



Final Report

# 591 Liverpool Road Traffic Impact Study

*Pickering Harbour Company Ltd*

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## **HDR TEAM**

Project Manager: Carl Wong, P.Eng.

Technical Support: Amanda Chung

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# 1. Introduction

## 1.1 Background

HDR Corporation (“HDR”) was retained by Pickering Harbour Company Ltd. to undertake a Traffic Impact Study for a proposed residential and commercial development at 591 Liverpool Road, located at the south end of Liverpool Road, in the City of Pickering (“City”). The site location is shown in **Exhibit 1**. The site is currently occupied by the Frenchman’s Bay Marina. .

A previous Traffic Impact Study report (dated November 2019) was prepared and submitted in regards to the proposed development. The updates in this report reflect the latest proposed concept plan, which include the following changes:

- Reducing the number of proposed residential units from 498 to 377 condominium apartment units,
- Reducing the proposed commercial space from 1,900 to 1,400 m<sup>2</sup> of GFA,
- Introducing a public assembly hall use of 625 m<sup>2</sup> GFA,
- Introducing indoor boat storage;
- Maintaining the existing public parking lot of 72 spaces south of 591 Liverpool Road,
- Removing the provision of additional public parking spaces within the proposed development, and
- Increasing the parking supply rate for the residential and commercial development.

The proposed development consists of 377 condominium apartment units in two 15-storey buildings, 1,400 m<sup>2</sup> of commercial space, and 625 m<sup>2</sup> of public assembly hall space. The site is proposed to supply 472 parking spaces for both the residential and commercial components, and 63 spaces for the assembly hall component, for a total parking supply of 535 parking spaces.

The net result of these changes will be a slight decrease in site generated traffic volumes; however, the conclusions and recommended mitigation measures identified in the previous report have not significantly changed.

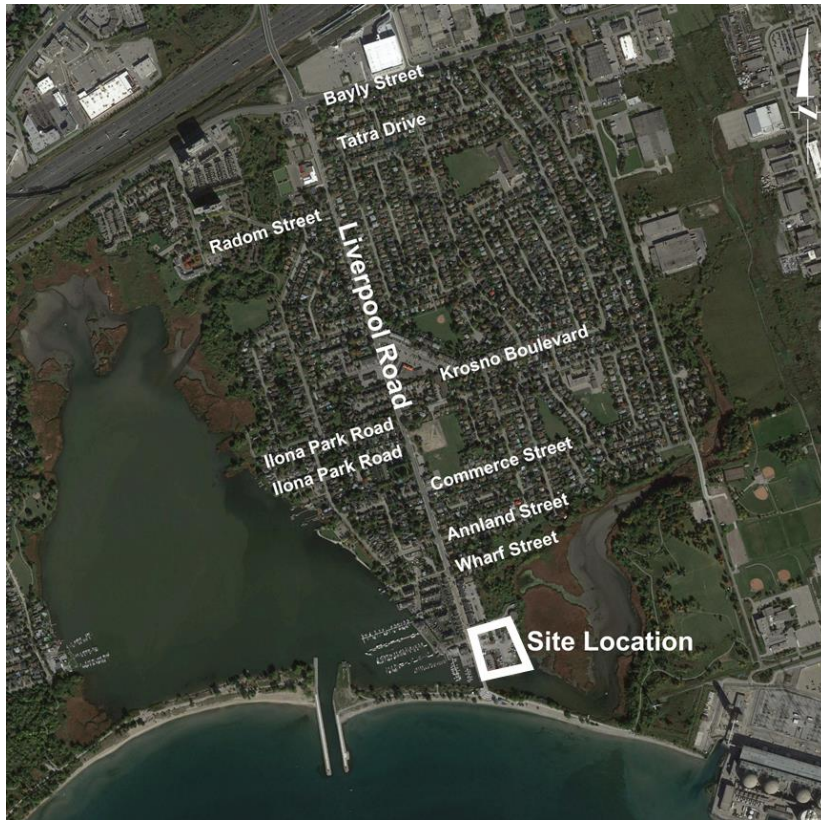


Exhibit 1: Site Location

## 1.2 Study Scope of Work

The study scope of work has been reviewed and approved by City of Pickering and Durham Region (“Region”) staff when this study initiated in June 2017, and is summarized below:

- |   |   |
|---|---|
| Analysis Scenarios                      | <ul style="list-style-type: none"><li>• Existing traffic conditions</li><li>• Full Build-out traffic conditions<ul style="list-style-type: none"><li>• 2027 Background Traffic (includes road growth and traffic from approved or under construction background developments in the immediate area)</li><li>• 2027 Total Traffic (2027 background traffic plus the proposed development traffic)</li></ul></li><li>• 5 years from the build-out traffic conditions<ul style="list-style-type: none"><li>• 2032 Background Traffic (includes road growth and traffic from approved or under construction background developments in the immediate area)</li><li>• 2032 Total Traffic (2032 background traffic plus the proposed development traffic)</li></ul></li></ul> |
| Analysis Time Periods                   | <ul style="list-style-type: none"><li>• Weekday AM peak hour (between 7:00am – 9:00am)</li><li>• Weekday PM peak hour (between 4:00pm – 6:00pm)</li><li>• Weekend Saturday peak hour (between 12:00pm – 2:00pm)</li></ul>   |
| Study Area Intersections to be Analyzed | <ul style="list-style-type: none"><li>• Liverpool Road and Bayly Street</li><li>• Liverpool Road and Tatra Drive</li><li>• Liverpool Road and Radom Street</li><li>• Liverpool Road and Krosno Boulevard</li><li>• Liverpool Road and Ilona Park Road (north)</li><li>• Liverpool Road and Ilona Park Road (south)</li><li>• Liverpool Road and Commerce Street</li><li>• Liverpool Road and Annland Street</li><li>• Liverpool Road and Wharf Street</li><li>• Proposed Site Access</li></ul>  |

## 1.3 Intersections Operations and Analysis Methodology

Intersection operations were assessed for the site driveways and study intersections using the software program Synchro 9 and SimTraffic 9, both of which employ methodology from the **Highway Capacity Manual (HCM2010)** published by the Transportation Research Board National Research Council. Synchro can analyze both signalized and unsignalized intersections in a road corridor or network taking into account the spacing, interaction, queues and operations between intersections.

The signalized intersection analysis considers two separate measures of performance:

- the capacity of all intersection movements, which is based on a volume to capacity ratio; and





- the level of service for all intersection movements, which is based on the average control delay per vehicle for the various movements through the intersection and overall.

The two-way unsignalized intersection analysis also considers two separate measures of performance:

- the capacity of the critical intersection movements, which is based on a volume to capacity ratio; and
- the level of service for the critical movements, which is based on the average control delay per vehicle for the various critical movements within the intersection.

Level of service is based on the average control delay per vehicle for a given movement. Delay is an indicator of how long a vehicle must wait to complete a movement and is represented by a letter between 'A' and 'F', with 'F' being the longest delay. The volume to capacity (v/c) ratio is a measure of the degree of capacity utilized at an intersection. Pedestrian and bicycle level of service was assessed using HCM 2010 methodology.

## 2. Existing Traffic Conditions

The subject site is bounded by the existing public road leading to the pumping station to the north, Frenchman's Bay to the east and south, and Liverpool Road to the west.

### 2.1 Existing Road Network

The transportation road network within the Study Area as described in Pickering's Official Plan: Schedule 2 is illustrated in **Exhibit 2**, and the existing lane configurations and traffic controls at intersections are presented in **Exhibit 3**. The road network is described below.

Liverpool Road	Liverpool Road is under the jurisdiction of the City of Pickering and is a north-south collector road north of Annland Street with a posted speed limit of 40 km/h within the study area. Liverpool Road is a local road south of Annland Street. It is a regional road north of Bayly Street and under the jurisdiction of the Region of Durham. It has a two-lane urban cross section with sidewalks on both sides. Liverpool Road is signalized at Bayly Street and partially signalized at Tatra Drive intersection for pedestrian crossing on the south approach. On-street parking exists on the west side between Commerce Street and Annland Street, and on both sides south of Annland Street.
Bayly Street	Bayly Street is under the jurisdiction of the Region of Durham and is an east-west arterial road that spans between across Pickering and Ajax. Within the study area, it has a four-lane urban cross section with sidewalks on the south side. A multi-use path exists on the north side east of Liverpool Road. It has a posted speed limit of 60 km/h.
Tatra Drive	Tatra Drive is under the jurisdiction of the City of Pickering and is an east-west collector road. It has a two-lane cross section with sidewalks on the south side. It has a posted speed limit of 40 km/h. The west approach serves as a parking lot.
Radom Street	Radom Street is under the jurisdiction of the City of Pickering and is a two-lane east-west collector road. It has a sidewalk on the south side and a posted speed limit of 40 km/h.
Krosno Boulevard	Krosno Boulevard is under the jurisdiction of the City of Pickering and is an east-west collector road. It has a two-lane cross section and has a posted speed limit of 40 km/h. A commercial plaza exists on the south-east corner.
Ilona Park Road	Ilona Park Road is a two-lane local road that forms a crescent. It is under the jurisdiction of the City of Pickering and has a posted speed limit of 40 km/h. Sidewalks are not provided.
Commerce Street	Commerce Street is a two-lane east-west local road under the jurisdiction of the City of Pickering. It has a posted speed limit of 40 km/h. It has a sidewalk on the north side of the east approach.

**Annland Street**

Annland Street is a two-lane collector road under the jurisdiction of the City of Pickering. It curves and also intersects Commerce Street (on both sides) and Krosno Boulevard (from the east approach). It has a posted speed limit of 40 km/h and has a sidewalk on the south side of the west approach.

**Wharf Street**

Wharf Street is a two-lane east-west local road under the jurisdiction of the City of Pickering. Both sides of Wharf Street lead to cul-de-sacs, and the west approach also leads to a small marina and commercial area. It has a posted speed limit of 40 km/h.



**Exhibit 2: Transportation System of the Study Area**

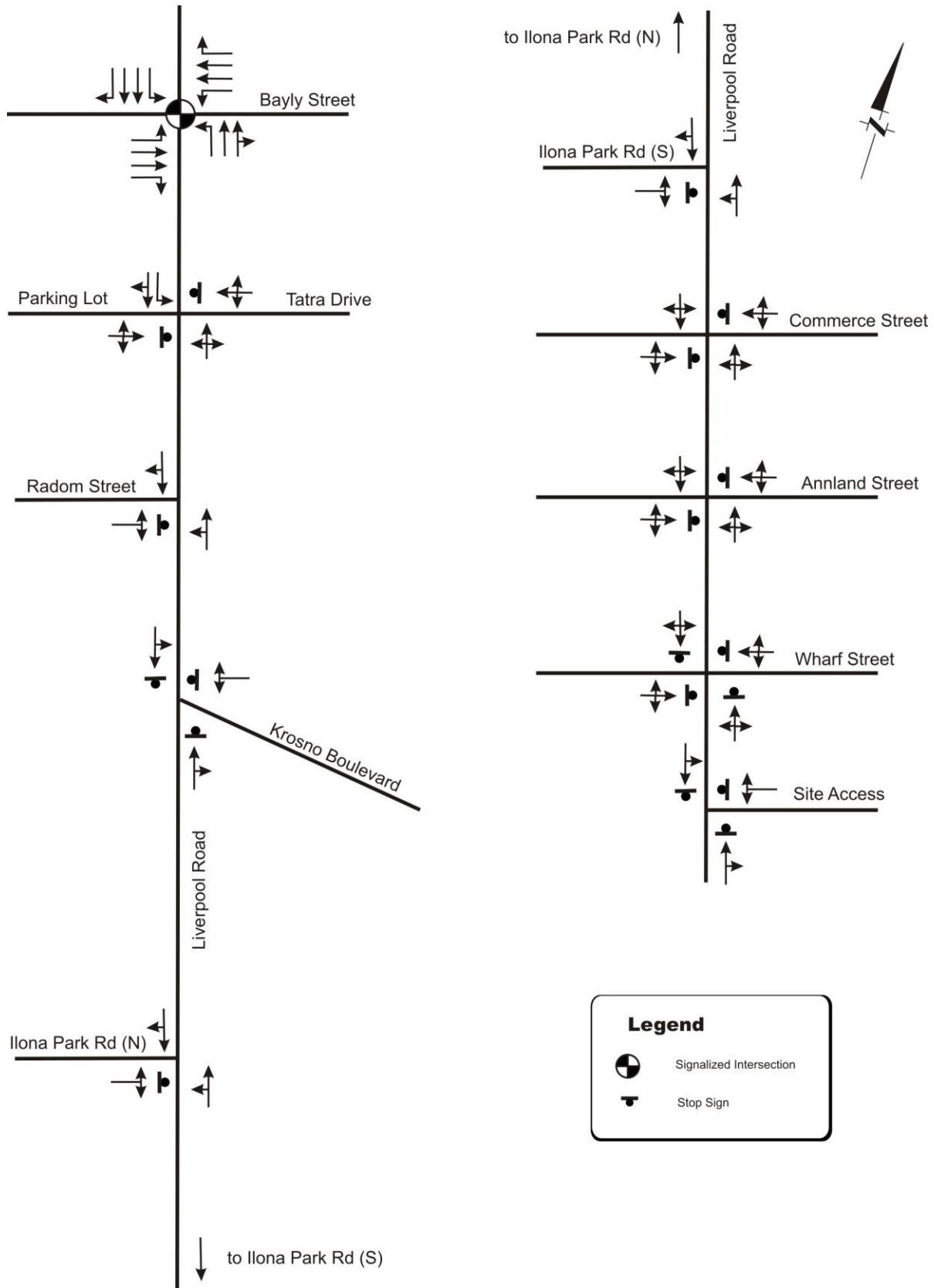


Exhibit 3: Existing Road Network

## 2.2 Transit Service

Durham Region Transit (DRT) currently operates several transit routes within the study area. Pickering GO Station is located at the north-east quadrant of the Liverpool Road and Bayly Street intersection, approximately 2km from the proposed site. A summary of DRT services and bus and train services provided at the Pickering GO Station is shown in **Table 1**.

Table 1: DRT Transit Service Summary

Bus / Route	Approximate headways during peak periods
<b>Liverpool Road</b>	
193 Community (DRT)	Weekday PM – 60 minutes Saturday MID – 60 minutes
101A Bay Ridges (DRT)	Weekday AM – 30 minutes
101 Bay Ridges (DRT)	Weekday AM – 60 minutes Weekday PM – 30 minutes Saturday MID – 60 minutes
<b>Bayly Street</b>	
110 Finch West (DRT)	Weekday AM – 10 minutes from 7:10 to 7:30, 30 minutes after 7:30
110A Finch West (DRT)	Weekday AM – 30 minutes
107 Rosebank Whites (DRT)	Weekday AM – 30 minutes Weekday PM – 30 minutes
120 Rosebank Whites (DRT)	Weekday AM – 20 minutes Weekday PM – 20 minutes Saturday MID – 30 minutes
103 Glenanna (DRT)	Weekday AM – 30 minutes Weekday PM – 30 minutes Saturday MID – 60 minutes
223 Bayly (DRT)	Weekday AM – 30 minutes Weekday PM – 30 minutes Saturday MID – 60 minutes
<b>GO Transit</b>	
Lakeshore East Train (GO)	Weekday AM – 20 minutes towards Toronto, 30 minutes towards Oshawa Weekday PM – 20 minutes towards Oshawa, 20 minutes towards Toronto Saturday MID – 30 minutes towards Oshawa, 30 minutes towards Toronto
51, 52, 54 – 407 East Bus (GO)	Weekday AM – 40 minutes Weekday PM – 30 minutes

The 101/101A stop was revised in April 2019 as shown in **Exhibit 4**. Before the change, the nearest stop to the subject site during peak hour was at Liverpool Road/Annland Street (approximately 300m from the subject site). The nearest stop during peak hour is now at Liverpool Road/Krosno Boulevard (approximately 950m from the subject site).



Exhibit 4: Transit Route Change (April 2019)

### 2.3 Existing Traffic Volumes

Existing weekday AM, weekday PM, and Saturday MID peak period turning movement counts (two hours in the morning between 7-9 AM, in the afternoon between 4-6 PM, and on Saturday between 12-2 PM) were commissioned by HDR in 2017. The traffic count dates are summarized in **Table 2**.

Table 2: Summary of Traffic Counts

Location	Weekday Count Date (AM and PM)	Weekend Count Date
Bayly Street	Thursday June 1, 2017	Saturday June 3, 2017
Tatra Drive	Thursday June 1, 2017	Saturday June 3, 2017
Radom Street	Thursday June 1, 2017	Saturday June 3, 2017
Krosno Boulevard	Thursday June 1, 2017	Saturday June 3, 2017
Ilona Park Road (N)	Tuesday June 6, 2017	Saturday June 3, 2017
Ilona Park Road (S)	Tuesday June 6, 2017	Saturday June 3, 2017
Commerce Street	Thursday June 1, 2017	Saturday June 3, 2017
Annland Street	Thursday June 1, 2017	Saturday June 3, 2017
Wharf Street	Tuesday June 6, 2017	Saturday June 3, 2017

The existing weekday AM, weekday PM, and Saturday midday peak hour turning movement volumes based on these counts at the study intersections are illustrated in **Exhibit 5**. Since the traffic counts are still within the 2 year time frame of this report, these counts are representative of existing conditions.

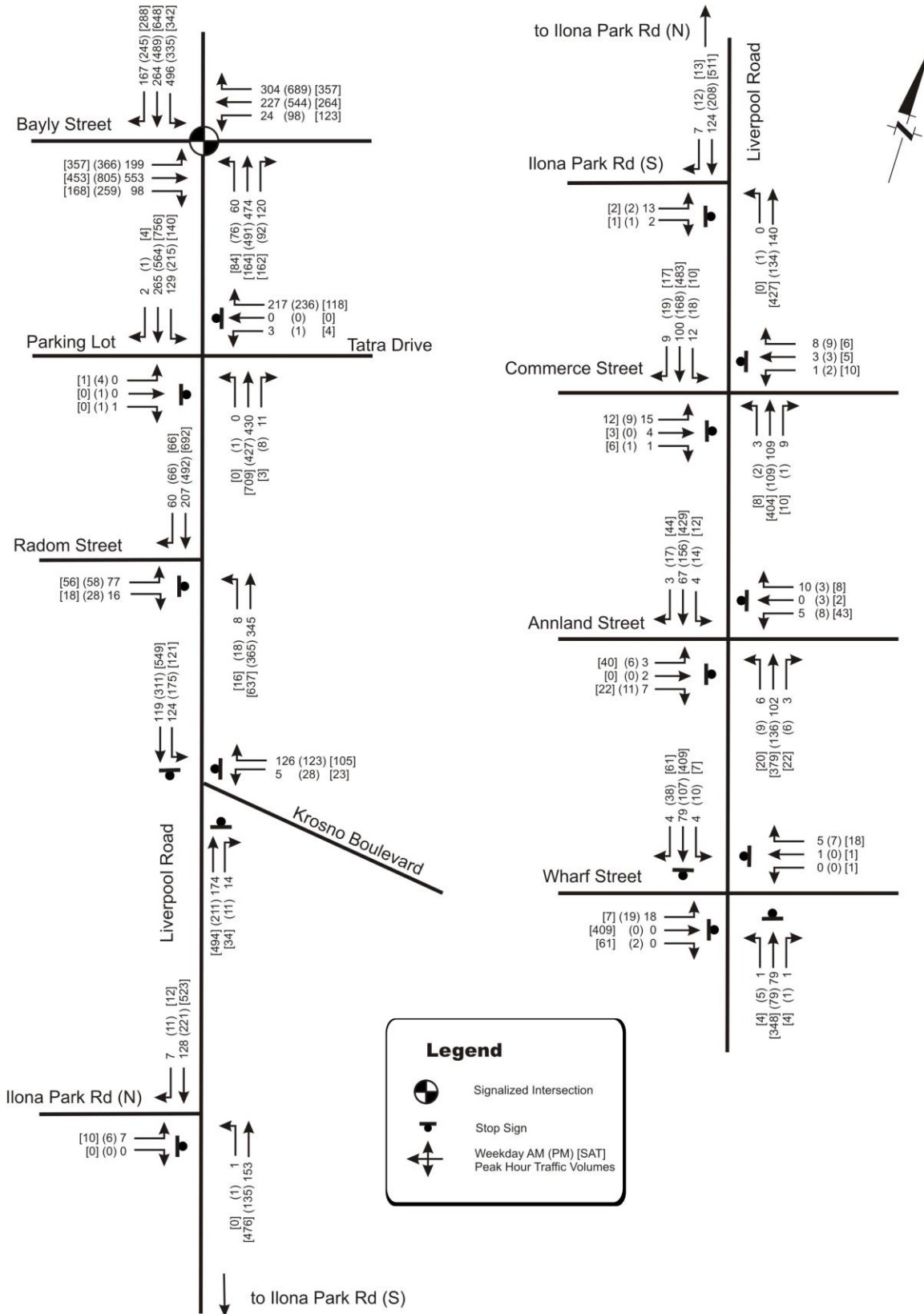


Exhibit 5: Existing Traffic Volumes

## 2.4 Existing Traffic Operations

Based on the existing road configurations illustrated in **Exhibit 3**, existing traffic volumes shown in **Exhibit 5**, and existing signal timings provided by the Region, the existing Liverpool Road and Bayly Street intersection operations are summarized in **Table 3**. Detailed parameter set-up and traffic analysis output sheets generated by Synchro are provided in **Appendix C**.

Table 3: Existing Traffic Signalized Intersection Operations

Intersection & Critical Movement	Weekday AM Peak Hour		Weekday PM Peak Hour		Saturday MID Peak Hour	
	LOS	v/c	LOS	v/c	LOS	v/c
<b>Liverpool Road/Bayly Street</b>	<b>C</b>	<b>0.80</b>	<b>D</b>	<b>1.04</b>	<b>C</b>	<b>0.77</b>
Eastbound Left-turn	C	0.50	F	1.04	D	0.77
Eastbound Through	D	0.76	D	0.78	C	0.43
Eastbound Right-turn	A	0.27	A	0.45	A	0.31
Westbound Left-turn	C	0.25	C	0.47	C	0.26
Westbound Through	D	0.33	D	0.61	C	0.25
Westbound Right-turn	A	0.40	C	0.88	B	0.48
Northbound Left-turn	B	0.13	B	0.14	B	0.15
Northbound Through-Right	C	0.64	D	0.70	C	0.47
Southbound Left-turn	C	0.80	C	0.70	C	0.70
Southbound Through	B	0.17	D	0.58	B	0.31
Southbound Right-turn	A	0.18	A	0.34	A	0.30

Notes: v/c – volume to capacity ratio, LOS – level of service

As per the Durham Region TIS Guidelines, it is the planning policy to operate the road network in an urban setting to a LOS D or better. Under existing traffic conditions, most individual turning movements for the intersection of Liverpool Road and Bayly Street are all operating at Level of Service 'D' or better, and with a volume to capacity ratio of 0.88 or better, with the exception of the eastbound left-turn at Liverpool Road and Bayly Street, which is currently operating at LOS 'F' with a volume to capacity of 1.04 during the weekday afternoon peak.

Turning movements with volume to capacity ratios over 1.00 indicate that the default or calculated Synchro analysis parameters may likely be too conservative compared with actual field conditions and therefore the results may underestimate the actual available capacity of the intersection. Theoretically it is not possible to have a volume to capacity ratio greater than 1.0 for existing conditions. To be conservative we have worked within the analysis software defaults to optimize intersection operations for future analysis by adjusting signal timing splits.

The intersection of Liverpool Road and Bayly Street was also analyzed with optimized splits to identify if the critical eastbound left-turn movement could be improved based on existing configurations. The results are summarized in **Table 4** and the detailed traffic analysis output sheets generated by Synchro are provided in **Appendix C**.



**Table 4: Liverpool Road/Bayly Street Intersection Operations – Optimized**

Intersection & Critical Movement	Weekday AM Peak Hour		Weekday PM Peak Hour		Saturday MID Peak Hour	
	LOS	v/c	LOS	v/c	LOS	v/c
<b>Liverpool Road/Bayly Street (optimized)</b>	<b>C</b>	<b>0.79</b>	<b>C</b>	<b>0.91</b>	<b>C</b>	<b>0.71</b>
Eastbound Left-turn	C	0.50	D	0.90	C	0.64
Eastbound Through	D	0.66	C	0.67	C	0.35
Eastbound Right-turn	A	0.25	A	0.41	A	0.26
Westbound Left-turn	C	0.25	C	0.41	B	0.28
Westbound Through	C	0.32	D	0.56	C	0.30
Westbound Right-turn	A	0.39	D	0.91	B	0.48
Northbound Left-turn	B	0.16	B	0.23	B	0.19
Northbound Through-Right	D	0.71	D	0.71	D	0.65
Southbound Left-turn	C	0.79	C	0.82	C	0.71
Southbound Through	B	0.17	C	0.40	C	0.35
Southbound Right-turn	A	0.18	A	0.29	A	0.29

Notes: v/c – volume to capacity ratio, LOS – level of service

Under optimized timing in the existing traffic conditions, most individual turning movements for the intersection of Liverpool Road and Bayly Street are all operating at Level of Service 'D' or better, and with a volume to capacity ratio of 0.96 or better.

