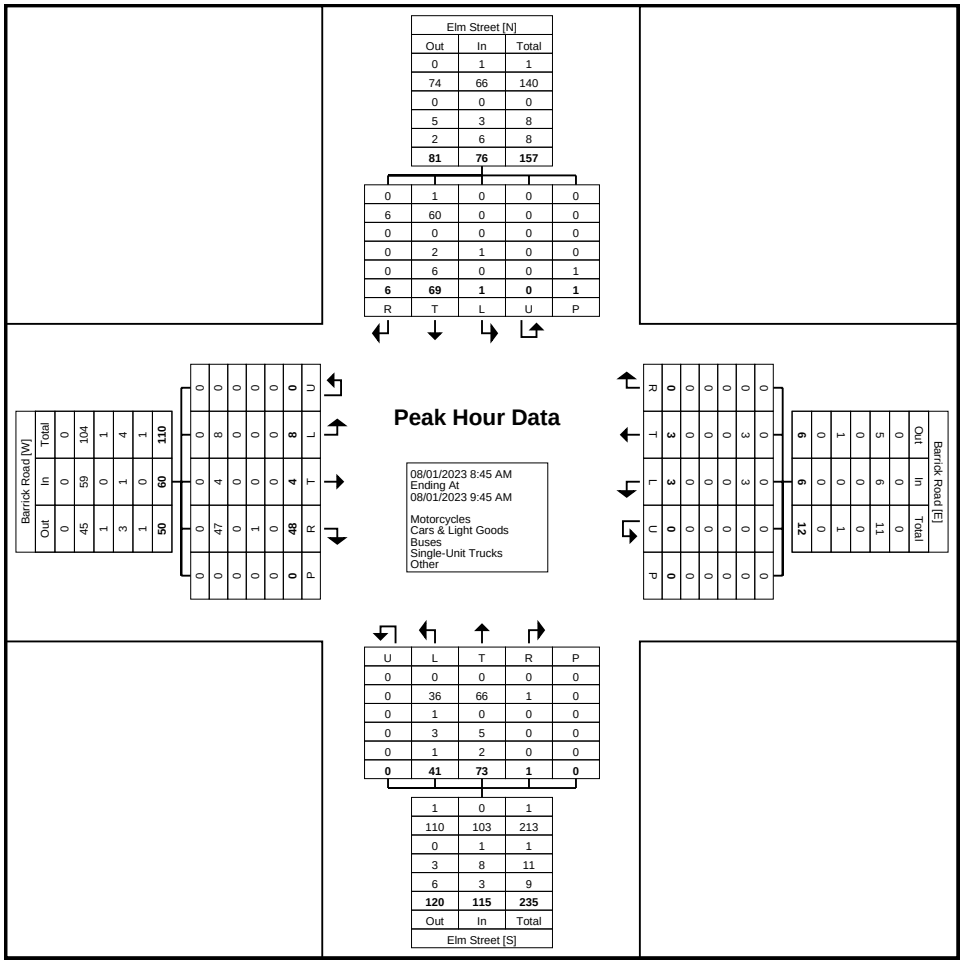
Turning Movement Peak Hour Data (8:45 AM)

Start Time	Barrick Road Eastbound						Barrick Road Westbound						Elm Street Northbound						Elm Street Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
8:45 AM	2	2	13	0	0	17	1	2	0	0	0	3	9	17	0	0	0	26	0	24	3	0	1	27	73
9:00 AM	2	0	8	0	0	10	1	1	0	0	0	2	8	14	0	0	0	22	1	18	2	0	0	21	55
9:15 AM	4	2	15	0	0	21	0	0	0	0	0	0	13	25	0	0	0	38	0	14	1	0	0	15	74
9:30 AM	0	0	12	0	0	12	1	0	0	0	0	1	11	17	1	0	0	29	0	13	0	0	0	13	55
Total	8	4	48	0	0	60	3	3	0	0	0	6	41	73	1	0	0	115	1	69	6	0	1	76	257
Approach %	13.3	6.7	80.0	0.0	-	-	50.0	50.0	0.0	0.0	-	-	35.7	63.5	0.9	0.0	-	-	1.3	90.8	7.9	0.0	-	-	-
Total %	3.1	1.6	18.7	0.0	-	23.3	1.2	1.2	0.0	0.0	-	2.3	16.0	28.4	0.4	0.0	-	44.7	0.4	26.8	2.3	0.0	-	29.6	-
PHF	0.500	0.500	0.800	0.000	-	0.714	0.750	0.375	0.000	0.000	-	0.500	0.788	0.730	0.250	0.000	-	0.757	0.250	0.719	0.500	0.000	-	0.704	0.868
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	1
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	1.4	0.0	-	-	1.3	0.4
Cars & Light Goods	8	4	47	0	-	59	3	3	0	0	-	6	36	66	1	0	-	103	0	60	6	0	-	66	234
% Cars & Light Goods	100.0	100.0	97.9	-	-	98.3	100.0	100.0	-	-	-	100.0	87.8	90.4	100.0	-	-	89.6	0.0	87.0	100.0	-	-	86.8	91.1
Buses	0	0	0	0	-	0	0	0	0	0	-	0	1	0	0	0	-	1	0	0	0	0	-	0	1
% Buses	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	-	0.0	2.4	0.0	0.0	-	-	0.9	0.0	0.0	0.0	-	-	0.0	0.4
Single-Unit Trucks	0	0	1	0	-	1	0	0	0	0	-	0	3	5	0	0	-	8	1	2	0	0	-	3	12
% Single-Unit Trucks	0.0	0.0	2.1	-	-	1.7	0.0	0.0	-	-	-	0.0	7.3	6.8	0.0	-	-	7.0	100.0	2.9	0.0	-	-	3.9	4.7
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	0	5	0	0	-	5	6
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	-	0.0	0.0	1.4	0.0	-	-	0.9	0.0	7.2	0.0	-	-	6.6	2.3
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	1	1	0	0	-	2	0	1	0	0	-	1	3
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	-	0.0	2.4	1.4	0.0	-	-	1.7	0.0	1.4	0.0	-	-	1.3	1.2
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Barrick Road & Elm Street
Site Code: 230423
Start Date: 08/01/2023



Turning Movement Peak Hour Data Plot (8:45 AM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Barrick Road & Elm Street
Site Code: 230423
Start Date: 08/01/2023

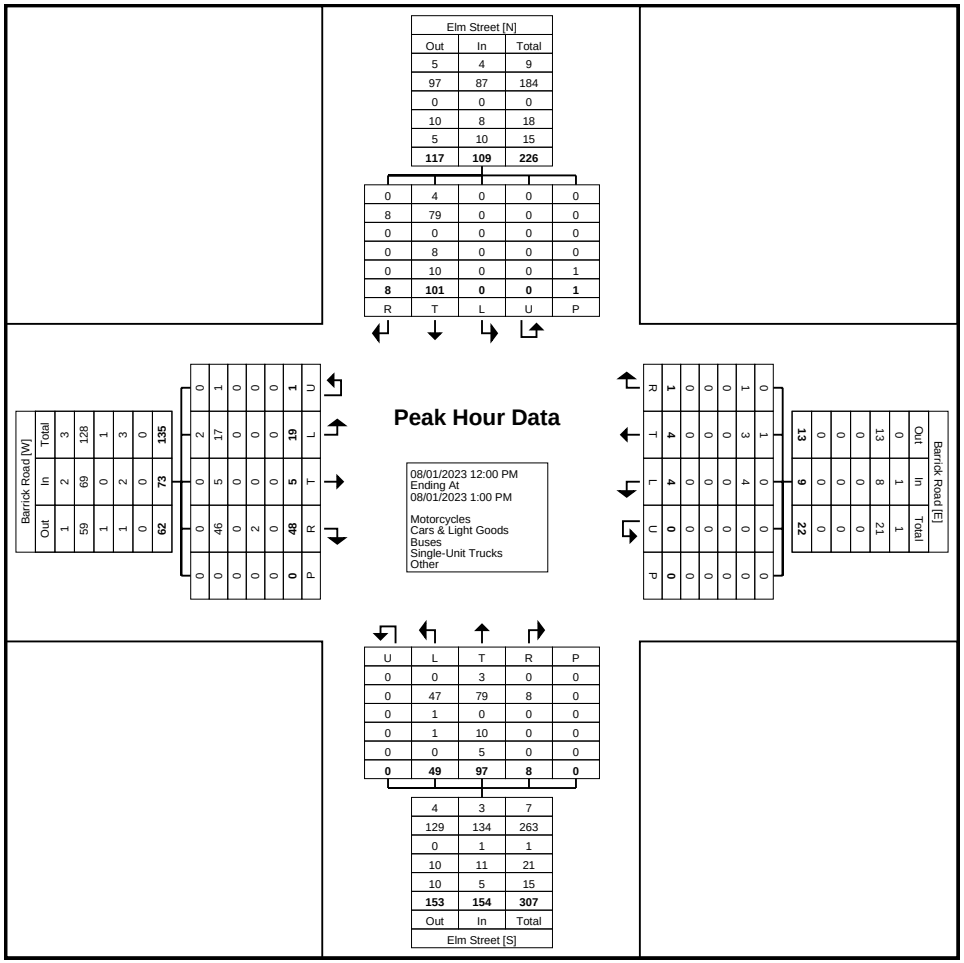
Turning Movement Peak Hour Data (12:00 PM)

Start Time	Barrick Road Eastbound						Barrick Road Westbound						Elm Street Northbound						Elm Street Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
12:00 PM	5	1	9	1	0	16	2	2	1	0	0	5	18	28	3	0	0	49	0	32	2	0	0	34	104
12:15 PM	1	3	8	0	0	12	0	0	0	0	0	0	7	24	2	0	0	33	0	28	3	0	0	31	76
12:30 PM	7	1	16	0	0	24	0	2	0	0	0	2	15	26	0	0	0	41	0	18	3	0	0	21	88
12:45 PM	6	0	15	0	0	21	2	0	0	0	0	2	9	19	3	0	0	31	0	23	0	0	1	23	77
Total	19	5	48	1	0	73	4	4	1	0	0	9	49	97	8	0	0	154	0	101	8	0	1	109	345
Approach %	26.0	6.8	65.8	1.4	-	-	44.4	44.4	11.1	0.0	-	-	31.8	63.0	5.2	0.0	-	-	0.0	92.7	7.3	0.0	-	-	-
Total %	5.5	1.4	13.9	0.3	-	21.2	1.2	1.2	0.3	0.0	-	2.6	14.2	28.1	2.3	0.0	-	44.6	0.0	29.3	2.3	0.0	-	31.6	-
PHF	0.679	0.417	0.750	0.250	-	0.760	0.500	0.500	0.250	0.000	-	0.450	0.681	0.866	0.667	0.000	-	0.786	0.000	0.789	0.667	0.000	-	0.801	0.829
Motorcycles	2	0	0	0	-	2	0	1	0	0	-	1	0	3	0	0	-	3	0	4	0	0	-	4	10
% Motorcycles	10.5	0.0	0.0	0.0	-	2.7	0.0	25.0	0.0	-	-	11.1	0.0	3.1	0.0	-	-	1.9	-	4.0	0.0	-	-	3.7	2.9
Cars & Light Goods	17	5	46	1	-	69	4	3	1	0	-	8	47	79	8	0	-	134	0	79	8	0	-	87	298
% Cars & Light Goods	89.5	100.0	95.8	100.0	-	94.5	100.0	75.0	100.0	-	-	88.9	95.9	81.4	100.0	-	-	87.0	-	78.2	100.0	-	-	79.8	86.4
Buses	0	0	0	0	-	0	0	0	0	0	-	0	1	0	0	0	-	1	0	0	0	0	-	0	1
% Buses	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	2.0	0.0	0.0	-	-	0.6	-	0.0	0.0	-	-	0.0	0.3
Single-Unit Trucks	0	0	2	0	-	2	0	0	0	0	-	0	1	10	0	0	-	11	0	8	0	0	-	8	21
% Single-Unit Trucks	0.0	0.0	4.2	0.0	-	2.7	0.0	0.0	0.0	-	-	0.0	2.0	10.3	0.0	-	-	7.1	-	7.9	0.0	-	-	7.3	6.1
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	4	0	0	-	4	0	10	0	0	-	10	14
% Articulated Trucks	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	4.1	0.0	-	-	2.6	-	9.9	0.0	-	-	9.2	4.1
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	1
% Bicycles on Road	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	1.0	0.0	-	-	0.6	-	0.0	0.0	-	-	0.0	0.3
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Barrick Road & Elm Street
Site Code: 230423
Start Date: 08/01/2023



Turning Movement Peak Hour Data Plot (12:00 PM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Barrick Road & Elm Street
Site Code: 230423
Start Date: 08/01/2023

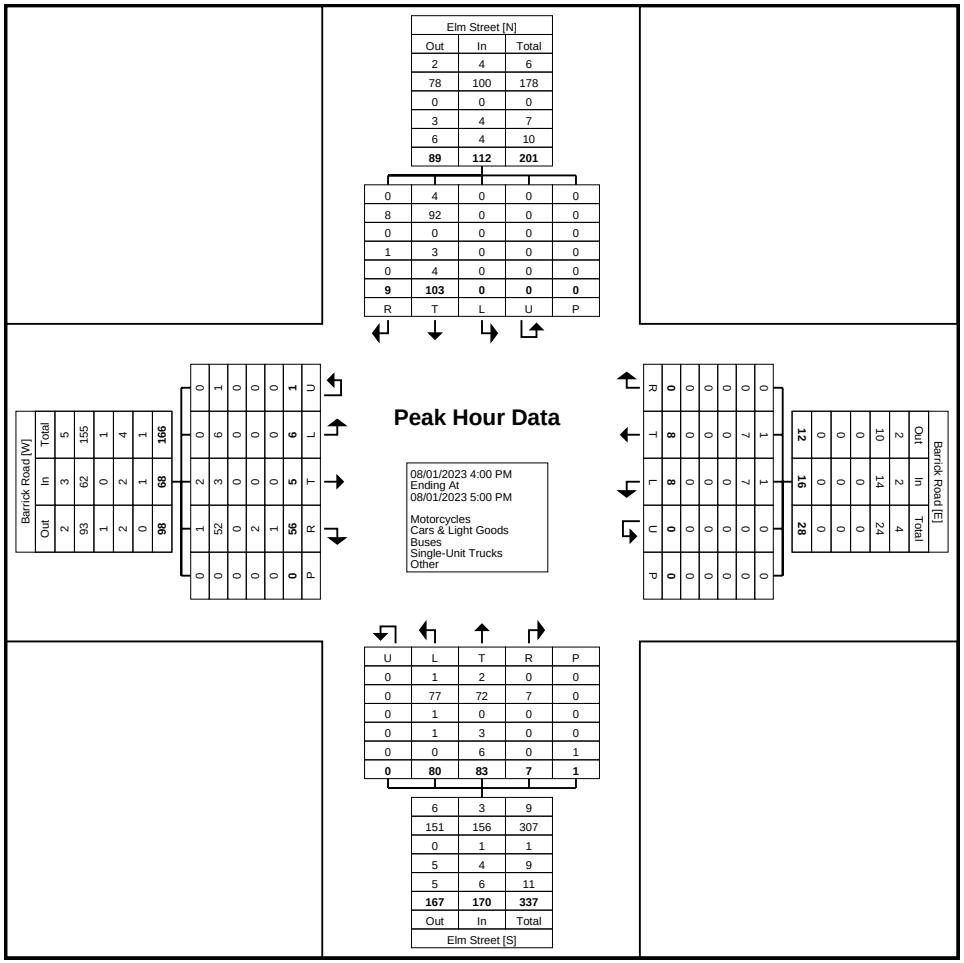
Turning Movement Peak Hour Data (4:00 PM)

Start Time	Barrick Road Eastbound						Barrick Road Westbound						Elm Street Northbound						Elm Street Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
4:00 PM	3	0	17	0	0	20	0	1	0	0	0	1	27	27	2	0	1	56	0	31	1	0	0	32	109
4:15 PM	0	1	15	1	0	17	2	3	0	0	0	5	15	22	2	0	0	39	0	17	1	0	0	18	79
4:30 PM	2	2	10	0	0	14	2	2	0	0	0	4	17	17	1	0	0	35	0	35	6	0	0	41	94
4:45 PM	1	2	14	0	0	17	4	2	0	0	0	6	21	17	2	0	0	40	0	20	1	0	0	21	84
Total	6	5	56	1	0	68	8	8	0	0	0	16	80	83	7	0	1	170	0	103	9	0	0	112	366
Approach %	8.8	7.4	82.4	1.5	-	-	50.0	50.0	0.0	0.0	-	-	47.1	48.8	4.1	0.0	-	-	0.0	92.0	8.0	0.0	-	-	-
Total %	1.6	1.4	15.3	0.3	-	18.6	2.2	2.2	0.0	0.0	-	4.4	21.9	22.7	1.9	0.0	-	46.4	0.0	28.1	2.5	0.0	-	30.6	-
PHF	0.500	0.625	0.824	0.250	-	0.850	0.500	0.667	0.000	0.000	-	0.667	0.741	0.769	0.875	0.000	-	0.759	0.000	0.736	0.375	0.000	-	0.683	0.839
Motorcycles	0	2	1	0	-	3	1	1	0	0	-	2	1	2	0	0	-	3	0	4	0	0	-	4	12
% Motorcycles	0.0	40.0	1.8	0.0	-	4.4	12.5	12.5	-	-	-	12.5	1.3	2.4	0.0	-	-	1.8	-	3.9	0.0	-	-	3.6	3.3
Cars & Light Goods	6	3	52	1	-	62	7	7	0	0	-	14	77	72	7	0	-	156	0	92	8	0	-	100	332
% Cars & Light Goods	100.0	60.0	92.9	100.0	-	91.2	87.5	87.5	-	-	-	87.5	96.3	86.7	100.0	-	-	91.8	-	89.3	88.9	-	-	89.3	90.7
Buses	0	0	0	0	-	0	0	0	0	0	-	0	1	0	0	0	-	1	0	0	0	0	-	0	1
% Buses	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	-	0.0	1.3	0.0	0.0	-	-	0.6	-	0.0	0.0	-	-	0.0	0.3
Single-Unit Trucks	0	0	2	0	-	2	0	0	0	0	-	0	1	3	0	0	-	4	0	3	1	0	-	4	10
% Single-Unit Trucks	0.0	0.0	3.6	0.0	-	2.9	0.0	0.0	-	-	-	0.0	1.3	3.6	0.0	-	-	2.4	-	2.9	11.1	-	-	3.6	2.7
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	5	0	0	-	5	0	3	0	0	-	3	8
% Articulated Trucks	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	-	0.0	0.0	6.0	0.0	-	-	2.9	-	2.9	0.0	-	-	2.7	2.2
Bicycles on Road	0	0	1	0	-	1	0	0	0	0	-	0	0	1	0	0	-	1	0	1	0	0	-	1	3
% Bicycles on Road	0.0	0.0	1.8	0.0	-	1.5	0.0	0.0	-	-	-	0.0	0.0	1.2	0.0	-	-	0.6	-	1.0	0.0	-	-	0.9	0.8
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Barrick Road & Elm Street
Site Code: 230423
Start Date: 08/01/2023



Turning Movement Peak Hour Data Plot (4:00 PM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Barrick Road & West Side Road
Site Code: 230423
Start Date: 08/01/2023

Turning Movement Data

Start Time	Barrick Road Eastbound						Barrick Road Westbound						West Side Road Northbound						West Side Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	1	0	4	0	0	5	2	0	5	0	0	7	3	67	6	0	0	76	7	45	0	0	0	52	140
7:15 AM	4	0	2	0	0	6	1	0	9	0	0	10	1	79	2	0	0	82	8	54	1	0	0	63	161
7:30 AM	4	0	3	0	0	7	1	0	11	0	0	12	1	81	0	0	0	82	4	53	1	0	0	58	159
7:45 AM	2	1	1	0	0	4	3	1	5	0	0	9	3	73	6	0	0	82	6	69	3	0	0	78	173
Hourly Total	11	1	10	0	0	22	7	1	30	0	0	38	8	300	14	0	0	322	25	221	5	0	0	251	633
8:00 AM	7	3	7	0	0	17	2	0	6	0	0	8	2	87	5	0	0	94	2	66	1	0	0	69	188
8:15 AM	3	0	2	0	0	5	5	1	13	0	0	19	1	86	2	0	0	89	2	88	2	1	0	93	206
8:30 AM	0	0	1	0	0	1	2	1	12	0	0	15	2	98	2	0	1	102	3	78	1	0	0	82	200
8:45 AM	5	4	2	0	0	11	6	1	18	0	0	25	0	73	5	0	0	78	3	67	0	0	0	70	184
Hourly Total	15	7	12	0	0	34	15	3	49	0	0	67	5	344	14	0	1	363	10	299	4	1	0	314	778
9:00 AM	1	0	2	0	0	3	2	0	18	0	0	20	1	77	5	0	0	83	5	71	3	0	1	79	185
9:15 AM	2	2	2	0	0	6	2	1	13	0	0	16	2	76	1	0	0	79	9	85	1	0	0	95	196
9:30 AM	4	1	4	0	0	9	2	0	14	0	0	16	0	85	3	0	0	88	7	91	2	0	0	100	213
9:45 AM	2	2	2	0	0	6	5	1	9	0	0	15	3	75	1	0	0	79	9	103	0	0	0	112	212
Hourly Total	9	5	10	0	0	24	11	2	54	0	0	67	6	313	10	0	0	329	30	350	6	0	1	386	806
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:30 AM	1	0	2	0	1	3	5	1	12	0	0	18	2	117	8	0	1	127	8	74	1	0	0	83	231
11:45 AM	1	0	3	0	0	4	7	1	7	0	0	15	4	96	3	0	1	103	8	100	1	0	0	109	231
Hourly Total	2	0	5	0	1	7	12	2	19	0	0	33	6	213	11	0	2	230	16	174	2	0	0	192	462
12:00 PM	2	1	6	0	0	9	8	1	9	0	0	18	2	86	5	0	0	93	10	108	1	0	0	119	239
12:15 PM	1	2	2	0	0	5	6	0	7	0	0	13	2	97	3	0	0	102	6	89	3	0	0	98	218
12:30 PM	1	1	3	0	0	5	8	0	14	0	0	22	2	87	10	0	0	99	11	96	1	0	0	108	234
12:45 PM	1	1	2	0	0	4	9	1	10	0	0	20	3	90	5	0	0	98	10	96	3	0	0	109	231
Hourly Total	5	5	13	0	0	23	31	2	40	0	0	73	9	360	23	0	0	392	37	389	8	0	0	434	922
1:00 PM	1	0	4	0	0	5	5	0	11	0	0	16	0	102	3	0	0	105	8	102	3	0	0	113	239
1:15 PM	0	1	1	0	0	2	0	1	5	0	0	6	3	75	2	0	0	80	12	124	1	0	0	137	225
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hourly Total	1	1	5	0	0	7	5	1	16	0	0	22	3	177	5	0	0	185	20	226	4	0	0	250	464
4:00 PM	1	0	3	0	0	4	7	2	19	0	0	28	1	103	3	0	0	107	17	134	3	0	0	154	293
4:15 PM	0	0	3	0	0	3	6	1	17	0	0	24	5	113	6	0	0	124	10	118	4	0	0	132	283
4:30 PM	2	0	3	0	0	5	5	5	12	0	0	22	5	94	3	0	0	102	11	126	4	0	0	141	270
4:45 PM	4	0	2	0	0	6	3	0	20	0	0	23	6	83	10	0	0	99	16	129	4	0	0	149	277
Hourly Total	7	0	11	0	0	18	21	8	68	0	0	97	17	393	22	0	0	432	54	507	15	0	0	576	1123
5:00 PM	2	1	2	0	0	5	4	1	17	0	0	22	4	105	2	0	0	111	11	112	5	0	0	128	266
5:15 PM	3	0	2	0	0	5	8	4	9	0	0	21	2	92	2	0	0	96	19	114	7	0	0	140	262

5:30 PM	1	0	3	0	0	4	7	2	9	0	0	18	3	86	5	0	1	94	6	106	5	0	0	117	233
5:45 PM	4	1	5	0	0	10	4	0	3	0	0	7	2	54	6	0	0	62	10	91	8	0	0	109	188
Hourly Total	10	2	12	0	0	24	23	7	38	0	0	68	11	337	15	0	1	363	46	423	25	0	0	494	949
6:00 PM	1	1	2	0	0	4	3	1	7	0	0	11	0	87	3	0	0	90	5	79	7	0	0	91	196
6:15 PM	0	0	5	0	0	5	4	0	4	0	0	8	2	53	7	0	0	62	9	92	2	0	0	103	178
6:30 PM	4	0	2	0	0	6	4	2	8	0	0	14	1	69	2	0	0	72	11	74	1	0	0	86	178
6:45 PM	0	0	2	0	0	2	5	1	7	0	0	13	4	38	3	0	0	45	10	60	3	0	0	73	133
Hourly Total	5	1	11	0	0	17	16	4	26	0	0	46	7	247	15	0	0	269	35	305	13	0	0	353	685
Grand Total	65	22	89	0	1	176	141	30	340	0	0	511	72	2684	129	0	4	2885	273	2894	82	1	1	3250	6822
Approach %	36.9	12.5	50.6	0.0	-	-	27.6	5.9	66.5	0.0	-	-	2.5	93.0	4.5	0.0	-	-	8.4	89.0	2.5	0.0	-	-	-
Total %	1.0	0.3	1.3	0.0	-	2.6	2.1	0.4	5.0	0.0	-	7.5	1.1	39.3	1.9	0.0	-	42.3	4.0	42.4	1.2	0.0	-	47.6	-
Motorcycles	0	0	1	0	-	1	0	0	3	0	-	3	0	33	0	0	-	33	4	19	0	0	-	23	60
% Motorcycles	0.0	0.0	1.1	-	-	0.6	0.0	0.0	0.9	-	-	0.6	0.0	1.2	0.0	-	-	1.1	1.5	0.7	0.0	0.0	-	0.7	0.9
Cars & Light Goods	62	22	85	0	-	169	140	27	326	0	-	493	71	2487	128	0	-	2686	266	2717	81	1	-	3065	6413
% Cars & Light Goods	95.4	100.0	95.5	-	-	96.0	99.3	90.0	95.9	-	-	96.5	98.6	92.7	99.2	-	-	93.1	97.4	93.9	98.8	100.0	-	94.3	94.0
Buses	0	0	0	0	-	0	0	0	8	0	-	8	0	0	0	0	-	0	0	8	0	0	-	8	16
% Buses	0.0	0.0	0.0	-	-	0.0	0.0	0.0	2.4	-	-	1.6	0.0	0.0	0.0	-	-	0.0	0.0	0.3	0.0	0.0	-	0.2	0.2
Single-Unit Trucks	2	0	3	0	-	5	0	3	3	0	-	6	1	142	1	0	-	144	3	133	0	0	-	136	291
% Single-Unit Trucks	3.1	0.0	3.4	-	-	2.8	0.0	10.0	0.9	-	-	1.2	1.4	5.3	0.8	-	-	5.0	1.1	4.6	0.0	0.0	-	4.2	4.3
Articulated Trucks	1	0	0	0	-	1	0	0	0	0	-	0	0	22	0	0	-	22	0	17	1	0	-	18	41
% Articulated Trucks	1.5	0.0	0.0	-	-	0.6	0.0	0.0	0.0	-	-	0.0	0.0	0.8	0.0	-	-	0.8	0.0	0.6	1.2	0.0	-	0.6	0.6
Bicycles on Road	0	0	0	0	-	0	1	0	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	1
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.7	0.0	0.0	-	-	0.2	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	25.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	3	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	75.0	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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Count Name: Barrick Road & West Side Road
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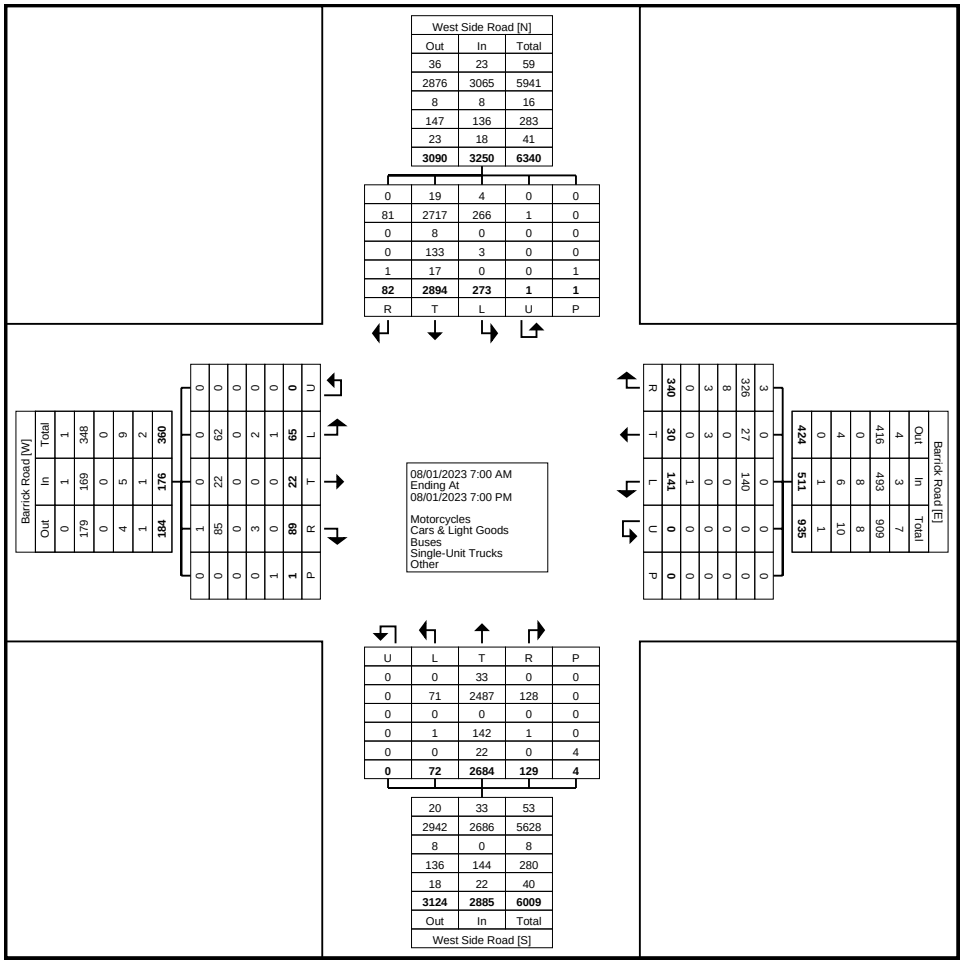
Start Date: 08/01/2023



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Barrick Road & West Side Road
Site Code: 230423
Start Date: 08/01/2023

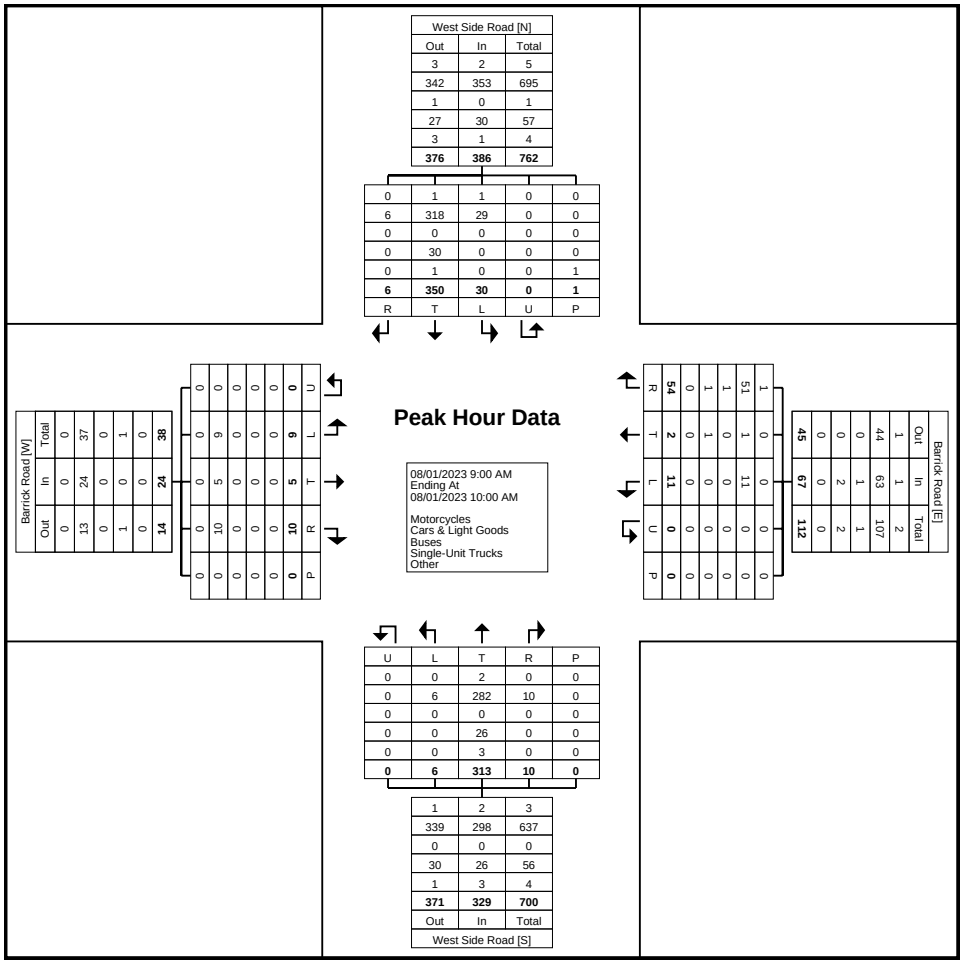
Turning Movement Peak Hour Data (9:00 AM)

Start Time	Barrick Road Eastbound						Barrick Road Westbound						West Side Road Northbound						West Side Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
9:00 AM	1	0	2	0	0	3	2	0	18	0	0	20	1	77	5	0	0	83	5	71	3	0	1	79	185
9:15 AM	2	2	2	0	0	6	2	1	13	0	0	16	2	76	1	0	0	79	9	85	1	0	0	95	196
9:30 AM	4	1	4	0	0	9	2	0	14	0	0	16	0	85	3	0	0	88	7	91	2	0	0	100	213
9:45 AM	2	2	2	0	0	6	5	1	9	0	0	15	3	75	1	0	0	79	9	103	0	0	0	112	212
Total	9	5	10	0	0	24	11	2	54	0	0	67	6	313	10	0	0	329	30	350	6	0	1	386	806
Approach %	37.5	20.8	41.7	0.0	-	-	16.4	3.0	80.6	0.0	-	-	1.8	95.1	3.0	0.0	-	-	7.8	90.7	1.6	0.0	-	-	-
Total %	1.1	0.6	1.2	0.0	-	3.0	1.4	0.2	6.7	0.0	-	8.3	0.7	38.8	1.2	0.0	-	40.8	3.7	43.4	0.7	0.0	-	47.9	-
PHF	0.563	0.625	0.625	0.000	-	0.667	0.550	0.500	0.750	0.000	-	0.838	0.500	0.921	0.500	0.000	-	0.935	0.833	0.850	0.500	0.000	-	0.862	0.946
Motorcycles	0	0	0	0	-	0	0	0	1	0	-	1	0	2	0	0	-	2	1	1	0	0	-	2	5
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	1.9	-	-	1.5	0.0	0.6	0.0	-	-	0.6	3.3	0.3	0.0	-	-	0.5	0.6
Cars & Light Goods	9	5	10	0	-	24	11	1	51	0	-	63	6	282	10	0	-	298	29	318	6	0	-	353	738
% Cars & Light Goods	100.0	100.0	100.0	-	-	100.0	100.0	50.0	94.4	-	-	94.0	100.0	90.1	100.0	-	-	90.6	96.7	90.9	100.0	-	-	91.5	91.6
Buses	0	0	0	0	-	0	0	0	1	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	1
% Buses	0.0	0.0	0.0	-	-	0.0	0.0	0.0	1.9	-	-	1.5	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.1
Single-Unit Trucks	0	0	0	0	-	0	0	1	1	0	-	2	0	26	0	0	-	26	0	30	0	0	-	30	58
% Single-Unit Trucks	0.0	0.0	0.0	-	-	0.0	0.0	50.0	1.9	-	-	3.0	0.0	8.3	0.0	-	-	7.9	0.0	8.6	0.0	-	-	7.8	7.2
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	3	0	0	-	3	0	1	0	0	-	1	4
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	1.0	0.0	-	-	0.9	0.0	0.3	0.0	-	-	0.3	0.5
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Barrick Road & West Side Road
Site Code: 230423
Start Date: 08/01/2023



Turning Movement Peak Hour Data Plot (9:00 AM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Barrick Road & West Side Road
Site Code: 230423
Start Date: 08/01/2023

Turning Movement Peak Hour Data (12:30 PM)

Start Time	Barrick Road Eastbound						Barrick Road Westbound						West Side Road Northbound						West Side Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
12:30 PM	1	1	3	0	0	5	8	0	14	0	0	22	2	87	10	0	0	99	11	96	1	0	0	108	234
12:45 PM	1	1	2	0	0	4	9	1	10	0	0	20	3	90	5	0	0	98	10	96	3	0	0	109	231
1:00 PM	1	0	4	0	0	5	5	0	11	0	0	16	0	102	3	0	0	105	8	102	3	0	0	113	239
1:15 PM	0	1	1	0	0	2	0	1	5	0	0	6	3	75	2	0	0	80	12	124	1	0	0	137	225
Total	3	3	10	0	0	16	22	2	40	0	0	64	8	354	20	0	0	382	41	418	8	0	0	467	929
Approach %	18.8	18.8	62.5	0.0	-	-	34.4	3.1	62.5	0.0	-	-	2.1	92.7	5.2	0.0	-	-	8.8	89.5	1.7	0.0	-	-	-
Total %	0.3	0.3	1.1	0.0	-	1.7	2.4	0.2	4.3	0.0	-	6.9	0.9	38.1	2.2	0.0	-	41.1	4.4	45.0	0.9	0.0	-	50.3	-
PHF	0.750	0.750	0.625	0.000	-	0.800	0.611	0.500	0.714	0.000	-	0.727	0.667	0.868	0.500	0.000	-	0.910	0.854	0.843	0.667	0.000	-	0.852	0.972
Motorcycles	0	0	1	0	-	1	0	0	0	0	-	0	0	6	0	0	-	6	1	1	0	0	-	2	9
% Motorcycles	0.0	0.0	10.0	-	-	6.3	0.0	0.0	0.0	-	-	0.0	0.0	1.7	0.0	-	-	1.6	2.4	0.2	0.0	-	-	0.4	1.0
Cars & Light Goods	3	3	9	0	-	15	22	2	38	0	-	62	8	311	19	0	-	338	38	392	8	0	-	438	853
% Cars & Light Goods	100.0	100.0	90.0	-	-	93.8	100.0	100.0	95.0	-	-	96.9	100.0	87.9	95.0	-	-	88.5	92.7	93.8	100.0	-	-	93.8	91.8
Buses	0	0	0	0	-	0	0	0	1	0	-	1	0	0	0	0	-	0	0	2	0	0	-	2	3
% Buses	0.0	0.0	0.0	-	-	0.0	0.0	0.0	2.5	-	-	1.6	0.0	0.0	0.0	-	-	0.0	0.0	0.5	0.0	-	-	0.4	0.3
Single-Unit Trucks	0	0	0	0	-	0	0	0	1	0	-	1	0	30	1	0	-	31	2	20	0	0	-	22	54
% Single-Unit Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	2.5	-	-	1.6	0.0	8.5	5.0	-	-	8.1	4.9	4.8	0.0	-	-	4.7	5.8
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	7	0	0	-	7	0	3	0	0	-	3	10
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	2.0	0.0	-	-	1.8	0.0	0.7	0.0	-	-	0.6	1.1
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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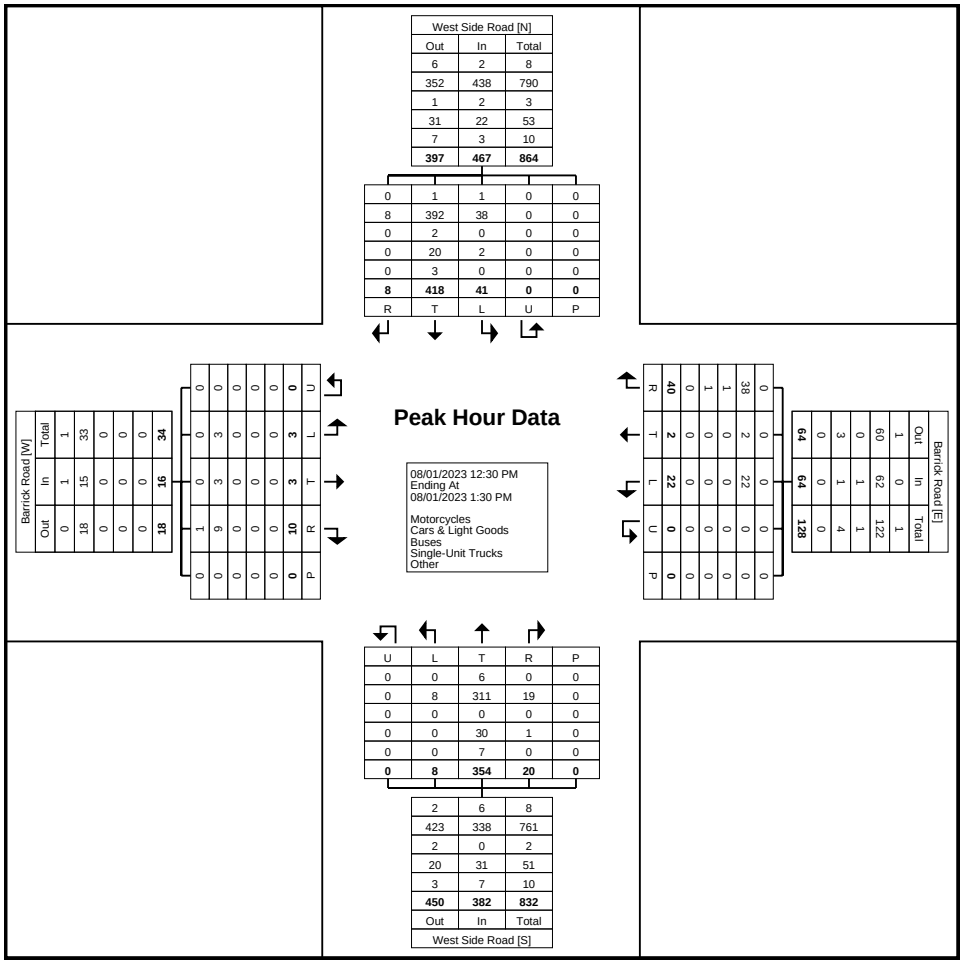


Turning Movement Peak Hour Data Plot (12:30 PM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Barrick Road & West Side Road
Site Code: 230423
Start Date: 08/01/2023

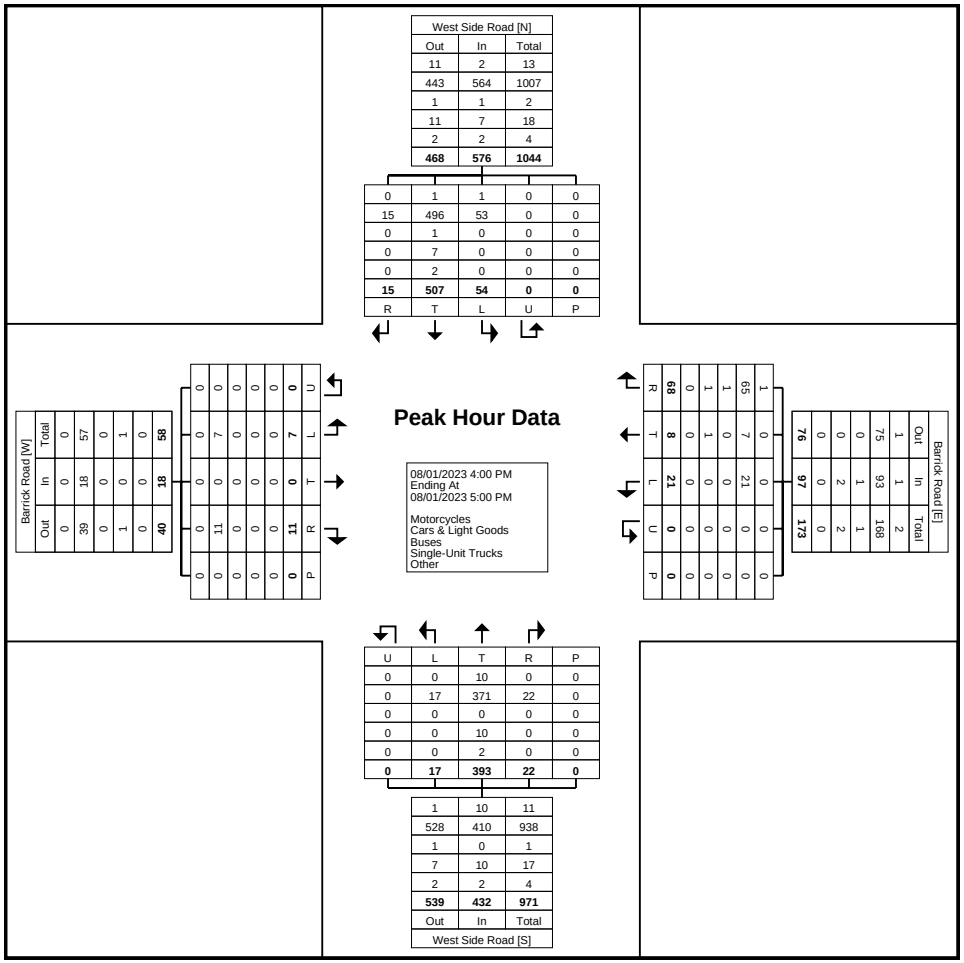
Turning Movement Peak Hour Data (4:00 PM)

Start Time	Barrick Road Eastbound						Barrick Road Westbound						West Side Road Northbound						West Side Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
4:00 PM	1	0	3	0	0	4	7	2	19	0	0	28	1	103	3	0	0	107	17	134	3	0	0	154	293
4:15 PM	0	0	3	0	0	3	6	1	17	0	0	24	5	113	6	0	0	124	10	118	4	0	0	132	283
4:30 PM	2	0	3	0	0	5	5	5	12	0	0	22	5	94	3	0	0	102	11	126	4	0	0	141	270
4:45 PM	4	0	2	0	0	6	3	0	20	0	0	23	6	83	10	0	0	99	16	129	4	0	0	149	277
Total	7	0	11	0	0	18	21	8	68	0	0	97	17	393	22	0	0	432	54	507	15	0	0	576	1123
Approach %	38.9	0.0	61.1	0.0	-	-	21.6	8.2	70.1	0.0	-	-	3.9	91.0	5.1	0.0	-	-	9.4	88.0	2.6	0.0	-	-	-
Total %	0.6	0.0	1.0	0.0	-	1.6	1.9	0.7	6.1	0.0	-	8.6	1.5	35.0	2.0	0.0	-	38.5	4.8	45.1	1.3	0.0	-	51.3	-
PHF	0.438	0.000	0.917	0.000	-	0.750	0.750	0.400	0.850	0.000	-	0.866	0.708	0.869	0.550	0.000	-	0.871	0.794	0.946	0.938	0.000	-	0.935	0.958
Motorcycles	0	0	0	0	-	0	0	0	1	0	-	1	0	10	0	0	-	10	1	1	0	0	-	2	13
% Motorcycles	0.0	-	0.0	-	-	0.0	0.0	0.0	1.5	-	-	1.0	0.0	2.5	0.0	-	-	2.3	1.9	0.2	0.0	-	-	0.3	1.2
Cars & Light Goods	7	0	11	0	-	18	21	7	65	0	-	93	17	371	22	0	-	410	53	496	15	0	-	564	1085
% Cars & Light Goods	100.0	-	100.0	-	-	100.0	100.0	87.5	95.6	-	-	95.9	100.0	94.4	100.0	-	-	94.9	98.1	97.8	100.0	-	-	97.9	96.6
Buses	0	0	0	0	-	0	0	0	1	0	-	1	0	0	0	0	-	0	0	1	0	0	-	1	2
% Buses	0.0	-	0.0	-	-	0.0	0.0	0.0	1.5	-	-	1.0	0.0	0.0	0.0	-	-	0.0	0.0	0.2	0.0	-	-	0.2	0.2
Single-Unit Trucks	0	0	0	0	-	0	0	1	1	0	-	2	0	10	0	0	-	10	0	7	0	0	-	7	19
% Single-Unit Trucks	0.0	-	0.0	-	-	0.0	0.0	12.5	1.5	-	-	2.1	0.0	2.5	0.0	-	-	2.3	0.0	1.4	0.0	-	-	1.2	1.7
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	2	0	0	-	2	0	2	0	0	-	2	4
% Articulated Trucks	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.5	0.0	-	-	0.5	0.0	0.4	0.0	-	-	0.3	0.4
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Barrick Road & West Side Road
Site Code: 230423
Start Date: 08/01/2023



Turning Movement Peak Hour Data Plot (4:00 PM)

Appendix C

Base Year Traffic Operation Reports

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	5	10	11	2	55	6	316	10	30	354	6
Future Volume (vph)	9	5	10	11	2	55	6	316	10	30	354	6
Ideal Flow (vphpl)	1483	1483	1483	1483	1483	1483	1504	1388	1388	1504	1388	1388
Storage Length (m)	0.0		0.0	0.0		0.0	30.0		0.0	110.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt		0.941			0.891			0.995			0.998	
Flt Protected		0.982			0.992		0.950			0.950		
Satd. Flow (prot)	0	1370	0	0	1253	0	1429	2414	0	1429	2418	0
Flt Permitted		0.982			0.992		0.950			0.950		
Satd. Flow (perm)	0	1370	0	0	1253	0	1429	2414	0	1429	2418	0
Link Speed (k/h)		50			50			70			80	
Link Distance (m)		200.7			412.7			191.5			132.1	
Travel Time (s)		14.5			29.7			9.8			5.9	
Confl. Peds. (#/hr)	1					1						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	0%	50%	4%	0%	9%	0%	0%	9%	0%
Adj. Flow (vph)	9	5	11	12	2	58	6	333	11	32	373	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	25	0	0	72	0	6	344	0	32	379	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.37	1.37	1.37	1.37	1.37	1.37	1.34	1.48	1.48	1.34	1.48	1.48
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	33.0%	ICU Level of Service A	
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	5	10	11	2	55	6	316	10	30	354	6
Future Volume (Veh/h)	9	5	10	11	2	55	6	316	10	30	354	6
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	9	5	11	12	2	58	6	333	11	32	373	6
Pedestrians											1	
Lane Width (m)											3.6	
Walking Speed (m/s)											1.2	
Percent Blockage											0	
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	678	796	190	614	794	173	379			344		
vC1, stage 1 conf vol	440	440		350	350							
vC2, stage 2 conf vol	238	356		264	443							
vCu, unblocked vol	678	796	190	614	794	173	379			344		
tC, single (s)	7.5	6.5	6.9	7.5	7.5	7.0	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	6.5							
tF (s)	3.5	4.0	3.3	3.5	4.5	3.3	2.2			2.2		
p0 queue free %	98	99	99	98	99	93	99			97		
cM capacity (veh/h)	488	479	826	548	388	834	1191			1226		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	25	72	6	222	122	32	249	130
Volume Left	9	12	6	0	0	32	0	0
Volume Right	11	58	0	0	11	0	0	6
cSH	593	745	1191	1700	1700	1226	1700	1700
Volume to Capacity	0.04	0.10	0.01	0.13	0.07	0.03	0.15	0.08
Queue Length 95th (m)	1.1	2.6	0.1	0.0	0.0	0.6	0.0	0.0
Control Delay (s)	11.3	10.3	8.0	0.0	0.0	8.0	0.0	0.0
Lane LOS	B	B	A			A		
Approach Delay (s)	11.3	10.3	0.1			0.6		
Approach LOS	B	B						