The existing unsignalized intersection operations are summarized in **Table 5**. Detailed traffic analysis output sheets generated by Synchro are provided in **Appendix C**.

**Table 5: Existing Traffic Unsignalized Intersection Operations**

Intersection & Critical Movement	Weekday AM Peak Hour		Weekday PM Peak Hour		Saturday MID Peak Hour	
	LOS	v/c	LOS	v/c	LOS	v/c
<b>Liverpool Road/Tatra Drive</b>						
Eastbound Left-Through-Right	A	0.00	F	0.19	F	0.01
Westbound Left-Through-Right	C	0.44	C	0.45	B	0.25
Northbound Left-through-right	-	0.00	A	0.00	-	0.00
Southbound Left-turn	A	0.14	A	0.21	A	0.14
Southbound Through-Right	-	0.17	-	0.35	-	0.31
<b>Liverpool Road/Radom Street</b>						
Eastbound Left-Right	B	0.22	C	0.28	C	0.26
Northbound Left-Through	A	0.01	A	0.02	A	0.01
<b>Liverpool Road/Krosno Boulevard</b>						
Westbound Left-Right	A	0.21	B	0.25	A	0.17
Northbound Right-turn	A	0.31	B	0.35	B	0.37
Southbound Left-Through	B	0.41	C	0.73	B	0.57
<b>Liverpool Road/Ilona Park Road (N)</b>						
Eastbound Left-Right	B	0.01	B	0.01	B	0.02
Northbound Left-Through	A	0.00	A	0.00	-	0.00
<b>Liverpool Road/Ilona Park Road (S)</b>						
Eastbound Left-Right	B	0.03	B	0.01	B	0.01
Northbound Left-Through	-	0.00	A	0.00	-	0.00
<b>Liverpool Road/Commerce Street</b>						
Eastbound Left-Through-Right	B	0.04	B	0.02	B	0.04
Westbound Left-Through-Right	A	0.02	B	0.02	B	0.03
Northbound Left-Through-Right	A	0.00	A	0.00	A	0.00
Southbound Left-Through-Right	A	0.01	A	0.02	A	0.01
<b>Liverpool Road/Annland Street</b>						
Eastbound Left-Through-Right	A	0.02	B	0.03	B	0.03

Intersection & Critical Movement	Weekday AM Peak Hour		Weekday PM Peak Hour		Saturday MID Peak Hour	
	LOS	v/c	LOS	v/c	LOS	v/c
	Westbound Left-Through-Right	A	0.02	B	0.03	B
Northbound Left-Through-Right	A	0.00	A	0.01	A	0.01
Southbound Left-Through-Right	A	0.00	A	0.01	A	0.01
<b>Liverpool Road/Wharf Street</b>						
Eastbound Left-Through-Right	A	0.03	A	0.03	A	0.06
Westbound Left-Through-Right	A	0.01	A	0.01	A	0.03
Northbound Left-Through-Right	A	0.11	A	0.16	A	0.16
Southbound Left-Through-Right	A	0.12	A	0.27	A	0.29

Under the existing conditions as shown in **Table 5**, the eastbound movements at Liverpool Road and Tatra Drive are operating at LOS 'F' during the weekday PM and Saturday midday peak periods.

A gap survey was conducted at Liverpool Road and Tatra Drive and Liverpool Road and Radom Street on Thursday June 1<sup>st</sup>, 2017 and Saturday June 3<sup>rd</sup>, 2017 during peak periods. Gap survey data is in **Appendix A**.

Based on the gaps available, the critical gap values shown in **Table 6** were used to calculate the number of vehicles that can turn onto or pass through Liverpool Road during each individual gap. **Table 7** totals the number of vehicles that can make the eastbound or westbound turn onto Liverpool Road or pass through Liverpool Road based on the total available gaps during the peak hour (e.g. 256 opportunities for a left turn from Tatra Drive during the AM Peak Hour, or 264 opportunities for a through movement).

Table 6: Critical Gap Values for Determining Vehicle Movements from Minor Street

Type	Critical Gap Values (Minor Movements) in Seconds		
	Left	Through	Right
Initial	7.5	6.5	6.9
Follow-Up	3.5	4.0	3.3

Table 7: Vehicle Gap Survey Summary (Available Gaps) – Eastbound and Westbound

Intersection and Movement	AM Peak Hour			PM Peak Hour			Saturday Peak Hour		
	Left	Through	Right	Left	Through	Right	Left	Through	Right
Liverpool Road/Tatra Drive	256	264	296	212	232	249	108	119	127
Liverpool Road/Radom Street	337	336	381	191	206	222	188	190	209

As shown in **Table 7**, there are sufficient amount of gaps available for drivers turned onto Liverpool Road during all peak periods.

Liverpool Road and Tatra Drive is a two-way stop-controlled intersection but also operates with a pedestrian signal on the south side of Tatra Drive, which is only used when pedestrians use the push button to cross Liverpool Road. Based on the counts obtained, it is noted that there is a frequent pedestrian traffic on the south side of Tatra Drive during the weekday PM peak hour. As a result, a sensitivity analysis was performed to present the partially signalized intersection operations during the weekday PM peak hour, which is summarized in **Table 8**.

**Table 8: Liverpool Road/Tatra Drive Signalized PM Peak Sensitive Analysis – Existing**

Intersection & Critical Movement	Weekday PM Peak Hour	
	LOS	v/c
<b>Liverpool Road/Tatra Drive (when pedestrian signals active)</b>		
Eastbound Left-Through-Right	C	0.07
Westbound Left-Through-Right	B	0.64
Northbound Left-through-right	A	0.33
Southbound Left-turn	A	0.31
Southbound Through-Right	A	0.44

As shown in **Exhibit 5**, there is only one vehicle making the eastbound movement during the weekend Saturday peak at Tatra Drive. Therefore, the traffic impact of the one vehicle is not significant as compared to the intersection and overall road network.

Level of Service (LOS) for bicyclists and pedestrians measure and reflect the quality of service by accounting for factors such as comfort, safety, and ease of mobility. The analysis during the weekday AM and PM peak hours are summarized in **Table 9**. Detailed pedestrian and bicycle LOS output sheets generated by Synchro are provided in **Appendix C**.

**Table 9: Existing Pedestrian and Bicycle Level of Service at Signalized Intersections**

Intersection & Critical Movement	Weekday AM Peak Hour		Weekday PM Peak Hour		Saturday MID Peak Hour	
	Pedestrian LOS	Bicycle LOS	Pedestrian LOS	Bicycle LOS	Pedestrian LOS	Bicycle LOS
<b>Liverpool Road/Bayly Street</b>						
Eastbound	B	C	C	D	B	C
Westbound	B	C	C	D	B	C
Northbound	B	C	B	C	B	C
Southbound	B	C	C	D	C	D

As shown in **Table 9**, pedestrian and bicycle trips experience LOS 'D' or better under existing conditions.

### 2.4.1 Field Observations

Field observations were conducted when the project was initiated in 2017. Additional observations were conducted during the weekday PM peak hour between 4:30PM and 5:30PM (on Thursday, October 17, 2019) prior to the November submission. Since the submission of this report in November 2019, additional weekday AM peak period field observations were also conducted between 7:45AM and 8:45AM (on Thursday, January 30, 2020).

In general, there were no significant traffic operational or safety issues observed along Liverpool Road. Liverpool Road was lightly travelled with little to no queues observed on the side streets. Queues were observed at the intersection of Bayly Street and Liverpool Road for the southbound left movement where vehicles would spillback and block the through lanes, which is consistent with the existing conditions analysis. Queues were also observed on the eastbound left movement

where the protected left turn only allowed 2 – 3 vehicles, while the demand was 7 – 8 vehicles each cycle during the AM peak period.

The proposed development will not add any site traffic to these two movements. Therefore these are solely attributable to existing traffic.

The northbound through-right movement on Liverpool Road at Bayly was also observed with queues of up to 8 vehicles during the weekday AM peak period, which is not an issue today and can be cleared within the northbound green phase.

## 2.5 Existing Traffic Queues Based on Synchro Analysis

Queuing analysis was undertaken at the key movements within the study intersections. The queuing results are based on the Synchro 95<sup>th</sup> percentile queues for the weekday AM, weekday PM, and Saturday MID peak hours.

SimTraffic queue results were reported for the two all way stop controlled intersections: (1) Liverpool Road/Krosno Boulevard, and (2) Liverpool Road/Wharf Street because of very low values of 95<sup>th</sup> percentile queues produced by Synchro. This would represent a very conservative analysis of queues for the all-way stop controlled intersections.

**Table 10** summarizes the queue length for key movements. In addition, the queuing results for the intersection at Liverpool Road and Bayly Street are based on the existing signal timing plan shown in **Appendix B**.

Under existing traffic conditions, 95<sup>th</sup> percentile queues can be accommodated for all key movements in the study area with the exception of the southbound left-turn at Liverpool / Bayly during all peak periods.

Table 10: Existing Traffic 95<sup>th</sup> Percentile Queue Summary

Intersection	Existing Storage and Link Length	Existing 95 <sup>th</sup> Percentile Queue (m)		
		AM Peak Hour	PM Peak Hour	SAT Peak Hour
<b>Liverpool Road/Bayly Street</b>				
Eastbound Left-turn	115	47.4	<b>115.4</b>	84.1
Eastbound Through	-	73	99.7	48.2
Eastbound Right-turn	100	6.4	17.7	14.7
Westbound Left-turn	50	16.2	21.6	22.4
Westbound Through	-	31.2	67.8	29.2
Westbound Right-turn	150	36.2	<b>181.2</b>	47.7
Northbound Left-turn	75	9.6	14.7	11.9
Northbound Through-Right	-	69.7	73.0	55.3
Southbound Left-turn	50	<b>103.0</b>	<b>62.1</b>	<b>56.0</b>
Southbound Through	-	23.6	61.8	42.8
Southbound Right-turn	65	7.8	13.7	10.4
<b>Liverpool Road/Tatra Drive</b>				
Eastbound Left-Through-Right	-	0.0	4.4	0.3
Westbound Left-Through-Right	-	17.1	17.6	7.4
Northbound Left-through-right	-	0.0	0.0	0.0
Southbound Left-turn	40	3.6	6.1	3.5
<b>Liverpool Road/Radom Street</b>				
Eastbound Left-Right	-	6.2	8.4	7.6
Northbound Left-Through	-	0.0	0.5	0.3
<b>Liverpool Road/Krosno Boulevard</b>				
Westbound Left-Right	-	16.2	19.9	6.2
Northbound Right-turn	-	20.6	17.3	30.9
Southbound Left-Through	-	24.7	24.6	37.9
<b>Liverpool Road/Ilona Park Road (N)</b>				
Eastbound Left-Right	-	0.3	0.3	0.5
Northbound Left-Through	-	0.0	0.0	0.0
<b>Liverpool Road/Ilona Park Road (S)</b>				
Eastbound Left-Right	-	0.6	0.1	0.1
Northbound Left-Through	-	0.0	0.0	0.0
<b>Liverpool Road/Commerce Street</b>				
Eastbound Left-Through-Right	-	0.9	0.6	1.1
Westbound Left-Through-Right	-	0.5	0.5	0.6
Northbound Left-Through-Right	-	0.1	0.0	0.1
Southbound Left-Through-Right	-	0.2	0.3	0.2
<b>Liverpool Road/Annland Street</b>				
Eastbound Left-Through-Right	-	0.4	0.03	0.6
Westbound Left-Through-Right	-	0.5	0.03	1.6
Northbound Left-Through-Right	-	0.1	0.01	0.2
Southbound Left-Through-Right	-	0.1	0.01	0.2
<b>Liverpool Road/Wharf Street</b>				
Eastbound Left-Through-Right	-	7.8	13.3	16.8
Westbound Left-Through-Right	-	-	-	13.2
Northbound Left-Through-Right	-	16.2	15.2	15.2
Southbound Left-Through-Right	-	14.2	19.1	18.6

## 2.6 City Public Parking Lot

In the previous concept plan, the property containing the public parking lot was included as part of the development proposal. The current plan now excludes redeveloping the parking lot and the lot will continue operating. The information presented on the public parking lot is for background context.



A parking survey was conducted at the existing public parking lot to understand the existing parking demand. As stated in **Section 1**, the existing public parking lot has 72 parking spaces.

HDR conducted the parking survey at the following dates and times to capture the peak parking demand:

- Saturday June 3<sup>rd</sup>, 2017 from 3:00pm to 7:00pm; and
- Thursday June 8<sup>th</sup>, 2017 from 2:00pm to 7:00pm.

The parking demand of the public parking lot is summarized in **Table 11**.

**Table 11: Parking Survey Summary**

Date	Peak Time	Occupied	Vacant	Vehicle in Aisle	% Utilization
Saturday June 3 <sup>rd</sup> , 2017	2:00 PM	67	5	0	93%
	2:15 PM	65	7	0	90%
	2:30 PM	64	8	0	89%
	2:45 PM	64	8	0	89%
	3:00 PM	66	6	0	92%
	3:15 PM	57	15	0	79%
	3:30 PM	51	21	0	71%
	3:45 PM	50	22	0	69%
	4:00 PM	52	20	0	72%
	4:15 PM	46	26	0	64%
	4:30 PM	43	29	0	60%
	4:45 PM	44	28	0	61%
	5:00 PM	50	22	0	69%
	5:15 PM	51	21	0	71%
	5:30 PM	59	13	0	82%
	5:45 PM	64	8	0	89%
	6:00 PM	71	1	1	99%
6:15 PM	72	0	1	100%	
6:30 PM	72	0	4	100%	
6:45 PM	72	0	3	100%	
7:00 PM	72	0	3	100%	
Thursday June 8 <sup>th</sup> , 2017	3:00 PM	72	0	3	100%
	3:15 PM	70	2	2	97%
	3:30 PM	72	0	3	100%
	3:45 PM	72	0	1	100%
	4:00 PM	72	0	2	100%
	4:15 PM	70	2	1	97%
	4:30 PM	72	0	4	100%
	4:45 PM	72	0	4	100%
	5:00 PM	72	0	4	100%
	5:15 PM	71	1	4	99%
	5:30 PM	71	1	5	99%
	5:45 PM	66	6	0	92%
	6:00 PM	72	0	1	100%
	6:15 PM	71	1	1	99%
	6:30 PM	72	0	3	100%
6:45 PM	72	0	4	100%	
7:00 PM	72	0	4	100%	

Based on the results of parking survey as shown in **Table 11**, the public parking lot is fully utilized after 6:00pm on Saturday June 3<sup>rd</sup>, 2017 and throughout the day on Thursday June 8<sup>th</sup>, 2017.

## 3. 2027 and 2032 Background Traffic Conditions

### 3.1 Planned Road Network Improvements

There are no planned public roadway improvements within the vicinity of the study area by 2032. The 2032 background network is expected to remain the same as the existing road network. The City of Pickering is undertaking a study to consider a future road connection between Liverpool Road and Sandy Beach Road, in the vicinity of the terminus of Liverpool Road, in order to improve connectivity; however no details on the study and timelines are currently available.

### 3.2 Background Development Traffic

As part of the analysis, adjacent background developments of the study were accounted for in the traffic forecasting process. Based on development applications submitted to the City, there were two background developments that have been taken into account in this analysis.

- A proposed residential development by R.B. Morgan Construction Ltd. (“R.B. Morgan Report”) consisting of 118 condominium apartment units located on the west side of Liverpool Road bounded by Annland Street and Wharfs Street. It was anticipated that the full build-out would be completed by 2020 based on the latest reports; however, this has been extended assuming this development was still included in the background traffic to be conservative in the forecast traffic volumes. Weekday peak hour site traffic volumes were obtained from a transportation impact study entitled “Proposed Residential Condominium Development” prepared by Dionne Bacchus & Associates dated December 2016. In addition, Saturday trip estimates were obtained from the 9<sup>th</sup> Edition of “Trip Generation Manual” published by the Institute of Transportation Engineers (“ITE”) using Land Use Code 232: High-Rise Residential Condo/Townhouse.
- A proposed residential development by Madison Liverpool Limited (“Madison Report”) consisting of 10 single family units and 57 townhouses units was proposed to redevelop Father Fenelon Catholic School at 747 Liverpool Road, which was located at the north side of Commerce Street Park on the northeast corner of Liverpool Road and Commerce Street. Weekday peak hour site traffic volumes were obtained from a transportation brief entitled “Revised Transportation Brief” prepared by Stantec Consulting Ltd. The study did not analyze the Saturday mid peak hour period. As a result, trip estimates were also obtained from the ITE using Land Use Codes 210: Single-Family Detached Housing and Land Use Code 230: Residential Condominium/Townhouse. It is anticipated to be at full build-out by the end of 2020.

The background development traffic volumes are shown in **Exhibit 6**.

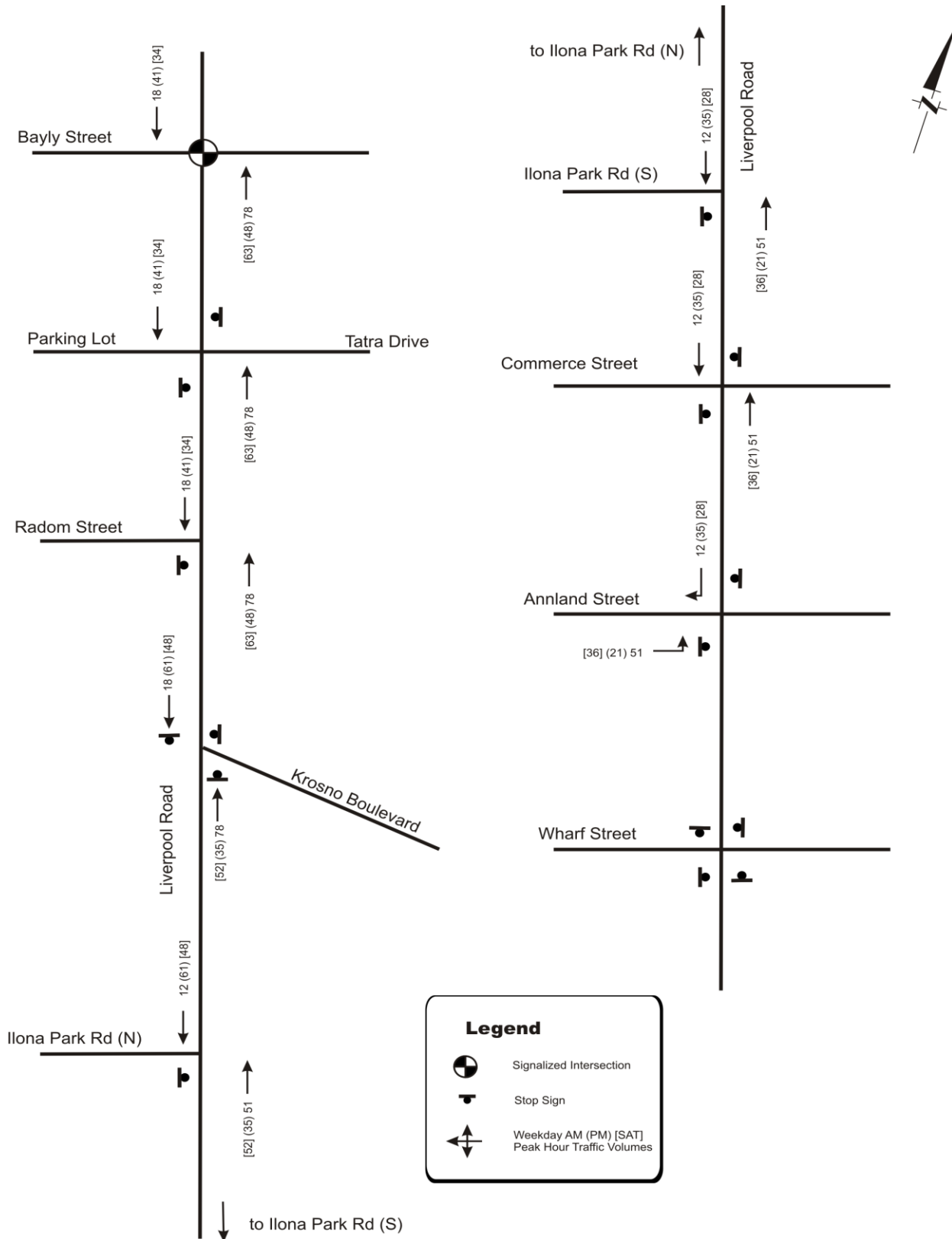


Exhibit 6: Background Development Traffic Volumes



### 3.3 Background Traffic Volumes

A growth rate of 0.5% per annum was applied to through movements on Liverpool Road. This is conservative compared to the R.B. Morgan Report, where 0% was assumed. Since the study area is matured and developed, and background developments are captured, growth rates were only applied to through movements as a conservative assumption to account for added volume to the south end.

Average Annual Daily Traffic (“AADT”) data was also analyzed for Bayly Street and a negative growth rate was observed. In addition, based on a regression analysis of the City’s historical data from May 2014 and the recent June 2017 turning movement counts, the intersection of Bayly Street and Liverpool Road is experiencing an average annual growth rate of 0.5%. As a result, a growth rate of 0.5% was applied to through movements on Bayly Street.

This background growth rate was also applied to traffic headed to the public parking lot at the south end of Liverpool Road since they were captured in the existing counts.

Although the proposed development will replace the existing Frenchmen’s Bay Marina, to be conservative, any traffic that may have been generated by the marina and captured in the existing counts was not subtracted from future background traffic volumes.

### 3.4 2027 Background Traffic Operations

Background traffic operations were analyzed based on the background traffic volumes shown in **Exhibit 7** and the existing road network shown in **Exhibit 3**. The 2027 background signalized and unsignalized intersection operations are summarized in **Table 12** and **Table 13**, respectively with signals being optimized. Detailed traffic analysis output sheets generated by Synchro are provided in **Appendix C**.

Table 12: 2027 Background Traffic Signalized Intersection Operations

Intersection & Critical Movement	Weekday AM Peak Hour		Weekday PM Peak Hour		Saturday MID Peak Hour	
	LOS	v/c	LOS	v/c	LOS	v/c
<b>Liverpool Road/Bayly Street</b>	<b>C</b>	<b>0.85</b>	<b>C</b>	<b>0.92</b>	<b>C</b>	<b>0.80</b>
Eastbound Left-turn	C	0.51	D	0.92	C	0.63
Eastbound Through	D	0.70	C	0.70	C	0.34
Eastbound Right-turn	A	0.25	A	0.42	A	0.25
Westbound Left-turn	C	0.27	C	0.44	B	0.28
Westbound Through	C	0.31	C	0.59	C	0.30
Westbound Right-turn	A	0.38	D	0.91	B	0.48
Northbound Left-turn	B	0.16	B	0.24	B	0.20
Northbound Through-Right	D	0.84	D	0.79	D	0.80
Southbound Left-turn	D	0.85	D	0.89	C	0.79
Southbound Through	B	0.19	C	0.45	C	0.39
Southbound Right-turn	A	0.18	A	0.29	A	0.29

Notes: v/c – volume to capacity ratio, LOS – level of service

Under 2027 background traffic conditions, the individual movements for Bayly Street and Liverpool Road intersection will operate at level of service ‘D’ or better, and with a volume to capacity ratio of 0.92 or better.



Since the eastbound left-turn movements are expected to operate at capacity (i.e.  $v/c$  ratio of 0.99 and LOS E if signal is not optimized) in 2027 background traffic conditions, the Region could consider protecting for dual left-turn lanes for this particular movement. However, at this time, HDR does not recommend any geometric improvements for the intersection of Bayly Street and Liverpool Road.