Intersection Summary				
Average Delay	1.6			
Intersection Capacity Utilization	33.0%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	41	6	28	58	23	32
Future Volume (vph)	41	6	28	58	23	32
Ideal Flow (vphpl)	1388	1388	1228	1228	1483	1483
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.982				0.921	
Flt Protected				0.984	0.980	
Satd. Flow (prot)	1255	0	0	1125	1252	0
Flt Permitted				0.984	0.980	
Satd. Flow (perm)	1255	0	0	1125	1252	0
Link Speed (k/h)	50			50	40	
Link Distance (m)	412.7			368.0	243.1	
Travel Time (s)	29.7			26.5	21.9	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	5%	33%	4%	9%	4%	9%
Adj. Flow (vph)	47	7	32	67	26	37
Shared Lane Traffic (%)						
Lane Group Flow (vph)	54	0	0	99	63	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.48	1.48	1.71	1.71	1.37	1.37
Turning Speed (k/h)		100	100		100	100
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 24.6%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	41	6	28	58	23	32
Future Volume (Veh/h)	41	6	28	58	23	32
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	47	7	32	67	26	37
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			54		182	50
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			54		182	50
tC, single (s)			4.1		6.4	6.3
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.4
p0 queue free %			98		97	96
cM capacity (veh/h)			1539		787	998

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	54	99	63
Volume Left	0	32	26
Volume Right	7	0	37
cSH	1700	1539	898
Volume to Capacity	0.03	0.02	0.07
Queue Length 95th (m)	0.0	0.5	1.8
Control Delay (s)	0.0	2.5	9.3
Lane LOS		A	A
Approach Delay (s)	0.0	2.5	9.3
Approach LOS			A

Intersection Summary			
Average Delay	3.9		
Intersection Capacity Utilization	24.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	4	48	3	3	0	41	74	1	1	70	6
Future Volume (vph)	8	4	48	3	3	0	41	74	1	1	70	6
Ideal Flow (vphpl)	1483	1483	1483	1483	1483	1483	1483	1483	1483	1483	1483	1483
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	1.00
Ped Bike Factor												
Frt		0.892						0.999			0.989	
Flt Protected		0.994			0.976			0.983			0.999	
Satd. Flow (prot)	0	1294	0	0	1447	0	0	1340	0	0	1329	0
Flt Permitted		0.994			0.976			0.983			0.999	
Satd. Flow (perm)	0	1294	0	0	1447	0	0	1340	0	0	1329	0
Link Speed (k/h)		50			50			50			60	
Link Distance (m)		45.6			194.5			189.8			146.3	
Travel Time (s)		3.3			14.0			13.7			8.8	
Confl. Peds. (#/hr)	1					1						
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	10%	8%	0%	100%	10%	0%
Adj. Flow (vph)	9	5	55	3	3	0	47	85	1	1	80	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	69	0	0	6	0	0	133	0	0	88	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.37
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	26.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	4	48	3	3	0	41	74	1	1	70	6
Future Volume (Veh/h)	8	4	48	3	3	0	41	74	1	1	70	6
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	9	5	55	3	3	0	47	85	1	1	80	7
Pedestrians											1	
Lane Width (m)											3.6	
Walking Speed (m/s)											1.2	
Percent Blockage											0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	268	266	84	322	268	86	87			86		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	268	266	84	322	268	86	87			86		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.2			5.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			3.1		
p0 queue free %	99	99	94	99	100	100	97			100		
cM capacity (veh/h)	669	622	976	580	620	977	1460			1067		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	69	6	133	88
Volume Left	9	3	47	1
Volume Right	55	0	1	7
cSH	886	599	1460	1067
Volume to Capacity	0.08	0.01	0.03	0.00
Queue Length 95th (m)	2.0	0.2	0.8	0.0
Control Delay (s)	9.4	11.1	2.8	0.1
Lane LOS	A	B	A	A
Approach Delay (s)	9.4	11.1	2.8	0.1
Approach LOS	A	B		

Intersection Summary				
Average Delay		3.7		
Intersection Capacity Utilization		26.0%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	8	17	31	32	48	8
Future Volume (vph)	8	17	31	32	48	8
Ideal Flow (vphpl)	1483	1483	1228	1228	1388	1388
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.907				0.981	
Flt Protected	0.985			0.976		
Satd. Flow (prot)	1272	0	0	1164	1295	0
Flt Permitted	0.985			0.976		
Satd. Flow (perm)	1272	0	0	1164	1295	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	237.1			136.5	203.0	
Travel Time (s)	17.1			9.8	14.6	
Confl. Peds. (#/hr)		1				
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	0%	6%	3%	3%	6%	0%
Adj. Flow (vph)	9	20	36	37	56	9
Shared Lane Traffic (%)						
Lane Group Flow (vph)	29	0	0	73	65	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.37	1.37	1.71	1.71	1.48	1.48
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	22.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	8	17	31	32	48	8
Future Volume (Veh/h)	8	17	31	32	48	8
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	9	20	36	37	56	9
Pedestrians				1		
Lane Width (m)				3.6		
Walking Speed (m/s)				1.2		
Percent Blockage				0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	170	62	65			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	170	62	65			
tC, single (s)	6.4	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.4	2.2			
p0 queue free %	99	98	98			
cM capacity (veh/h)	806	992	1531			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	29	73	65
Volume Left	9	36	0
Volume Right	20	0	9
cSH	925	1531	1700
Volume to Capacity	0.03	0.02	0.04
Queue Length 95th (m)	0.8	0.6	0.0
Control Delay (s)	9.0	3.7	0.0
Lane LOS	A	A	
Approach Delay (s)	9.0	3.7	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	3.2		
Intersection Capacity Utilization	22.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	0	11	21	8	69	17	397	22	55	512	15
Future Volume (vph)	7	0	11	21	8	69	17	397	22	55	512	15
Ideal Flow (vphpl)	1483	1483	1483	1483	1483	1483	1504	1388	1388	1504	1388	1388
Storage Length (m)	0.0		0.0	0.0		0.0	30.0		0.0	110.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.917			0.905			0.992			0.996	
Flt Protected		0.981			0.989		0.950			0.950		
Satd. Flow (prot)	0	1334	0	0	1287	0	1429	2544	0	1429	2577	0
Flt Permitted		0.981			0.989		0.950			0.950		
Satd. Flow (perm)	0	1334	0	0	1287	0	1429	2544	0	1429	2577	0
Link Speed (k/h)		50			50			70			80	
Link Distance (m)		200.7			412.7			191.5			132.1	
Travel Time (s)		14.5			29.7			9.8			5.9	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	0%	0%	13%	3%	0%	3%	0%	0%	2%	0%
Adj. Flow (vph)	7	0	11	22	8	72	18	414	23	57	533	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	18	0	0	102	0	18	437	0	57	549	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.37	1.37	1.37	1.37	1.37	1.37	1.34	1.48	1.48	1.34	1.48	1.48
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	41.7%	ICU Level of Service A	
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	0	11	21	8	69	17	397	22	55	512	15
Future Volume (Veh/h)	7	0	11	21	8	69	17	397	22	55	512	15
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	7	0	11	22	8	72	18	414	23	57	533	16
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	974	1128	274	853	1124	218	549			437		
vC1, stage 1 conf vol	655	655		462	462							
vC2, stage 2 conf vol	319	473		392	663							
vCu, unblocked vol	974	1128	274	853	1124	218	549			437		
tC, single (s)	7.5	6.5	6.9	7.5	6.8	7.0	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.8							
tF (s)	3.5	4.0	3.3	3.5	4.1	3.3	2.2			2.2		
p0 queue free %	98	100	98	95	98	91	98			95		
cM capacity (veh/h)	351	365	729	435	342	783	1031			1134		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	18	102	18	276	161	57	355	194
Volume Left	7	22	18	0	0	57	0	0
Volume Right	11	72	0	0	23	0	0	16
cSH	514	615	1031	1700	1700	1134	1700	1700
Volume to Capacity	0.04	0.17	0.02	0.16	0.09	0.05	0.21	0.11
Queue Length 95th (m)	0.9	4.7	0.4	0.0	0.0	1.3	0.0	0.0
Control Delay (s)	12.3	12.0	8.6	0.0	0.0	8.3	0.0	0.0
Lane LOS	B	B	A			A		
Approach Delay (s)	12.3	12.0	0.3			0.8		
Approach LOS	B	B						

Intersection Summary				
Average Delay	1.8			
Intersection Capacity Utilization	41.7%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	41	6	28	58	23	32
Future Volume (vph)	41	6	28	58	23	32
Ideal Flow (vphpl)	1388	1388	1228	1228	1483	1483
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.982				0.921	
Flt Protected				0.984	0.980	
Satd. Flow (prot)	1340	0	0	1184	1301	0
Flt Permitted				0.984	0.980	
Satd. Flow (perm)	1340	0	0	1184	1301	0
Link Speed (k/h)	50			50	40	
Link Distance (m)	412.7			368.0	243.1	
Travel Time (s)	29.7			26.5	21.9	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	2%	0%	0%	3%	7%	0%
Adj. Flow (vph)	45	7	31	64	25	35
Shared Lane Traffic (%)						
Lane Group Flow (vph)	52	0	0	95	60	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.48	1.48	1.71	1.71	1.37	1.37
Turning Speed (k/h)		100	100		100	100
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 24.6%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	41	6	28	58	23	32
Future Volume (Veh/h)	41	6	28	58	23	32
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	45	7	31	64	25	35
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			52		174	48
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			52		174	48
tC, single (s)			4.1		6.5	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			98		97	97
cM capacity (veh/h)			1567		788	1026

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	52	95	60
Volume Left	0	31	25
Volume Right	7	0	35
cSH	1700	1567	911
Volume to Capacity	0.03	0.02	0.07
Queue Length 95th (m)	0.0	0.5	1.7
Control Delay (s)	0.0	2.5	9.2
Lane LOS		A	A
Approach Delay (s)	0.0	2.5	9.2
Approach LOS			A

Intersection Summary			
Average Delay	3.8		
Intersection Capacity Utilization	24.6%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	5	57	8	8	0	81	84	7	0	104	9
Future Volume (vph)	6	5	57	8	8	0	81	84	7	0	104	9
Ideal Flow (vphpl)	1483	1483	1483	1483	1483	1483	1483	1483	1483	1483	1483	1483
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	1.00
Ped Bike Factor												
Frt		0.887						0.995			0.989	
Flt Protected		0.996			0.976			0.977				
Satd. Flow (prot)	0	1268	0	0	1447	0	0	1356	0	0	1378	0
Flt Permitted		0.996			0.976			0.977				
Satd. Flow (perm)	0	1268	0	0	1447	0	0	1356	0	0	1378	0
Link Speed (k/h)		50			50			50			60	
Link Distance (m)		45.6			194.5			189.8			146.3	
Travel Time (s)		3.3			14.0			13.7			8.8	
Confl. Peds. (#/hr)			1	1								
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	0%	0%	4%	0%	0%	0%	3%	10%	0%	0%	6%	11%
Adj. Flow (vph)	7	6	68	10	10	0	96	100	8	0	124	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	81	0	0	20	0	0	204	0	0	135	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.37
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	30.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	5	57	8	8	0	81	84	7	0	104	9
Future Volume (Veh/h)	6	5	57	8	8	0	81	84	7	0	104	9
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	7	6	68	10	10	0	96	100	8	0	124	11
Pedestrians								1				
Lane Width (m)								3.6				
Walking Speed (m/s)								1.2				
Percent Blockage								0				
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	430	430	130	498	431	104	135			108		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	430	430	130	498	431	104	135			108		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	99	93	98	98	100	93			100		
cM capacity (veh/h)	503	486	913	423	486	956	1443			1495		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	81	20	204	135
Volume Left	7	10	96	0
Volume Right	68	0	8	11
cSH	804	452	1443	1495
Volume to Capacity	0.10	0.04	0.07	0.00
Queue Length 95th (m)	2.7	1.1	1.7	0.0
Control Delay (s)	10.0	13.3	3.9	0.0
Lane LOS	A	B	A	
Approach Delay (s)	10.0	13.3	3.9	0.0
Approach LOS	A	B		

Intersection Summary				
Average Delay	4.3			
Intersection Capacity Utilization	30.9%	ICU Level of Service		A
Analysis Period (min)	15			

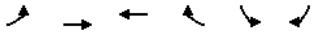
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	9	33	24	45	49	8
Future Volume (vph)	9	33	24	45	49	8
Ideal Flow (vphpl)	1483	1483	1228	1228	1388	1388
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.894				0.981	
Flt Protected	0.989			0.983		
Satd. Flow (prot)	1311	0	0	1207	1362	0
Flt Permitted	0.989			0.983		
Satd. Flow (perm)	1311	0	0	1207	1362	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	237.1			136.5	203.0	
Travel Time (s)	17.1			9.8	14.6	
Confl. Peds. (#/hr)		1				
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	10	37	27	51	55	9
Shared Lane Traffic (%)						
Lane Group Flow (vph)	47	0	0	78	64	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.37	1.37	1.71	1.71	1.48	1.48
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	22.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	9	33	24	45	49	8
Future Volume (Veh/h)	9	33	24	45	49	8
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	10	37	27	51	55	9
Pedestrians				1		
Lane Width (m)				3.6		
Walking Speed (m/s)				1.2		
Percent Blockage				0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	164	60	64			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	164	60	64			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	96	98			
cM capacity (veh/h)	816	1010	1551			

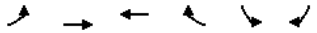
Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	47	78	64
Volume Left	10	27	0
Volume Right	37	0	9
cSH	961	1551	1700
Volume to Capacity	0.05	0.02	0.04
Queue Length 95th (m)	1.2	0.4	0.0
Control Delay (s)	8.9	2.6	0.0
Lane LOS	A	A	
Approach Delay (s)	8.9	2.6	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	3.3		
Intersection Capacity Utilization	22.7%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	2	6	0	0	0
Future Volume (vph)	0	2	6	0	0	0
Ideal Flow (vphpl)	1228	1228	1388	1388	1483	1483
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	0	1204	1361	0	1454	0
Flt Permitted						
Satd. Flow (perm)	0	1204	1361	0	1454	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		91.7	97.8		98.9	
Travel Time (s)		6.6	7.0		7.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	2	7	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	2	7	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.71	1.71	1.48	1.48	1.37	1.37
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	6.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	2	6	0	0	0
Future Volume (Veh/h)	0	2	6	0	0	0
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)	0	2	7	0	0	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	7				9	7
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	7				9	7
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1614				1011	1075

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	2	7	0
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1614	1700	1700
Volume to Capacity	0.00	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS			A
Approach Delay (s)	0.0	0.0	0.0
Approach LOS			A

Intersection Summary				
Average Delay		0.0		
Intersection Capacity Utilization		6.7%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	55	0	0	34
Future Volume (vph)	0	0	55	0	0	34
Ideal Flow (vphpl)	1483	1483	1388	1388	1228	1228
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1454	0	1361	0	0	1204
Flt Permitted						
Satd. Flow (perm)	1454	0	1361	0	0	1204
Link Speed (k/h)	50		40			50
Link Distance (m)	86.6		203.0			243.1
Travel Time (s)	6.2		18.3			17.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	60	0	0	37
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	60	0	0	37
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.37	1.37	1.48	1.48	1.71	1.71
Turning Speed (k/h)	25	15		15	25	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	7.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	55	0	0	34
Future Volume (Veh/h)	0	0	55	0	0	34
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	60	0	0	37
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	97	60			60	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	97	60			60	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	902	1005			1544	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	0	60	37
Volume Left	0	0	0
Volume Right	0	0	0
cSH	1700	1700	1544
Volume to Capacity	0.00	0.04	0.00
Queue Length 95th (m)	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0
Lane LOS	A		
Approach Delay (s)	0.0	0.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	0.0		
Intersection Capacity Utilization	7.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	73	0	0	98	0	0
Future Volume (vph)	73	0	0	98	0	0
Ideal Flow (vphpl)	1388	1388	1629	1629	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt						
Flt Protected						
Satd. Flow (prot)	1361	0	0	1597	0	0
Flt Permitted						
Satd. Flow (perm)	1361	0	0	1597	0	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	368.0			45.6	98.8	
Travel Time (s)	26.5			3.3	7.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	79	0	0	107	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	79	0	0	107	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.48	1.48	1.22	1.22	1.00	1.00
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 9.3%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection Sign configuration not allowed in HCM analysis.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	0	0	0	0	172	0	0	169	0
Future Volume (vph)	0	0	0	0	0	0	0	172	0	0	169	0
Ideal Flow (vphpl)	1483	1483	1000	1483	1483	1483	1483	1483	1483	1483	1483	1483
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	1.00
Frt												
Flt Protected												
Satd. Flow (prot)	0	1454	0	0	1454	0	0	1454	0	0	1454	0
Flt Permitted												
Satd. Flow (perm)	0	1454	0	0	1454	0	0	1454	0	0	1454	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		92.4			127.6			100.6			189.8	
Travel Time (s)		6.7			9.2			7.2			13.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0	0	187	0	0	184	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	0	0	0	187	0	0	184	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.37	1.37	2.17	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.37
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	14.9%	ICU Level of Service	A
Analysis Period (min)	15		

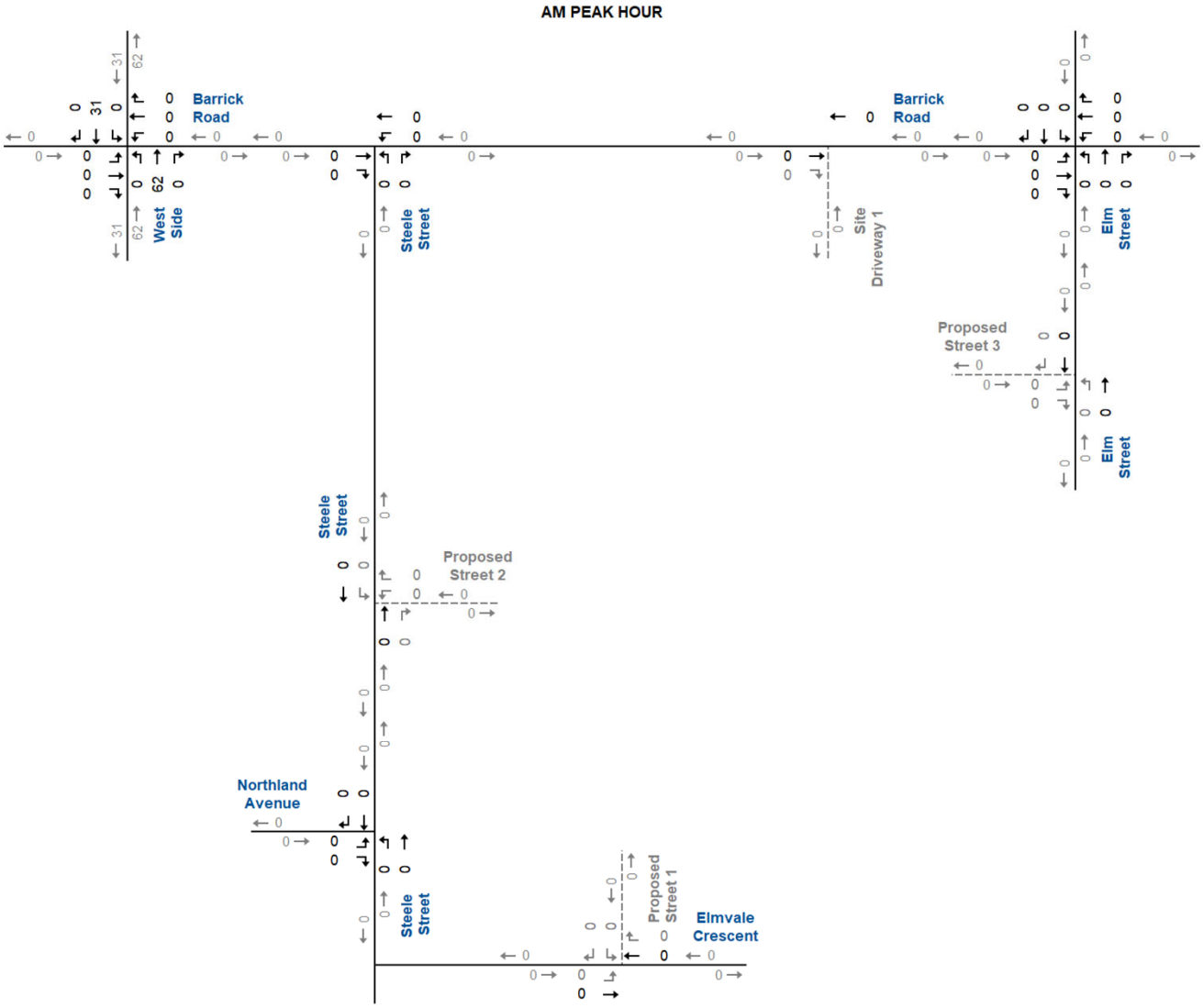
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	0	0	0	0	172	0	0	169	0
Future Volume (Veh/h)	0	0	0	0	0	0	0	172	0	0	169	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	0	0	187	0	0	184	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	371	371	184	371	371	187	184			187		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	371	371	184	371	371	187	184			187		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	100	100	100	100			100		
cM capacity (veh/h)	586	559	858	586	559	855	1391			1387		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	0	0	187	184
Volume Left	0	0	0	0
Volume Right	0	0	0	0
cSH	1700	1700	1391	1387
Volume to Capacity	0.00	0.00	0.00	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0
Control Delay (s)	0.0	0.0	0.0	0.0
Lane LOS	A	A		
Approach Delay (s)	0.0	0.0	0.0	0.0
Approach LOS	A	A		

Intersection Summary					
Average Delay		0.0			
Intersection Capacity Utilization	14.9%	ICU Level of Service		A	
Analysis Period (min)	15				