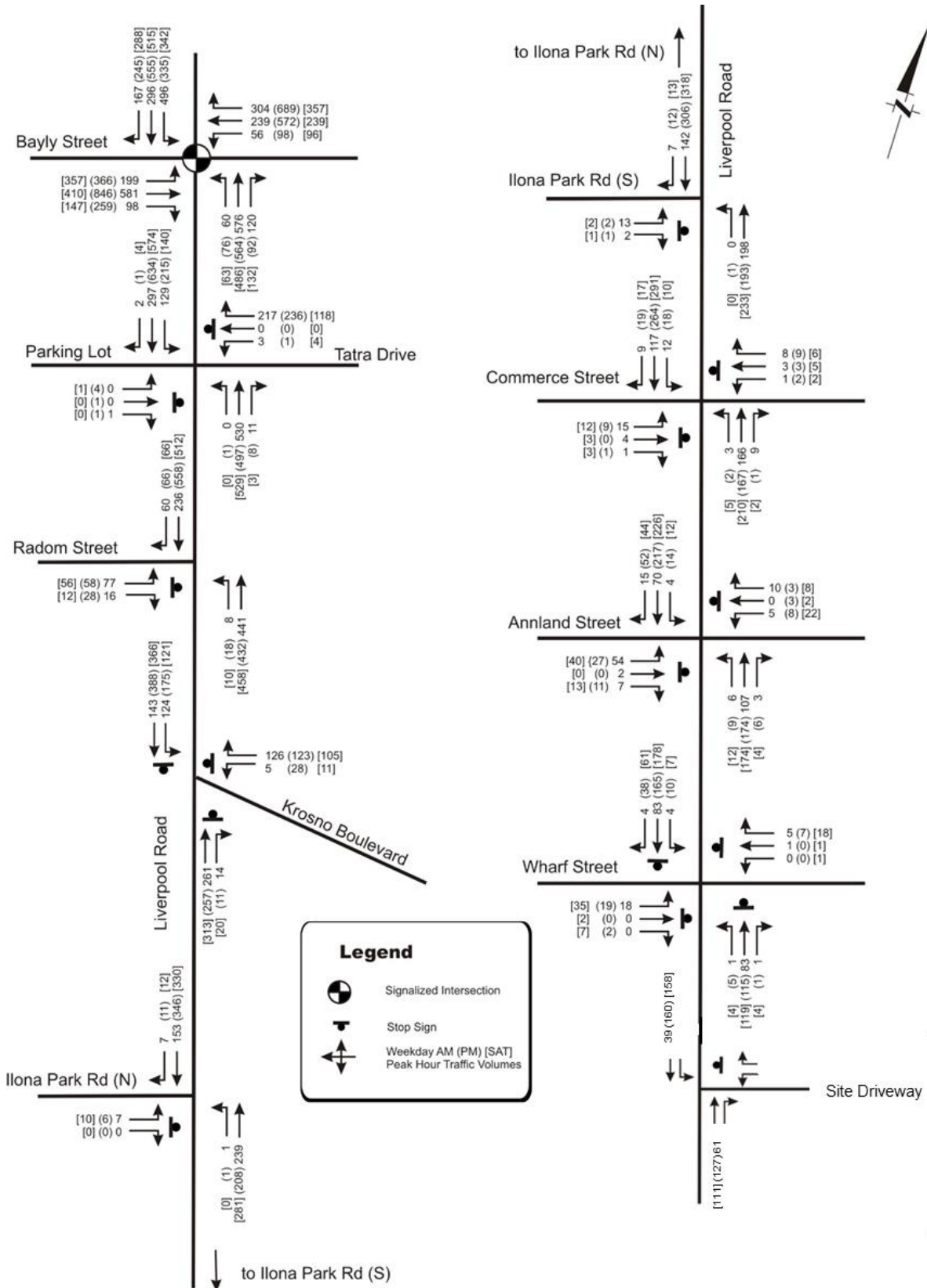


Exhibit 7: 2027 Background Traffic Volumes

Table 13: 2027 Background Traffic Unsignalized Intersection Operations

Intersection & Critical Movement	Weekday AM Peak Hour		Weekday PM Peak Hour		Saturday MID Peak Hour	
	LOS	v/c	LOS	v/c	LOS	v/c
<b>Liverpool Road/Tatra Drive</b>						
Eastbound Left-Through-Right	B	0.00	F	0.27	F	0.02
Westbound Left-Through-Right	C	0.51	C	0.50	C	0.29
Northbound Left-through-right	-	0.00	A	0.00	-	0.00
Southbound Left-turn	A	0.15	A	0.23	A	0.15
Southbound Through-Right	-	0.19	-	0.29	-	0.35
<b>Liverpool Road/Radom Street</b>						
Eastbound Left-Right	C	0.26	D	0.34	D	0.33
Northbound Left-Through	A	0.01	A	0.02	A	0.01
<b>Liverpool Road/Krosno Boulevard</b>						
Westbound Left-Right	A	0.23	B	0.27	A	0.18
Northbound Right-turn	B	0.46	B	0.44	B	0.47
Southbound Left-Through	B	0.46	D	0.86	C	0.66
<b>Liverpool Road/Ilona Park Road (N)</b>						
Eastbound Left-Right	B	0.02	B	0.02	B	0.03
Northbound Left-Through	A	0.00	A	0.00	-	0.00
<b>Liverpool Road/Ilona Park Road (S)</b>						
Eastbound Left-Right	B	0.03	B	0.01	B	0.01
Northbound Left-Through	-	0.00	A	0.00	-	0.00
<b>Liverpool Road/Commerce Street</b>						
Eastbound Left-Through-Right	B	0.04	B	0.03	C	0.05
Westbound Left-Through-Right	B	0.02	B	0.03	B	0.03
Northbound Left-Through-Right	A	0.00	A	0.00	A	0.00
Southbound Left-Through-Right	A	0.01	A	0.02	A	0.01
<b>Liverpool Road/Annland Street</b>						
Eastbound Left-Through-Right	B	0.11	B	0.08	B	0.12
Westbound Left-Through-Right	A	0.02	B	0.03	B	0.07
Northbound Left-Through-Right	A	0.01	A	0.01	A	0.01
Southbound Left-Through-Right	A	0.00	A	0.01	A	0.01
<b>Liverpool Road/Wharf Street</b>						
Eastbound Left-Through-Right	A	0.03	A	0.03	A	0.06
Westbound Left-Through-Right	A	0.01	A	0.01	A	0.03
Northbound Left-Through-Right	A	0.12	A	0.17	A	0.17
Southbound Left-Through-Right	A	0.12	A	0.28	A	0.30

Notes: v/c – volume to capacity ratio, LOS – level of service

Under 2027 background traffic conditions, there will be excess capacity at all unsignalized intersections and drivers/vehicles will experience level of service 'D' or better, with the exception of the eastbound movement at Tatra Drive at Liverpool Road during the weekday PM and Saturday peak periods. As mentioned in **Section 2.4**, the number of vehicles exiting the parking lot from the west is expected to be extremely low during those peaks.

In addition, traffic operations for the intersection of Tatra Drive and Liverpool Road was also assessed based on signalization due to the high number of pedestrians crossing at the pedestrian signal during the PM peak hour. Results are summarized in **Table 14**.

**Table 14: Liverpool Road/Tatra Drive Signalized PM Peak Sensitive Analysis – 2027 Background**

Intersection & Critical Movement	Weekday PM Peak Hour	
	LOS	v/c
<b>Liverpool Road/Tatra Drive (when pedestrian signals active)</b>		
Eastbound Left-Through-Right	C	0.06
Westbound Left-Through-Right	B	0.65
Northbound Left-through-right	A	0.35
Southbound Left-turn	A	0.31
Southbound Through-Right	A	0.45

Notes: v/c – volume to capacity ratio, LOS – level of service

Pedestrian and bicycle level of service under 2027 background conditions during the weekday AM, PM and Saturday peak hour are summarized in **Table 15**.

**Table 15: 2027 Background Pedestrian and Bicycle Level of Service**

Intersection & Critical Movement	Weekday AM Peak Hour		Weekday PM Peak Hour		Saturday Midday Peak Hour	
	Pedestrian LOS	Bicycle LOS	Pedestrian LOS	Bicycle LOS	Pedestrian LOS	Bicycle LOS
<b>Liverpool Road/Bayly Street</b>						
Eastbound	B	C	C	D	B	C
Westbound	B	C	C	D	B	C
Northbound	B	C	B	C	B	C
Southbound	B	C	C	D	C	D

As shown in **Table 15**, pedestrian and bicycle trips experience LOS 'D' or better under 2027 background conditions.

### 3.5 2027 Background Traffic Queues

2027 background weekday AM, PM, and weekend Saturday peak hour queues are summarized in **Table 16**.

SimTraffic queue results were reported for the two all way stop controlled intersections: (1) Liverpool Road/Krosno Boulevard, and (2) Liverpool Road/Wharf Street.

Table 16: 2027 Background 95<sup>th</sup> Percentile Queue Summary

Intersection	Existing Storage and Link Length	95 <sup>TH</sup> Percentile Queue (m) under 2027 Background Traffic Condition		
		AM Peak Hour	PM Peak Hour	SAT Peak Hour
<b>Liverpool Road/Bayly Street</b>				
Eastbound Left-turn	115	47	90	73
Eastbound Through	-	74	98	47
Eastbound Right-turn	100	<7	19	14
Westbound Left-turn	50	16	20	21
Westbound Through	-	32	70	33
Westbound Right-turn	150	38	134	55
Northbound Left-turn	75	10	16	14
Northbound Through-Right	-	95	84	77
Southbound Left-turn	50	<b>126</b>	<b>93</b>	<b>81</b>
Southbound Through	-	26	60	53
Southbound Right-turn	65	8	23	10
<b>Liverpool Road/Tatra Drive</b>				
Eastbound Left-Through-Right	-	0	<7	<7
Westbound Left-Through-Right	-	22	21	9
Northbound Left-through-right	-	0	<7	<7
Southbound Left-turn	40	<7	<7	<7
<b>Liverpool Road/Radom Street</b>				
Eastbound Left-Right	-	8	11	11
Northbound Left-Through	-	<7	<7	<7
<b>Liverpool Road/Krosno Boulevard</b>				
Westbound Left-Right	-	13	16	15
Northbound Right-turn	-	25	27	35
Southbound Left-Through	-	27	62	48
<b>Liverpool Road/Ilona Park Road (N)</b>				
Eastbound Left-Right	-	<7	<7	<7
Northbound Left-Through	-	<7	<7	<7
<b>Liverpool Road/Ilona Park Road (S)</b>				
Eastbound Left-Right	-	<7	<7	<7
Northbound Left-Through	-	<7	<7	<7
<b>Liverpool Road/Commerce Street</b>				
Eastbound Left-Through-Right	-	<7	<7	<7
Westbound Left-Through-Right	-	<7	<7	<7
Northbound Left-Through-Right	-	<7	<7	<7
Southbound Left-Through-Right	-	<7	<7	<7
<b>Liverpool Road/Annland Street</b>				
Eastbound Left-Through-Right	-	<7	<7	<7
Westbound Left-Through-Right	-	<7	<7	<7
Northbound Left-Through-Right	-	<7	<7	<7
Southbound Left-Through-Right	-	<7	<7	<7
<b>Liverpool Road/Wharf Street</b>				
Eastbound Left-Through-Right	-	12	14	13
Westbound Left-Through-Right	-	8	8	12
Northbound Left-Through-Right	-	16	17	15
Southbound Left-Through-Right	-	16	22	22

Under 2027 background traffic conditions, 95<sup>th</sup> percentile queues can be accommodated for all key movements in the study area with the exception of the southbound left-turn at Liverpool / Bayly during all peak periods. The existing southbound left-turn storage lane at Liverpool / Bayly cannot be extended north without significant impacts to the bridge over the Lakeshore East GO Rail and Highway 401.

There are no geometric improvements required in the study area under the 2027 background traffic conditions.

However, because of the future background southbound left turn volumes in 2027 are the heaviest southbound movement at this intersection (destined to the GO station), the Region/City can consider a potential realignment of the southbound lane markings in order to accommodate the full 95<sup>th</sup> percentile southbound left turn queue.

This potential solution would include converting the existing left turn storage lane as a continuous lane coming directly from the bridge. That is, of the two southbound lanes, the left hand lane leads to the left turn lane at the intersection, and the right hand lane would become the southbound through lane, and a new right turn lane would be introduced. The shifting of the left lane marking on the road can occur upstream (i.e. approximately 130 m from the stop line). The right turn lane would have a storage length of 60 m.

This pavement marking scheme would result in no physical changes to the road and pavement width as only new pavement markings and signage would be required.

### 3.6 2032 Background Traffic Operations

Background traffic operations were analyzed based on the background traffic volumes shown in **Exhibit 8** and the existing road network shown in **Exhibit 3**. The 2032 background signalized and unsignalized intersection operations are summarized in **Table 17** and **Table 18**, respectively with signals being optimized. Detailed traffic analysis output sheets generated by Synchro are provided in **Appendix C**.

Table 17: 2032 Background Traffic Signalized Intersection Operations

Intersection & Critical Movement	Weekday AM Peak Hour		Weekday PM Peak Hour		Saturday MID Peak Hour	
	LOS	v/c	LOS	v/c	LOS	v/c
<b>Liverpool Road/Bayly Street</b>	<b>C</b>	<b>0.85</b>	<b>C</b>	<b>0.94</b>	<b>C</b>	<b>0.77</b>
Eastbound Left-turn	C	0.52	D	0.94	C	0.68
Eastbound Through	D	0.71	C	0.72	C	0.36
Eastbound Right-turn	A	0.25	A	0.42	A	0.26
Westbound Left-turn	C	0.28	C	0.46	C	0.27
Westbound Through	C	0.31	C	0.61	C	0.29
Westbound Right-turn	A	0.38	D	0.92	B	0.47
Northbound Left-turn	B	0.16	B	0.25	B	0.19
Northbound Through-Right	D	0.85	D	0.80	D	0.77
Southbound Left-turn	D	0.85	D	0.90	C	0.77
Southbound Through	B	0.19	C	0.46	C	0.39
Southbound Right-turn	A	0.18	A	0.29	A	0.29

Notes: v/c – volume to capacity ratio, LOS – level of service

Under 2032 background traffic conditions, the individual movements for Bayly Street and Liverpool Road intersection will operate at level of service ‘D’ or better, and with a volume to capacity ratio of 0.94 or better when the signal is optimized.

However, if the signal is not optimized, the individual movements for Bayly Street and Liverpool Road intersection will operate at level of service ‘E’ or better, and with a volume to capacity ratio of 0.99 or better.

Similar to **Section 3.4**, the Region could consider improving the intersection for movements that are expected to be operating at capacity.

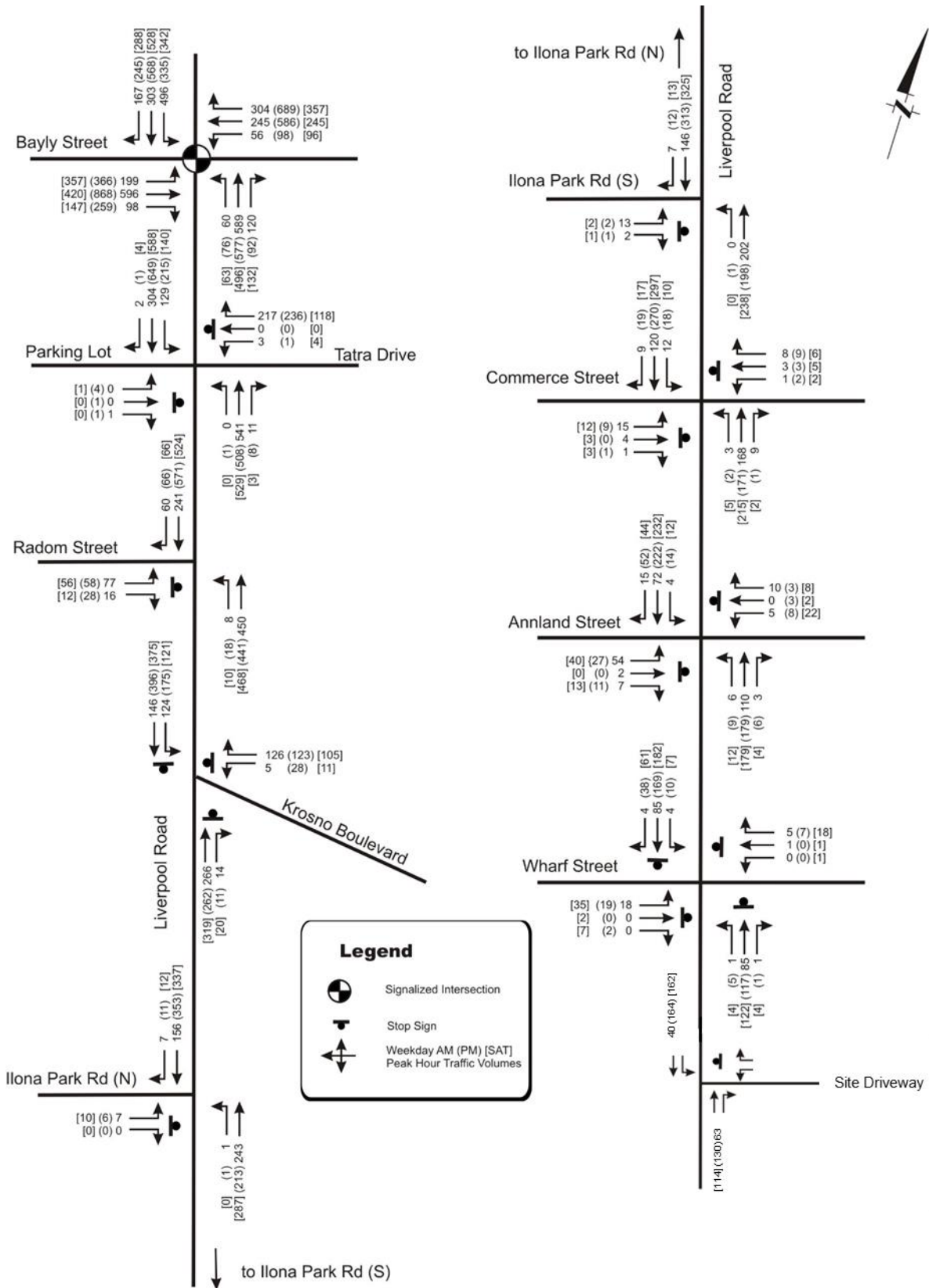


Exhibit 8: 2032 Background Traffic Volumes



Table 18: 2032 Background Traffic Unsignalized Intersection Operations

Intersection & Critical Movement	Weekday AM Peak Hour		Weekday PM Peak Hour		Saturday MID Peak Hour	
	LOS	v/c	LOS	v/c	LOS	v/c
<b>Liverpool Road/Tatra Drive</b>						
Eastbound Left-Through-Right	B	0.00	F	0.29	F	0.02
Westbound Left-Through-Right	C	0.52	C	0.51	C	0.29
Northbound Left-through-right	-	0.00	A	0.00	-	0.00
Southbound Left-turn	A	0.15	A	0.23	A	0.15
Southbound Through-Right	-	0.20	-	0.40	-	0.36
<b>Liverpool Road/Radom Street</b>						
Eastbound Left-Right	C	0.26	D	0.35	D	0.34
Northbound Left-Through	A	0.01	A	0.02	A	0.01
<b>Liverpool Road/Krosno Boulevard</b>						
Westbound Left-Right	A	0.23	B	0.27	A	0.18
Northbound Right-turn	B	0.48	B	0.45	B	0.48
Southbound Left-Through	B	0.47	D	0.87	C	0.67
<b>Liverpool Road/Ilona Park Road (N)</b>						
Eastbound Left-Right	B	0.02	B	0.02	B	0.03
Northbound Left-Through	A	0.00	A	0.00	-	0.00
<b>Liverpool Road/Ilona Park Road (S)</b>						
Eastbound Left-Right	B	0.03	B	0.01	B	0.01
Northbound Left-Through	-	0.00	A	0.00	-	0.00
<b>Liverpool Road/Commerce Street</b>						
Eastbound Left-Through-Right	B	0.04	B	0.03	C	0.05
Westbound Left-Through-Right	B	0.02	B	0.03	B	0.03
Northbound Left-Through-Right	A	0.00	A	0.00	A	0.01
Southbound Left-Through-Right	A	0.01	A	0.02	A	0.01
<b>Liverpool Road/Annland Street</b>						
Eastbound Left-Through-Right	B	0.11	B	0.08	B	0.12
Westbound Left-Through-Right	A	0.02	B	0.03	B	0.07
Northbound Left-Through-Right	A	0.01	A	0.01	A	0.01
Southbound Left-Through-Right	A	0.00	A	0.01	A	0.01
<b>Liverpool Road/Wharf Street</b>						
Eastbound Left-Through-Right	A	0.03	A	0.03	A	0.07
Westbound Left-Through-Right	A	0.01	A	0.01	A	0.03
Northbound Left-Through-Right	A	0.12	A	0.17	A	0.17
Southbound Left-Through-Right	A	0.13	A	0.29	A	0.31

Notes: v/c – volume to capacity ratio, LOS – level of service

Under 2032 background traffic conditions, there will be excess capacity at all unsignalized intersections and drivers/vehicles will experience level of service 'D' or better, with the exception of Tatra Drive at Liverpool Road. As mentioned in **Section 2.4**, the number of vehicles exiting the parking lot from the west is expected to be extremely low.

Traffic operations for the intersection of Tatra Drive and Liverpool Road was again assessed based on signalization due to the high number of pedestrians crossing at the pedestrian signal during the PM peak hour. Results are summarized in **Table 19**.

**Table 19: Liverpool Road/Tatra Drive Signalized PM Peak Sensitive Analysis – 2032 Background**

Intersection & Critical Movement	Weekday PM Peak Hour	
	LOS	v/c
<b>Liverpool Road/Tatra Drive (when pedestrian signals active)</b>		
Eastbound Left-Through-Right	C	0.08
Westbound Left-Through-Right	B	0.64
Northbound Left-through-right	A	0.39
Southbound Left-turn	A	0.33
Southbound Through-Right	B	0.50

Notes: v/c – volume to capacity ratio, LOS – level of service

Pedestrian and bicycle level of service under 2032 background conditions during the weekday AM, PM, and Saturday peak hour are summarized in **Table 20**.

**Table 20: 2032 Background Pedestrian and Bicycle Level of Service**

Intersection & Critical Movement	Weekday AM Peak Hour		Weekday PM Peak Hour		Saturday Midday Peak Hour	
	Pedestrian LOS	Bicycle LOS	Pedestrian LOS	Bicycle LOS	Pedestrian LOS	Bicycle LOS
<b>Liverpool Road/Bayly Street</b>						
Eastbound	B	C	C	D	B	C
Westbound	B	C	C	D	B	C
Northbound	B	C	B	C	B	C
Southbound	C	C	C	D	C	D

As shown in **Table 20**, pedestrian and bicycle trips will experience LOS 'D' or better under 2032 background conditions.

### 3.7 2032 Background Traffic Queues

2032 background weekday AM, PM, and weekend Saturday peak hour queues are summarized in **Table 21**.

SimTraffic queue results were reported for the two all way stop controlled intersections: (1) Liverpool Road/Krosno Boulevard, and (2) Liverpool Road/Wharf Street.

Table 21: 2032 Background 95<sup>th</sup> Percentile Queue Summary

Intersection	Existing Storage and Link Length	95 <sup>TH</sup> Percentile Queue (m) under 2032 Background Traffic Condition		
		AM Peak Hour	PM Peak Hour	SAT Peak Hour
<b>Liverpool Road/Bayly Street</b>				
Eastbound Left-turn	115	47	92	78
Eastbound Through	-	76	101	50
Eastbound Right-turn	100	<7	20	14
Westbound Left-turn	50	16	20	22
Westbound Through	-	32	72	33
Westbound Right-turn	150	38	134	54
Northbound Left-turn	75	10	16	13
Northbound Through-Right	-	98	86	75
Southbound Left-turn	50	<b>128</b>	<b>96</b>	<b>73</b>
Southbound Through	-	26	61	51
Southbound Right-turn	65	8	24	10
<b>Liverpool Road/Tatra Drive</b>				
Eastbound Left-Through-Right	-	<7	<7	<7
Westbound Left-Through-Right	-	23	22	10
Northbound Left-through-right	-	<7	<7	<7
Southbound Left-turn	40	<7	<7	<7
<b>Liverpool Road/Radom Street</b>				
Eastbound Left-Right	-	8	12	11
Northbound Left-Through	-	<7	<7	<7
<b>Liverpool Road/Krosno Boulevard</b>				
Westbound Left-Right	-	16	15	13
Northbound Right-turn	-	29	28	27
Southbound Left-Through	-	29	58	42
<b>Liverpool Road/Ilona Park Road (N)</b>				
Eastbound Left-Right	-	<7	<7	<7
Northbound Left-Through	-	<7	<7	<7
<b>Liverpool Road/Ilona Park Road (S)</b>				
Eastbound Left-Right	-	<7	<7	<7
Northbound Left-Through	-	<7	<7	<7
<b>Liverpool Road/Commerce Street</b>				
Eastbound Left-Through-Right	-	<7	<7	<7
Westbound Left-Through-Right	-	<7	<7	<7
Northbound Left-Through-Right	-	<7	<7	<7
Southbound Left-Through-Right	-	<7	<7	<7
<b>Liverpool Road/Annland Street</b>				
Eastbound Left-Through-Right	-	<7	<7	<7
Westbound Left-Through-Right	-	<7	<7	<7
Northbound Left-Through-Right	-	<7	<7	<7
Southbound Left-Through-Right	-	<7	<7	<7
<b>Liverpool Road/Wharf Street</b>				
Eastbound Left-Through-Right	-	11	13	14
Westbound Left-Through-Right	-	8	9	11
Northbound Left-Through-Right	-	12	16	16
Southbound Left-Through-Right	-	16	20	22

Under 2032 background traffic conditions, 95<sup>th</sup> percentile queues can be accommodated for all key movements in the study area with the exception of the southbound left-turn during all peak periods similar to the 2027 background traffic conditions.

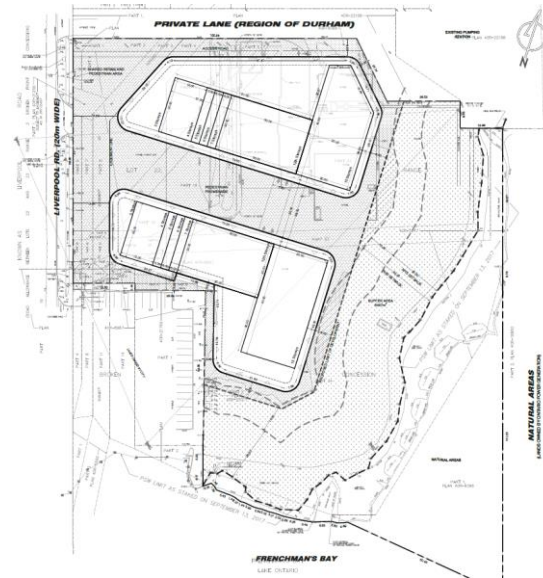
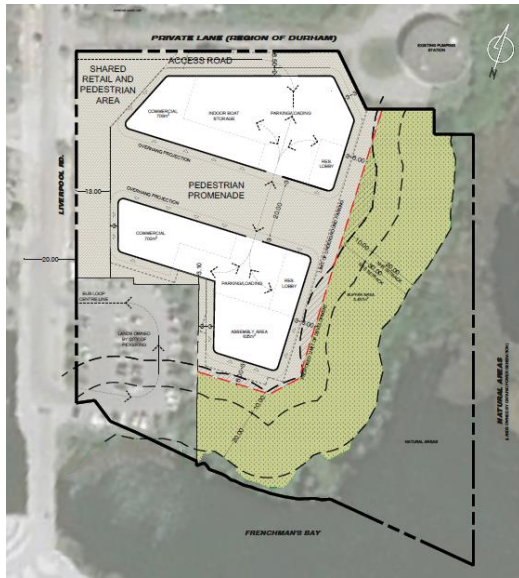
There are no geometric improvements required in the study area under the 2032 background traffic conditions. However, similar to 2027 background condition, City can consider the potential realignment of southbound lane markings to accommodate the full queue length of southbound left traffic at Liverpool Road/Bayly Street.

# 4. Proposed Development

## 4.1 Conceptual Site Plan

The proposed development will be a mixed-use development comprising a residential and commercial component, which will be integrated into the same site. The residential component will consist of 377 condominium units and 1,400 m<sup>2</sup> (15,069 ft<sup>2</sup>) of commercial space in two 15-storey buildings. In addition, revised concept plan has introduced a 625 m<sup>2</sup> assembly hall use, and indoor boat storage within the proposed buildings. The site is proposed to supply 472 residential parking spaces, visitor, and commercial parking spaces, and another 63 parking spaces for the assembly hall use. Details of the justification for the proposed parking supply are provided in **Section 6**. The site concept plan is shown in **Exhibit 9**.

One 6.5m wide, full movement driveway access is proposed on the east side of Liverpool Road to the site located just south of the pumping station road along the north side of the proposed building. Access for the indoor boat storage (contained within the north building) will be from this same location.



SITE STATISTICS			PARKING STATISTICS		KEY PLAN:
LAND AREA (NDA)	Ha	Acres	PROPOSED PARKING RATE		
TOTAL	1.11	2.74	RESIDENTIAL @ 1 SPACES / UNIT	377	
Residential Density	340	u/ha	VISITOR @ 0.15 SPACES / UNIT	57	
FSI	4.4		COMMERCIAL @ 0.1 / UNIT	38	
GROSS FLOOR AREA BREAKDOWN			PUBLIC HALL @ 10/100 m <sup>2</sup>	63	
Total Permitted GFA	48,840.00	525,713.76	TOTAL	535	
Residential Uses			PROPOSED PARKING LOCATIONS		
Residential GFA	43,233.20	465,362.16	U/G Parking/FL	250	
Residential Indoor Amenity GFA	754.80	8,124.67	U/G Parking Levels	2	
Total Residential GFA	43,988.00	473,486.83	A/G Parking/FL	35	
Total Units	377	Units	A/G Parking Levels	1	
Non-Residential Uses			TOTAL	535	
Commercial GFA	1,400.00	15,069.60			
Assembly Hall GFA	625.00	6,727.50			
Parking, Boat Storage, Lobby GFA	2,827.00	30,429.83			
Total Non-Residential GFA	4,852.00	52,226.93			

Exhibit 9: Conceptual Site Plan

The conceptual site plan also shows the retained public parking lot along with the indication that the circulation aisles within the lot can serve as a turnaround loop required for emergency vehicles and for a potential shuttle bus that is being recommended to encourage and accommodate transit trips between the GO Station and Frenchmen’s Bay. Additional information on the proposed shuttle bus is provided in **Section 6.5** of this report.

## 4.2 Proposed Development Traffic Generation

Site traffic generation for the proposed residential development was based on ITE. The Residential Condominium / Townhouse land use code 230 was used to estimate the trip generation for the 428 condominium units. In addition, the public parking lot expansion traffic generation was based on the survey.

Commercial site traffic generation was determined by using ITE. The Shopping Centre land use 820 and Specialty Retail Centre land use code 826 were reviewed to estimate the trip generation for the 15,069 ft<sup>2</sup> commercial space. The rates are summarized in **Table 22**.

**Table 22: Commercial Vehicular Site Traffic Generation – Rates Comparison**

		Weekday AM Peak Hour	Weekday PM Peak Hour	Saturday Peak Hour
<b>Land Use (820) Shopping Centre</b>				
Trip Rate (equation based on 15,069 ft <sup>2</sup> )	veh / 1000 ft <sup>2</sup>	0.05	0.17	0.26
Trip Rate (average rate)	veh / 1000 ft <sup>2</sup>	0.96	3.71	4.82
<b>Land Use (826) Specialty Retail Centre</b>				
Trip rate (equation based on 15,069 ft <sup>2</sup> )	veh / 1000 ft <sup>2</sup>	0.19	0.06	No data
Trip rate (average rate)	veh / 1000 ft <sup>2</sup>	6.84*	2.71	No data

\*Rate for peak hour of generator; all other rates provided are based on peak hour of adjacent street traffic.

The Special Retail Centre equation and average rate for the weekday AM peak hour rates were based on a small sample size from ITE. The AM peak hour trip rate was also higher than the PM peak hour rate because it was based on the AM peak hour of the land use. The peak hour of retail in the AM typically does not coincide with the peak hour traffic of the side street (7:00AM to 9:00AM). Using the AM rate of the Specialty Retail Centre would be counter-intuitive, as the AM peak hour does not coincide with the proposed land use’s hours of operation.

Moreover, the Shopping Centre equations tended to overestimate trips when the size of the development is significantly smaller than the average size of the ITE samples.

As a result of the review above, the Shopping Centre average rates were used in this study as an appropriate method to forecast trips generated by the supporting ground floor retail space which will be frequented primarily by the residents and will not be a major generator of external traffic.

ITE does not provide survey rates for an assembly hall land use. To be conservative, trip generation was estimated to be twice the required 63 parking spaces based on the Pickering City Centre bylaw (i.e. 63 parking spaces would translate to 63 vehicle trips in, and 63 vehicle trips out during the peak hour) during the weekday PM and Saturday peak period. The assumption that all vehicles will leave within the hour is very conservative; it is expected that for an event at the

assembly hall, not all visitors will both arrive and depart within the hour. Additionally, unlike the residential and commercial traffic, the assembly hall traffic will be dependent on events being booked at the facility which is not expected to occur on a regular basis or every day, and may not occur during the peak hours. The AM peak hour trips for the assembly hall is expected to be insignificant, and this study has assumed no trips will be generated for analysis purposes. Details of the parking supply for the assembly hall are provided in **Section 6.2**.

Since the proposed development is mixed-use, it is expected that a portion of trips generated by the commercial, and assembly hall component could originate from the residential building. In this study, an internal capture rate of 10% was used for weekday AM, PM and Saturday peak hours.

As mentioned in **Section 2.6**, a parking survey was conducted on Saturday June 3<sup>rd</sup>, 2017 and Thursday June 8<sup>th</sup>, 2017. In addition to the parking survey, a driveway count at the public parking lot was conducted between 4:00pm and 6:00pm on Thursday and 3:00pm and 7:00pm on Saturday.

During the parking survey, it was observed that majority of the drivers were entering and exiting within a short period of time because the parking lot was fully utilized. These vehicles would then head north to find parking elsewhere. Assuming the parking lot was able to accommodate all the demand, the trip generation is summarized in **Table 23**. It is noted that number of vehicles heading south on Liverpool towards the parking lot could be reduced if there were signage or messaging that the lot is full.

**Table 23: Public Parking Lot Demand**

		Weekday AM Peak Hour	Weekday PM Peak Hour	Saturday Peak Hour
<b>Public Parking Lot Trip Generation</b>				
Inbound (demand)	veh	-	94	138
Outbound	veh	-	73	134
Total	veh	-	167	272

The resulting vehicular traffic generation is summarized in **Table 24**.

**Table 24: Site Traffic Generation**

		Weekday AM Peak Hour	Weekday PM Peak Hour	Saturday Peak Hour
<b>Land Use (820) Shopping Center – 15,069 ft<sup>2</sup></b>				
Gross trip rate	veh / 1000 ft <sup>2</sup>	0.96	3.71	4.82
Gross trip generation	veh / h	14	56	73
Gross inbound trips	veh / h	9	27	38
Gross outbound trips	veh / h	5	29	35
<b>Assembly Hall – 6,997 ft<sup>2</sup></b>				
Gross trip rate	veh / 1000 ft <sup>2</sup>	0	18.00	18.00
Gross trip generation	veh / h	0	126	126
Gross inbound trips	veh / h	0	63	63
Gross outbound trips	veh / h	0	63	63

<b>Land Use (232) High-Rise Residential Condominium / Townhouse – 377 units</b>				
Gross trip rate	veh / unit	0.37	0.38	0.38
Gross trips	veh / h	138	144	142
Internal percentage		10%	10%	10%
Internal trip	veh / h	14	15	14
Internal inbound trips	veh / h	3	9	6
Internal outbound trips	veh / h	11	6	8
Net trip	veh / h	124	129	128
Inbound trips	veh / h	23	80	55
Outbound trips	veh / h	101	49	73
<b>Total</b>				
Total net trip generation	veh / h	138	311	327
Total net inbound trips	veh / h	32	170	156
Total net outbound trips	veh / h	106	141	171

### 4.3 Site Generated Transit Demand

To estimate the transit demand generated by the development, the following process was applied:

1. Mode splits from the TTS 2016 were researched and it can be assumed that the vehicular auto-driver mode splits are 86% and 84% during the weekday AM and PM peak periods, respectively.

Bus Transit and GO Train mode splits from TTS 2016 were 4% and 5%, during the AM peak hour, and 7% and 6% during PM peak hour for the site generated trips.

2. Vehicular site trip generation from **Table 24** - which represents auto-driver trips – was then converted to bus transit trips, and GO Transit Trips using the above mode splits. However, only site generated auto-trips to/from the public car parking lot will be excluded for the transit trips estimation.

3. Using the above information the projected transit demand in person trips was estimated. The resulting transit demand is summarized in **Table 25** below.

Table 25: Transit Site Trip Generation

Period	Auto-Driver Trips		Bus Transit Trips	GO Train Trips	Total Transit
	Trips	Split	Trips	Trips	Trips
Weekday AM Peak Hour	86% Auto		4% Bus Transit	5% GO Train	
IN	23	19%	2	2	4
OUT	106	81%	5	6	11
TOTAL	124		7	8	15
Weekday PM Peak Hour	84% Auto		7% Bus Transit	6% GO Train	
IN	80	62%	7	6	13
OUT	49	38%	5	4	9
TOTAL	129		12	10	22

Assuming site generated person trips to/from the GO station also uses the DRT buses on Liverpool Road, the total transit trips would be 15 person-trips during the AM peak hour and 22 person-trips during the PM peak hour.

#### 4.4 Trip Generation

The distribution for the residential component of the development was based on the review of the information provided in the 2006 Transportation Tomorrow Survey (“TTS”) conducted by the University of Toronto Joint Program in Transportation. The 2016 TTS divides geographical areas into ‘zones’ for the purposes of determining trip patterns from one zone to another. Since there are multiple road facilities available from each zone to the site, a comprehensive review was done on a zone by zone basis to determine an assignment of trips from each zone to the surrounding road network. The zones and routes were then aggregated to determine percentages based on route assignment.

The trip distribution for the residential land use is based on home to work based trips originating from zone adjacent to the site and destined to the zones in the Greater Toronto Area during the weekday peak period.

The trip distribution for the commercial land use was based on the population density in the surrounding area, with consideration given to major routes available to access the proposed development.

The trip distribution for the assembly hall was based on the existing traffic pattern with consideration given to major routes available to access the site. It is expected that very few trips will be generated during the AM peak hours for the assembly hall.

The trip distribution for the proposed development is summarized in **Table 26**.

**Table 26: Site Traffic Distribution**

To / From	Via	New Site Trips		
		Residential	Commercial	Assembly Hall
North	Liverpool Road	60%	15%	70%
South	Liverpool Road	0%	0%	0%
East	Bayly Street	20%	0%	15%
	Krosno Boulevard	10%	10%	0%
	Commerce Street	3%	10%	0%
	Annland Street	2%	30%	0%
West	Bayly Street	5%	5%	15%
	Radom Street	0%	10%	0%
	Commerce Street	0%	5%	0%
	Annland Street	0%	15%	0%
Total		100 %	100 %	100%

The commercial, residential, assembly hall, and the total site trips are shown in **Exhibit 10**, **Exhibit 11**, **Exhibit 12**, and **Exhibit 13**, respectively.