Appendix D

Adjacent Development Traffic Forecasts

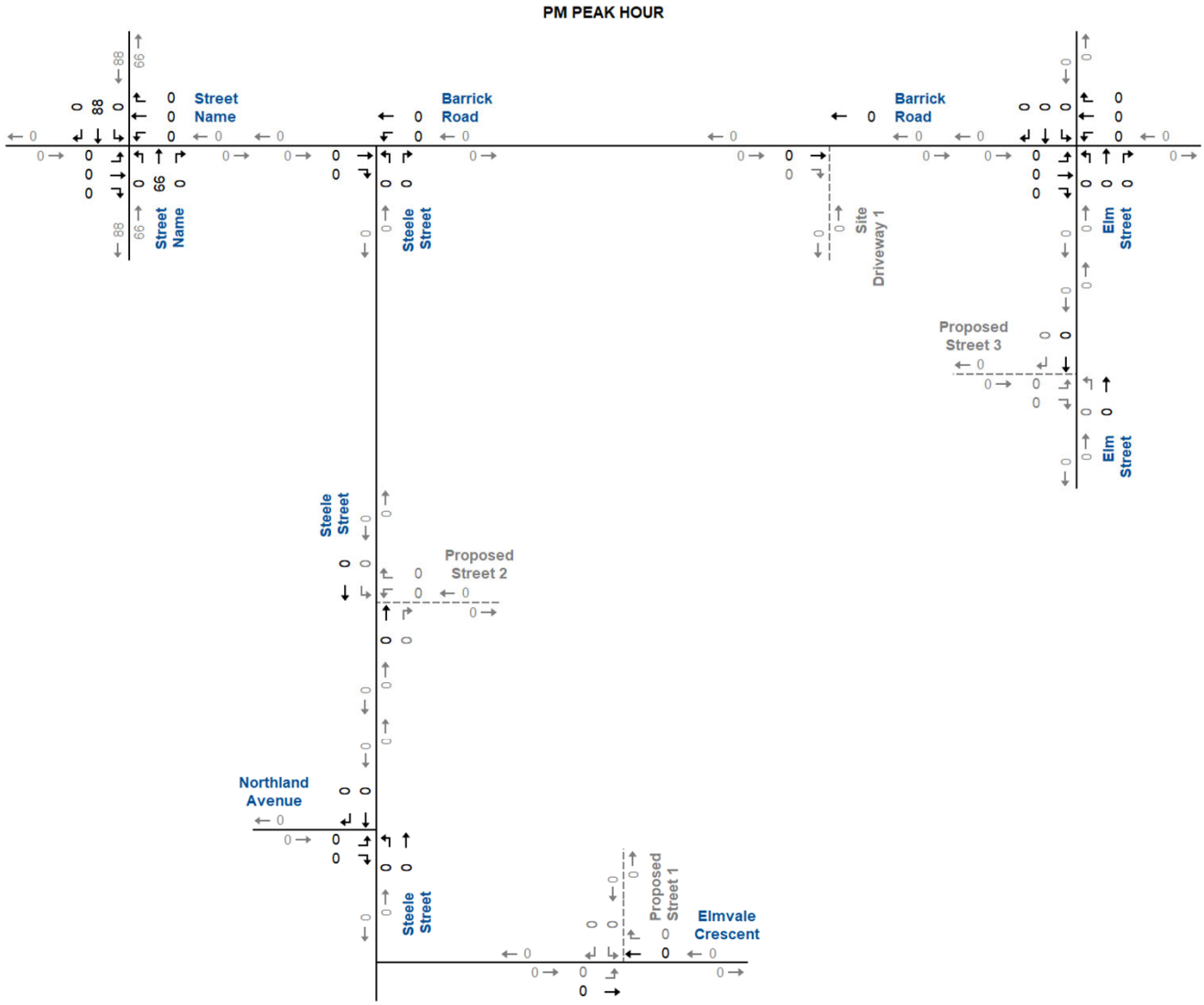


NTS

Northland Estates Traffic Forecast – AM Peak Hour

Elm Street Development, Port Colborne
240031

Appendix D

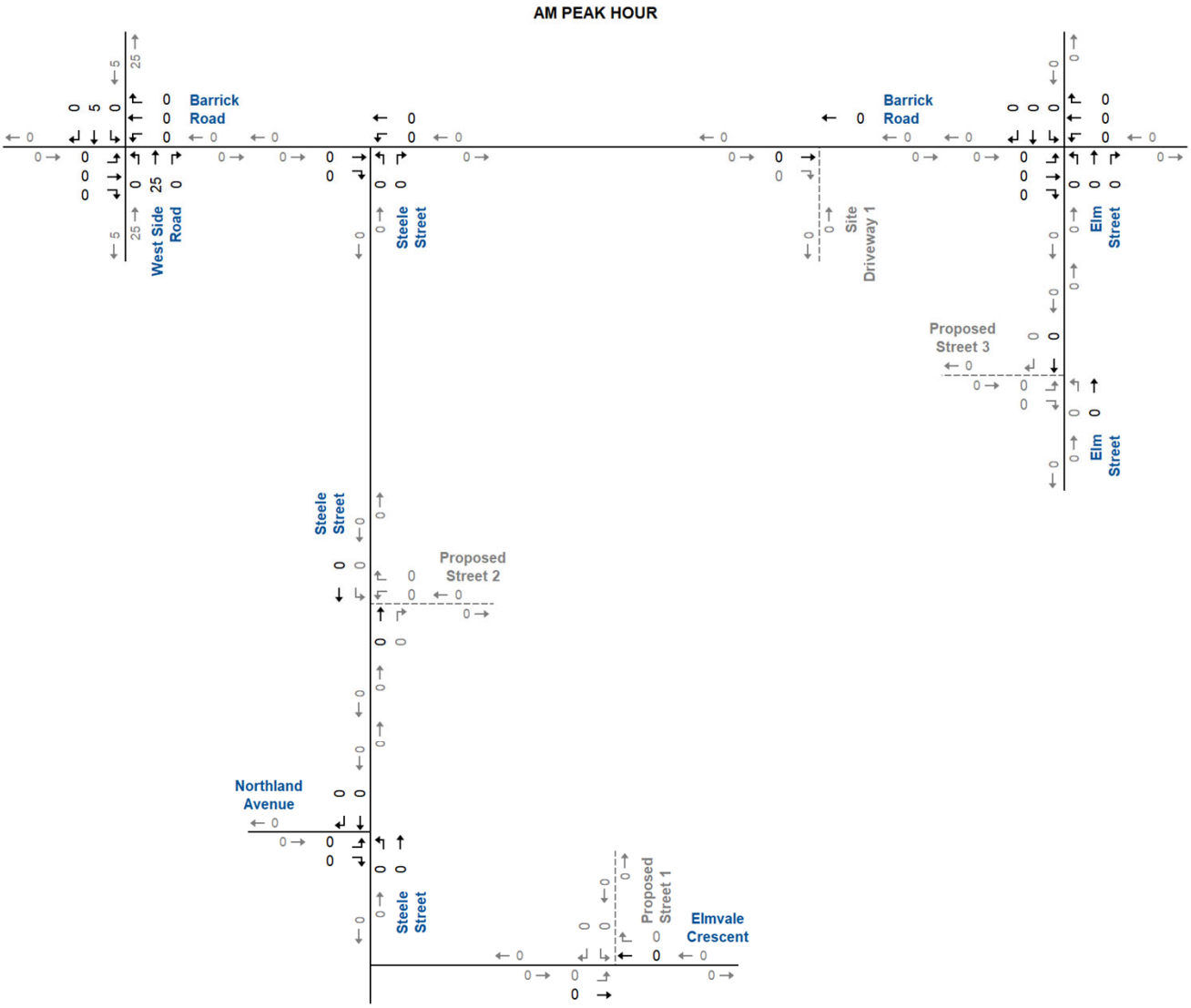


NTS

Northland Estates Traffic Forecast – PM Peak Hour

Elm Street Development, Port Colborne
240031

Appendix D

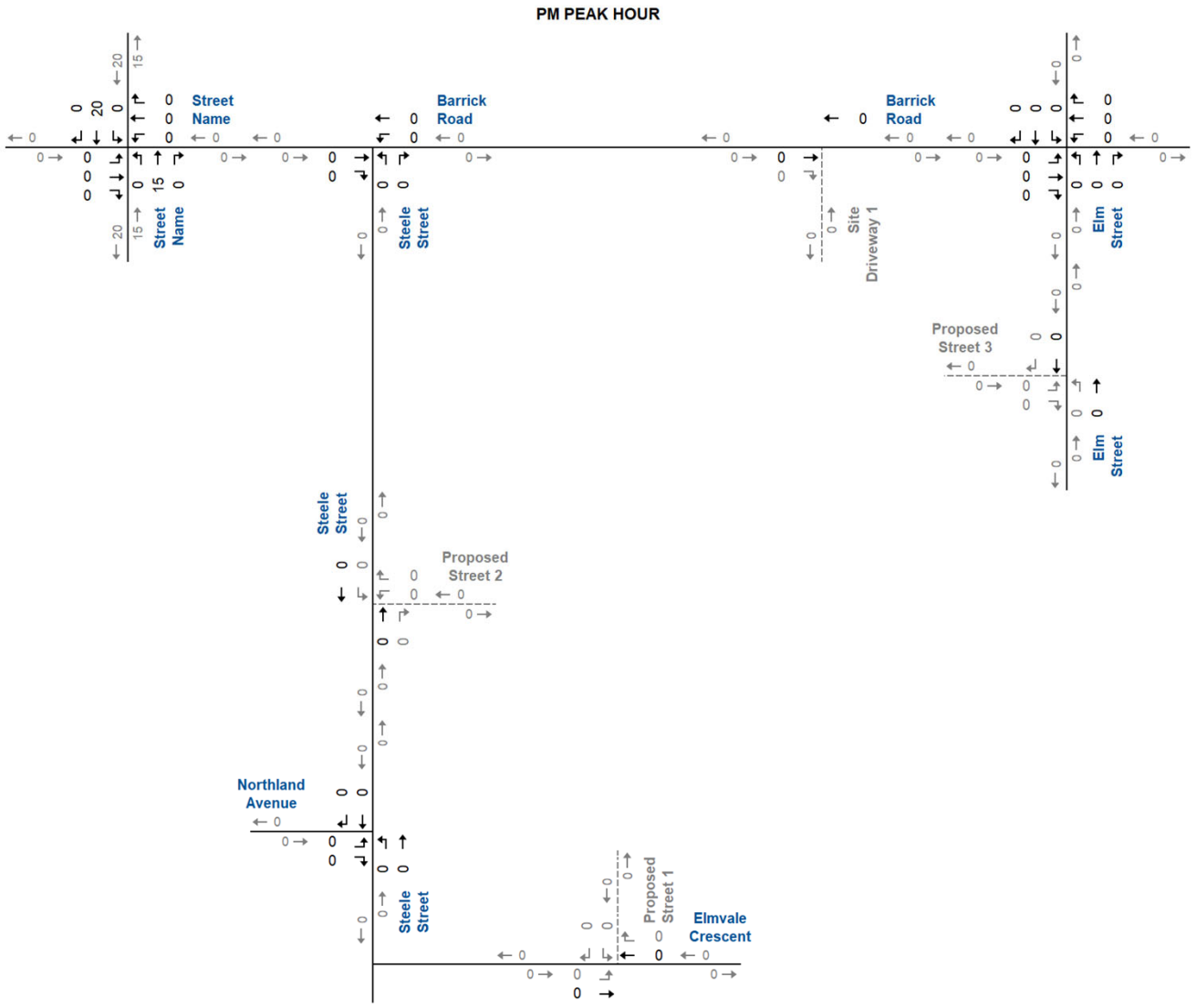


NTS

135 Coronation Drive
Traffic Forecast – AM Peak Hour

Elm Street Development, Port Colborne
240031

Appendix D

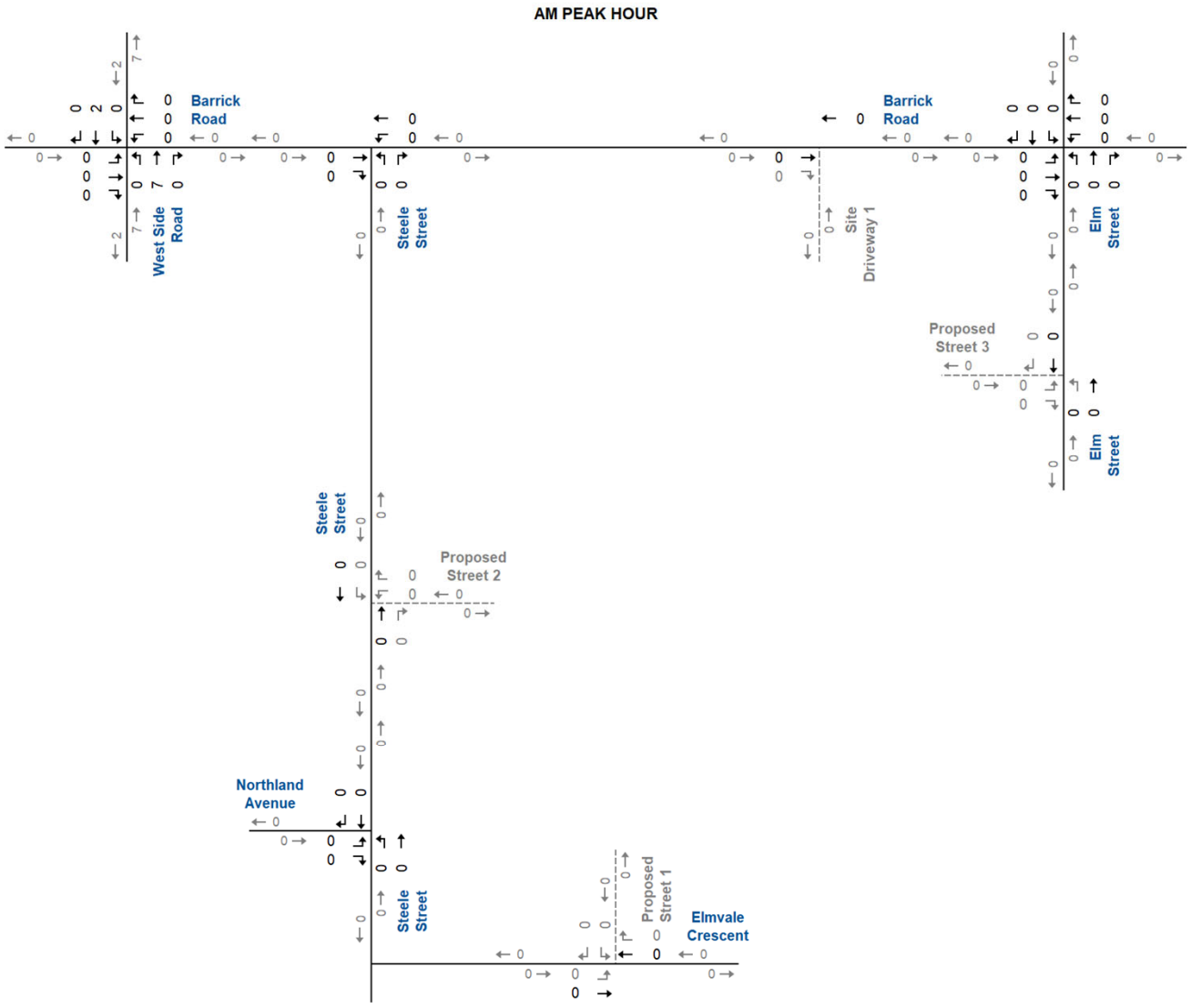


NTS

135 Coronation Drive
Traffic Forecast – PM Peak Hour

Elm Street Development, Port Colborne
240031

Appendix D

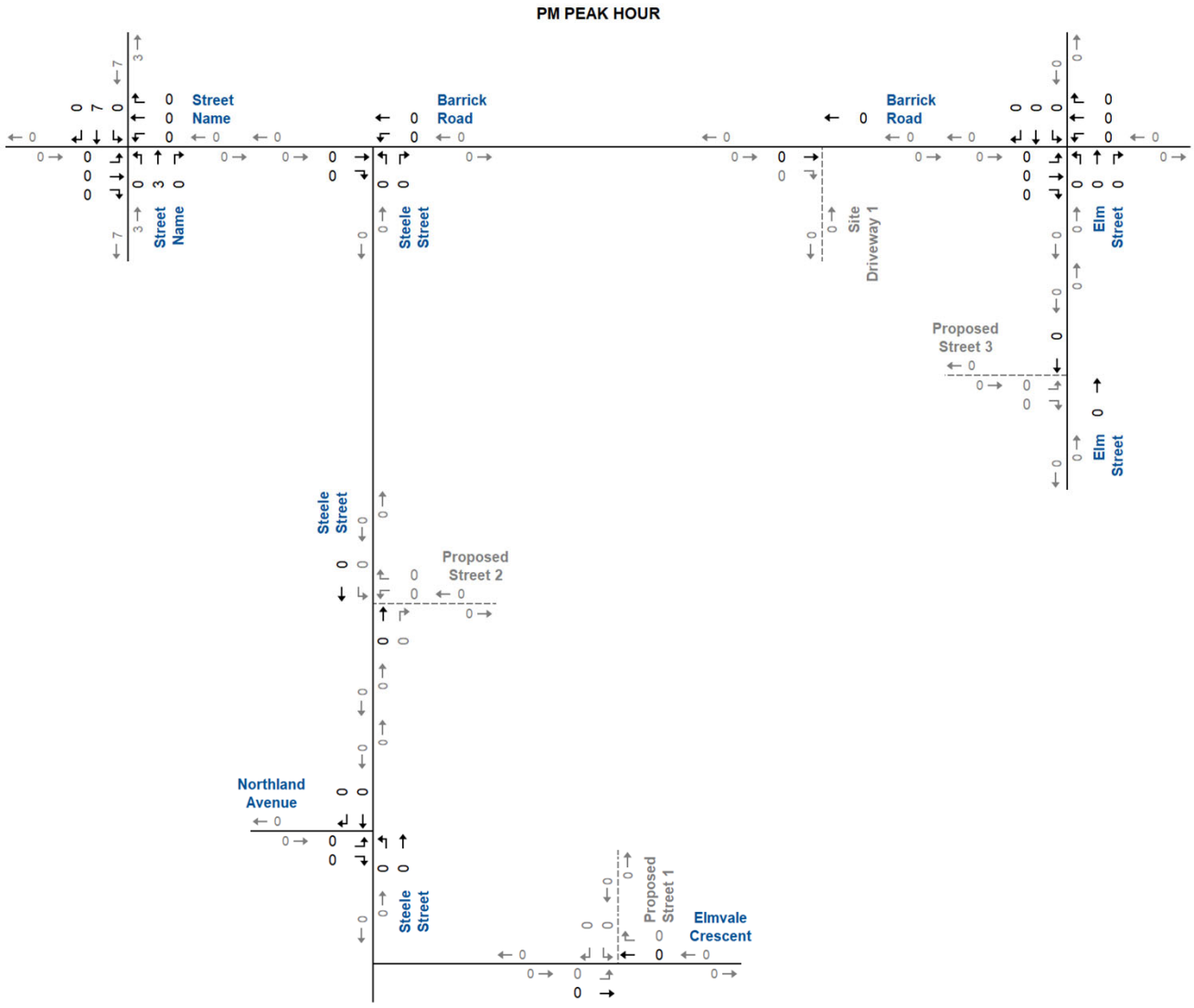


NTS

250 West Side Road
Traffic Forecast – AM Peak Hour

Elm Street Development, Port Colborne
240031

Appendix D

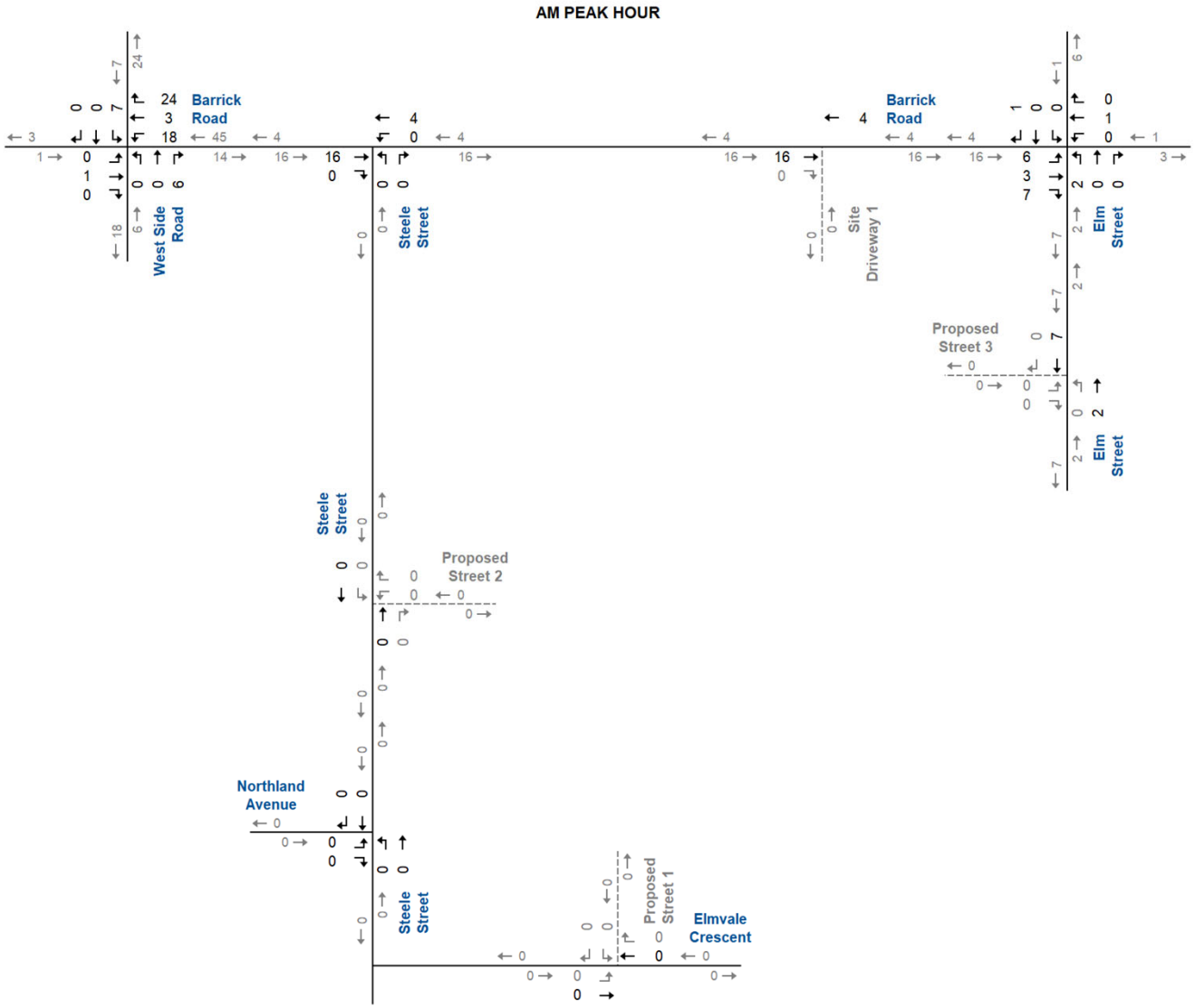


NTS

250 West Side Road
Traffic Forecast – PM Peak Hour

Elm Street Development, Port Colborne
240031

Appendix D

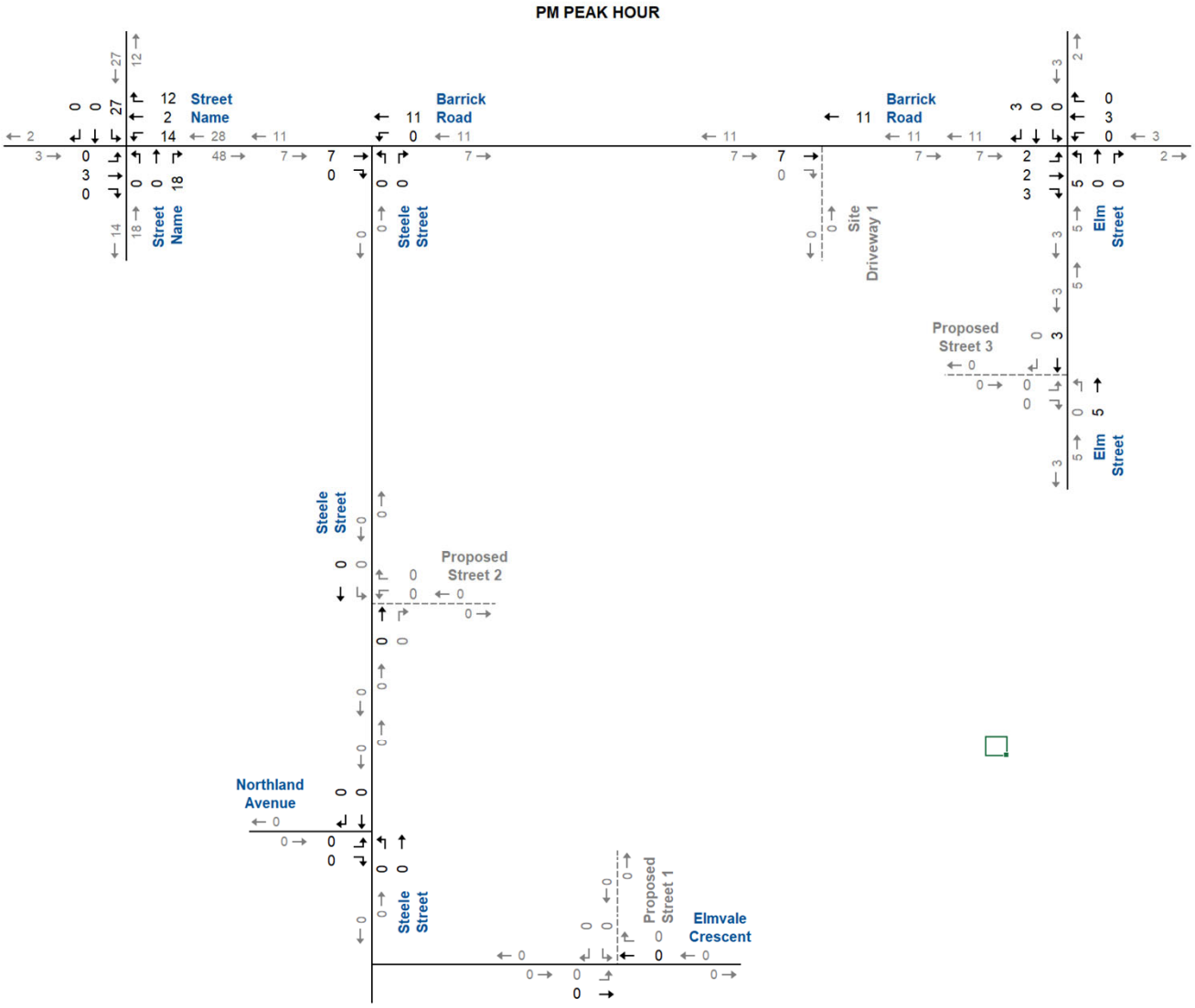


NTS

Barrick Road and West Side Road (East Development) Traffic Forecast – AM Peak Hour

Elm Street Development, Port Colborne
240031

Appendix D

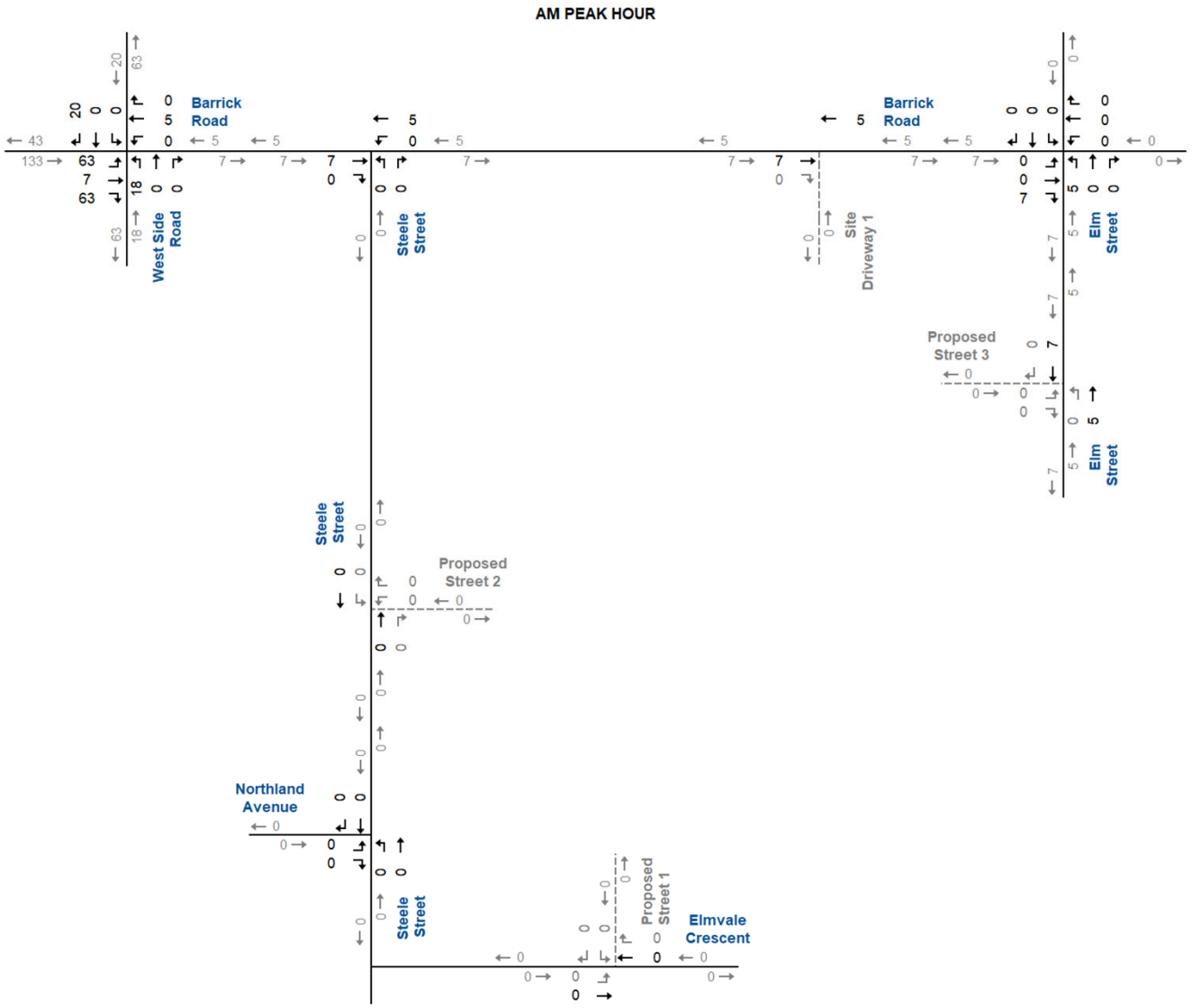


NTS

Barrick Road and West Side Road (East Development) Traffic Forecast – PM Peak Hour

Elm Street Development, Port Colborne
240031

Appendix D

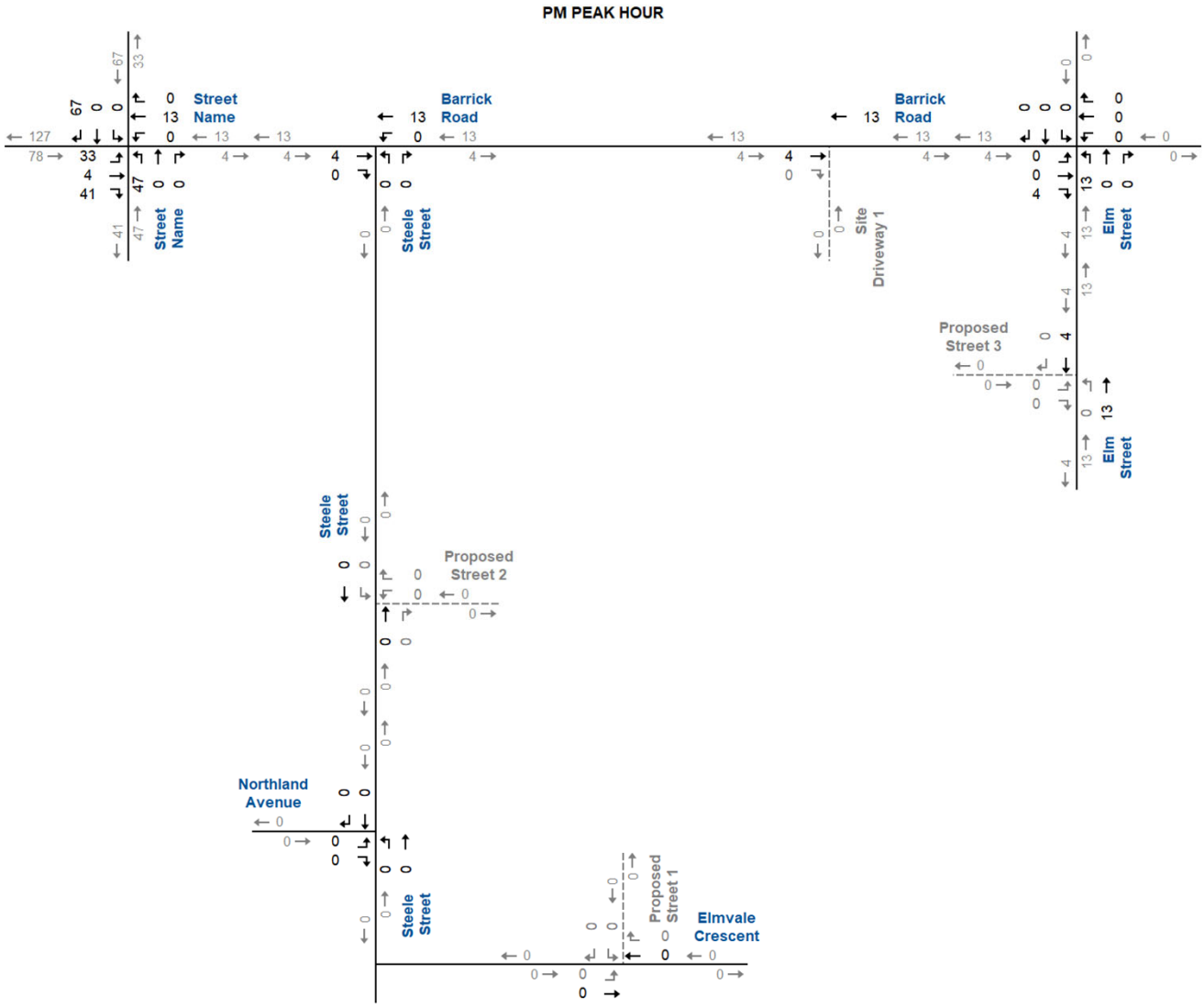


NTS

Barrick Road and West Side Road (West Development) Traffic Forecast – AM Peak Hour

Elm Street Development, Port Colborne
240031

Appendix D

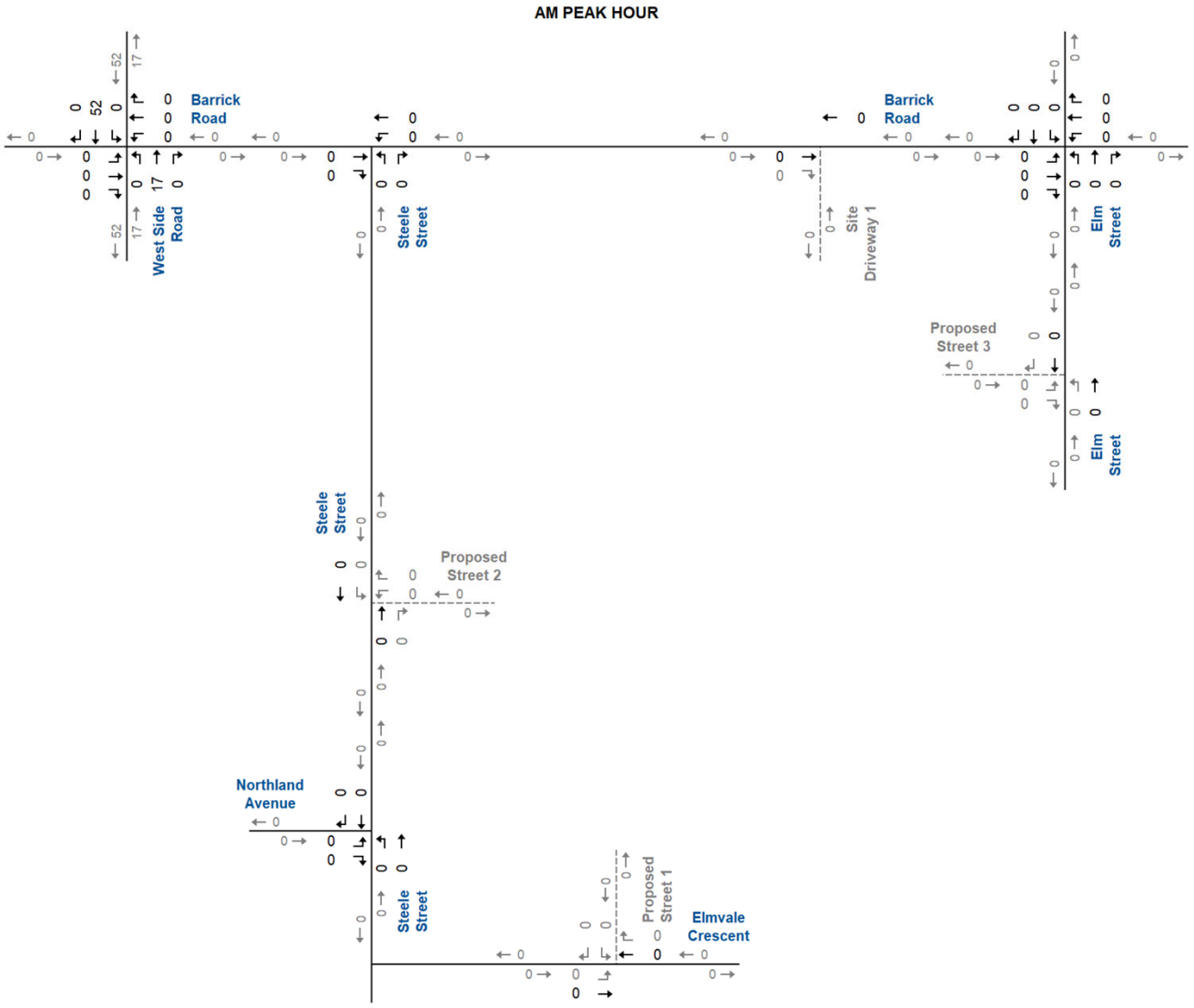


NTS

Barrick Road and West Side Road (West Development) Traffic Forecast – PM Peak Hour

Elm Street Development, Port Colborne
240031

Appendix D

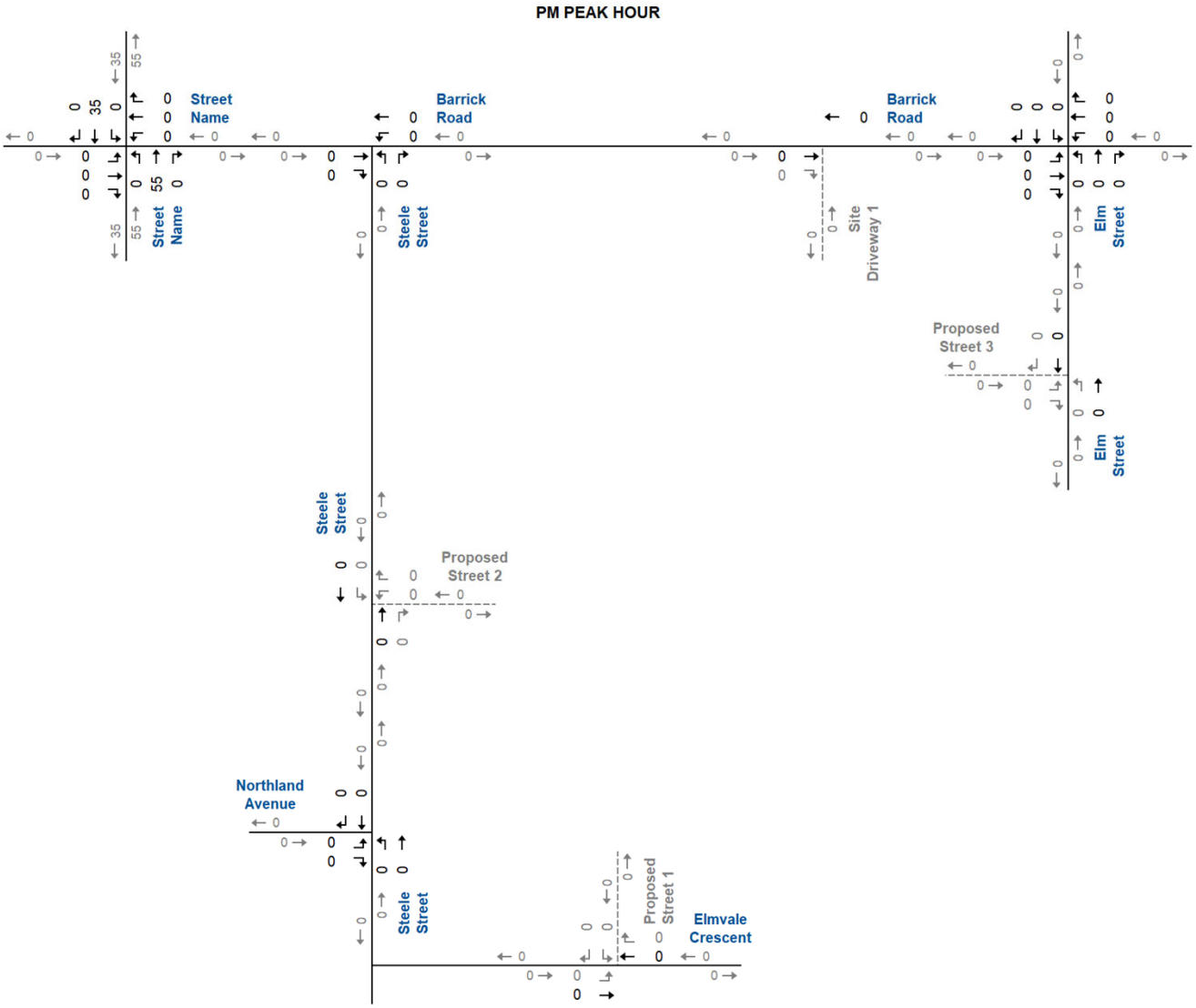


NTS

100 Oxford Boulevard
Traffic Forecast – AM Peak Hour

Elm Street Development, Port Colborne
240031

Appendix D



NTS

100 Oxford Boulevard
Traffic Forecast – PM Peak Hour

Elm Street Development, Port Colborne
240031

Appendix D

Appendix E

Background Traffic Operation Reports

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	73	13	74	30	10	84	24	453	17	39	473	26
Future Volume (vph)	73	13	74	30	10	84	24	453	17	39	473	26
Ideal Flow (vphpl)	1483	1483	1483	1483	1483	1483	1504	1388	1388	1504	1388	1388
Storage Length (m)	0.0		0.0	0.0		0.0	30.0		0.0	110.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt		0.938			0.909			0.995			0.992	
Flt Protected		0.978			0.988		0.950			0.950		
Satd. Flow (prot)	0	1360	0	0	1246	0	1429	2415	0	1429	2408	0
Flt Permitted		0.978			0.988		0.950			0.950		
Satd. Flow (perm)	0	1360	0	0	1246	0	1429	2415	0	1429	2408	0
Link Speed (k/h)		50			50			70			80	
Link Distance (m)		200.7			412.7			191.5			132.1	
Travel Time (s)		14.5			29.7			9.8			5.9	
Confl. Peds. (#/hr)	1					1						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	0%	50%	4%	0%	9%	0%	0%	9%	2%
Adj. Flow (vph)	77	14	78	32	11	88	25	477	18	41	498	27
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	169	0	0	131	0	25	495	0	41	525	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.37	1.37	1.37	1.37	1.37	1.37	1.34	1.48	1.48	1.34	1.48	1.48
Turning Speed (k/h)	100		100	100		100	100		100	100		100
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	50.9%	ICU Level of Service A	
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	73	13	74	30	10	84	24	453	17	39	473	26
Future Volume (Veh/h)	73	13	74	30	10	84	24	453	17	39	473	26
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	77	14	78	32	11	88	25	477	18	41	498	27
Pedestrians											1	
Lane Width (m)											3.6	
Walking Speed (m/s)											1.2	
Percent Blockage											0	
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	976	1138	262	952	1143	248	525			495		
vC1, stage 1 conf vol	594	594		536	536							
vC2, stage 2 conf vol	383	545		416	607							
vCu, unblocked vol	976	1138	262	952	1143	248	525			495		
tC, single (s)	7.5	6.5	6.9	7.5	7.5	7.0	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	6.5							
tF (s)	3.5	4.0	3.3	3.5	4.5	3.3	2.2			2.2		
p0 queue free %	78	96	89	91	96	88	98			96		
cM capacity (veh/h)	354	370	742	370	282	745	1052			1079		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	169	131	25	318	177	41	332	193
Volume Left	77	32	25	0	0	41	0	0
Volume Right	78	88	0	0	18	0	0	27
cSH	469	538	1052	1700	1700	1079	1700	1700
Volume to Capacity	0.36	0.24	0.02	0.19	0.10	0.04	0.20	0.11
Queue Length 95th (m)	13.0	7.6	0.6	0.0	0.0	0.9	0.0	0.0
Control Delay (s)	16.9	13.8	8.5	0.0	0.0	8.5	0.0	0.0
Lane LOS	C	B	A			A		
Approach Delay (s)	16.9	13.8	0.4			0.6		
Approach LOS	C	B						

Intersection Summary				
Average Delay	3.8			
Intersection Capacity Utilization	50.9%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	67	6	30	72	25	35
Future Volume (vph)	67	6	30	72	25	35
Ideal Flow (vphpl)	1388	1388	1228	1228	1483	1483
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.989				0.922	
Flt Protected				0.986	0.979	
Satd. Flow (prot)	1279	0	0	1126	1252	0
Flt Permitted				0.986	0.979	
Satd. Flow (perm)	1279	0	0	1126	1252	0
Link Speed (k/h)	50			50	40	
Link Distance (m)	412.7			368.0	243.1	
Travel Time (s)	29.7			26.5	21.9	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	5%	33%	4%	9%	4%	9%
Adj. Flow (vph)	77	7	34	83	29	40
Shared Lane Traffic (%)						
Lane Group Flow (vph)	84	0	0	117	69	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.48	1.48	1.71	1.71	1.37	1.37
Turning Speed (k/h)		100	100		100	100
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	26.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	67	6	30	72	25	35
Future Volume (Veh/h)	67	6	30	72	25	35
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	77	7	34	83	29	40
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			84		232	80
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			84		232	80
tC, single (s)			4.1		6.4	6.3
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.4
p0 queue free %			98		96	96
cM capacity (veh/h)			1500		735	960

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	84	117	69
Volume Left	0	34	29
Volume Right	7	0	40
cSH	1700	1500	851
Volume to Capacity	0.05	0.02	0.08
Queue Length 95th (m)	0.0	0.6	2.1
Control Delay (s)	0.0	2.3	9.6
Lane LOS		A	A
Approach Delay (s)	0.0	2.3	9.6
Approach LOS			A

Intersection Summary			
Average Delay	3.4		
Intersection Capacity Utilization	26.3%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	7	66	3	4	0	51	80	1	1	76	7
Future Volume (vph)	15	7	66	3	4	0	51	80	1	1	76	7
Ideal Flow (vphpl)	1483	1483	1483	1483	1483	1483	1483	1483	1483	1483	1483	1483
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	1.00
Ped Bike Factor												
Frt		0.898						0.999			0.989	
Flt Protected		0.992			0.982			0.981			0.999	
Satd. Flow (prot)	0	1301	0	0	1456	0	0	1337	0	0	1331	0
Flt Permitted		0.992			0.982			0.981			0.999	
Satd. Flow (perm)	0	1301	0	0	1456	0	0	1337	0	0	1331	0
Link Speed (k/h)		50			50			50			60	
Link Distance (m)		45.6			194.5			189.8			146.3	
Travel Time (s)		3.3			14.0			13.7			8.8	
Confl. Peds. (#/hr)	1					1						
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	10%	8%	0%	100%	10%	0%
Adj. Flow (vph)	17	8	76	3	5	0	59	92	1	1	87	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	101	0	0	8	0	0	152	0	0	96	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.37
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	29.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	7	66	3	4	0	51	80	1	1	76	7
Future Volume (Veh/h)	15	7	66	3	4	0	51	80	1	1	76	7
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	17	8	76	3	5	0	59	92	1	1	87	8
Pedestrians											1	
Lane Width (m)											3.6	
Walking Speed (m/s)											1.2	
Percent Blockage											0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	307	304	91	384	308	94	95			93		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	307	304	91	384	308	94	95			93		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.2			5.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			3.1		
p0 queue free %	97	99	92	99	99	100	96			100		
cM capacity (veh/h)	624	587	967	511	584	968	1450			1059		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	101	8	152	96
Volume Left	17	3	59	1
Volume Right	76	0	1	8
cSH	845	554	1450	1059
Volume to Capacity	0.12	0.01	0.04	0.00
Queue Length 95th (m)	3.2	0.4	1.0	0.0
Control Delay (s)	9.8	11.6	3.1	0.1
Lane LOS	A	B	A	A
Approach Delay (s)	9.8	11.6	3.1	0.1
Approach LOS	A	B		

Intersection Summary				
Average Delay		4.4		
Intersection Capacity Utilization		29.6%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	9	18	34	35	52	9
Future Volume (vph)	9	18	34	35	52	9
Ideal Flow (vphpl)	1483	1483	1228	1228	1388	1388
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.909				0.981	
Flt Protected	0.984			0.976		
Satd. Flow (prot)	1275	0	0	1164	1295	0
Flt Permitted	0.984			0.976		
Satd. Flow (perm)	1275	0	0	1164	1295	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	237.1			136.5	203.0	
Travel Time (s)	17.1			9.8	14.6	
Confl. Peds. (#/hr)		1				
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	0%	6%	3%	3%	6%	0%
Adj. Flow (vph)	10	21	40	41	60	10
Shared Lane Traffic (%)						
Lane Group Flow (vph)	31	0	0	81	70	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.37	1.37	1.71	1.71	1.48	1.48
Turning Speed (k/h)	100	100	100			100
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	22.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	9	18	34	35	52	9
Future Volume (Veh/h)	9	18	34	35	52	9
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	10	21	40	41	60	10
Pedestrians				1		
Lane Width (m)				3.6		
Walking Speed (m/s)				1.2		
Percent Blockage				0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	186	66	70			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	186	66	70			
tC, single (s)	6.4	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.4	2.2			
p0 queue free %	99	98	97			
cM capacity (veh/h)	787	986	1524			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	31	81	70
Volume Left	10	40	0
Volume Right	21	0	10
cSH	911	1524	1700
Volume to Capacity	0.03	0.03	0.04
Queue Length 95th (m)	0.8	0.6	0.0
Control Delay (s)	9.1	3.8	0.0
Lane LOS	A	A	
Approach Delay (s)	9.1	3.8	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	3.2		
Intersection Capacity Utilization	22.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	41	7	53	37	24	87	65	569	42	87	704	83
Future Volume (vph)	41	7	53	37	24	87	65	569	42	87	704	83
Ideal Flow (vphpl)	1483	1483	1483	1483	1483	1483	1504	1388	1388	1504	1388	1388
Storage Length (m)	0.0		0.0	0.0		0.0	30.0		0.0	110.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.929			0.921			0.990			0.984	
Flt Protected		0.980			0.988		0.950			0.950		
Satd. Flow (prot)	0	1350	0	0	1299	0	1429	2540	0	1429	2549	0
Flt Permitted		0.980			0.988		0.950			0.950		
Satd. Flow (perm)	0	1350	0	0	1299	0	1429	2540	0	1429	2549	0
Link Speed (k/h)		50			50			70			80	
Link Distance (m)		200.7			412.7			191.5			132.1	
Travel Time (s)		14.5			29.7			9.8			5.9	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	0%	0%	13%	3%	0%	3%	0%	0%	2%	0%
Adj. Flow (vph)	43	7	55	39	25	91	68	593	44	91	733	86
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	105	0	0	155	0	68	637	0	91	819	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.37	1.37	1.37	1.37	1.37	1.37	1.34	1.48	1.48	1.34	1.48	1.48
Turning Speed (k/h)	100		100	100		100	100		100	100		100
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 57.3%		ICU Level of Service B	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	41	7	53	37	24	87	65	569	42	87	704	83
Future Volume (Veh/h)	41	7	53	37	24	87	65	569	42	87	704	83
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	43	7	55	39	25	91	68	593	44	91	733	86
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1494	1731	410	1358	1752	318	819			637		
vC1, stage 1 conf vol	958	958		751	751							
vC2, stage 2 conf vol	536	773		607	1001							
vCu, unblocked vol	1494	1731	410	1358	1752	318	819			637		
tC, single (s)	7.5	6.5	6.9	7.5	6.8	7.0	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.8							
tF (s)	3.5	4.0	3.3	3.5	4.1	3.3	2.2			2.2		
p0 queue free %	78	97	91	83	86	87	92			90		
cM capacity (veh/h)	192	217	597	234	178	674	818			956		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	105	155	68	395	242	91	489	330
Volume Left	43	39	68	0	0	91	0	0
Volume Right	55	91	0	0	44	0	0	86
cSH	301	350	818	1700	1700	956	1700	1700
Volume to Capacity	0.35	0.44	0.08	0.23	0.14	0.10	0.29	0.19
Queue Length 95th (m)	12.1	17.5	2.2	0.0	0.0	2.5	0.0	0.0
Control Delay (s)	23.2	23.2	9.8	0.0	0.0	9.2	0.0	0.0
Lane LOS	C	C	A			A		
Approach Delay (s)	23.2	23.2	0.9			0.9		
Approach LOS	C	C						

Intersection Summary				
Average Delay	4.0			
Intersection Capacity Utilization	57.3%	ICU Level of Service	B	
Analysis Period (min)	15			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	55	6	30	87	25	35
Future Volume (vph)	55	6	30	87	25	35
Ideal Flow (vphpl)	1388	1388	1228	1228	1483	1483
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.986				0.922	
Flt Protected				0.987	0.979	
Satd. Flow (prot)	1270	0	0	1125	1252	0
Flt Permitted				0.987	0.979	
Satd. Flow (perm)	1270	0	0	1125	1252	0
Link Speed (k/h)	50			50	40	
Link Distance (m)	412.7			368.0	243.1	
Travel Time (s)	29.7			26.5	21.9	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	5%	33%	4%	9%	4%	9%
Adj. Flow (vph)	63	7	34	100	29	40
Shared Lane Traffic (%)						
Lane Group Flow (vph)	70	0	0	134	69	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.48	1.48	1.71	1.71	1.37	1.37
Turning Speed (k/h)		100	100		100	100
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 27.5%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	55	6	30	87	25	35
Future Volume (Veh/h)	55	6	30	87	25	35
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	63	7	34	100	29	40
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			70		234	66
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			70		234	66
tC, single (s)			4.1		6.4	6.3
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.4
p0 queue free %			98		96	96
cM capacity (veh/h)			1518		733	978

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	70	134	69
Volume Left	0	34	29
Volume Right	7	0	40
cSH	1700	1518	857
Volume to Capacity	0.04	0.02	0.08
Queue Length 95th (m)	0.0	0.5	2.1
Control Delay (s)	0.0	2.0	9.6
Lane LOS		A	A
Approach Delay (s)	0.0	2.0	9.6
Approach LOS			A