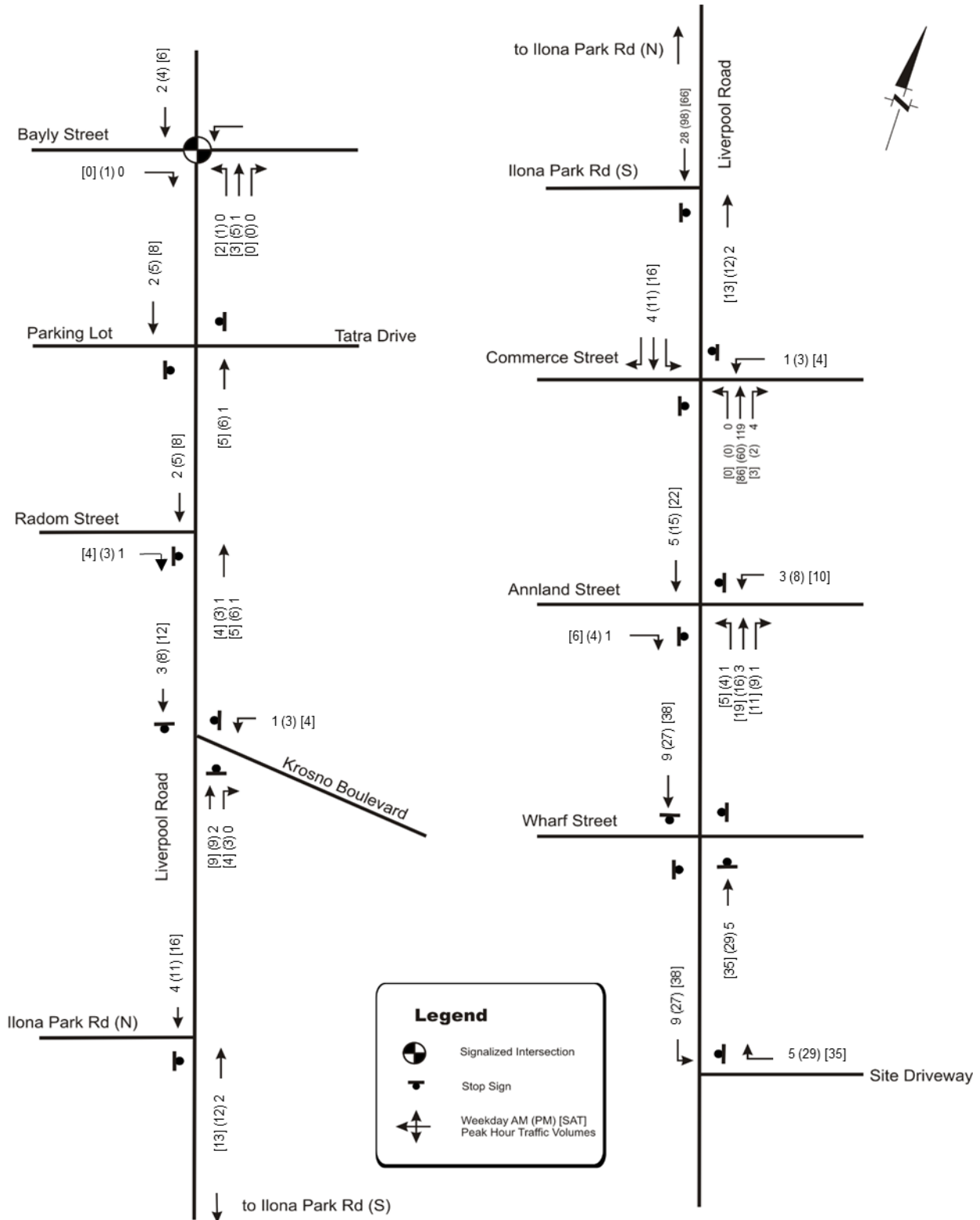


Exhibit 10: Commercial Traffic Volumes

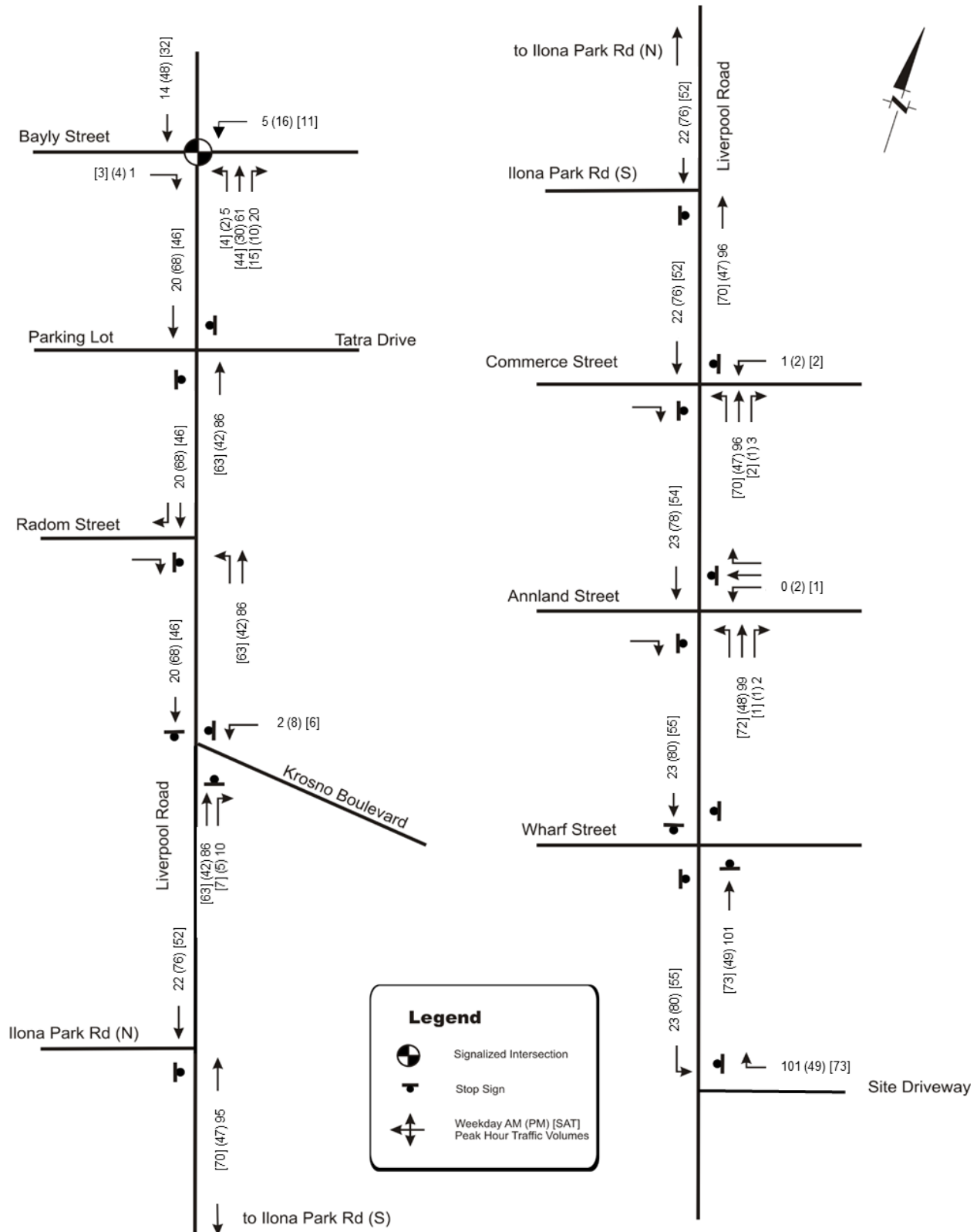


Exhibit 11: Residential Traffic Volumes

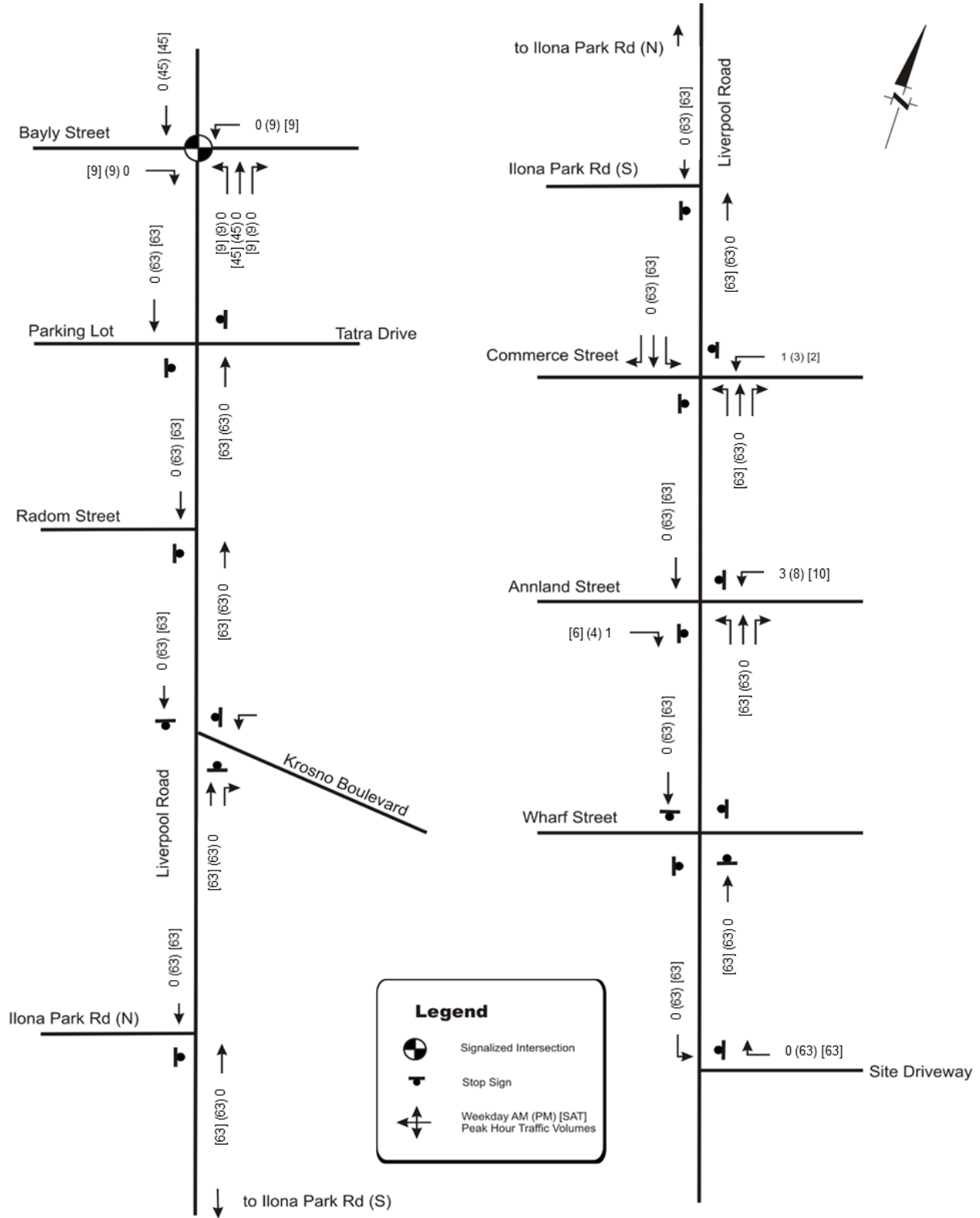


Exhibit 12: Assembly Hall Traffic Volumes

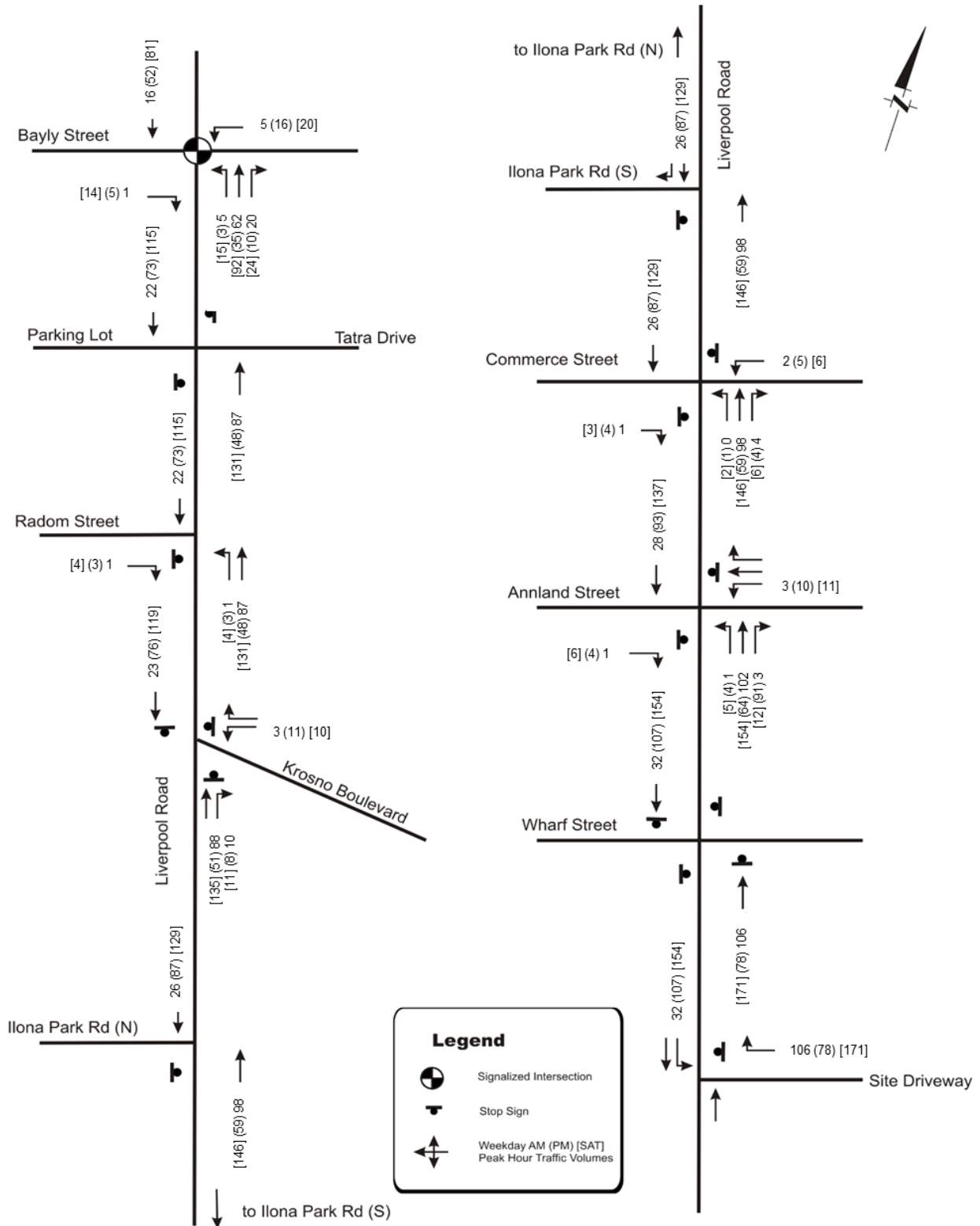


Exhibit 13: Site Traffic Volumes – Total

## 5. 2027 and 2032 Total Traffic Conditions

### 5.1 2027 Total Traffic Operations

The 2027 total traffic volumes include 2027 background traffic plus the resulting site traffic for the proposed development are shown in **Exhibit 14**. The 2027 total signalized and unsignalized intersection operations are summarized in **Table 27** and **Table 28**, respectively. Detailed HCM output sheets generated by Synchro are provided in **Appendix C**.

Table 27: 2027 Total Traffic Signalized Intersection Operations

Intersection & Critical Movement	Weekday AM Peak Hour		Weekday PM Peak Hour		Saturday MID Peak Hour	
	LOS	v/c	LOS	v/c	LOS	v/c
<b>Liverpool Road/Bayly Street</b>	<b>D</b>	<b>0.87</b>	<b>D</b>	<b>0.97</b>	<b>C</b>	<b>0.92</b>
Eastbound Left-turn	D	0.61	E	0.96	C	0.72
Eastbound Through	D	0.77	C	0.70	C	0.35
Eastbound Right-turn	C	0.08	C	0.29	A	0.11
Westbound Left-turn	C	0.36	C	0.59	C	0.34
Westbound Through	C	0.34	C	0.59	C	0.27
Westbound Right-turn	B	0.39	E	0.97	B	0.44
Northbound Left-turn	C	0.18	C	0.33	B	0.26
Northbound Through-Right	D	0.85	D	0.90	D	0.83
Southbound Left-turn	D	0.87	E	0.96	D	0.83
Southbound Through	B	0.19	C	0.53	C	0.41
Southbound Right-turn	B	0.11	B	0.26	A	0.19

Notes: v/c – volume to capacity ratio, LOS – level of service

For 2027 total traffic conditions, the individual movements for Bayly Street at Liverpool Road will all operate at Level of Service ‘E’ or better, and with volume to capacity ratios of 0.97 or better under optimized signal timings.

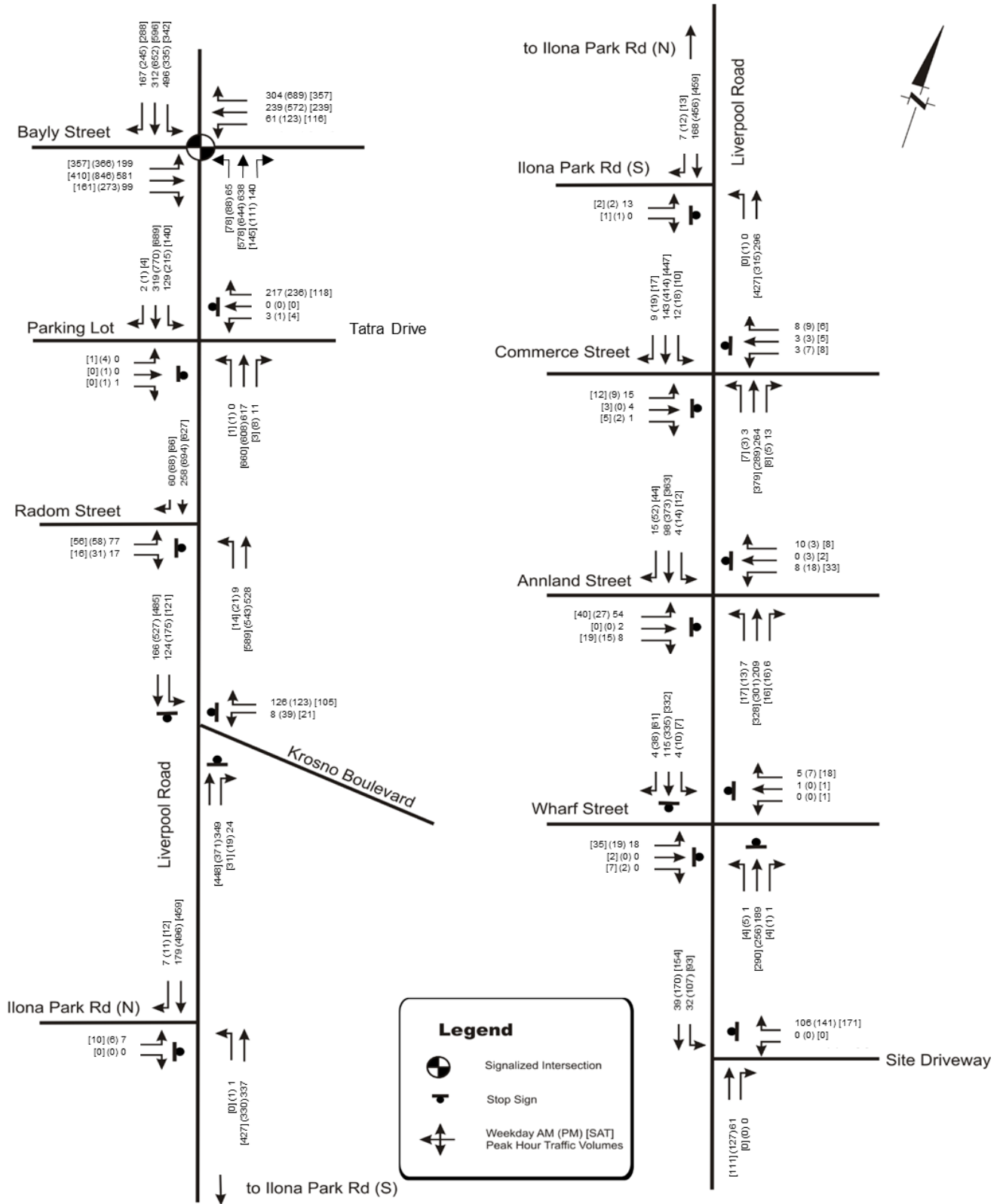


Exhibit 14: 2027 Total Traffic Volumes

Table 28: 2027 Total Traffic Unsignalized Intersection Operations

Intersection & Critical Movement	Weekday AM Peak Hour		Weekday PM Peak Hour		Saturday MID Peak Hour	
	LOS	v/c	LOS	v/c	LOS	v/c
<b>Liverpool Road/Tatra Drive</b>						
Eastbound Left-Through-Right	B	0.00	F	0.58	F	0.04
Westbound Left-Through-Right	D	0.58	D	0.59	C	0.37
Northbound Left-through-right	-	0.00	A	0.00	-	0.00
Southbound Left-turn	B	0.16	B	0.25	A	0.16
Southbound Through-Right	-	0.21	-	0.47	-	0.42
<b>Liverpool Road/Radom Street</b>						
Eastbound Left-Right	C	0.30	E	0.54	F	0.54
Northbound Left-Through	A	0.01	A	0.03	A	0.02
Southbound Through-Right	-	0.20	-	0.46	-	0.45
<b>Liverpool Road/Krosno Boulevard</b>						
Westbound Left-Right	B	0.25	B	0.31	B	0.22
Northbound Right-turn	C	0.65	C	0.66	C	0.71
Southbound Left-Through	B	0.53	<b>F</b>	<b>1.15</b>	D	0.89
<b>Liverpool Road/Ilona Park Road (N)</b>						
Eastbound Left-Right	B	0.02	C	0.03	C	0.04
Northbound Left-Through	A	0.00	A	0.00	-	0.00
Southbound Through-Right	-	0.13	-	0.35	-	0.30
<b>Liverpool Road/Ilona Park Road (S)</b>						
Eastbound Left-Right	B	0.03	C	0.01	C	0.01
Northbound Left-Through	-	0.00	A	0.00	-	0.00
Southbound Through-Right	-	0.12	-	0.32	-	0.29
<b>Liverpool Road/Commerce Street</b>						
Eastbound Left-Through-Right	B	0.05	C	0.05	C	0.09
Westbound Left-Through-Right	B	0.03	C	0.06	C	0.07
Northbound Left-Through-Right	A	0.00	A	0.00	A	0.01
Southbound Left-Through-Right	A	0.01	A	0.02	A	0.01
<b>Liverpool Road/Annland Street</b>						
Eastbound Left-Through-Right	B	0.14	C	0.14	C	0.20
Westbound Left-Through-Right	B	0.03	C	0.08	C	0.16
Northbound Left-Through-Right	A	0.01	A	0.01	A	0.02
Southbound Left-Through-Right	A	0.00	A	0.01	A	0.01
<b>Liverpool Road/Wharf Street</b>						
Eastbound Left-Through-Right	A	0.03	A	0.04	A	0.08
Westbound Left-Through-Right	A	0.01	A	0.01	A	0.03
Northbound Left-Through-Right	A	0.26	B	0.39	A	0.41
Southbound Left-Through-Right	A	0.17	B	0.54	B	0.53
<b>Liverpool Road/Site Access</b>						
Westbound Left-Right	A	0.15	B	0.22	B	0.01
Northbound Through-Right	-	0.05	-	0.10	-	0.18
Southbound Left-Through	A	0.03	A	0.16	A	0.01

Notes: v/c – volume to capacity ratio, LOS – level of service

Under 2027 total traffic conditions, there will be excess capacity at most unsignalized intersections while operating at level of service ‘E’ or better. Some movements will experience long delays, such as eastbound at Tatra Drive at Liverpool Road during the weekday PM and Saturday peak periods as well as eastbound movements at Radom Street at Liverpool Road during the weekday PM and Saturday peak periods.

Southbound movements at Krosno Boulevard at Liverpool Road will operate at level of service ‘F’ and at capacity (v/c ratio > 1.0). Krosno Boulevard at Liverpool Road is currently an all-way stop. Based on the land use and available ROW at this intersection, there is not enough land to convert the intersection into a roundabout or add a dedicated southbound-left lane without reducing

boulevard widths. As a result, Krosno Boulevard at Liverpool Road was analyzed as a signalized intersection to identify potential improvements. 2027 total signalized intersection operations for Krosno Boulevard at Liverpool Road is summarized in **Table 29**.

**Table 29: 2027 Total Traffic Krosno Boulevard Signalized Operations**

Intersection & Critical Movement	Weekday AM Peak Hour		Weekday PM Peak Hour		Saturday MID Peak Hour	
	LOS	v/c	LOS	v/c	LOS	v/c
<b>Liverpool Road/Krosno Boulevard</b>						
Westbound Left-Right	C	0.17	D	0.34	D	0.22
Northbound Right-turn	A	0.34	A	0.31	A	0.35
Southbound Left-Through	A	0.39	A	0.72	A	0.54

Notes: v/c – volume to capacity ratio, LOS – level of service

As shown in **Table 29**, all movements at Krosno Boulevard will operate at level of service ‘D’ or better if signalized.

A 1-hour signal warrant analysis was also conducted to determine the need for signalization, and the detailed results can be found in **Appendix E**. The results indicated that both Warrant 1 – Minimum Vehicular Volume and Warrant 2 – Delay to Cross Traffic are not met.

In addition, Tatra Drive at Liverpool Road was also analyzed with signalized operations due to the high volume of pedestrians during the PM peak hour. The results can be found in **Table 30**.

**Table 30: 2027 Total Traffic Tatra Drive Signalized PM Peak Operations**

Intersection & Critical Movement	Weekday PM Peak Hour	
	LOS	v/c
<b>Liverpool Road/Tatra Drive (when pedestrian signals active)</b>		
Eastbound Left-Through-Right	C	0.07
Westbound Left-Through-Right	C	0.16
Northbound Left-through-right	A	0.46
Southbound Left-turn	A	0.38
Southbound Through-Right	A	0.58

Notes: v/c – volume to capacity ratio, LOS – level of service

The 2027 total pedestrian and bicycle levels of service during the weekday AM peak hour and weekday PM peak hour is summarized in **Table 31**. Pedestrian and bicycle levels of service will continue to operate at LOS ‘D’ or better under the 2027 total conditions, which will be acceptable.





Table 31: 2027 Total Pedestrian and Bicycle Level of Service

Intersection & Critical Movement	Weekday AM Peak Hour		Weekday PM Peak Hour		Saturday MID Peak Hour	
	Pedestrian LOS	Bicycle LOS	Pedestrian LOS	Bicycle LOS	Pedestrian LOS	Bicycle LOS
Liverpool Road/Bayly Street						
Eastbound	B	C	C	D	B	C
Westbound	B	C	C	D	B	C
Northbound	B	C	B	C	B	C
Southbound	C	C	C	D	C	D

## 5.2 2027 Total Queues

Queues under 2027 total traffic conditions are summarized in **Table 32** for key movements. Detailed calculations are provided in **Appendix C**.

SimTraffic queue results were reported for the two all way stop controlled intersections: (1) Liverpool Road/Krosno Boulevard, and (2) Liverpool Road/Wharf Street.

Table 32: 2027 Total 95<sup>th</sup> Percentile Queue Summary

Intersection	Existing Storage and Link Length	95 <sup>th</sup> Percentile Queue (m) under 2027 Total Traffic Condition		
		AM Peak Hour	PM Peak Hour	SAT Peak Hour
<b>Liverpool Road/Bayly Street</b>				
Eastbound Left-turn	115	48	90	74
Eastbound Through	-	77	98	47
Eastbound Right-turn	100	<7	29	14
Westbound Left-turn	50	18	24	25
Westbound Through	-	32	70	31
Westbound Right-turn	150	41	133	50
Northbound Left-turn	75	10	18	15
Northbound Through-Right	-	104	109	104
Southbound Left-turn	50	<b>128</b>	100	88
Southbound Through	-	25	71	60
Southbound Right-turn	65	7	24	10
<b>Liverpool Road/Tatra Drive</b>				
Eastbound Left-Through-Right	-	<7	10	<7
Westbound Left-Through-Right	-	27	24	13
Northbound Left-through-right	-	<7	<7	<7
Southbound Left-turn	40	<7	8	<7
<b>Liverpool Road/Radom Street</b>				
Eastbound Left-Right	-	9	21	21
Northbound Left-Through	-	<7	<7	<7
Southbound Through-Right	-	<7	<7	<7
<b>Liverpool Road/Krosno Boulevard</b>				
Westbound Left-Right	-	16	16	<7
Northbound Right-turn	-	39	38	24
Southbound Left-Through	-	29	60	65
<b>Liverpool Road/Ilona Park Road (N)</b>				
Eastbound Left-Right	-	<7	<7	<7
Northbound Left-Through	-	<7	<7	<7
Southbound Through-Right	-	<7	<7	<7
<b>Liverpool Road/Ilona Park Road (S)</b>				
Eastbound Left-Right	-	<7	<7	<7
Northbound Left-Through	-	<7	<7	<7
Southbound Through-Right	-	<7	<7	<7
<b>Liverpool Road/Commerce Street</b>				
Eastbound Left-Through-Right	-	<7	<7	<7
Westbound Left-Through-Right	-	<7	<7	<7
Northbound Left-Through-Right	-	<7	<7	<7
Southbound Left-Through-Right	-	<7	<7	<7
<b>Liverpool Road/Anniand Street</b>				
Eastbound Left-Through-Right	-	<7	<7	<7
Westbound Left-Through-Right	-	<7	<7	<7
Northbound Left-Through-Right	-	<7	<7	<7
Southbound Left-Through-Right	-	<7	<7	<7
<b>Liverpool Road/Wharf Street</b>				
Eastbound Left-Through-Right	-	10	13	11
Westbound Left-Through-Right	-	5	11	13
Northbound Left-Through-Right	-	18	20	18
Southbound Left-Through-Right	-	17	22	25
<b>Liverpool Road/Site Access</b>				
Westbound Left-Right	-	<7	<7	<7
Northbound Through-Right	-	<7	<7	<7
Southbound Left-Through	-	<7	<7	<7

Under 2027 total traffic conditions, 95<sup>th</sup> percentile queues can be accommodated for all key movements in the study area with the exception of the southbound left-turn during all peak periods.

In conclusion, there are no geometric improvements required in the study area under the 2027 total traffic conditions. However, signalization is recommended at Liverpool Road at Krosno Boulevard as well as signal timing optimization at Liverpool Road at Bayly Street.

### 5.3 2032 Total Traffic Operations

The 2032 total traffic volumes include 2032 background traffic plus the resulting site traffic for the proposed development are shown in **Exhibit 15**. The 2032 total signalized and unsignalized intersection operations are summarized in **Table 33** and **Table 34**, respectively. Detailed HCM output sheets generated by Synchro are provided in **Appendix C**.

Table 33: 2032 Total Traffic Signalized Intersection Operations

Intersection & Critical Movement	Weekday AM Peak Hour		Weekday PM Peak Hour		Saturday MID Peak Hour	
	LOS	v/c	LOS	v/c	LOS	v/c
<b>Liverpool Road/Bayly Street</b>	<b>D</b>	<b>0.90</b>	<b>D</b>	<b>0.98</b>	<b>C</b>	<b>0.89</b>
Eastbound Left-turn	D	0.60	E	0.98	C	0.69
Eastbound Through	D	0.76	D	0.72	C	0.37
Eastbound Right-turn	C	0.08	C	0.30	C	0.11
Westbound Left-turn	C	0.35	D	0.61	C	0.38
Westbound Through	C	0.33	D	0.61	C	0.31
Westbound Right-turn	B	0.39	E	0.97	C	0.47
Northbound Left-turn	C	0.18	C	0.34	C	0.30
Northbound Through-Right	D	0.86	D	0.92	D	0.89
Southbound Left-turn	D	0.90	D	0.96	C	0.86
Southbound Through	B	0.20	C	0.54	C	0.45
Southbound Right-turn	B	0.11	B	0.26	B	0.20
<b>Liverpool Road/Krosno Boulevard</b>						
Westbound Left-Right	C	0.17	D	0.34	D	0.22
Northbound Through-Right	A	0.35	A	0.26	A	0.31
Southbound Left-turn	A	0.40	A	0.66	A	0.49

Notes: v/c – volume to capacity ratio, LOS – level of service

Under 2032 total traffic conditions, the individual movements for signalized intersections in the study area will all operate at Level of Service 'E' or better, and with volume to capacity ratios of 0.98 or better if signals are optimized. The analysis included Krosno Boulevard under the assumption that improvements made for 2027 total traffic conditions will be implemented.