Intersection Summary			
Average Delay	3.4		
Intersection Capacity Utilization	27.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	7	69	9	12	0	106	91	8	0	113	13
Future Volume (vph)	8	7	69	9	12	0	106	91	8	0	113	13
Ideal Flow (vphpl)	1483	1483	1483	1483	1483	1483	1483	1483	1483	1483	1483	1483
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	1.00
Ped Bike Factor												
Frt		0.889						0.995			0.986	
Flt Protected		0.995			0.980			0.975				
Satd. Flow (prot)	0	1291	0	0	1453	0	0	1323	0	0	1342	0
Flt Permitted		0.995			0.980			0.975				
Satd. Flow (perm)	0	1291	0	0	1453	0	0	1323	0	0	1342	0
Link Speed (k/h)		50			50			50			60	
Link Distance (m)		45.6			194.5			189.8			146.3	
Travel Time (s)		3.3			14.0			13.7			8.8	
Confl. Peds. (#/hr)	1					1						
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	10%	8%	0%	100%	10%	0%
Adj. Flow (vph)	9	8	79	10	14	0	122	105	9	0	130	15
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	96	0	0	24	0	0	236	0	0	145	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.37
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	39.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	7	69	9	12	0	106	91	8	0	113	13
Future Volume (Veh/h)	8	7	69	9	12	0	106	91	8	0	113	13
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	9	8	79	10	14	0	122	105	9	0	130	15
Pedestrians											1	
Lane Width (m)											3.6	
Walking Speed (m/s)											1.2	
Percent Blockage											0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	499	496	138	574	498	110	145			114		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	499	496	138	574	498	110	145			114		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.2			5.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			3.1		
p0 queue free %	98	98	91	97	97	100	91			100		
cM capacity (veh/h)	441	436	911	364	435	948	1390			1037		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	96	24	236	145
Volume Left	9	10	122	0
Volume Right	79	0	9	15
cSH	765	402	1390	1037
Volume to Capacity	0.13	0.06	0.09	0.00
Queue Length 95th (m)	3.4	1.5	2.3	0.0
Control Delay (s)	10.4	14.5	4.4	0.0
Lane LOS	B	B	A	
Approach Delay (s)	10.4	14.5	4.4	0.0
Approach LOS	B	B		

Intersection Summary				
Average Delay	4.8			
Intersection Capacity Utilization	39.5%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	10	36	26	49	53	9
Future Volume (vph)	10	36	26	49	53	9
Ideal Flow (vphpl)	1483	1483	1228	1228	1388	1388
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.894				0.981	
Flt Protected	0.989			0.983		
Satd. Flow (prot)	1311	0	0	1207	1362	0
Flt Permitted	0.989			0.983		
Satd. Flow (perm)	1311	0	0	1207	1362	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	237.1			136.5	203.0	
Travel Time (s)	17.1			9.8	14.6	
Confl. Peds. (#/hr)		1				
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	11	40	29	55	60	10
Shared Lane Traffic (%)						
Lane Group Flow (vph)	51	0	0	84	70	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.37	1.37	1.71	1.71	1.48	1.48
Turning Speed (k/h)	100	100	100			100
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	23.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	36	26	49	53	9
Future Volume (Veh/h)	10	36	26	49	53	9
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	11	40	29	55	60	10
Pedestrians				1		
Lane Width (m)				3.6		
Walking Speed (m/s)				1.2		
Percent Blockage				0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	178	66	70			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	178	66	70			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	96	98			
cM capacity (veh/h)	801	1003	1544			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	51	84	70
Volume Left	11	29	0
Volume Right	40	0	10
cSH	951	1544	1700
Volume to Capacity	0.05	0.02	0.04
Queue Length 95th (m)	1.4	0.5	0.0
Control Delay (s)	9.0	2.6	0.0
Lane LOS	A	A	
Approach Delay (s)	9.0	2.6	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	3.3		
Intersection Capacity Utilization	23.5%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix F

Total Traffic Operation Reports

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	73	15	74	75	17	121	24	453	33	56	473	26
Future Volume (vph)	73	15	74	75	17	121	24	453	33	56	473	26
Ideal Flow (vphpl)	1483	1483	1483	1483	1483	1483	1504	1388	1388	1504	1388	1388
Storage Length (m)	0.0		0.0	0.0		0.0	30.0		0.0	110.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt		0.938			0.923			0.990			0.992	
Flt Protected		0.978			0.983		0.950			0.950		
Satd. Flow (prot)	0	1360	0	0	1266	0	1429	2409	0	1429	2410	0
Flt Permitted		0.978			0.983		0.950			0.950		
Satd. Flow (perm)	0	1360	0	0	1266	0	1429	2409	0	1429	2410	0
Link Speed (k/h)		50			50			70			80	
Link Distance (m)		200.7			412.7			191.5			132.1	
Travel Time (s)		14.5			29.7			9.8			5.9	
Confl. Peds. (#/hr)	1					1						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	0%	50%	4%	0%	9%	0%	0%	9%	0%
Adj. Flow (vph)	77	16	78	79	18	127	25	477	35	59	498	27
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	171	0	0	224	0	25	512	0	59	525	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.37	1.37	1.37	1.37	1.37	1.37	1.34	1.48	1.48	1.34	1.48	1.48
Turning Speed (k/h)	100		100	100		100	100		100	100		100
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	51.4%	ICU Level of Service A	
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	73	15	74	75	17	121	24	453	33	56	473	26
Future Volume (Veh/h)	73	15	74	75	17	121	24	453	33	56	473	26
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	77	16	78	79	18	127	25	477	35	59	498	27
Pedestrians											1	
Lane Width (m)											3.6	
Walking Speed (m/s)											1.2	
Percent Blockage											0	
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1055	1192	262	998	1188	257	525			512		
vC1, stage 1 conf vol	630	630		544	544							
vC2, stage 2 conf vol	426	562		453	643							
vCu, unblocked vol	1055	1192	262	998	1188	257	525			512		
tC, single (s)	7.5	6.5	6.9	7.5	7.5	7.0	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	6.5							
tF (s)	3.5	4.0	3.3	3.5	4.5	3.3	2.2			2.2		
p0 queue free %	75	95	89	77	93	83	98			94		
cM capacity (veh/h)	306	347	742	349	268	735	1052			1064		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	171	224	25	318	194	59	332	193
Volume Left	77	79	25	0	0	59	0	0
Volume Right	78	127	0	0	35	0	0	27
cSH	424	481	1052	1700	1700	1064	1700	1700
Volume to Capacity	0.40	0.47	0.02	0.19	0.11	0.06	0.20	0.11
Queue Length 95th (m)	15.3	19.5	0.6	0.0	0.0	1.4	0.0	0.0
Control Delay (s)	19.1	18.9	8.5	0.0	0.0	8.6	0.0	0.0
Lane LOS	C	C	A			A		
Approach Delay (s)	19.1	18.9	0.4			0.9		
Approach LOS	C	C						

Intersection Summary				
Average Delay	5.4			
Intersection Capacity Utilization	51.4%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	93	15	40	140	46	43
Future Volume (vph)	93	15	40	140	46	43
Ideal Flow (vphpl)	1388	1388	1228	1228	1483	1483
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.981				0.935	
Flt Protected				0.989	0.975	
Satd. Flow (prot)	1251	0	0	1126	1271	0
Flt Permitted				0.989	0.975	
Satd. Flow (perm)	1251	0	0	1126	1271	0
Link Speed (k/h)	50			50	40	
Link Distance (m)	412.7			368.0	243.1	
Travel Time (s)	29.7			26.5	21.9	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	5%	33%	4%	9%	4%	9%
Adj. Flow (vph)	107	17	46	161	53	49
Shared Lane Traffic (%)						
Lane Group Flow (vph)	124	0	0	207	102	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.48	1.48	1.71	1.71	1.37	1.37
Turning Speed (k/h)		100	100		100	100
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 34.8%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	93	15	40	140	46	43
Future Volume (Veh/h)	93	15	40	140	46	43
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	107	17	46	161	53	49
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			124		368	116
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			124		368	116
tC, single (s)			4.1		6.4	6.3
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.4
p0 queue free %			97		91	95
cM capacity (veh/h)			1450		608	918

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	124	207	102
Volume Left	0	46	53
Volume Right	17	0	49
cSH	1700	1450	726
Volume to Capacity	0.07	0.03	0.14
Queue Length 95th (m)	0.0	0.8	3.9
Control Delay (s)	0.0	1.9	10.8
Lane LOS		A	B
Approach Delay (s)	0.0	1.9	10.8
Approach LOS			B

Intersection Summary			
Average Delay	3.4		
Intersection Capacity Utilization	34.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	9	91	5	4	0	129	85	6	1	78	7
Future Volume (vph)	17	9	91	5	4	0	129	85	6	1	78	7
Ideal Flow (vphpl)	1483	1483	1483	1483	1483	1483	1483	1483	1483	1483	1483	1483
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	1.00
Ped Bike Factor												
Frt		0.895						0.996			0.989	
Flt Protected		0.993			0.973			0.972			0.999	
Satd. Flow (prot)	0	1298	0	0	1443	0	0	1318	0	0	1331	0
Flt Permitted		0.993			0.973			0.972			0.999	
Satd. Flow (perm)	0	1298	0	0	1443	0	0	1318	0	0	1331	0
Link Speed (k/h)		50			50			50			60	
Link Distance (m)		45.6			194.5			189.8			146.3	
Travel Time (s)		3.3			14.0			13.7			8.8	
Confl. Peds. (#/hr)	1					1						
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	10%	8%	0%	100%	10%	0%
Adj. Flow (vph)	20	10	105	6	5	0	148	98	7	1	90	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	135	0	0	11	0	0	253	0	0	99	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.37
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	37.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	9	91	5	4	0	129	85	6	1	78	7
Future Volume (Veh/h)	17	9	91	5	4	0	129	85	6	1	78	7
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	20	10	105	6	5	0	148	98	7	1	90	8
Pedestrians											1	
Lane Width (m)											3.6	
Walking Speed (m/s)											1.2	
Percent Blockage											0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	497	497	94	604	498	102	98			105		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	497	497	94	604	498	102	98			105		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.2			5.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			3.1		
p0 queue free %	95	98	89	98	99	100	90			100		
cM capacity (veh/h)	444	428	963	333	428	957	1446			1047		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	135	11	253	99
Volume Left	20	6	148	1
Volume Right	105	0	7	8
cSH	761	371	1446	1047
Volume to Capacity	0.18	0.03	0.10	0.00
Queue Length 95th (m)	5.1	0.7	2.7	0.0
Control Delay (s)	10.8	15.0	4.9	0.1
Lane LOS	B	C	A	A
Approach Delay (s)	10.8	15.0	4.9	0.1
Approach LOS	B	C		

Intersection Summary				
Average Delay		5.8		
Intersection Capacity Utilization	37.7%	ICU Level of Service		A
Analysis Period (min)	15			

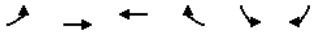
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	11	18	35	48	64	15
Future Volume (vph)	11	18	35	48	64	15
Ideal Flow (vphpl)	1483	1483	1228	1228	1388	1388
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.917				0.975	
Flt Protected	0.981			0.979		
Satd. Flow (prot)	1286	0	0	1167	1290	0
Flt Permitted	0.981			0.979		
Satd. Flow (perm)	1286	0	0	1167	1290	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	237.1			136.5	203.0	
Travel Time (s)	17.1			9.8	14.6	
Confl. Peds. (#/hr)		1				
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	0%	6%	3%	3%	6%	0%
Adj. Flow (vph)	13	21	41	56	74	17
Shared Lane Traffic (%)						
Lane Group Flow (vph)	34	0	0	97	91	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.37	1.37	1.71	1.71	1.48	1.48
Turning Speed (k/h)	100	100	100			100
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	23.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	11	18	35	48	64	15
Future Volume (Veh/h)	11	18	35	48	64	15
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	13	21	41	56	74	17
Pedestrians				1		
Lane Width (m)				3.6		
Walking Speed (m/s)				1.2		
Percent Blockage				0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	220	84	91			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	220	84	91			
tC, single (s)	6.4	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.4	2.2			
p0 queue free %	98	98	97			
cM capacity (veh/h)	751	964	1498			

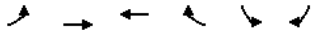
Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	34	97	91
Volume Left	13	41	0
Volume Right	21	0	17
cSH	870	1498	1700
Volume to Capacity	0.04	0.03	0.05
Queue Length 95th (m)	1.0	0.7	0.0
Control Delay (s)	9.3	3.3	0.0
Lane LOS	A	A	
Approach Delay (s)	9.3	3.3	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	2.9		
Intersection Capacity Utilization	23.9%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	4	3	3	0	1	12
Future Volume (vph)	4	3	3	0	1	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.875	
Flt Protected		0.972			0.996	
Satd. Flow (prot)	0	1811	1863	0	1623	0
Flt Permitted		0.972			0.996	
Satd. Flow (perm)	0	1811	1863	0	1623	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		91.7	97.8		98.9	
Travel Time (s)		6.6	7.0		7.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	4	3	3	0	1	13
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	7	3	0	14	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	100			100	100	100
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 13.7%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	4	3	3	0	1	12
Future Volume (Veh/h)	4	3	3	0	1	12
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)	4	3	3	0	1	13
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	3				14	3
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	3				14	3
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	1619				1002	1081

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	7	3	14
Volume Left	4	0	1
Volume Right	0	0	13
cSH	1619	1700	1075
Volume to Capacity	0.00	0.00	0.01
Queue Length 95th (m)	0.1	0.0	0.3
Control Delay (s)	4.1	0.0	8.4
Lane LOS	A		A
Approach Delay (s)	4.1	0.0	8.4
Approach LOS			A

Intersection Summary				
Average Delay		6.1		
Intersection Capacity Utilization		13.7%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	4	15	74	1	5	51
Future Volume (vph)	4	15	74	1	5	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.892		0.998			
Flt Protected	0.990					0.996
Satd. Flow (prot)	1645	0	1859	0	0	1855
Flt Permitted	0.990					0.996
Satd. Flow (perm)	1645	0	1859	0	0	1855
Link Speed (k/h)	50		50			50
Link Distance (m)	86.6		203.0			243.1
Travel Time (s)	6.2		14.6			17.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	4	16	80	1	5	55
Shared Lane Traffic (%)						
Lane Group Flow (vph)	20	0	81	0	0	60
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	100	100		100	100	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	16.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	4	15	74	1	5	51
Future Volume (Veh/h)	4	15	74	1	5	51
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	16	80	1	5	55
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	146	80			81	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	146	80			81	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	98			100	
cM capacity (veh/h)	844	980			1517	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	20	81	60
Volume Left	4	0	5
Volume Right	16	1	0
cSH	949	1700	1517
Volume to Capacity	0.02	0.05	0.00
Queue Length 95th (m)	0.5	0.0	0.1
Control Delay (s)	8.9	0.0	0.6
Lane LOS	A		A
Approach Delay (s)	8.9	0.0	0.6
Approach LOS	A		

Intersection Summary				
Average Delay		1.3		
Intersection Capacity Utilization		16.8%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	0	10	0	0	0	4	133	0	0	145	29
Future Volume (vph)	88	0	10	0	0	0	4	133	0	0	145	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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	1.00
Frt		0.986									0.977	
Flt Protected		0.957						0.999				
Satd. Flow (prot)	0	1758	0	0	1863	0	0	1861	0	0	1820	0
Flt Permitted		0.957						0.999				
Satd. Flow (perm)	0	1758	0	0	1863	0	0	1861	0	0	1820	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		92.4			127.6			100.6			189.8	
Travel Time (s)		6.7			9.2			7.2			13.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	96	0	11	0	0	0	4	145	0	0	158	32
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	107	0	0	0	0	0	149	0	0	190	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	100		100	100		100	100		100	100		100
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	22.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	88	0	10	0	0	0	4	133	0	0	145	29
Future Volume (Veh/h)	88	0	10	0	0	0	4	133	0	0	145	29
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	96	0	11	0	0	0	4	145	0	0	158	32
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	327	327	174	338	343	145	190			145		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	327	327	174	338	343	145	190			145		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	85	100	99	100	100	100	100			100		
cM capacity (veh/h)	625	590	869	607	578	902	1384			1437		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	107	0	149	190
Volume Left	96	0	4	0
Volume Right	11	0	0	32
cSH	643	1700	1384	1437
Volume to Capacity	0.17	0.00	0.00	0.00
Queue Length 95th (m)	4.7	0.0	0.1	0.0
Control Delay (s)	11.7	0.0	0.2	0.0
Lane LOS	B	A	A	
Approach Delay (s)	11.7	0.0	0.2	0.0
Approach LOS	B	A		

Intersection Summary				
Average Delay	2.9			
Intersection Capacity Utilization	22.4%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	41	14	53	70	29	113	65	569	82	130	704	83
Future Volume (vph)	41	14	53	70	29	113	65	569	82	130	704	83
Ideal Flow (vphpl)	1483	1483	1483	1483	1483	1483	1504	1388	1388	1504	1388	1388
Storage Length (m)	0.0		0.0	0.0		0.0	30.0		0.0	110.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.934			0.928			0.981			0.984	
Flt Protected		0.981			0.984		0.950			0.950		
Satd. Flow (prot)	0	1359	0	0	1310	0	1429	2521	0	1429	2549	0
Flt Permitted		0.981			0.984		0.950			0.950		
Satd. Flow (perm)	0	1359	0	0	1310	0	1429	2521	0	1429	2549	0
Link Speed (k/h)		50			50			70			80	
Link Distance (m)		200.7			412.7			191.5			132.1	
Travel Time (s)		14.5			29.7			9.8			5.9	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	0%	0%	13%	3%	0%	3%	0%	0%	2%	0%
Adj. Flow (vph)	43	15	55	73	30	118	68	593	85	135	733	86
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	113	0	0	221	0	68	678	0	135	819	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.37	1.37	1.37	1.37	1.37	1.37	1.34	1.48	1.48	1.34	1.48	1.48
Turning Speed (k/h)	100		100	100		100	100		100	100		100
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 64.4%		ICU Level of Service C	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	41	14	53	70	29	113	65	569	82	130	704	83
Future Volume (Veh/h)	41	14	53	70	29	113	65	569	82	130	704	83
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	43	15	55	73	30	118	68	593	85	135	733	86
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1612	1860	410	1470	1860	339	819			678		
vC1, stage 1 conf vol	1046	1046		772	772							
vC2, stage 2 conf vol	566	814		699	1089							
vCu, unblocked vol	1612	1860	410	1470	1860	339	819			678		
tC, single (s)	7.5	6.5	6.9	7.5	6.8	7.0	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.8							
tF (s)	3.5	4.0	3.3	3.5	4.1	3.3	2.2			2.2		
p0 queue free %	70	92	91	62	80	82	92			85		
cM capacity (veh/h)	146	177	597	191	147	654	818			923		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	113	221	68	395	283	135	489	330
Volume Left	43	73	68	0	0	135	0	0
Volume Right	55	118	0	0	85	0	0	86
cSH	239	288	818	1700	1700	923	1700	1700
Volume to Capacity	0.47	0.77	0.08	0.23	0.17	0.15	0.29	0.19
Queue Length 95th (m)	18.7	46.6	2.2	0.0	0.0	4.1	0.0	0.0
Control Delay (s)	32.8	49.1	9.8	0.0	0.0	9.6	0.0	0.0
Lane LOS	D	E	A			A		
Approach Delay (s)	32.8	49.1	0.9			1.4		
Approach LOS	D	E						

Intersection Summary				
Average Delay	8.1			
Intersection Capacity Utilization	64.4%	ICU Level of Service		C
Analysis Period (min)	15			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	124	27	42	137	39	47
Future Volume (vph)	124	27	42	137	39	47
Ideal Flow (vphpl)	1388	1388	1228	1228	1483	1483
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.976				0.926	
Flt Protected				0.988	0.978	
Satd. Flow (prot)	1232	0	0	1125	1258	0
Flt Permitted				0.988	0.978	
Satd. Flow (perm)	1232	0	0	1125	1258	0
Link Speed (k/h)	50			50	40	
Link Distance (m)	412.7			368.0	243.1	
Travel Time (s)	29.7			26.5	21.9	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	5%	33%	4%	9%	4%	9%
Adj. Flow (vph)	143	31	48	157	45	54
Shared Lane Traffic (%)						
Lane Group Flow (vph)	174	0	0	205	99	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.48	1.48	1.71	1.71	1.37	1.37
Turning Speed (k/h)		100	100		100	100
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	42.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	124	27	42	137	39	47
Future Volume (Veh/h)	124	27	42	137	39	47
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	143	31	48	157	45	54
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			174		412	158
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			174		412	158
tC, single (s)			4.1		6.4	6.3
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.4
p0 queue free %			97		92	94
cM capacity (veh/h)			1391		572	869

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	174	205	99
Volume Left	0	48	45
Volume Right	31	0	54
cSH	1700	1391	703
Volume to Capacity	0.10	0.03	0.14
Queue Length 95th (m)	0.0	0.9	3.9
Control Delay (s)	0.0	2.0	11.0
Lane LOS		A	B
Approach Delay (s)	0.0	2.0	11.0
Approach LOS			B

Intersection Summary			
Average Delay	3.1		
Intersection Capacity Utilization	42.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	8	136	14	14	0	164	95	12	0	118	15
Future Volume (vph)	9	8	136	14	14	0	164	95	12	0	118	15
Ideal Flow (vphpl)	1483	1483	1483	1483	1483	1483	1483	1483	1483	1483	1483	1483
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	1.00
Ped Bike Factor												
Frt		0.880						0.994			0.985	
Flt Protected		0.997			0.976			0.971				
Satd. Flow (prot)	0	1278	0	0	1447	0	0	1315	0	0	1342	0
Flt Permitted		0.997			0.976			0.971				
Satd. Flow (perm)	0	1278	0	0	1447	0	0	1315	0	0	1342	0
Link Speed (k/h)		50			50			50			60	
Link Distance (m)		45.6			194.5			189.8			146.3	
Travel Time (s)		3.3			14.0			13.7			8.8	
Confl. Peds. (#/hr)	1					1						
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	10%	8%	0%	100%	10%	0%
Adj. Flow (vph)	10	9	156	16	16	0	189	109	14	0	136	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	175	0	0	32	0	0	312	0	0	153	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.37
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	50.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	8	136	14	14	0	164	95	12	0	118	15
Future Volume (Veh/h)	9	8	136	14	14	0	164	95	12	0	118	15
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	10	9	156	16	16	0	189	109	14	0	136	17
Pedestrians											1	
Lane Width (m)											3.6	
Walking Speed (m/s)											1.2	
Percent Blockage											0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	648	646	144	799	647	117	153			123		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	648	646	144	799	647	117	153			123		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.2			5.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			3.1		
p0 queue free %	97	97	83	93	95	100	86			100		
cM capacity (veh/h)	333	339	903	222	339	940	1380			1028		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	175	32	312	153
Volume Left	10	16	189	0
Volume Right	156	0	14	17
cSH	763	268	1380	1028
Volume to Capacity	0.23	0.12	0.14	0.00
Queue Length 95th (m)	7.1	3.2	3.8	0.0
Control Delay (s)	11.1	20.2	5.3	0.0
Lane LOS	B	C	A	
Approach Delay (s)	11.1	20.2	5.3	0.0
Approach LOS	B	C		

Intersection Summary				
Average Delay	6.3			
Intersection Capacity Utilization	50.0%	ICU Level of Service	A	
Analysis Period (min)	15			

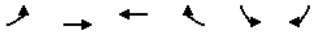
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	16	37	26	64	68	14
Future Volume (vph)	16	37	26	64	68	14
Ideal Flow (vphpl)	1483	1483	1228	1228	1388	1388
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.905				0.977	
Flt Protected	0.985			0.986		
Satd. Flow (prot)	1322	0	0	1211	1356	0
Flt Permitted	0.985			0.986		
Satd. Flow (perm)	1322	0	0	1211	1356	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	237.1			136.5	203.0	
Travel Time (s)	17.1			9.8	14.6	
Confl. Peds. (#/hr)		1				
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	18	42	29	72	76	16
Shared Lane Traffic (%)						
Lane Group Flow (vph)	60	0	0	101	92	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.37	1.37	1.71	1.71	1.48	1.48
Turning Speed (k/h)	100	100	100			100
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	25.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	16	37	26	64	68	14
Future Volume (Veh/h)	16	37	26	64	68	14
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	18	42	29	72	76	16
Pedestrians				1		
Lane Width (m)				3.6		
Walking Speed (m/s)				1.2		
Percent Blockage				0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	214	85	92			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	214	85	92			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	96	98			
cM capacity (veh/h)	764	979	1515			

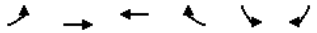
Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	60	101	92
Volume Left	18	29	0
Volume Right	42	0	16
cSH	903	1515	1700
Volume to Capacity	0.07	0.02	0.05
Queue Length 95th (m)	1.7	0.5	0.0
Control Delay (s)	9.3	2.2	0.0
Lane LOS	A	A	
Approach Delay (s)	9.3	2.2	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	3.1		
Intersection Capacity Utilization	25.2%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	11	2	6	1	1	7
Future Volume (vph)	11	2	6	1	1	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.983		0.880	
Flt Protected		0.959			0.994	
Satd. Flow (prot)	0	1786	1831	0	1629	0
Flt Permitted		0.959			0.994	
Satd. Flow (perm)	0	1786	1831	0	1629	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		91.7	97.8		98.9	
Travel Time (s)		6.6	7.0		7.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	2	7	1	1	8
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	14	8	0	9	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	100			100	100	100
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	17.4%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	11	2	6	1	1	7
Future Volume (Veh/h)	11	2	6	1	1	7
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)	12	2	7	1	1	8
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	8				34	8
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	8				34	8
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				100	99
cM capacity (veh/h)	1612				973	1075

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	14	8	9
Volume Left	12	0	1
Volume Right	0	1	8
cSH	1612	1700	1062
Volume to Capacity	0.01	0.00	0.01
Queue Length 95th (m)	0.2	0.0	0.2
Control Delay (s)	6.2	0.0	8.4
Lane LOS	A		A
Approach Delay (s)	6.2	0.0	8.4
Approach LOS			A

Intersection Summary				
Average Delay		5.3		
Intersection Capacity Utilization		17.4%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	3	9	77	4	16	54
Future Volume (vph)	3	9	77	4	16	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.896		0.994			
Flt Protected	0.989					0.989
Satd. Flow (prot)	1651	0	1852	0	0	1842
Flt Permitted	0.989					0.989
Satd. Flow (perm)	1651	0	1852	0	0	1842
Link Speed (k/h)	50		50			50
Link Distance (m)	86.6		203.0			243.1
Travel Time (s)	6.2		14.6			17.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	10	84	4	17	59
Shared Lane Traffic (%)						
Lane Group Flow (vph)	13	0	88	0	0	76
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	100	100		100	100	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	20.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	3	9	77	4	16	54
Future Volume (Veh/h)	3	9	77	4	16	54
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	10	84	4	17	59
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	179	86			88	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	179	86			88	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			99	
cM capacity (veh/h)	801	973			1508	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	13	88	76
Volume Left	3	0	17
Volume Right	10	4	0
cSH	927	1700	1508
Volume to Capacity	0.01	0.05	0.01
Queue Length 95th (m)	0.3	0.0	0.3
Control Delay (s)	8.9	0.0	1.7
Lane LOS	A		A
Approach Delay (s)	8.9	0.0	1.7
Approach LOS	A		

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	20.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	0	7	0	0	0	10	204	0	0	190	77
Future Volume (vph)	66	0	7	0	0	0	10	204	0	0	190	77
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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	1.00
Frt		0.986									0.961	
Flt Protected		0.957						0.998				
Satd. Flow (prot)	0	1758	0	0	1863	0	0	1859	0	0	1790	0
Flt Permitted		0.957						0.998				
Satd. Flow (perm)	0	1758	0	0	1863	0	0	1859	0	0	1790	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		92.4			127.6			100.6			189.8	
Travel Time (s)		6.7			9.2			7.2			13.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	72	0	8	0	0	0	11	222	0	0	207	84
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	80	0	0	0	0	0	233	0	0	291	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	100		100	100		100	100		100	100		100
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 29.6%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	66	0	7	0	0	0	10	204	0	0	190	77
Future Volume (Veh/h)	66	0	7	0	0	0	10	204	0	0	190	77
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	72	0	8	0	0	0	11	222	0	0	207	84
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	493	493	249	501	535	222	291			222		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	493	493	249	501	535	222	291			222		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	85	100	99	100	100	100	99			100		
cM capacity (veh/h)	483	473	790	472	448	818	1271			1347		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	80	0	233	291
Volume Left	72	0	11	0
Volume Right	8	0	0	84
cSH	503	1700	1271	1347
Volume to Capacity	0.16	0.00	0.01	0.00
Queue Length 95th (m)	4.5	0.0	0.2	0.0
Control Delay (s)	13.5	0.0	0.4	0.0
Lane LOS	B	A	A	
Approach Delay (s)	13.5	0.0	0.4	0.0
Approach LOS	B	A		

Intersection Summary				
Average Delay		2.0		
Intersection Capacity Utilization		29.6%	ICU Level of Service	A
Analysis Period (min)		15		

Appendix G

Signal Warrant

Signal Justification Calculation for Existing Volumes (OTM Book 12 - Justification 7)

Horizon Year: 2032
Region/City/Township: Port Colborne

Major Street: West Side Road
Minor Street: Barrick Road
North/South: Y

Number of Approach Lanes: 2 or more
Tee Intersection? N
Flow Conditions: Free

PM Forecast Only? N

Warrant Results		
150% Satisfied	**No**	Justification for new intersections with forecast traffic
120% Satisfied	**No**	Justification for existing intersections with forecast traffic

Time Period	Major Street: West Side Road						Minor Street: Barrick Road						Peds Crossing Main Road
	Northbound			Southbound			Eastbound			Westbound			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
AM Peak Hour	24	453	33	56	473	26	73	15	74	75	17	121	1
PM Peak Hour	65	569	82	130	704	83	41	14	53	70	29	113	0
Average Hourly Volume	**22**	**256**	**29**	**47**	**294**	**27**	**29**	**7**	**32**	**36**	**12**	**59**	**0**

Warrant 1 - Minimum Vehicular Volume

Warrant	AHV
1A - All	848
1B - Minor	174
2A - Major	675
2B - Cross	77

1A	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
				X		
	All Approaches	480	720	600	900	848
					% Fulfilled	**141.4%**

1B	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
	Minor Street Approaches	120	170	120	170	174
					% Fulfilled	**102.2%**

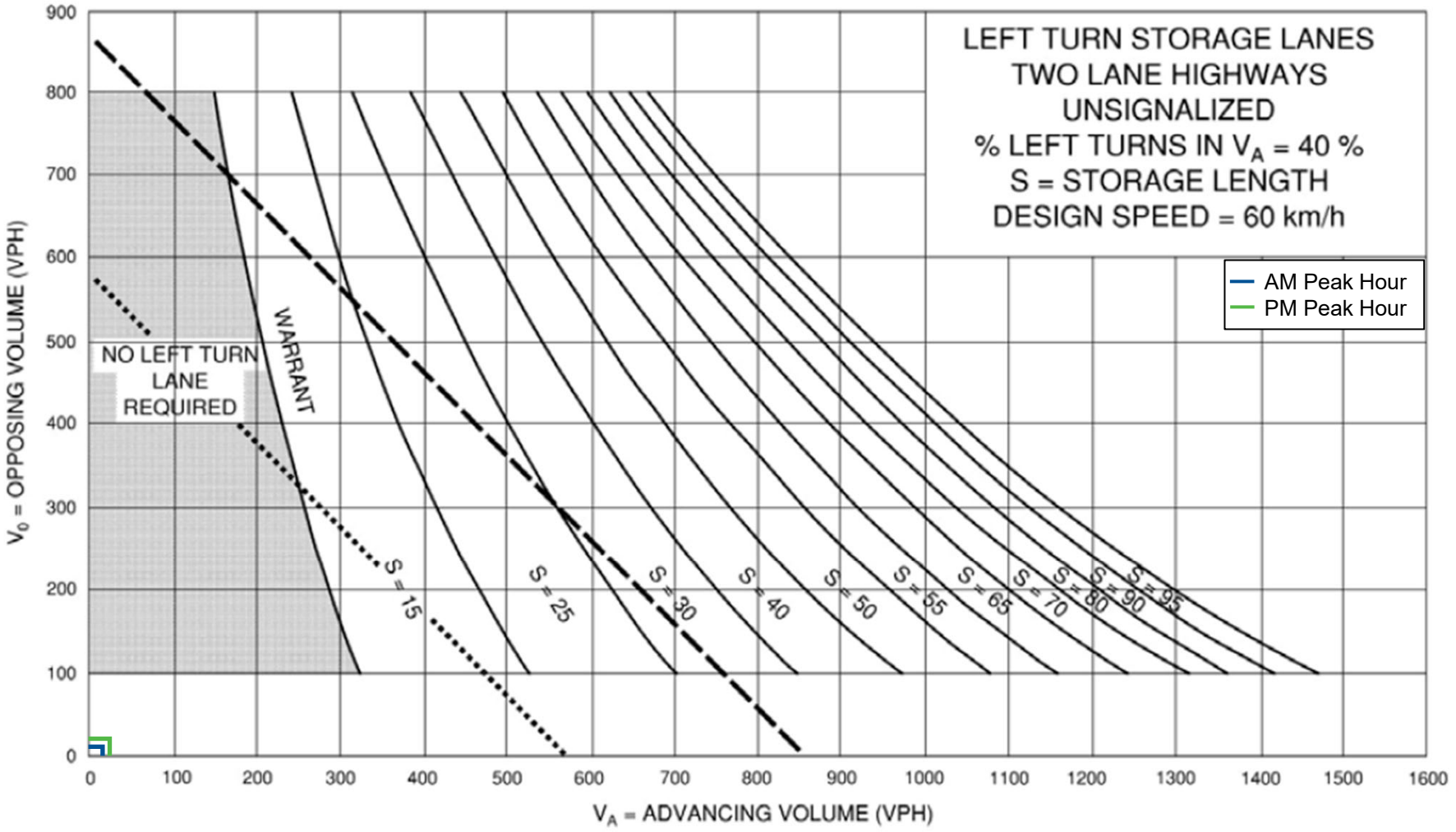
Warrant 2 - Delay To Cross Traffic

2A	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
				X		
	Major Street Approaches	480	720	600	900	675
					% Fulfilled	**112.4%**

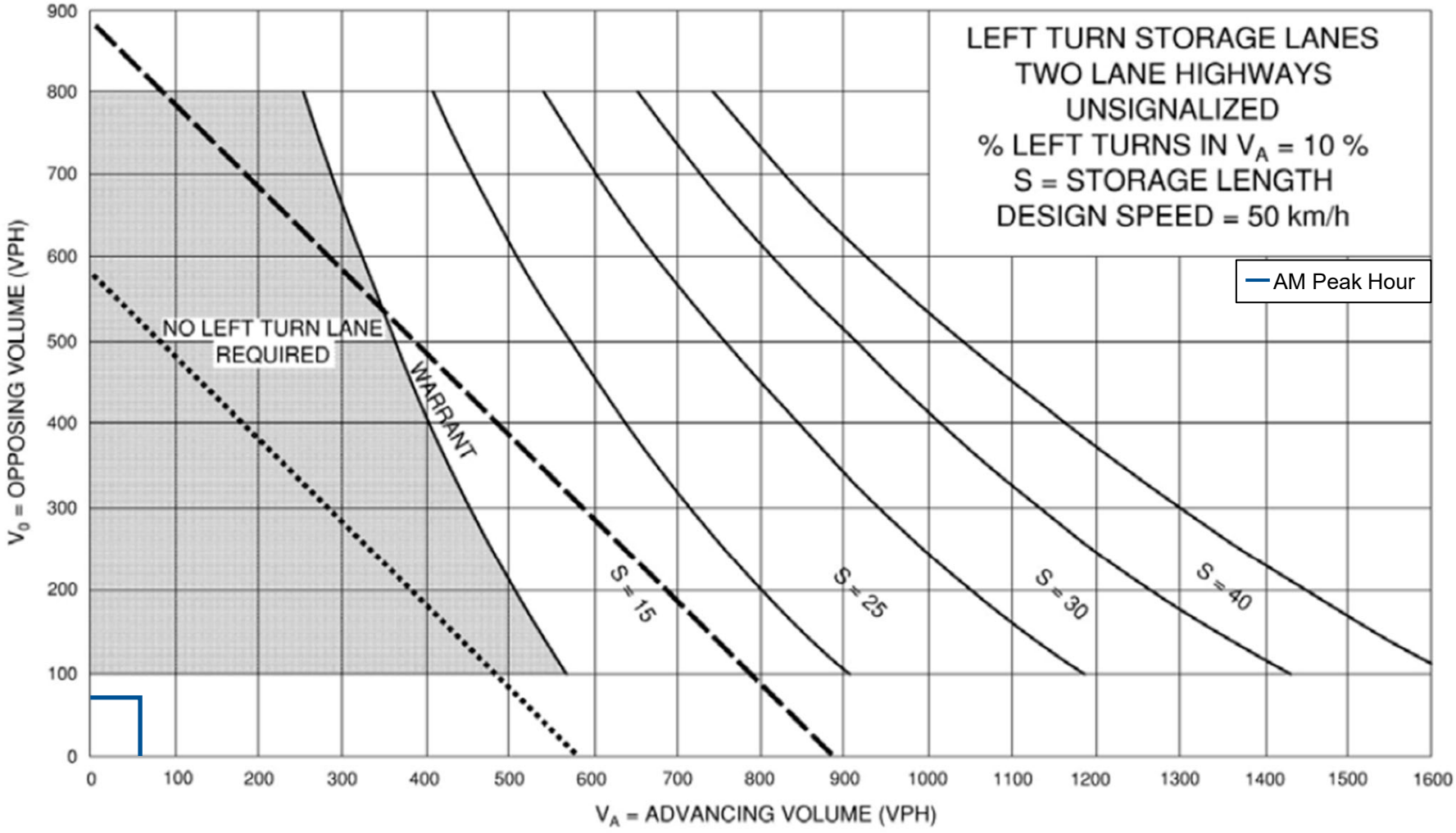
2B	Approach Lanes	1		2 or more		Average Hourly Volume
	Flow Conditions	Free	Restricted	Free	Restricted	
			X			
	Traffic Crossing Major Street	50	75	120	170	77
					% Fulfilled	**102.0%**

Appendix H

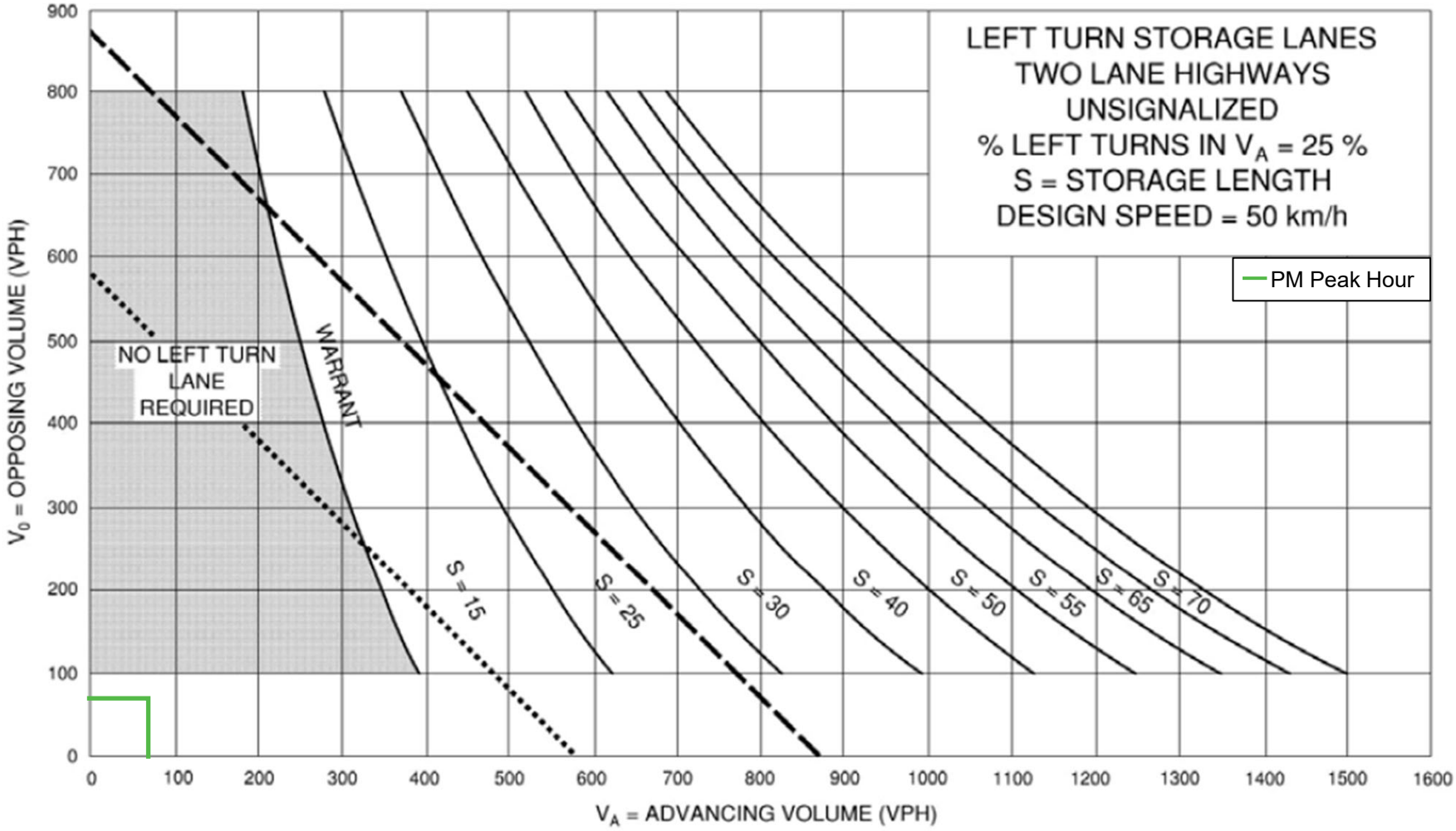
Left-Turn Lane Warrants



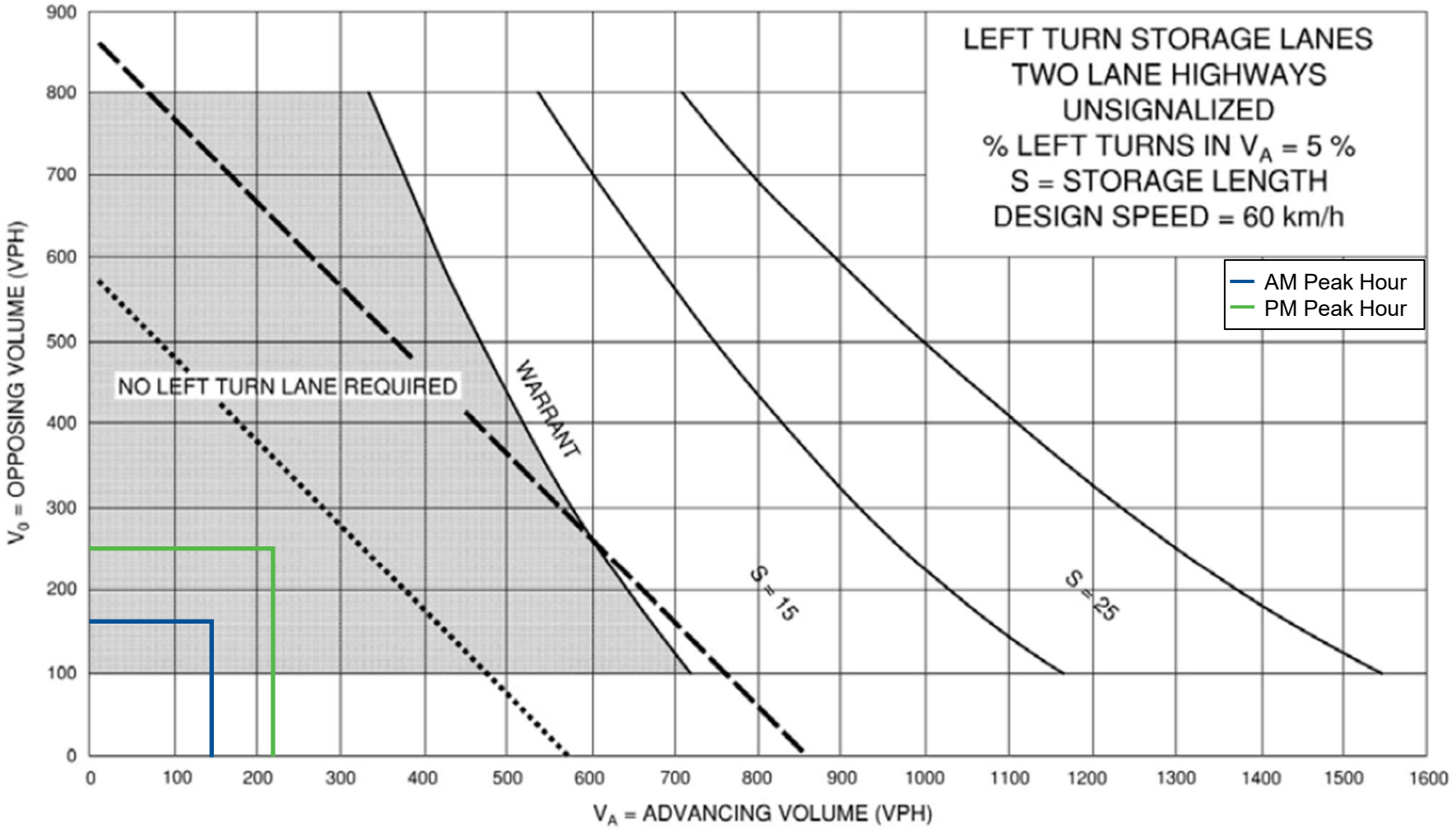
Elmvale Crescent at Proposed Street 1
Left-Turn Lane Warrant



Steele Street at Proposed Street 2
Left-Turn Lane Warrant – AM Peak Hour



Steele Street at Proposed Street 2
Left-Turn Lane Warrant – PM Peak Hour



paradigm TRANSPORTATION SOLUTIONS LIMITED

Elm Street at Proposed Street 3
Left-Turn Lane Warrant

Appendix I

Intersection Modification Operation Reports

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	73	15	74	75	17	121	24	453	33	56	473	26
Future Volume (vph)	73	15	74	75	17	121	24	453	33	56	473	26
Ideal Flow (vphpl)	1504	1388	1388	1504	1388	1388	1504	1388	1388	1504	1388	1388
Storage Length (m)	15.0		0.0	15.0		0.0	30.0		0.0	110.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor												
Frt		0.876			0.869			0.990			0.992	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1429	1216	0	1429	1099	0	1429	2409	0	1429	2410	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1429	1216	0	1429	1099	0	1429	2409	0	1429	2410	0
Link Speed (k/h)		50			50			70			80	
Link Distance (m)		200.7			412.7			191.5			132.1	
Travel Time (s)		14.5			29.7			9.8			5.9	
Confl. Peds. (#/hr)	1					1						
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	0%	50%	4%	0%	9%	0%	0%	9%	0%
Adj. Flow (vph)	77	16	78	79	18	127	25	477	35	59	498	27
Shared Lane Traffic (%)												
Lane Group Flow (vph)	77	94	0	79	145	0	25	512	0	59	525	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.34	1.48	1.48	1.34	1.48	1.48	1.34	1.48	1.48	1.34	1.48	1.48
Turning Speed (k/h)	100		100	100		100	100		100	100		100
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 52.5%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	73	15	74	75	17	121	24	453	33	56	473	26
Future Volume (Veh/h)	73	15	74	75	17	121	24	453	33	56	473	26
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	77	16	78	79	18	127	25	477	35	59	498	27
Pedestrians											1	
Lane Width (m)											3.6	
Walking Speed (m/s)											1.2	
Percent Blockage											0	
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1055	1192	262	998	1188	257	525			512		
vC1, stage 1 conf vol	630	630		544	544							
vC2, stage 2 conf vol	426	562		453	643							
vCu, unblocked vol	1055	1192	262	998	1188	257	525			512		
tC, single (s)	7.5	6.5	6.9	7.5	7.5	7.0	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	6.5							
tF (s)	3.5	4.0	3.3	3.5	4.5	3.3	2.2			2.2		
p0 queue free %	75	95	89	77	93	83	98			94		
cM capacity (veh/h)	306	347	742	349	268	735	1052			1064		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	77	94	79	145	25	318	194	59	332	193
Volume Left	77	0	79	0	25	0	0	59	0	0
Volume Right	0	78	0	127	0	0	35	0	0	27
cSH	306	622	349	604	1052	1700	1700	1064	1700	1700
Volume to Capacity	0.25	0.15	0.23	0.24	0.02	0.19	0.11	0.06	0.20	0.11
Queue Length 95th (m)	7.8	4.2	6.8	7.5	0.6	0.0	0.0	1.4	0.0	0.0
Control Delay (s)	20.7	11.8	18.3	12.8	8.5	0.0	0.0	8.6	0.0	0.0
Lane LOS	C	B	C	B	A			A		
Approach Delay (s)	15.8		14.8		0.4			0.9		
Approach LOS	C		B							

Intersection Summary				
Average Delay		4.4		
Intersection Capacity Utilization		52.5%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	41	14	53	70	29	113	65	569	82	130	704	83
Future Volume (vph)	41	14	53	70	29	113	65	569	82	130	704	83
Ideal Flow (vphpl)	1504	1388	1388	1504	1388	1388	1504	1388	1388	1504	1388	1388
Storage Length (m)	15.0		0.0	15.0		0.0	30.0		0.0	110.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.882			0.880			0.981			0.984	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1429	1224	0	1429	1163	0	1429	2521	0	1429	2549	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1429	1224	0	1429	1163	0	1429	2521	0	1429	2549	0
Link Speed (k/h)		50			50			70			80	
Link Distance (m)		200.7			412.7			191.5			132.1	
Travel Time (s)		14.5			29.7			9.8			5.9	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	0%	0%	13%	3%	0%	3%	0%	0%	2%	0%
Adj. Flow (vph)	43	15	55	73	30	118	68	593	85	135	733	86
Shared Lane Traffic (%)												
Lane Group Flow (vph)	43	70	0	73	148	0	68	678	0	135	819	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.34	1.48	1.48	1.34	1.48	1.48	1.34	1.48	1.48	1.34	1.48	1.48
Turning Speed (k/h)	100		100	100		100	100		100	100		100
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 63.1%		ICU Level of Service B	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	41	14	53	70	29	113	65	569	82	130	704	83
Future Volume (Veh/h)	41	14	53	70	29	113	65	569	82	130	704	83
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	43	15	55	73	30	118	68	593	85	135	733	86
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1612	1860	410	1470	1860	339	819			678		
vC1, stage 1 conf vol	1046	1046		772	772							
vC2, stage 2 conf vol	566	814		699	1089							
vCu, unblocked vol	1612	1860	410	1470	1860	339	819			678		
tC, single (s)	7.5	6.5	6.9	7.5	6.8	7.0	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.8							
tF (s)	3.5	4.0	3.3	3.5	4.1	3.3	2.2			2.2		
p0 queue free %	70	92	91	62	80	82	92			85		
cM capacity (veh/h)	146	177	597	191	147	654	818			923		