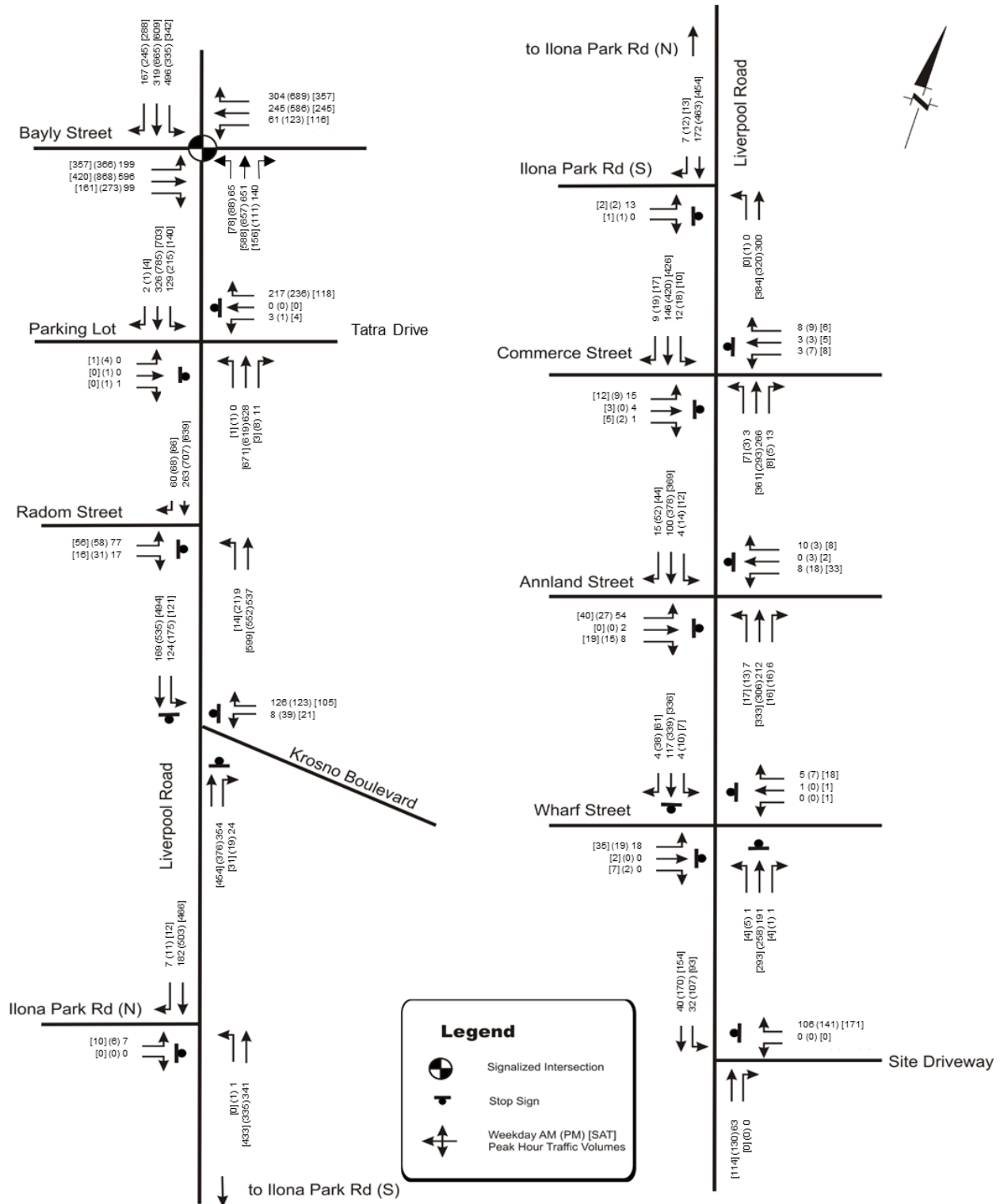


Exhibit 15: 2032 Total Traffic Volumes

**Table 34: 2032 Total Traffic Unsignalized Intersection Operations**

Intersection & Critical Movement	Weekday AM Peak Hour		Weekday PM Peak Hour		Saturday MID Peak Hour	
	LOS	v/c	LOS	v/c	LOS	v/c
<b>Liverpool Road/Tatra Drive</b>						
Eastbound Left-Through-Right	B	0.00	F	0.62	F	0.04
Westbound Left-Through-Right	D	0.59	C	0.61	C	0.38
Northbound Left-through-right	-	0.00	A	0.00	-	0.00
Southbound Left-turn	A	0.16	B	0.25	A	0.16
Southbound Through-Right	-	0.21	-	0.48	-	0.43
<b>Liverpool Road/Radom Street</b>						
Eastbound Left-Right	C	0.30	F	0.56	F	0.57
Northbound Left-Through	A	0.01	A	0.03	A	0.02
Southbound Through-Right	-	0.20	-	0.47	-	0.46
<b>Liverpool Road/Ilona Park Road (N)</b>						
Eastbound Left-Right	B	0.02	C	0.03	C	0.04
Northbound Left-Through	A	0.00	A	0.00	-	0.00
Southbound Through-Right	-	0.13	-	0.36	-	0.31
<b>Liverpool Road/Ilona Park Road (S)</b>						
Eastbound Left-Right	B	0.04	C	0.01	C	0.01
Northbound Left-Through	-	0.00	A	0.00	-	0.00
Southbound Through-Right	-	0.13	-	0.32	-	0.30
<b>Liverpool Road/Commerce Street</b>						
Eastbound Left-Through-Right	B	0.06	C	0.05	C	0.09
Westbound Left-Through-Right	B	0.03	C	0.06	C	0.08
Northbound Left-Through-Right	A	0.00	A	0.00	A	0.01
Southbound Left-Through-Right	A	0.01	A	0.02	A	0.01
<b>Liverpool Road/Annland Street</b>						
Eastbound Left-Through-Right	B	0.14	C	0.14	C	0.20
Westbound Left-Through-Right	B	0.04	C	0.08	C	0.16
Northbound Left-Through-Right	A	0.01	A	0.01	A	0.02
Southbound Left-Through-Right	A	0.00	A	0.01	A	0.01
<b>Liverpool Road/Wharf Street</b>						
Eastbound Left-Through-Right	A	0.03	A	0.04	A	0.08
Westbound Left-Through-Right	A	0.01	A	0.01	A	0.03
Northbound Left-Through-Right	A	0.27	B	0.39	A	0.41
Southbound Left-Through-Right	A	0.18	B	0.55	B	0.53
<b>Liverpool Road/Site Access</b>						
Westbound Left-Right	A	0.15	B	0.23	B	0.01
Northbound Through-Right	-	0.05	-	0.10	-	0.18
Southbound Left-Through	A	0.03	A	0.16	A	0.01

Notes: v/c – volume to capacity ratio, LOS – level of service

Under 2032 total traffic conditions, there will be excess capacity at all unsignalized intersections while operating at level of service ‘D’ or better, with the exception of eastbound movements at both Liverpool Road at Tatra Drive and Liverpool Road at Radom Street during the Weekday PM and Saturday peak periods. As mentioned in **Section 2.4**, the number of vehicles exiting the parking lot from the west is expected to be extremely low during those peaks.

In addition, Tatra Drive at Liverpool Road was also analyzed with signalized operations due to the high volume of pedestrians during the PM peak hour. The results can be found in **Table 35**.

**Table 35: 2032 Total Traffic Tatra Drive Signalized PM Peak Operations**

Intersection & Critical Movement	Weekday PM Peak Hour	
	LOS	v/c
<b>Liverpool Road/Tatra Drive (when pedestrian signals active)</b>		
Eastbound Left-Through-Right	C	0.07
Westbound Left-Through-Right	C	0.16
Northbound Left-through-right	A	0.47
Southbound Left-turn	A	0.38
Southbound Through-Right	A	0.60

Notes: v/c – volume to capacity ratio, LOS – level of service

The 2032 total pedestrian and bicycle levels of service during the weekday AM, weekday PM, and Saturday peak hours are summarized in **Table 36**. Pedestrian and bicycle levels of service will continue to operate at LOS ‘D’ or better under the 2032 total conditions.

**Table 36: 2032 Pedestrian and Bicycle Level of Service**

Intersection & Critical Movement	Weekday AM Peak Hour		Weekday PM Peak Hour		Saturday MID Peak Hour	
	Pedestrian LOS	Bicycle LOS	Pedestrian LOS	Bicycle LOS	Pedestrian LOS	Bicycle LOS
<b>Liverpool Road/Bayly Street</b>						
Eastbound	B	C	C	D	B	C
Westbound	B	C	C	D	B	C
Northbound	B	C	B	C	B	C
Southbound	C	C	C	D	C	D
<b>Liverpool Road/Krosno Boulevard</b>						
Westbound	A	B	A	B	A	B
Northbound	B	B	B	B	B	C
Southbound	B	B	B	C	B	C

## 5.4 2032 Total Queues

Queues under 2032 total traffic conditions are summarized in **Table 37** for key movements. Detailed calculations are provided in **Appendix C**.

SimTraffic queue results were reported for the all way stop controlled intersection of Liverpool Road/Wharf Street.

Table 37: 2032 Total 95th Percentile Queue Summary

Intersection	Existing Storage and Link Length	95 <sup>TH</sup> Percentile Queue (m) under 2032 Total Traffic Condition		
		AM Peak Hour	PM Peak Hour	SAT Peak Hour
<b>Liverpool Road/Bayly Street</b>				
Eastbound Left-turn	115	48	92	73
Eastbound Through	-	78	100	47
Eastbound Right-turn	100	<7	30	14
Westbound Left-turn	50	17	24	25
Westbound Through	-	33	71	33
Westbound Right-turn	150	41	133	55
Northbound Left-turn	75	10	18	15
Northbound Through-Right	-	107	112	106
Southbound Left-turn	50	<b>132</b>	<b>100</b>	<b>92</b>
Southbound Through	-	26	73	63
Southbound Right-turn	65	8	24	10
<b>Liverpool Road/Tatra Drive</b>				
Eastbound Left-Through-Right	-	<7	10	<7
Westbound Left-Through-Right	-	28	29	13
Northbound Left-through-right	-	<7	<7	<7
Southbound Left-turn	40	<7	8	<7
<b>Liverpool Road/Radom Street</b>				
Eastbound Left-Right	-	10	22	22
Northbound Left-Through	-	<7	<7	<7
Southbound Through-Right	-	<7	<7	<7
<b>Liverpool Road/Krosno Boulevard</b>				
Westbound Left-Right	-	12	23	15
Northbound Right-turn	-	30	35	31
Southbound Left-Through	-	27	125	62
<b>Liverpool Road/Ilona Park Road (N)</b>				
Eastbound Left-Right	-	<7	<7	<7
Northbound Left-Through	-	<7	<7	<7
Southbound Through-Right	-	<7	<7	<7
<b>Liverpool Road/Ilona Park Road (S)</b>				
Eastbound Left-Right	-	<7	<7	<7
Northbound Left-Through	-	<7	<7	<7
Southbound Through-Right	-	<7	<7	<7
<b>Liverpool Road/Commerce Street</b>				
Eastbound Left-Through-Right	-	<7	<7	<7
Westbound Left-Through-Right	-	<7	<7	<7
Northbound Left-Through-Right	-	<7	<7	<7
Southbound Left-Through-Right	-	<7	<7	<7
<b>Liverpool Road/Annland Street</b>				
Eastbound Left-Through-Right	-	<7	<7	<7
Westbound Left-Through-Right	-	<7	<7	<7
Northbound Left-Through-Right	-	<7	<7	<7
Southbound Left-Through-Right	-	<7	<7	<7
<b>Liverpool Road/Wharf Street</b>				
Eastbound Left-Through-Right	-	11	13	13
Westbound Left-Through-Right	-	8	13	13
Northbound Left-Through-Right	-	21	22	23
Southbound Left-Through-Right	-	16	28	49
<b>Liverpool/Site Access</b>				
Westbound Left-Right	-	<7	<7	<7
Northbound Through-Right	-	<7	<7	<7
Southbound Left-Through	-	<7	<7	<7

Under 2032 total traffic conditions, 95<sup>th</sup> percentile queues can be accommodated for all key movements in the study area with the exception of the southbound left-turn movement at Liverpool



Road/Bayly Street during all peak periods. However, similar to the 2032 background condition, the Region/City can consider the potential realignment of southbound lane markings to accommodate the full queue length of southbound left traffic at Liverpool Road/Bayly Street.

To address the southbound left-through queues at Liverpool Road/Krosno Boulevard, a dedicated southbound left lane could be considered, or an advanced southbound movement to clear the left turning volumes. However, based on the land use and available ROW, there is not enough land to add a dedicated southbound-left lane without reducing boulevard widths.

In conclusion, geometric improvements will not be required in the study area under the 2027 total traffic conditions. However, signalization is recommended at Liverpool Road at Krosno Boulevard as well as signal timing optimization at Liverpool Road at Bayly Street.



## 6. Parking Assessment

### 6.1 Proposed Parking Rates

The proposed development will be a mixed-use development comprising 377 condominium apartment units, 1,400 m<sup>2</sup> (15,069 ft<sup>2</sup>) of commercial space, and 625 m<sup>2</sup> of public assembly hall space. The proposed parking supply is 472 parking spaces for residents, visitors, and the commercial component, and 63 parking spaces for the assembly hall component.

The proposed parking supply was based on recommended parking rates applied to the site as summarized in **Table 38**, including the consideration of shared parking principles.

The residential and visitor parking rates were based on an examination of proxy site surveys undertaken by HDR for similar developments in the vicinity of the study area. Details are provided in **Section 6.2**.

The commercial parking supply was based on application of bylaw parking rates. Because the commercial land use tenants are not yet defined, the commercial parking rate was based on assuming half the space would be used for retail (3.5 spaces/100m<sup>2</sup> of GFA) and the other space would be used for office (4.5 spaces/100m<sup>2</sup> of GFA). Similarly, the Assembly Hall parking rate was applied using the current City Centre By-law 7553/17 standard rate of 10 spaces/100m<sup>2</sup> of GFA.

**Table 38: Proposed Parking Supply Rates (without and with shared parking applied)**

Land Use	Size	Proposed Rate	Parking Spaces	Proposed Rates with Shared Visitor and Commercial	Proposed Parking Spaces
Residential	377 units	1.00 spaces/unit	377	1.00 spaces/unit	377
Visitor	377 units	0.15 spaces/unit	57	0.25 spaces/unit*	95
Retail	700 m <sup>2</sup> GFA	3.5 spaces/100 m <sup>2</sup>	25		
Office	700 m <sup>2</sup> GFA	4.5 spaces/100 m <sup>2</sup>	32		
Assembly Hall	625 m <sup>2</sup> GFA	10 spaces / 100 m <sup>2</sup>	63	10 spaces/100 m <sup>2</sup>	63
<b>Total</b>			<b>554</b>		<b>535</b>

\* Shared rate is based on sharing the commercial and visitor spaces required divide by number of units – see calculation and discussion below

Although the By-Law requires the sum of the parking required for all uses within the property, the shared parking formula in the City Centre By-Law 7553/17 is based on the varying expected peak times of use. These peak times would still occur outside of the City Centre; therefore shared parking should be applicable across the city. The results of applying the shared parking formula for Retail Store, Office, and Residential – Visitor are shown in **Table 39**.

**Table 39: Shared Parking between Commercial and Residential Visitor Parking**

Weekday	Morning	Noon	Afternoon	Evening
Retail	21 (65%)	29 (90%)	29 (90%)	29 (90%)
Office	25 (100%)	23 (90%)	24 (95%)	3 (10%)
Visitor	12 (20%)	12 (20%)	35 (60%)	57 (100%)
<b>Total</b>	<b>58</b>	<b>64</b>	<b>88</b>	<b>89</b>

<b>Weekend</b>	<b>Morning</b>	<b>Noon</b>	<b>Afternoon</b>	<b>Evening</b>
Retail	26 (80%)	32 (100%)	32 (100%)	23 (70%)
Office	3 (10%)	3 (10%)	3 (10%)	0 (0%)
Visitor	12 (20%)	12 (20%)	35 (60%)	57 (100%)
<b>Total</b>	<b>41</b>	<b>47</b>	<b>70</b>	<b>80</b>

The shared parking formula reduces the minimum required spaces for the visitor and commercial uses from 114 spaces (32, 25, and 57 spaces for retail, office, and visitor, respectively) to 89 spaces required (a 25 space reduction). This results in a combined visitor and commercial parking rate of approximately 0.24 spaces per unit.

Adding these spaces to the 377 residential spaces, and 63 assembly hall spaces results in a total parking demand of 529 spaces required for the proposed development. The development proposes 535 spaces (based on specifying a combined visitor and commercial parking supply of 95 spaces and a rate of approximately 0.25 spaces per unit) which provides 6 excess spaces.

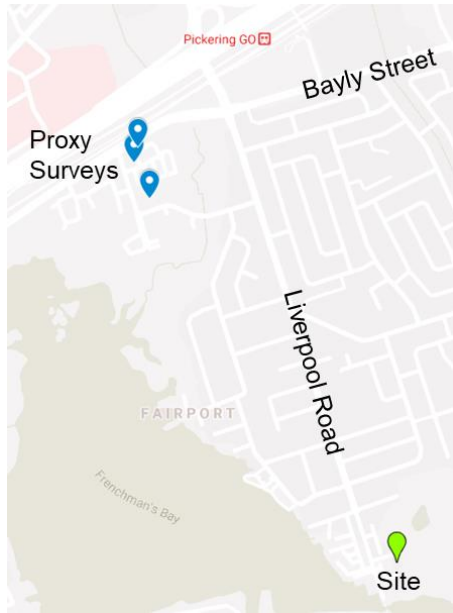
The 6 extra spaces could be used for carshare parking spaces or preferred carpooling parking spaces for the development and for the surrounding area. In particular, a car sharing service within the site can reduce 4 parking spaces for every 1 carshare space provided<sup>1</sup>.

Measures such as signs, gates, and parking permits, can ensure that the site's parking lot is reserved for visitors of the site.

## 6.2 Proxy Site Parking Surveys

To determine appropriate parking rates that could be applied to proposed development at 591 Liverpool Road, parking demand surveys were conducted at nearby residential condominium apartment sites to assess the existing parking supply and demand and. The area nearest the site are primarily detached homes and townhouses. The closest similar locations selected were 1215 Bayly Street, 1235 Bayly Street, and 1210 Radom Street. The survey locations relative to the site is shown in **Exhibit 16**.

<sup>1</sup> Parking Standards Review: Examination of Potential Options and Impacts of Car Share Programs on Parking Standards, City of Toronto and IBI Group, 2009


**Exhibit 16: Proxy Site Parking Survey Locations**

Although these locations are closer to transit (Pickering GO station) than the site, it is only a 10 to 15-minute walk closer than the proposed site, and there are no other similar apartment developments further south. The exhibit above shows the location of the proxy sites. The locations were surveyed during the expected peak parking demand periods between 5:30pm and 7:30pm (visitor parking) and after 11:00pm (residential parking). The peak residential and visitor demand of each of the proxy sites is summarized in **Table 40**.

**Table 40: Proxy Parking Survey Results**

Location	Number of Units	Supply		Demand	
		[Spaces]	[Spaces/Unit]	[Spaces]	[Spaces/Unit]
<b>Residential</b>					
1215 Bayly	169	172	1.02	135	0.80
1235 Bayly	235	224	0.95	201	0.86
1210 Radom	179	179	1.00	159	0.89
Average			0.99		0.85
<b>Visitor</b>					
1215 Bayly	169	42	0.25	33	0.20
1235 Bayly	235	58	0.25	45	0.19
1210 Radom	179	48	0.27	31	0.17
Average			0.26		0.19
<b>Total</b>					
1215 Bayly	169	214	1.27	168	0.99
1235 Bayly	235	266	1.20	234	1.05
1210 Radom	179	227	1.27	190	1.06
Average			1.25		1.04

\*1215 & 1235 Bayly have shared visitor parking. The supply and demand of parking spaces were distributed proportionally to the number of units. The visitor parking is also shared with some commercial use. Although there is parking specifically labelled for commercial use, these results assume all visitor parking to be for the residential units to show conservative results.

Based on the results, there is an average demand of residential parking of 0.85 spaces per unit, and a combined visitor and commercial demand of 0.19 spaces per unit. Removing the parking demand for commercial use from the surveys, the visitor parking demand is actually 0.14 spaces per unit as shown in **Table 41**.

**Table 41: Proxy Parking Surveys for Visitor Parking Excluding Commercial Spaces**

Location	Number of Units	Supply		Demand	
		[Spaces]	[Spaces/Unit]	[Spaces]	[Spaces/Unit]
<b>Visitor</b>					
1215 Bayly	169	26	0.15	20	0.12
1235 Bayly	235	35	0.15	27	0.12
1210 Radom	179	48	0.27	31	0.17
Average			0.19		0.14

The proposed parking supply rate for the site of 1.25 spaces / unit combined for residents, visitors, and commercial is similar to the average parking supply for the three proxy sites surveyed.

The proposed parking supply rate is also demonstrated to be higher than the residential and visitor parking demand observed at these three proxy sites.

A proposed residential parking rate of 1.0 spaces / unit for residential parking, which is also similar to that proposed at the three proxy sites, will be more than sufficient to accommodate the average observed parking demand rate of 0.85 parking spaces / unit.

As discussed earlier, the parking spaces for visitors and for commercial customers can be shared. Although the commercial parking rate is typically based on floor space, the combined visitor and commercial parking supply rate is proposed to be 0.25 spaces / unit, which is similar to the combined visitor and commercial parking supply rate for the three proxy sites. This is more than sufficient to accommodate the combined surveyed visitor and commercial parking demand from the three proxy sites (which never exceed a combined rate of 0.20 spaces / unit). The 0.25 spaces / unit technically covers at least 0.15 spaces / unit for visitors and an average of 4.0 spaces / 100 m<sup>2</sup> of GFA for commercial visitors.

Parking spaces provided for the assembly hall could also be used for visitor or commercial parking or even public parking when no events take place. During events, there will still be sufficient dedicated parking for the other uses as described in the shared parking formula.

## Traffic Demand Management Measures

Various Traffic Demand Management (“TDM”) measures are proposed to encourage non-single occupant vehicle use and dependency for the residents and customers in the proposed development.

### 6.3 Cycling

The City’s Zoning By-law 7553/17 outlines minimum number of bicycle parking spaces requirement for apartment dwelling as 0.5 spaces per dwelling unit and 1 space for 1,000 m<sup>2</sup> of gross leasable floor area of commercial space.

The proposed development will provide 189 and at least 2 bicycle parking spaces, respectively, for residents and retail customers.

A maximum of 50% of the required bicycle parking spaces will be vertical spaces and the remaining will be horizontal spaces. In addition, a minimum of 25% of total spaces will be located within a building with a secure area such as a supervised parking lot or enclosure, or bicycle lockers.

### 6.4 Walking

Active transportation access in the form of a hard surface pathway will be provided connecting the building entrance to the existing sidewalk on Liverpool Road to facilitate pedestrian access.

Residents, visitors, employees and customers can easily access the site from the surrounding neighborhoods. This will assist in accommodating residents that choose not to utilize their vehicles and the local road system to access the site.

In addition, existing streetlights along Liverpool Road and lighting from the building will illuminate the sidewalk and the walkway connection to the site. The walk distance (in terms of travel time) from the proposed development to the GO station is 28 minutes suggesting some residents can walk to the station.

### 6.5 Transit

As mentioned in **Section 2.2**, the DRT and GO currently provides surface bus routes and GO train along Liverpool Road and the study area. Pickering GO Station is located at the north-east quadrant of the Liverpool Road and Bayly Street intersection, with approximately 2km from the proposed site. The existing bus route services are shown in **Table 42**.

Table 42: Bus Route Services

Bus / Route	Approximate headways during peak periods
<b>Liverpool Road</b>	
193 Community (DRT)	Weekday PM – 60 minutes Saturday MID – 60 minutes
101A Bay Ridges (DRT)	Weekday AM – 30 minutes
101 Bay Ridges (DRT)	Weekday PM – 60 minutes Saturday MID – 60 minutes

Bus / Route	Approximate headways during peak periods
<b>Bayly Street</b>	
110 Finch West (DRT)	Weekday AM – 10 minutes from 7:10 to 7:30, 30 minutes after 7:30
110A Finch West (DRT)	Weekday AM – 30 minutes
107 Rosebank Whites (DRT)	Weekday AM – 30 minutes Weekday PM – 30 minutes
120 Rosebank Whites (DRT)	Weekday AM – 20 minutes Weekday PM – 20 minutes Saturday MID – 30 minutes
103 Glenanna (DRT)	Weekday AM – 30 minutes Weekday PM – 30 minutes Saturday MID – 60 minutes
223 Bayly (DRT)	Weekday AM – 30 minutes Weekday PM – 30 minutes Saturday MID – 60 minutes
<b>GO Transit</b>	
Lakeshore East Train (GO)	Weekday AM – 20 minutes towards Toronto, 30 minutes towards Oshawa Weekday PM – 20 minutes towards Oshawa, 20 minutes towards Toronto Saturday MID – 30 minutes towards Oshawa, 30 minutes towards Toronto
51, 52, 54 – 407 East Bus (GO)	Weekday AM – 40 minutes Weekday PM – 30 minutes

Based on the above listed bus routes, the maximum number of northbound or southbound bus trips on Liverpool Road will be 2 during a peak hour in future traffic conditions.