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	43	70	73	148	68	395	283	135	489	330
Volume Left	43	0	73	0	68	0	0	135	0	0
Volume Right	0	55	0	118	0	0	85	0	0	86
cSH	146	395	191	385	818	1700	1700	923	1700	1700
Volume to Capacity	0.30	0.18	0.38	0.38	0.08	0.23	0.17	0.15	0.29	0.19
Queue Length 95th (m)	9.2	5.1	13.3	14.2	2.2	0.0	0.0	4.1	0.0	0.0
Control Delay (s)	39.7	16.1	35.1	20.1	9.8	0.0	0.0	9.6	0.0	0.0
Lane LOS	E	C	E	C	A			A		
Approach Delay (s)	25.1		25.0		0.9			1.4		
Approach LOS	D		D							

Intersection Summary				
Average Delay		5.1		
Intersection Capacity Utilization		63.1%	ICU Level of Service	B
Analysis Period (min)		15		

Appendix J

Driveway Reduction Operation Reports

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	73	15	74	75	17	121	24	453	33	56	473	26
Future Volume (vph)	73	15	74	75	17	121	24	453	33	56	473	26
Ideal Flow (vphpl)	1483	1483	1483	1483	1483	1483	1504	1388	1388	1504	1388	1388
Storage Length (m)	0.0		0.0	0.0		0.0	30.0		0.0	110.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.938			0.923			0.990			0.992	
Flt Protected		0.978			0.983		0.950			0.950		
Satd. Flow (prot)	0	1360	0	0	1266	0	1429	2409	0	1429	2408	0
Flt Permitted		0.978			0.983		0.950			0.950		
Satd. Flow (perm)	0	1360	0	0	1266	0	1429	2409	0	1429	2408	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		200.7			412.7			191.5			132.1	
Travel Time (s)		14.5			29.7			13.8			9.5	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	0%	0%	0%	0%	50%	4%	0%	9%	0%	0%	9%	2%
Adj. Flow (vph)	77	16	78	79	18	127	25	477	35	59	498	27
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	171	0	0	224	0	25	512	0	59	525	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.37	1.37	1.37	1.37	1.37	1.37	1.34	1.48	1.48	1.34	1.48	1.48
Turning Speed (k/h)	100		100	100		100	100		100	100		100
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	51.3%	ICU Level of Service A	
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	73	15	74	75	17	121	24	453	33	56	473	26
Future Volume (Veh/h)	73	15	74	75	17	121	24	453	33	56	473	26
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	77	16	78	79	18	127	25	477	35	59	498	27
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1054	1192	262	998	1188	256	525			512		
vC1, stage 1 conf vol	630	630		544	544							
vC2, stage 2 conf vol	424	562		453	643							
vCu, unblocked vol	1054	1192	262	998	1188	256	525			512		
tC, single (s)	7.5	6.5	6.9	7.5	7.5	7.0	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	6.5							
tF (s)	3.5	4.0	3.3	3.5	4.5	3.3	2.2			2.2		
p0 queue free %	75	95	89	77	93	83	98			94		
cM capacity (veh/h)	306	347	742	349	268	737	1052			1064		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	171	224	25	318	194	59	332	193
Volume Left	77	79	25	0	0	59	0	0
Volume Right	78	127	0	0	35	0	0	27
cSH	425	481	1052	1700	1700	1064	1700	1700
Volume to Capacity	0.40	0.47	0.02	0.19	0.11	0.06	0.20	0.11
Queue Length 95th (m)	15.2	19.4	0.6	0.0	0.0	1.4	0.0	0.0
Control Delay (s)	19.1	18.8	8.5	0.0	0.0	8.6	0.0	0.0
Lane LOS	C	C	A			A		
Approach Delay (s)	19.1	18.8	0.4			0.9		
Approach LOS	C	C						

Intersection Summary				
Average Delay	5.4			
Intersection Capacity Utilization	51.3%	ICU Level of Service	A	
Analysis Period (min)	15			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	93	15	40	140	46	43
Future Volume (vph)	93	15	40	140	46	43
Ideal Flow (vphpl)	1388	1388	1228	1228	1483	1483
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.981				0.935	
Flt Protected				0.989	0.975	
Satd. Flow (prot)	1251	0	0	1126	1271	0
Flt Permitted				0.989	0.975	
Satd. Flow (perm)	1251	0	0	1126	1271	0
Link Speed (k/h)	50			50	40	
Link Distance (m)	412.7			413.6	243.1	
Travel Time (s)	29.7			29.8	21.9	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	5%	33%	4%	9%	4%	9%
Adj. Flow (vph)	107	17	46	161	53	49
Shared Lane Traffic (%)						
Lane Group Flow (vph)	124	0	0	207	102	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.48	1.48	1.71	1.71	1.37	1.37
Turning Speed (k/h)		100	100		100	100
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 34.8%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	93	15	40	140	46	43
Future Volume (Veh/h)	93	15	40	140	46	43
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	107	17	46	161	53	49
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			124		368	116
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			124		368	116
tC, single (s)			4.1		6.4	6.3
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.4
p0 queue free %			97		91	95
cM capacity (veh/h)			1450		608	918

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	124	207	102
Volume Left	0	46	53
Volume Right	17	0	49
cSH	1700	1450	726
Volume to Capacity	0.07	0.03	0.14
Queue Length 95th (m)	0.0	0.8	3.9
Control Delay (s)	0.0	1.9	10.8
Lane LOS		A	B
Approach Delay (s)	0.0	1.9	10.8
Approach LOS			B

Intersection Summary			
Average Delay	3.4		
Intersection Capacity Utilization	34.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	9	96	5	4	0	129	85	6	1	78	7
Future Volume (vph)	17	9	96	5	4	0	129	85	6	1	78	7
Ideal Flow (vphpl)	1483	1483	1483	1483	1483	1483	1483	1483	1483	1483	1483	1483
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	1.00
Ped Bike Factor												
Frt		0.894						0.996			0.989	
Flt Protected		0.993			0.973			0.972			0.999	
Satd. Flow (prot)	0	1296	0	0	1443	0	0	1318	0	0	1331	0
Flt Permitted		0.993			0.973			0.972			0.999	
Satd. Flow (perm)	0	1296	0	0	1443	0	0	1318	0	0	1331	0
Link Speed (k/h)		50			50			50			60	
Link Distance (m)		413.6			194.5			189.8			146.3	
Travel Time (s)		29.8			14.0			13.7			8.8	
Confl. Peds. (#/hr)	1					1						
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	10%	8%	0%	100%	10%	0%
Adj. Flow (vph)	20	10	110	6	5	0	148	98	7	1	90	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	140	0	0	11	0	0	253	0	0	99	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.37
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	38.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	9	96	5	4	0	129	85	6	1	78	7
Future Volume (Veh/h)	17	9	96	5	4	0	129	85	6	1	78	7
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	20	10	110	6	5	0	148	98	7	1	90	8
Pedestrians											1	
Lane Width (m)											3.6	
Walking Speed (m/s)											1.2	
Percent Blockage											0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	497	497	94	608	498	102	98			105		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	497	497	94	608	498	102	98			105		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.2			5.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			3.1		
p0 queue free %	95	98	89	98	99	100	90			100		
cM capacity (veh/h)	444	428	963	329	428	957	1446			1047		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	140	11	253	99
Volume Left	20	6	148	1
Volume Right	110	0	7	8
cSH	767	368	1446	1047
Volume to Capacity	0.18	0.03	0.10	0.00
Queue Length 95th (m)	5.3	0.7	2.7	0.0
Control Delay (s)	10.7	15.1	4.9	0.1
Lane LOS	B	C	A	A
Approach Delay (s)	10.7	15.1	4.9	0.1
Approach LOS	B	C		

Intersection Summary				
Average Delay	5.8			
Intersection Capacity Utilization	38.1%	ICU Level of Service		A
Analysis Period (min)	15			

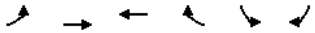
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	11	18	35	48	64	15
Future Volume (vph)	11	18	35	48	64	15
Ideal Flow (vphpl)	1483	1483	1228	1228	1388	1388
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.917				0.975	
Flt Protected	0.981			0.979		
Satd. Flow (prot)	1286	0	0	1167	1290	0
Flt Permitted	0.981			0.979		
Satd. Flow (perm)	1286	0	0	1167	1290	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	237.1			136.5	203.0	
Travel Time (s)	17.1			9.8	14.6	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	0%	6%	3%	3%	6%	0%
Adj. Flow (vph)	13	21	41	56	74	17
Shared Lane Traffic (%)						
Lane Group Flow (vph)	34	0	0	97	91	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.37	1.37	1.71	1.71	1.48	1.48
Turning Speed (k/h)	100	100	100			100
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	23.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	11	18	35	48	64	15
Future Volume (Veh/h)	11	18	35	48	64	15
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	13	21	41	56	74	17
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	220	82	91			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	220	82	91			
tC, single (s)	6.4	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.4	2.2			
p0 queue free %	98	98	97			
cM capacity (veh/h)	751	966	1498			

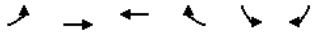
Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	34	97	91
Volume Left	13	41	0
Volume Right	21	0	17
cSH	871	1498	1700
Volume to Capacity	0.04	0.03	0.05
Queue Length 95th (m)	1.0	0.7	0.0
Control Delay (s)	9.3	3.3	0.0
Lane LOS	A	A	
Approach Delay (s)	9.3	3.3	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	2.9		
Intersection Capacity Utilization	23.6%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	4	3	3	0	1	12
Future Volume (vph)	4	3	3	0	1	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.875	
Flt Protected		0.972			0.996	
Satd. Flow (prot)	0	1811	1863	0	1623	0
Flt Permitted		0.972			0.996	
Satd. Flow (perm)	0	1811	1863	0	1623	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		91.7	97.8		98.9	
Travel Time (s)		6.6	7.0		7.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	4	3	3	0	1	13
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	7	3	0	14	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	100			100	100	100
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	13.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	4	3	3	0	1	12
Future Volume (Veh/h)	4	3	3	0	1	12
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)	4	3	3	0	1	13
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	3				14	3
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	3				14	3
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	1619				1002	1081

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	7	3	14
Volume Left	4	0	1
Volume Right	0	0	13
cSH	1619	1700	1075
Volume to Capacity	0.00	0.00	0.01
Queue Length 95th (m)	0.1	0.0	0.3
Control Delay (s)	4.1	0.0	8.4
Lane LOS	A		A
Approach Delay (s)	4.1	0.0	8.4
Approach LOS			A

Intersection Summary			
Average Delay	6.1		
Intersection Capacity Utilization	13.7%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	4	15	74	1	5	51
Future Volume (vph)	4	15	74	1	5	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.892		0.998			
Flt Protected	0.990					0.996
Satd. Flow (prot)	1645	0	1859	0	0	1855
Flt Permitted	0.990					0.996
Satd. Flow (perm)	1645	0	1859	0	0	1855
Link Speed (k/h)	50		50			50
Link Distance (m)	86.6		203.0			243.1
Travel Time (s)	6.2		14.6			17.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	4	16	80	1	5	55
Shared Lane Traffic (%)						
Lane Group Flow (vph)	20	0	81	0	0	60
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	100	100		100	100	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	16.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	4	15	74	1	5	51
Future Volume (Veh/h)	4	15	74	1	5	51
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	16	80	1	5	55
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	146	80			81	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	146	80			81	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	98			100	
cM capacity (veh/h)	844	980			1517	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	20	81	60
Volume Left	4	0	5
Volume Right	16	1	0
cSH	949	1700	1517
Volume to Capacity	0.02	0.05	0.00
Queue Length 95th (m)	0.5	0.0	0.1
Control Delay (s)	8.9	0.0	0.6
Lane LOS	A		A
Approach Delay (s)	8.9	0.0	0.6
Approach LOS	A		

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	16.8%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	0	10	0	0	0	4	133	0	0	145	34
Future Volume (vph)	88	0	10	0	0	0	4	133	0	0	145	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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	1.00
Frt		0.986									0.974	
Flt Protected		0.957						0.999				
Satd. Flow (prot)	0	1758	0	0	1863	0	0	1861	0	0	1814	0
Flt Permitted		0.957						0.999				
Satd. Flow (perm)	0	1758	0	0	1863	0	0	1861	0	0	1814	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		92.4			127.6			100.6			189.8	
Travel Time (s)		6.7			9.2			7.2			13.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	96	0	11	0	0	0	4	145	0	0	158	37
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	107	0	0	0	0	0	149	0	0	195	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	100		100	100		100	100		100	100		100
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 22.4%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	88	0	10	0	0	0	4	133	0	0	145	34
Future Volume (Veh/h)	88	0	10	0	0	0	4	133	0	0	145	34
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	96	0	11	0	0	0	4	145	0	0	158	37
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	330	330	176	340	348	145	195			145		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	330	330	176	340	348	145	195			145		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	85	100	99	100	100	100	100			100		
cM capacity (veh/h)	622	588	867	604	574	902	1378			1437		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	107	0	149	195
Volume Left	96	0	4	0
Volume Right	11	0	0	37
cSH	641	1700	1378	1437
Volume to Capacity	0.17	0.00	0.00	0.00
Queue Length 95th (m)	4.8	0.0	0.1	0.0
Control Delay (s)	11.7	0.0	0.2	0.0
Lane LOS	B	A	A	
Approach Delay (s)	11.7	0.0	0.2	0.0
Approach LOS	B	A		

Intersection Summary				
Average Delay		2.9		
Intersection Capacity Utilization		22.4%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	41	14	53	70	29	113	65	569	82	130	704	83
Future Volume (vph)	41	14	53	70	29	113	65	569	82	130	704	83
Ideal Flow (vphpl)	1483	1483	1483	1483	1483	1483	1504	1388	1388	1504	1388	1388
Storage Length (m)	0.0		0.0	0.0		0.0	30.0		0.0	110.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt		0.934			0.928			0.981			0.984	
Flt Protected		0.981			0.984		0.950			0.950		
Satd. Flow (prot)	0	1359	0	0	1310	0	1429	2521	0	1429	2549	0
Flt Permitted		0.981			0.984		0.950			0.950		
Satd. Flow (perm)	0	1359	0	0	1310	0	1429	2521	0	1429	2549	0
Link Speed (k/h)		50			50			70			80	
Link Distance (m)		200.7			412.7			191.5			132.1	
Travel Time (s)		14.5			29.7			9.8			5.9	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	0%	0%	0%	13%	3%	0%	3%	0%	0%	2%	0%
Adj. Flow (vph)	43	15	55	73	30	118	68	593	85	135	733	86
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	113	0	0	221	0	68	678	0	135	819	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane								Yes			Yes	
Headway Factor	1.37	1.37	1.37	1.37	1.37	1.37	1.34	1.48	1.48	1.34	1.48	1.48
Turning Speed (k/h)	100		100	100		100	100		100	100		100
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 64.4%		ICU Level of Service C	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	41	14	53	70	29	113	65	569	82	130	704	83
Future Volume (Veh/h)	41	14	53	70	29	113	65	569	82	130	704	83
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	43	15	55	73	30	118	68	593	85	135	733	86
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								TWLTL			TWLTL	
Median storage veh)								2			2	
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	1612	1860	410	1470	1860	339	819			678		
vC1, stage 1 conf vol	1046	1046		772	772							
vC2, stage 2 conf vol	566	814		699	1089							
vCu, unblocked vol	1612	1860	410	1470	1860	339	819			678		
tC, single (s)	7.5	6.5	6.9	7.5	6.8	7.0	4.1			4.1		
tC, 2 stage (s)	6.5	5.5		6.5	5.8							
tF (s)	3.5	4.0	3.3	3.5	4.1	3.3	2.2			2.2		
p0 queue free %	70	92	91	62	80	82	92			85		
cM capacity (veh/h)	146	177	597	191	147	654	818			923		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3
Volume Total	113	221	68	395	283	135	489	330
Volume Left	43	73	68	0	0	135	0	0
Volume Right	55	118	0	0	85	0	0	86
cSH	239	288	818	1700	1700	923	1700	1700
Volume to Capacity	0.47	0.77	0.08	0.23	0.17	0.15	0.29	0.19
Queue Length 95th (m)	18.7	46.6	2.2	0.0	0.0	4.1	0.0	0.0
Control Delay (s)	32.8	49.1	9.8	0.0	0.0	9.6	0.0	0.0
Lane LOS	D	E	A			A		
Approach Delay (s)	32.8	49.1	0.9			1.4		
Approach LOS	D	E						

Intersection Summary				
Average Delay	8.1			
Intersection Capacity Utilization	64.4%	ICU Level of Service		C
Analysis Period (min)	15			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	124	27	42	137	39	47
Future Volume (vph)	124	27	42	137	39	47
Ideal Flow (vphpl)	1388	1388	1228	1228	1483	1483
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.976				0.926	
Flt Protected				0.988	0.978	
Satd. Flow (prot)	1232	0	0	1125	1258	0
Flt Permitted				0.988	0.978	
Satd. Flow (perm)	1232	0	0	1125	1258	0
Link Speed (k/h)	50			50	40	
Link Distance (m)	412.7			413.6	243.1	
Travel Time (s)	29.7			29.8	21.9	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	5%	33%	4%	9%	4%	9%
Adj. Flow (vph)	143	31	48	157	45	54
Shared Lane Traffic (%)						
Lane Group Flow (vph)	174	0	0	205	99	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.48	1.48	1.71	1.71	1.37	1.37
Turning Speed (k/h)		100	100		100	100
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	42.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	124	27	42	137	39	47
Future Volume (Veh/h)	124	27	42	137	39	47
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	143	31	48	157	45	54
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			174		412	158
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			174		412	158
tC, single (s)			4.1		6.4	6.3
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.4
p0 queue free %			97		92	94
cM capacity (veh/h)			1391		572	869

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	174	205	99
Volume Left	0	48	45
Volume Right	31	0	54
cSH	1700	1391	703
Volume to Capacity	0.10	0.03	0.14
Queue Length 95th (m)	0.0	0.9	3.9
Control Delay (s)	0.0	2.0	11.0
Lane LOS		A	B
Approach Delay (s)	0.0	2.0	11.0
Approach LOS			B

Intersection Summary			
Average Delay	3.1		
Intersection Capacity Utilization	42.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	8	148	14	14	0	164	95	12	0	118	15
Future Volume (vph)	9	8	148	14	14	0	164	95	12	0	118	15
Ideal Flow (vphpl)	1483	1483	1483	1483	1483	1483	1483	1483	1483	1483	1483	1483
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	1.00
Ped Bike Factor												
Frt		0.879						0.994			0.985	
Flt Protected		0.997			0.976			0.971				
Satd. Flow (prot)	0	1277	0	0	1447	0	0	1315	0	0	1342	0
Flt Permitted		0.997			0.976			0.971				
Satd. Flow (perm)	0	1277	0	0	1447	0	0	1315	0	0	1342	0
Link Speed (k/h)		50			50			50			60	
Link Distance (m)		413.6			194.5			189.8			146.3	
Travel Time (s)		29.8			14.0			13.7			8.8	
Confl. Peds. (#/hr)	1					1						
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Heavy Vehicles (%)	0%	0%	2%	0%	0%	0%	10%	8%	0%	100%	10%	0%
Adj. Flow (vph)	10	9	170	16	16	0	189	109	14	0	136	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	189	0	0	32	0	0	312	0	0	153	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.37	1.37
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	51.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	8	148	14	14	0	164	95	12	0	118	15
Future Volume (Veh/h)	9	8	148	14	14	0	164	95	12	0	118	15
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (vph)	10	9	170	16	16	0	189	109	14	0	136	17
Pedestrians											1	
Lane Width (m)											3.6	
Walking Speed (m/s)											1.2	
Percent Blockage											0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	648	646	144	813	647	117	153			123		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	648	646	144	813	647	117	153			123		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.2			5.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.3			3.1		
p0 queue free %	97	97	81	92	95	100	86			100		
cM capacity (veh/h)	333	339	903	213	339	940	1380			1028		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	189	32	312	153
Volume Left	10	16	189	0
Volume Right	170	0	14	17
cSH	772	262	1380	1028
Volume to Capacity	0.24	0.12	0.14	0.00
Queue Length 95th (m)	7.7	3.3	3.8	0.0
Control Delay (s)	11.2	20.7	5.3	0.0
Lane LOS	B	C	A	
Approach Delay (s)	11.2	20.7	5.3	0.0
Approach LOS	B	C		

Intersection Summary				
Average Delay	6.5			
Intersection Capacity Utilization	51.0%	ICU Level of Service		A
Analysis Period (min)	15			

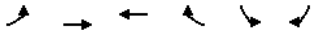
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	16	37	26	64	68	14
Future Volume (vph)	16	37	26	64	68	14
Ideal Flow (vphpl)	1483	1483	1228	1228	1388	1388
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.905				0.977	
Flt Protected	0.985			0.986		
Satd. Flow (prot)	1322	0	0	1211	1356	0
Flt Permitted	0.985			0.986		
Satd. Flow (perm)	1322	0	0	1211	1356	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	237.1			136.5	203.0	
Travel Time (s)	17.1			9.8	14.6	
Confl. Peds. (#/hr)		1				
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	18	42	29	72	76	16
Shared Lane Traffic (%)						
Lane Group Flow (vph)	60	0	0	101	92	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.6			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.37	1.37	1.71	1.71	1.48	1.48
Turning Speed (k/h)	100	100	100			100
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	25.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	16	37	26	64	68	14
Future Volume (Veh/h)	16	37	26	64	68	14
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	18	42	29	72	76	16
Pedestrians				1		
Lane Width (m)				3.6		
Walking Speed (m/s)				1.2		
Percent Blockage				0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	214	85	92			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	214	85	92			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	96	98			
cM capacity (veh/h)	764	979	1515			

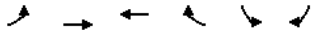
Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	60	101	92
Volume Left	18	29	0
Volume Right	42	0	16
cSH	903	1515	1700
Volume to Capacity	0.07	0.02	0.05
Queue Length 95th (m)	1.7	0.5	0.0
Control Delay (s)	9.3	2.2	0.0
Lane LOS	A	A	
Approach Delay (s)	9.3	2.2	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	3.1		
Intersection Capacity Utilization	25.2%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	11	2	6	1	1	7
Future Volume (vph)	11	2	6	1	1	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.983		0.880	
Flt Protected		0.959			0.994	
Satd. Flow (prot)	0	1786	1831	0	1629	0
Flt Permitted		0.959			0.994	
Satd. Flow (perm)	0	1786	1831	0	1629	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		91.7	97.8		98.9	
Travel Time (s)		6.6	7.0		7.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	2	7	1	1	8
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	14	8	0	9	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	100			100	100	100
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	17.4%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	11	2	6	1	1	7
Future Volume (Veh/h)	11	2	6	1	1	7
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)	12	2	7	1	1	8
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	8				34	8
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	8				34	8
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				100	99
cM capacity (veh/h)	1612				973	1075

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	14	8	9
Volume Left	12	0	1
Volume Right	0	1	8
cSH	1612	1700	1062
Volume to Capacity	0.01	0.00	0.01
Queue Length 95th (m)	0.2	0.0	0.2
Control Delay (s)	6.2	0.0	8.4
Lane LOS	A		A
Approach Delay (s)	6.2	0.0	8.4
Approach LOS			A

Intersection Summary			
Average Delay	5.3		
Intersection Capacity Utilization	17.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	3	9	77	4	16	54
Future Volume (vph)	3	9	77	4	16	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.896		0.994			
Flt Protected	0.989					0.989
Satd. Flow (prot)	1651	0	1852	0	0	1842
Flt Permitted	0.989					0.989
Satd. Flow (perm)	1651	0	1852	0	0	1842
Link Speed (k/h)	50		50			50
Link Distance (m)	86.6		203.0			243.1
Travel Time (s)	6.2		14.6			17.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	3	10	84	4	17	59
Shared Lane Traffic (%)						
Lane Group Flow (vph)	13	0	88	0	0	76
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.6		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.8		4.8			4.8
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	100	100		100	100	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 20.4%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	3	9	77	4	16	54
Future Volume (Veh/h)	3	9	77	4	16	54
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	10	84	4	17	59
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	179	86			88	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	179	86			88	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			99	
cM capacity (veh/h)	801	973			1508	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	13	88	76
Volume Left	3	0	17
Volume Right	10	4	0
cSH	927	1700	1508
Volume to Capacity	0.01	0.05	0.01
Queue Length 95th (m)	0.3	0.0	0.3
Control Delay (s)	8.9	0.0	1.7
Lane LOS	A		A
Approach Delay (s)	8.9	0.0	1.7
Approach LOS	A		

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	20.4%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	0	7	0	0	0	10	204	0	0	190	89
Future Volume (vph)	66	0	7	0	0	0	10	204	0	0	190	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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	1.00
Frt		0.986									0.957	
Flt Protected		0.957						0.998				
Satd. Flow (prot)	0	1758	0	0	1863	0	0	1859	0	0	1783	0
Flt Permitted		0.957						0.998				
Satd. Flow (perm)	0	1758	0	0	1863	0	0	1859	0	0	1783	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		92.4			127.6			100.6			189.8	
Travel Time (s)		6.7			9.2			7.2			13.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	72	0	8	0	0	0	11	222	0	0	207	97
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	80	0	0	0	0	0	233	0	0	304	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (k/h)	100		100	100		100	100		100	100		100
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 29.6%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	66	0	7	0	0	0	10	204	0	0	190	89
Future Volume (Veh/h)	66	0	7	0	0	0	10	204	0	0	190	89
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	72	0	8	0	0	0	11	222	0	0	207	97
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	500	500	256	508	548	222	304			222		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	500	500	256	508	548	222	304			222		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	85	100	99	100	100	100	99			100		
cM capacity (veh/h)	478	469	783	468	440	818	1257			1347		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	80	0	233	304
Volume Left	72	0	11	0
Volume Right	8	0	0	97
cSH	498	1700	1257	1347
Volume to Capacity	0.16	0.00	0.01	0.00
Queue Length 95th (m)	4.5	0.0	0.2	0.0
Control Delay (s)	13.6	0.0	0.4	0.0
Lane LOS	B	A	A	
Approach Delay (s)	13.6	0.0	0.4	0.0
Approach LOS	B	A		

Intersection Summary				
Average Delay		1.9		
Intersection Capacity Utilization		29.6%	ICU Level of Service	A
Analysis Period (min)		15		