As mentioned in **Section 2.2**, a route change in 101/101A moved the nearest bus stop from 300m to 950m from the site. With the additional transit demand generated from the site, it is recommended that the route revert back to its previous route, so that the nearest stop to the site is at Liverpool Road/Annland Street.

All transit stops are connected to the existing sidewalk network and as mentioned in **Section 6.4**, a hard surface pathway will be provided connecting the building entrance to the existing sidewalk on Liverpool Road.

Assuming site generated person trips to/from the GO station also use the DRT buses on Liverpool Road, the total transit trips would be 15 person-trips during the AM peak hour and 22 person-trips during the PM peak hour.

Assuming existing traffic counts have already captured these buses during the peak hours as heavy vehicles, it can be stated that the development trips on the Liverpool Road will not be expected to impact the future transit operations within the study area.

On the other hand, if a dedicated shuttle bus (with a seat capacity of 25 seats) is proposed to serve the site to/from the Picketing GO station in future, then it can be assumed that the proposed shuttle bus can also reduce at least 8 vehicles (i.e. assuming an average car occupancy of 1.5) from the road if a 50% occupancy of the bus is considered for both inbound and outbound traffic.

To demonstrate that a shuttle bus can maneuver on Liverpool Road, and to turnaround using the public parking lot (similar to emergency vehicles and other maintenance vehicles), swept path analysis using AutoTurn was conducted based on a 27-foot, 36-foot, and 40-foot length bus. The results are shown in **Exhibit 17**, and **Exhibit 18**. The standard shuttle bus is approximately 27 feet in length and is similar to the buses that Durham Region Transit uses for specialized services / demand response, whereas the 36-foot, and 40-foot bus lengths are the bus lengths for the typical routes<sup>2</sup>.

The shuttle bus is expected to be able to use the public parking lot to turnaround from/to Liverpool Road, whereas the regular bus length would require reconfiguration of the public parking lot (repainting or removal of parking spaces). For example, the center aisle parking spaces can be repainted to shift the spaces further west.

As all of the future north-south traffic flows travelling through all the intersections will be operating under acceptable LOS and delays under Future Total Traffic Conditions (background plus the subject development), the addition of this shuttle bus will not impact the future road traffic operations.



Exhibit 17: Path Swept Analysis of a 27-foot Bus (Shuttle Bus)

<sup>2</sup> [https://cptdb.ca/wiki/index.php/Durham\\_Region\\_Transit](https://cptdb.ca/wiki/index.php/Durham_Region_Transit)



Exhibit 18: Path Swept Analysis of a 36-foot Bus (Left) and 40-foot Bus (Right)

In addition, if the frequency of DRT 193 and DRT 101 could be increased to 15 min headway, this could further reduce auto-vehicles from the road, and the addition of the increased bus trips will not impact the operations of the intersections significantly.

## 6.6 Carshare/Bikeshare

On-site carshare and bikeshare can be considered for the proposed development. However, coordination with providers is required to determine its feasibility. A carshare parking space can result in a net reduction of auto trips and parking spaces.

## 6.7 Wayfinding and Travel Planning

Since the transit stops are located along Liverpool Road in the vicinity of the proposed development, and this is the main north-south road, improved wayfinding signage would not be necessary for the site. However, residents can be provided with transit route maps and schedules, which can be made available within the building lobby.

## 6.8 Education/Promotion and Incentives

Unbundled resident parking will be offered as an option for many units. By separating the cost of parking from the cost of the residential unit, unbundling makes visible the hidden cost of driving, enabling residents to make more informed transportation decisions, and creates opportunities to use more sustainable modes of transportation and reduce their ownership costs.



## 7. Conclusions and Recommendations

HDR was retained to undertake a traffic study for the proposed development located at 591 Liverpool Road in the City of Pickering.

The proposed development consists of 377 condominium apartment units, 1,400 m<sup>2</sup> of commercial space, and 625 m<sup>2</sup> of public assembly hall space in two 15-storey buildings. The site is proposed to supply 535 parking spaces for both residential and commercial components.

Overall the proposed development can be accommodated by the existing transportation network. Below is a summary discussion of minor impacts and mitigation measures.

The eastbound one lane approach at the existing unsignalized intersections of Liverpool Road/Tatra Drive and Liverpool Road/Radom Street will experience some longer delays triggered by the increase in background traffic, but these will operate well below the capacity, and the addition of traffic generated by the proposed development will not exacerbate this condition.

Only the southbound left-turn 95<sup>th</sup> percentile queue at Liverpool / Bayly will exceed the available storage length and this is triggered by existing and background traffic. The proposed development will not add traffic to this movement. The existing southbound left-turn storage lane cannot be extended north without significant impacts to the bridge over the Lakeshore East GO Rail and Highway 401. However, City can consider some potential realignment of the southbound lane markings to accommodate the full queue length of southbound left traffic at Liverpool Road/Bayly Street without significant road and operations impacts.

Therefore, no geometric improvements to the existing road network are recommended, with the exception of new traffic signals at the Krosno Boulevard and Liverpool Road intersection by 2027.

Future residents of the subject development are expected to use the existing transit service on Liverpool Road. In addition, there is an opportunity to work with Durham Region Transit and Metrolinx to provide shuttle buses to/from the site to connect with the GO Station or increased frequency of the DRT 101 and DRT 193, which will further reduce the forecast auto-vehicles that have been estimated and documented in this report. The additional shuttle bus or bus trips will not impact the operations of the road network. The existing public parking lot is sufficient to allow a turnaround for a shuttle bus. Minor reconfiguration of the public parking lot may be required to accommodate the regular city bus; however, the demand response buses (shuttle bus) is expected to meet the expected transit demands.

We understand the City of Pickering is undertaking a study to consider a future road connection between Liverpool Road and Sandy Beach Road, in the vicinity of the terminus of Liverpool Road, in order to improve connectivity.

The proposed building entrance will be connected to the existing sidewalk on Liverpool Road for pedestrians with good access to the rest of the neighbourhood. The site will also provide 189 and at least 2 bicycle parking spaces, respectively, for residents and customers. Combined with other potential TDM measures, the subject development will likely result in generating less vehicular traffic based on the available active transportation and transit opportunities. The vehicular traffic



estimated in this report is conservative as the study does not account for potential increases in transit service and the application of TDM measures that could reduce vehicle trips.



# **Appendix A**

## **Traffic Data Collection**

**North-South Road:** Liverpool Road

**East-West Road:** Annland Street

**Survey Date:** Thu Jun 1, Sat Jun 3, 2017

**Weather:** WKDY-Sunny, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

		<b>AUTOS</b>												<b>PEDESTRIANS</b>				
	TIME BEGINNING	Annland Street			Annland Street			Liverpool Road			Liverpool Road			West Side	East Side	South Side	North Side	
		Eastbound			Westbound			Northbound			Southbound							
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right					
<b>WEEKDAY</b>	700	1	0	1	1	0	0	2	12	0	0	9	0	1	0	0	0	
	715	1	0	1	0	0	3	1	13	0	0	5	0	2	0	0	0	
	730	0	0	4	0	0	0	1	38	2	0	15	2	3	0	0	0	
	745	1	2	1	0	0	3	2	28	0	2	20	1	2	0	0	0	
	800	0	0	0	3	0	2	0	14	0	1	13	0	1	1	0	0	
	815	2	0	2	2	0	4	2	20	1	1	15	0	0	2	2	1	
	830	0	0	1	3	0	0	3	18	4	0	19	0	1	0	0	0	
	845	0	0	0	1	0	2	0	20	0	0	30	2	1	1	0	1	
	1600	1	0	3	0	1	1	6	37	1	2	43	2	2	1	2	0	
	1615	2	0	3	3	0	2	2	30	2	2	29	4	1	0	0	1	
	1630	1	0	4	2	0	0	0	41	1	6	36	5	0	0	0	0	
	1645	1	0	1	3	2	0	1	27	2	4	46	5	1	0	0	2	
	1700	0	1	2	3	0	1	0	37	0	2	33	3	1	1	0	0	
1715	0	0	3	5	0	0	1	26	5	1	47	3	1	0	0	0		
1730	1	0	0	0	1	1	3	32	0	5	41	5	1	2	3	0		
1745	1	0	3	1	1	1	3	30	4	2	44	3	1	0	0	3		
<b>SATURDAY</b>	1200	1	2	5	1	0	0	0	38	2	2	40	2	1	3	0	1	
	1215	0	0	3	4	0	1	2	48	3	2	58	2	5	3	0	0	
	1230	1	0	0	17	1	2	3	33	1	4	51	9	6	1	0	2	
	1245	0	0	4	1	0	3	3	31	0	5	48	3	3	1	1	0	
	1300	3	0	6	0	1	2	4	50	0	1	53	2	1	0	0	0	
	1315	0	0	0	1	1	2	2	33	3	0	46	3	5	2	0	1	
	1330	1	1	3	1	0	0	3	39	0	2	70	2	3	2	0	0	
1345	1	0	3	2	1	0	1	32	2	2	54	2	1	2	5	0		
	<b>TOTALS</b>																	
	AM	5	2	10	10	0	14	11	163	7	4	126	5	11	4	2	2	
	PM	7	1	19	17	5	6	16	260	15	24	319	30	8	4	5	6	
	SAT	7	3	24	27	4	10	18	304	11	18	420	25	25	14	6	4	

North-South Road: Liverpool Road

East-West Road: Annland Street

Survey Date: Thu Jun 1, Sat Jun 3, 2017

Weather: WKDY-Sunny, SAT - Sunny

MUNICIPALITY: Pickering, Ontario

TIG TCS v1.17

TRAF8 GROUP

<b>MEDIUM</b>														<b>BICYCLES</b>				
TIME BEGINNING	Annland Street			Annland Street			Liverpool Road			Liverpool Road			West Side	East Side	South Side	North Side		
	Eastbound			Westbound			Northbound			Southbound								
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right						
<b>WEEKDAY</b>	700	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	
	715	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	
	730	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	
	745	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	800	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	
	815	0	0	0	0	0	0	0	1	0	0	0	2	0	1	0	1	
	830	0	0	0	0	1	0	0	1	0	0	0	0	0	2	0	0	
	845	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	
	1600	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
	1615	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
	1630	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
	1645	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1700	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0
1715	0	0	0	0	0	0	1	0	0	0	0	1	1	2	1	0	0	
1730	0	1	0	0	0	0	0	0	0	0	0	2	0	2	0	2	0	
1745	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	
<b>SATURDAY</b>	1200	0	0	0	0	0	0	0	3	0	0	1	0	8	1	1	0	
	1215	0	0	0	0	0	0	0	0	0	0	1	0	1	2	1	0	
	1230	0	0	0	0	0	0	0	1	0	0	3	0	7	2	3	0	
	1245	0	0	0	0	0	0	0	2	0	0	0	0	0	0	4	0	
	1300	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	
	1315	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0
	1330	0	0	0	0	0	0	0	0	0	0	0	0	1	1	3	1	0
1345	0	0	0	1	0	0	0	0	0	0	0	1	0	0	1	3	1	
<b>TOTALS</b>																		
AM	0	0	0	0	1	0	1	4	0	0	3	1	4	1	0	1	1	
PM	0	1	0	0	0	0	1	2	0	1	3	1	5	3	3	0	0	
SAT	0	0	0	1	0	0	0	7	0	0	6	1	18	11	14	1	1	

North-South Road: Liverpool Road

East-West Road: Annland Street

Survey Date: Thu Jun 1, Sat Jun 3, 2017

Weather: WKDY-Sunny, SAT - Sunny

MUNICIPALITY: Pickering, Ontario

TIG TCS v1.17

TRAF8 GROUP

		<b>HEAVY</b>											<b>U-TURNS</b>				
	TIME BEGINNING	Annland Street			Annland Street			Liverpool Road			Liverpool Road			EB to WB	WB to EB	NB to SB	SB to NB
		Eastbound			Westbound			Northbound			Southbound						
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right				
<b>WEEKDAY</b>	700	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
	715	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	730	0	0	0	0	0	0	0	0	0	0	1	0	0	2	0	0
	745	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	800	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
	815	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
	830	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
	845	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	1600	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	0
	1615	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1630	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	1645	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1700	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1715	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	
1730	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	
1745	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	
<b>SATURDAY</b>	1200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1215	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
	1230	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	1245	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1315	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
	1330	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	1345	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<b>TOTALS</b>																
	AM	0	0	0	0	0	1	0	0	0	0	2	0	0	5	0	0
	PM	1	0	0	0	0	0	0	0	1	0	4	1	0	1	0	0
	SAT	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0

**North-South Road:** Liverpool Road

**East-West Road:** Annland Street

**Survey Date:** Thu Jun 1, Sat Jun 3, 2017

**Weather:** WKDY-Sunny, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

<b>TOTAL VEHICLES</b>														
TIME BEGINNING	Annland Street			Annland Street			Liverpool Road			Liverpool Road			TOTAL VEHICLES	
	Eastbound			Westbound			Northbound			Southbound				
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
<b>WEEKDAY</b>	700	1	0	1	1	0	0	2	12	0	0	9	1	27
	715	1	0	1	0	0	3	1	14	0	0	5	0	25
	730	0	0	4	0	0	0	2	38	2	0	16	2	64
	745	1	2	1	0	0	3	2	28	0	2	20	1	60
	800	0	0	0	3	0	2	0	15	0	1	14	0	35
	815	2	0	2	2	0	5	2	21	1	1	17	0	53
	830	0	0	1	3	1	0	3	19	4	0	19	0	50
	845	0	0	0	1	0	2	0	20	0	0	31	2	56
	1600	1	0	3	0	1	1	6	37	1	2	44	3	99
	1615	3	0	3	3	0	2	2	31	2	2	29	4	81
	1630	1	0	4	2	0	0	0	41	1	6	37	5	97
	1645	1	0	1	3	2	0	1	27	2	4	46	5	92
	1700	0	1	2	3	0	1	0	37	0	3	33	3	83
	1715	0	0	3	5	0	0	2	26	5	1	49	4	95
1730	1	1	0	0	1	1	3	32	1	5	43	5	93	
1745	1	0	3	1	1	1	3	31	4	2	45	3	95	
<b>SATURDAY</b>	1200	1	2	5	1	0	0	0	41	2	2	41	2	97
	1215	0	0	3	4	0	1	2	48	3	2	59	2	124
	1230	1	0	0	17	1	2	3	34	1	4	55	9	127
	1245	0	0	4	1	0	3	3	33	0	5	48	3	100
	1300	3	0	6	0	1	2	4	51	0	1	53	2	123
	1315	0	0	0	1	1	2	2	33	3	0	46	3	91
	1330	1	1	3	1	0	0	3	39	0	2	71	3	124
1345	1	0	3	3	1	0	1	32	2	2	55	2	102	
<b>TOTALS</b>														
AM	5	2	10	10	1	15	12	167	7	4	131	6	<b>370</b>	
PM	8	2	19	17	5	6	17	262	16	25	326	32	<b>735</b>	
SAT	7	3	24	28	4	10	18	311	11	18	428	26	<b>888</b>	

**North-South Road:** Liverpool Road

**East-West Road:** Annland Street

**Survey Date:** Thu Jun 1, Sat Jun 3, 2017

**Weather:** WKDY-Sunny, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

**HOURLY SUMMARY - ALL VEHICLES**

	TIME BEGINNING	Annland Street			Annland Street			Liverpool Road			Liverpool Road			TOTAL VEHICLES
		Eastbound			Westbound			Northbound			Southbound			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
<b>WEEKDAY</b>	700	3	2	7	1	0	6	7	92	2	2	50	4	176
	715	2	2	6	3	0	8	5	95	2	3	55	3	184
	730	3	2	7	5	0	10	6	102	3	4	67	3	212
	745	3	2	4	8	1	10	7	83	5	4	70	1	198
	800	2	0	3	9	1	9	5	75	5	2	81	2	194
	1600	6	0	11	8	3	3	9	136	6	14	156	17	369
	1615	5	1	10	11	2	3	3	136	5	15	145	17	353
	1630	2	1	10	13	2	1	3	131	8	14	165	17	367
	1645	2	2	6	11	3	2	6	122	8	13	171	17	363
	1700	2	2	8	9	2	3	8	126	10	11	170	15	366
<b>SATURDAY</b>	1200	2	2	12	23	1	6	8	156	6	13	203	16	448
	1215	4	0	13	22	2	8	12	166	4	12	215	16	474
	1230	4	0	10	19	3	9	12	151	4	10	202	17	441
	1245	4	1	13	3	2	7	12	156	3	8	218	11	438
	1300	5	1	12	5	3	4	10	155	5	5	225	10	440



**North-South Road:** Liverpool Road

**East-West Road:** Annland Street

**Survey Date:** Thu Jun 1, Sat Jun 3, 2017

**Weather:** WKDY-Sunny, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

**HOURLY SUMMARY**

	TIME BEGINNING	PEDESTRIANS					BICYCLES					U-TURN				
		West Side	East Side	South Side	North Side	Total	West Side	East Side	South Side	North Side	Total	EB to WB	WB to EB	NB to SB	SB to NB	Total
<b>WEEKDAY</b>	700	8	0	0	0	8	0	1	0	0	1	0	3	0	0	3
	715	8	1	0	0	9	0	1	0	0	1	0	3	0	0	3
	730	6	3	2	1	12	1	0	0	1	2	0	3	0	0	3
	745	4	3	2	1	10	3	0	0	1	4	0	2	0	0	2
	800	3	4	2	2	11	4	0	0	1	5	0	2	0	0	2
	1600	4	1	2	3	10	1	2	0	0	3	0	1	0	0	1
	1615	3	1	0	3	7	0	2	1	0	3	0	0	0	0	0
	1630	3	1	0	2	6	2	3	1	0	6	0	0	0	0	0
	1645	4	3	3	2	12	4	1	3	0	8	0	0	0	0	0
1700	4	3	3	3	13	4	1	3	0	8	0	0	0	0	0	
<b>SATURDAY</b>	1200	15	8	1	3	27	16	5	9	0	30	0	1	0	0	1
	1215	15	5	1	2	23	8	4	9	0	21	0	1	0	0	1
	1230	15	4	1	3	23	8	4	8	0	20	0	1	0	0	1
	1245	12	5	1	1	19	2	5	6	0	13	0	1	0	0	1
	1300	10	6	5	1	22	2	6	5	1	14	0	1	0	0	1

**North-South Road:** Liverpool Road

**East-West Road:** Annland Street

**Survey Date:** Thu Jun 1, Sat Jun 3, 2017

**Weather:** WKDY-Sunny, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

**PEAK HOUR VOLUMES - ALL VEHICLES**

PEAK HOUR		Annland Street			Annland Street			Liverpool Road			Liverpool Road			TOTAL VEHICLES
		Eastbound			Westbound			Northbound			Southbound			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
<b>AM 730 - 830</b>	Autos	3	2	7	5	0	9	5	100	3	4	63	3	204
	Medium	0	0	0	0	0	0	1	2	0	0	3	0	6
	Heavy	0	0	0	0	0	1	0	0	0	0	1	0	2
	<b>Total</b>	<b>3</b>	<b>2</b>	<b>7</b>	<b>5</b>	<b>0</b>	<b>10</b>	<b>6</b>	<b>102</b>	<b>3</b>	<b>4</b>	<b>67</b>	<b>3</b>	<b>212</b>
	% Hv	0.0%	0.0%	0.0%	0.0%	0.0%	10.0%	16.7%	2.0%	0.0%	0.0%	6.0%	0.0%	3.8%
	PHF	0.375	0.250	0.438	0.417	0.000	0.500	0.750	0.671	0.375	0.500	0.838	0.375	0.828
<b>PM 1600 - 1700</b>	Autos	5	0	11	8	3	3	9	135	6	14	154	16	364
	Medium	0	0	0	0	0	0	0	1	0	0	0	0	1
	Heavy	1	0	0	0	0	0	0	0	0	0	2	1	4
	<b>Total</b>	<b>6</b>	<b>0</b>	<b>11</b>	<b>8</b>	<b>3</b>	<b>3</b>	<b>9</b>	<b>136</b>	<b>6</b>	<b>14</b>	<b>156</b>	<b>17</b>	<b>369</b>
	% Hv	16.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%	0.0%	0.0%	1.3%	5.9%	1.4%
	PHF	0.500	0.000	0.688	0.667	0.375	0.375	0.375	0.829	0.750	0.583	0.848	0.850	0.932
<b>SAT 1215 - 1315</b>	Autos	4	0	13	22	2	8	12	162	4	12	210	16	465
	Medium	0	0	0	0	0	0	0	4	0	0	4	0	8
	Heavy	0	0	0	0	0	0	0	0	0	0	1	0	1
	<b>Total</b>	<b>4</b>	<b>0</b>	<b>13</b>	<b>22</b>	<b>2</b>	<b>8</b>	<b>12</b>	<b>166</b>	<b>4</b>	<b>12</b>	<b>215</b>	<b>16</b>	<b>474</b>
	% Hv	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.4%	0.0%	0.0%	2.3%	0.0%	1.9%
	PHF	0.333	0.000	0.542	0.324	0.500	0.667	0.750	0.814	0.333	0.600	0.911	0.444	0.933

PEAK HOUR	PEDESTRIANS					BICYCLES					U-TURN				
	West Side	East Side	South Side	North Side	Total	West Side	East Side	South Side	North Side	Total	EB to WB	WB to EB	NB to SB	SB to NB	Total
<b>AM</b>	6	3	2	1	12	1	0	0	1	2	0	3	0	0	3
<b>PM</b>	4	1	2	3	10	1	2	0	0	3	0	1	0	0	1
<b>SAT</b>	15	5	1	2	23	8	4	9	0	21	0	1	0	0	1

**North-South Road:** Liverpool Road

**East-West Road:** Annland Street

**Survey Date:** Thu Jun 1, Sat Jun 3, 2017

**Weather:** WKDY-Sunny, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

**HOURLY SUMMARY - AUTOS**

	TIME BEGINNING	Annland Street Eastbound			Annland Street Westbound			Liverpool Road Northbound			Liverpool Road Southbound			TOTAL VEHICLES
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
		<b>WEEKDAY</b>												
	700	3	2	7	1	0	6	6	91	2	2	49	3	172
	715	2	2	6	3	0	8	4	93	2	3	53	3	179
	730	3	2	7	5	0	9	5	100	3	4	63	3	204
	745	3	2	4	8	0	9	7	80	5	4	67	1	190
	800	2	0	3	9	0	8	5	72	5	2	77	2	185
	1600	5	0	11	8	3	3	9	135	6	14	154	16	364
	1615	4	1	10	11	2	3	3	135	5	14	144	17	349
	1630	2	1	10	13	2	1	2	131	8	13	162	16	361
	1645	2	1	6	11	3	2	5	122	7	12	167	16	354
	1700	2	1	8	9	2	3	7	125	9	10	165	14	355
<b>SATURDAY</b>														
	1200	2	2	12	23	1	6	8	150	6	13	197	16	436
	1215	4	0	13	22	2	8	12	162	4	12	210	16	465
	1230	4	0	10	19	3	9	12	147	4	10	198	17	433
	1245	4	1	13	3	2	7	12	153	3	8	217	10	433
	1300	5	1	12	4	3	4	10	154	5	5	223	9	435

**North-South Road:** Liverpool Road

**East-West Road:** Annland Street

**Survey Date:** Thu Jun 1, Sat Jun 3, 2017

**Weather:** WKDY-Sunny, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

**HOURLY SUMMARY - MEDIUM**

	TIME BEGINNING	Annland Street			Annland Street			Liverpool Road			Liverpool Road			TOTAL VEHICLES
		Eastbound			Westbound			Northbound			Southbound			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
<b>WEEKDAY</b>	700	0	0	0	0	0	0	1	1	0	0	0	1	3
	715	0	0	0	0	0	0	1	2	0	0	1	0	4
	730	0	0	0	0	0	0	1	2	0	0	3	0	6
	745	0	0	0	0	1	0	0	3	0	0	3	0	7
	800	0	0	0	0	1	0	0	3	0	0	3	0	7
	1600	0	0	0	0	0	0	0	1	0	0	0	0	1
	1615	0	0	0	0	0	0	0	1	0	1	0	0	2
	1630	0	0	0	0	0	0	1	0	0	1	1	1	4
	1645	0	1	0	0	0	0	1	0	0	1	3	1	7
	1700	0	1	0	0	0	0	1	1	0	1	3	1	8
<b>SATURDAY</b>	1200	0	0	0	0	0	0	0	6	0	0	5	0	11
	1215	0	0	0	0	0	0	0	4	0	0	4	0	8
	1230	0	0	0	0	0	0	0	4	0	0	3	0	7
	1245	0	0	0	0	0	0	0	3	0	0	0	1	4
	1300	0	0	0	1	0	0	0	1	0	0	1	1	4

**North-South Road:** Liverpool Road

**East-West Road:** Annland Street

**Survey Date:** Thu Jun 1, Sat Jun 3, 2017

**Weather:** WKDY-Sunny, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

**HOURLY SUMMARY - HEAVY**

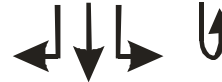
	TIME BEGINNING	Annland Street			Annland Street			Liverpool Road			Liverpool Road			TOTAL VEHICLES
		Eastbound			Westbound			Northbound			Southbound			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
<b>WEEKDAY</b>	700	0	0	0	0	0	0	0	0	0	0	1	0	1
	715	0	0	0	0	0	0	0	0	0	0	1	0	1
	730	0	0	0	0	0	1	0	0	0	0	1	0	2
	745	0	0	0	0	0	1	0	0	0	0	0	0	1
	800	0	0	0	0	0	1	0	0	0	0	1	0	2
	1600	1	0	0	0	0	0	0	0	0	0	2	1	4
	1615	1	0	0	0	0	0	0	0	0	0	1	0	2
	1630	0	0	0	0	0	0	0	0	0	0	2	0	2
	1645	0	0	0	0	0	0	0	0	1	0	1	0	2
	1700	0	0	0	0	0	0	0	0	1	0	2	0	3
<b>SATURDAY</b>	1200	0	0	0	0	0	0	0	0	0	0	1	0	1
	1215	0	0	0	0	0	0	0	0	0	0	1	0	1
	1230	0	0	0	0	0	0	0	0	0	0	1	0	1
	1245	0	0	0	0	0	0	0	0	0	0	1	0	1
	1300	0	0	0	0	0	0	0	0	0	0	1	0	1



**Liverpool Road**

	<b>Total</b>	3	67	4
	<b>Heavy</b>	0	1	0
	<b>Medium</b>	0	3	0
	<b>Autos</b>	3	63	4

<b>U-Turns</b>	0
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<b>Pedestrians</b>	1
<b>Bicyclists</b>	1

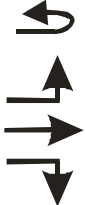
<b>PERIOD</b>	WEEKDAY AM PEAK HOUR
<b>TIME</b>	0730 - 0830

<b>INTERSECTION TOTALS</b>	<b>Autos</b>	<b>Trucks</b>	<b>Buses</b>	<b>Total Vehicles</b>	<b>Medium &amp; Heavy %</b>
	204	6	2	212	3.8%
	<b>Peds</b>	<b>Bicycles</b>	<b>U-Turns</b>	<b>PHF</b>	
	12	2	3	0.828	

Annland Street

<b>U-Turns</b>	0
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<b>Auto</b>	<b>Medium</b>	<b>Heavy</b>	<b>Total</b>
3	0	0	3
2	0	0	2
7	0	0	7



<b>Pedestrians</b>	6
<b>Bicyclists</b>	1

<b>Pedestrians</b>	3
<b>Bicyclists</b>	0

<b>Auto</b>	<b>Medium</b>	<b>Heavy</b>	<b>Total</b>
9	0	1	10
0	0	0	0
5	0	0	5

<b>U-Turns</b>	3
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Annland Street

% NON-AUTO VEHICLES (Medium & Heavy)			
Direction	Left	Thru	Right
Eastbound	0.0%	0.0%	0.0%
Westbound	0.0%	0.0%	10.0%
Northbound	16.7%	2.0%	0.0%
Southbound	0.0%	6.0%	0.0%

<b>Pedestrians</b>	2
<b>Bicyclists</b>	0



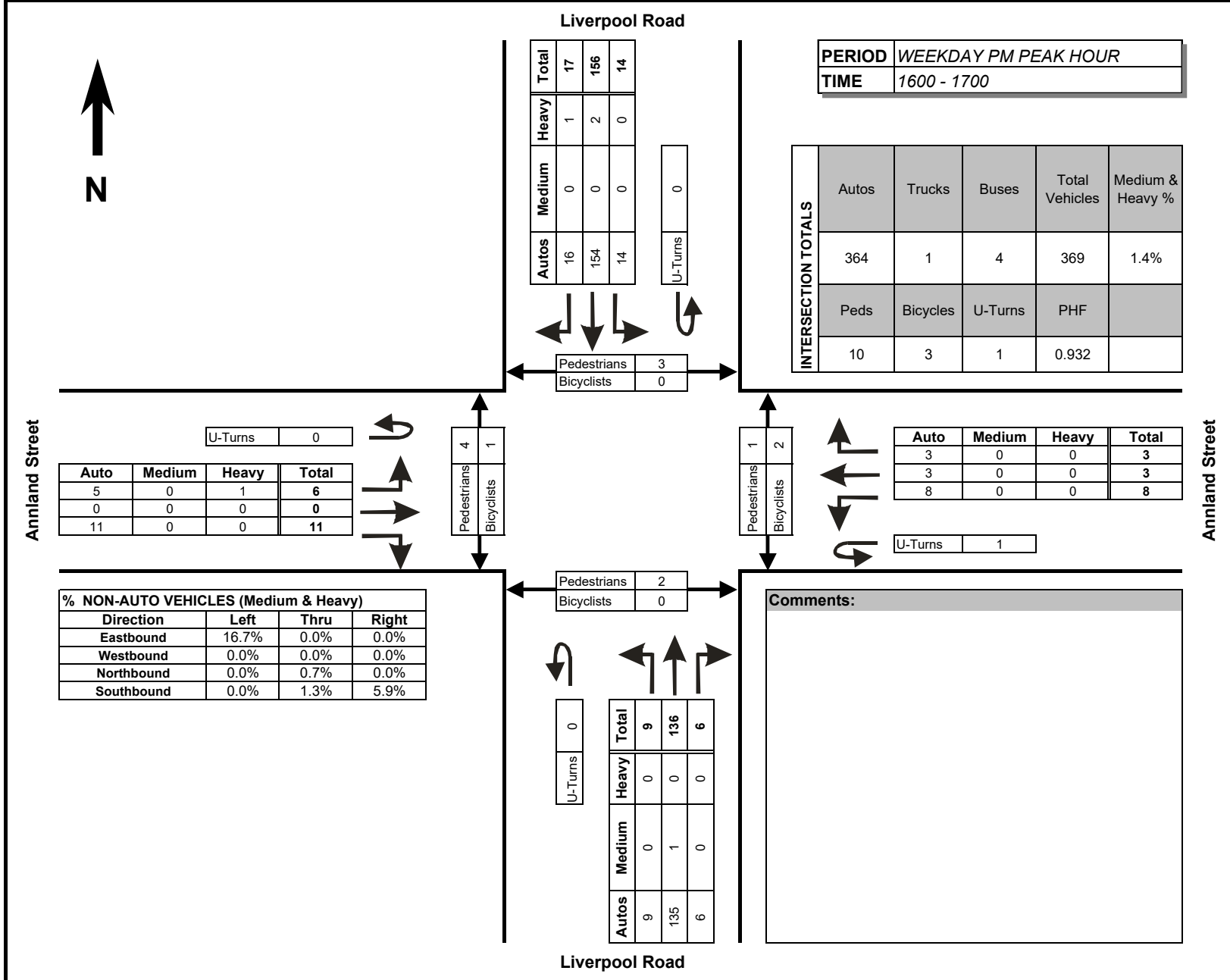
	<b>Total</b>	6	102	3
	<b>Heavy</b>	0	0	0
	<b>Medium</b>	1	2	0
	<b>Autos</b>	5	100	3

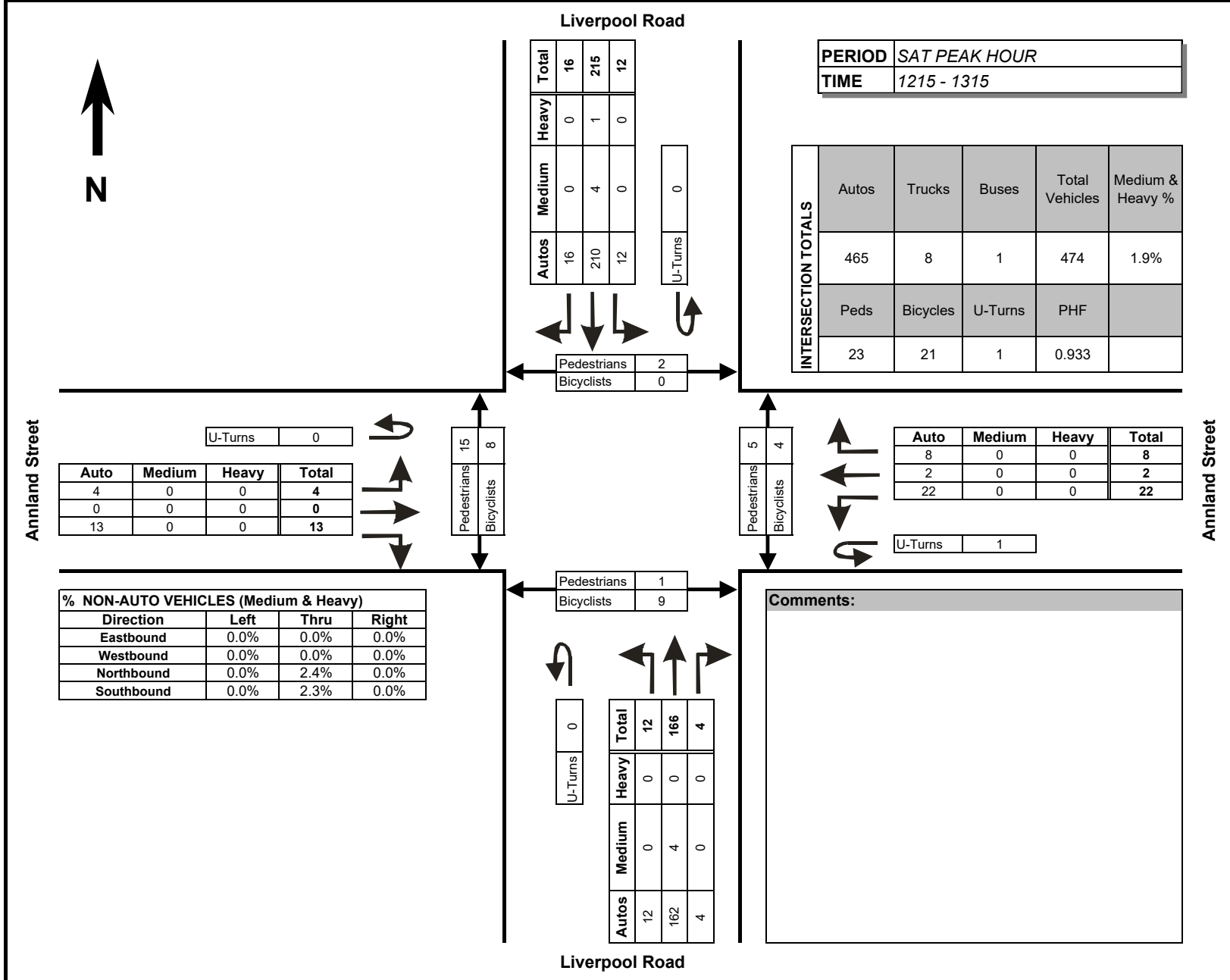
**Liverpool Road**

**Comments:**

**NORTH-SOUTH ROAD:** Liverpool Road  
**EAST-WEST ROAD:** Annland Street  
**SURVEY DATE:** Thu Jun 1, Sat Jun 3, 2017  
**MUNICIPALITY:** Pickering, Ontario  
**WEATHER:** WKDY-Sunny, SAT - Sunny

**TURNING  
MOVEMENT  
DIAGRAM**







**North-South Road:** Liverpool Road

**East-West Road:** Bayly Street

**Survey Date:** Thu Jun 1, Sat Jun 3, 2017

**Weather:** WKDY-Sunny, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

		<b>AUTOS</b>												<b>PEDESTRIANS</b>				
	TIME BEGINNING	Bayly Street			Bayly Street			Liverpool Road			Liverpool Road			West Side	East Side	South Side	North Side	
		Eastbound			Westbound			Northbound			Southbound							
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right					
<b>WEEKDAY</b>	700	22	126	7	8	44	52	9	106	27	112	31	12	5	8	7	6	
	715	32	192	18	19	50	71	9	85	46	95	36	17	2	18	5	2	
	730	50	160	20	20	59	63	20	110	26	130	37	40	3	10	4	3	
	745	37	140	23	13	47	63	19	137	25	124	58	34	6	10	8	10	
	800	48	140	16	12	43	69	7	112	36	127	71	32	5	4	4	3	
	815	63	105	17	9	59	73	13	104	26	110	80	56	4	11	5	2	
	830	55	114	21	16	46	64	15	105	37	112	59	41	11	10	6	10	
	845	80	99	18	13	44	64	23	93	17	96	80	39	7	3	2	2	
		1600	89	173	43	22	83	145	19	131	26	69	90	59	5	11	6	3
		1615	102	189	55	23	74	142	14	111	23	80	110	60	1	13	6	3
		1630	90	166	42	31	143	186	22	119	24	65	82	61	12	8	6	2
		1645	101	228	51	25	101	153	17	153	21	77	109	59	12	4	2	3
		1700	87	188	62	7	175	169	24	128	16	85	119	60	8	9	6	6
	1715	102	197	53	29	123	150	22	123	28	77	115	56	5	15	5	7	
	1730	90	201	59	32	120	183	17	127	22	75	113	56	8	16	8	4	
	1745	87	202	54	26	120	169	13	110	24	93	130	69	13	14	10	7	
<b>SATURDAY</b>	1200	79	81	26	29	54	92	19	102	41	94	85	75	1	7	3	2	
	1215	78	94	40	14	68	93	12	115	29	68	89	78	0	5	0	0	
	1230	86	103	35	24	60	77	13	91	28	79	121	82	6	9	4	3	
	1245	93	102	45	25	48	84	18	92	34	80	109	64	2	12	3	0	
	1300	88	87	23	22	53	92	16	106	27	88	112	77	3	8	7	2	
	1315	90	96	35	23	64	96	16	106	40	92	109	61	4	12	4	3	
	1330	70	76	28	25	63	104	20	92	36	78	93	83	4	12	6	5	
1345	79	69	37	26	61	82	11	81	31	88	116	87	5	7	9	3		
	<b>TOTALS</b>																	
	AM	387	1,076	140	110	392	519	115	852	240	906	452	271	43	74	41	38	
	PM	748	1,544	419	195	939	1,297	148	1,002	184	621	868	480	64	90	49	35	
	SAT	663	708	269	188	471	720	125	785	266	667	834	607	25	72	36	18	

North-South Road: Liverpool Road

East-West Road: Bayly Street

Survey Date: Thu Jun 1, Sat Jun 3, 2017

Weather: WKDY-Sunny, SAT - Sunny

MUNICIPALITY: Pickering, Ontario

TIG TCS v1.17

TRAF8 GROUP

<b>MEDIUM</b>														<b>BICYCLES</b>				
TIME BEGINNING	Bayly Street			Bayly Street			Liverpool Road			Liverpool Road			West Side	East Side	South Side	North Side		
	Eastbound			Westbound			Northbound			Southbound								
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right						
<b>WEEKDAY</b>	700	0	3	0	1	5	0	0	1	0	1	1	1	0	0	0	0	
	715	1	1	0	0	4	2	0	1	1	0	1	0	0	2	0	1	
	730	1	0	1	1	6	2	1	2	0	1	2	0	0	0	0	0	
	745	0	2	1	1	4	3	0	5	0	1	1	0	0	1	0	0	
	800	0	3	0	0	6	7	0	1	3	1	2	3	0	2	0	0	
	815	0	1	0	0	2	2	0	2	0	2	4	0	0	0	0	0	
	830	2	5	2	1	3	3	0	2	1	2	3	1	2	0	0	0	
	845	3	6	0	0	2	9	2	2	0	1	1	0	1	1	0	0	
	1600	0	5	0	0	1	3	0	0	0	0	2	1	1	2	0	0	
	1615	2	6	0	0	3	6	0	1	1	2	0	0	0	0	0	0	
	1630	1	6	0	0	3	0	0	1	1	1	0	2	0	2	0	0	
	1645	0	3	1	0	3	0	0	0	0	2	0	0	2	0	1	0	
	1700	0	6	3	1	0	4	0	0	0	2	3	2	1	0	0	0	
1715	0	6	2	2	6	2	0	2	1	0	1	0	3	1	0	1		
1730	0	2	1	0	0	1	0	0	0	1	2	0	2	1	2	3		
1745	0	3	0	1	0	0	0	1	0	2	0	1	0	1	4	0		
<b>SATURDAY</b>	1200	0	1	0	0	0	2	0	0	3	0	0	0	1	0	0	0	
	1215	0	0	0	2	0	1	0	0	0	0	0	0	0	7	5	0	
	1230	0	1	2	1	0	0	0	2	2	2	1	0	4	0	0	0	
	1245	0	1	0	0	1	0	0	2	0	0	0	2	4	0	1	1	
	1300	0	0	0	1	0	0	0	2	0	1	1	1	0	1	0	0	
	1315	0	0	0	0	1	1	0	1	0	0	2	0	0	1	3	0	
	1330	0	2	1	1	1	0	0	1	0	1	0	3	0	1	2	1	
1345	0	0	0	1	0	2	0	1	0	3	0	0	2	0	1	2		
<b>TOTALS</b>																		
AM	7	21	4	4	32	28	3	16	5	9	15	5	3	6	0	1		
PM	3	37	7	4	16	16	0	5	3	10	8	6	9	7	7	4		
SAT	0	5	3	6	3	6	0	9	5	7	4	6	11	10	12	4		

North-South Road: Liverpool Road

East-West Road: Bayly Street

Survey Date: Thu Jun 1, Sat Jun 3, 2017

Weather: WKDY-Sunny, SAT - Sunny

MUNICIPALITY: Pickering, Ontario

TIG TCS v1.17

TRAF8 GROUP

		<b>HEAVY</b>												<b>U-TURNS</b>				
	TIME BEGINNING	Bayly Street			Bayly Street			Liverpool Road			Liverpool Road			EB to WB	WB to EB	NB to SB	SB to NB	
		Eastbound			Westbound			Northbound			Southbound							
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right					
<b>WEEKDAY</b>	700	0	0	13	0	2	6	0	1	0	0	1	1	0	4	0	1	
	715	0	1	11	0	1	6	0	1	0	0	1	0	0	3	1	0	
	730	0	1	7	0	0	10	0	0	2	0	1	0	0	7	0	0	
	745	0	1	3	0	0	4	0	0	2	0	4	2	1	9	0	1	
	800	0	0	6	0	1	4	0	0	0	0	2	0	0	3	1	0	
	815	0	0	4	0	0	4	0	1	0	0	2	0	0	4	0	0	
	830	0	0	6	0	0	4	0	1	2	0	3	0	0	2	0	2	
	845	0	0	8	0	0	4	0	0	0	0	12	0	0	4	0	0	
		1600	0	0	2	0	0	0	0	0	0	0	0	0	0	2	0	0
		1615	0	1	7	0	0	1	0	0	0	0	2	1	0	1	0	0
		1630	0	0	8	0	0	5	0	0	0	2	0	0	1	1	0	0
		1645	0	0	3	0	0	2	0	0	0	1	0	0	3	0	0	0
		1700	0	0	6	0	0	4	0	0	0	2	0	0	2	0	0	0
	1715	0	0	7	0	0	1	0	0	0	2	0	0	5	0	0	0	
	1730	0	0	9	0	0	4	0	0	1	0	0	1	3	0	0	0	
	1745	0	0	3	0	0	2	0	0	0	2	0	0	4	0	0	0	
<b>SATURDAY</b>	1200	0	0	3	0	0	0	0	0	0	0	0	2	0	2	0	0	
	1215	0	0	1	0	0	3	1	0	1	0	2	0	0	2	1	0	
	1230	0	0	1	0	0	1	0	0	0	0	0	0	0	2	0	0	
	1245	0	0	3	0	0	1	0	0	0	0	1	0	0	3	0	0	
	1300	0	0	2	0	0	3	0	0	0	0	0	1	0	3	0	0	
	1315	0	0	1	0	0	2	0	0	1	0	2	0	0	0	0	0	
	1330	0	0	2	1	0	2	0	0	0	0	0	0	0	3	0	0	
1345	0	0	1	0	0	0	1	0	0	0	1	1	0	2	0	0		
	<b>TOTALS</b>																	
	AM	0	3	58	0	4	42	0	4	6	0	26	3	1	36	2	4	
	PM	0	1	45	0	0	19	0	0	1	0	11	2	0	21	1	0	
	SAT	0	0	14	1	0	12	2	0	2	0	6	4	0	17	1	0	

**North-South Road:** Liverpool Road

**East-West Road:** Bayly Street

**Survey Date:** Thu Jun 1, Sat Jun 3, 2017

**Weather:** WKDY-Sunny, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

<b>TOTAL VEHICLES</b>															
TIME BEGINNING	Bayly Street			Bayly Street			Liverpool Road			Liverpool Road			TOTAL VEHICLES		
	Eastbound			Westbound			Northbound			Southbound					
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right			
<b>WEEKDAY</b>	700	22	129	20	9	51	58	9	108	27	113	33	14	593	
	715	33	194	29	19	55	79	9	87	47	95	38	17	702	
	730	51	161	28	21	65	75	21	112	28	131	40	40	773	
	745	37	143	27	14	51	70	19	142	27	125	63	36	754	
	800	48	143	22	12	50	80	7	113	39	128	75	35	752	
	815	63	106	21	9	61	79	13	107	26	112	86	56	739	
	830	57	119	29	17	49	71	15	108	40	114	65	42	726	
	845	83	105	26	13	46	77	25	95	17	97	93	39	716	
	1600	89	178	45	22	84	148	19	131	26	69	92	60	963	
	1615	104	196	62	23	77	149	14	112	24	82	112	61	1,016	
	1630	91	172	50	31	146	191	22	120	25	66	84	63	1,061	
	1645	101	231	55	25	104	155	17	153	21	79	110	59	1,110	
	1700	87	194	71	8	175	177	24	128	16	87	124	62	1,153	
1715	102	203	62	31	129	153	22	125	29	77	118	56	1,107		
1730	90	203	69	32	120	188	17	127	23	76	115	57	1,117		
1745	87	205	57	27	120	171	13	111	24	95	132	70	1,112		
<b>SATURDAY</b>	1200	79	82	29	29	54	94	19	102	44	94	85	77	788	
	1215	78	94	41	16	68	97	13	115	30	68	91	78	789	
	1230	86	104	38	25	60	78	13	93	30	81	122	82	812	
	1245	93	103	48	25	49	85	18	94	34	80	110	66	805	
	1300	88	87	25	23	53	95	16	108	27	89	113	79	803	
	1315	90	96	36	23	65	99	16	107	41	92	113	61	839	
	1330	70	78	31	27	64	106	20	93	36	79	93	86	783	
	1345	79	69	38	27	61	84	12	82	31	91	117	88	779	
<b>TOTALS</b>															
AM	394	1,100	202	114	428	589	118	872	251	915	493	279	<b>5,755</b>		
PM	751	1,582	471	199	955	1,332	148	1,007	188	631	887	488	<b>8,639</b>		
SAT	663	713	286	195	474	738	127	794	273	674	844	617	<b>6,398</b>		

**North-South Road:** Liverpool Road

**East-West Road:** Bayly Street

**Survey Date:** Thu Jun 1, Sat Jun 3, 2017

**Weather:** WKDY-Sunny, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

**HOURLY SUMMARY - ALL VEHICLES**

	TIME BEGINNING	Bayly Street			Bayly Street			Liverpool Road			Liverpool Road			TOTAL VEHICLES
		Eastbound			Westbound			Northbound			Southbound			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
<b>WEEKDAY</b>	700	143	627	104	63	222	282	58	449	129	464	174	107	2,822
	715	169	641	106	66	221	304	56	454	141	479	216	128	2,981
	730	199	553	98	56	227	304	60	474	120	496	264	167	3,018
	745	205	511	99	52	211	300	54	470	132	479	289	169	2,971
	800	251	473	98	51	206	307	60	423	122	451	319	172	2,933
	1600	385	777	212	101	411	643	72	516	96	296	398	243	4,150
	1615	383	793	238	87	502	672	77	513	86	314	430	245	4,340
	1630	381	800	238	95	554	676	85	526	91	309	436	240	4,431
	1645	380	831	257	96	528	673	80	533	89	319	467	234	4,487
	1700	366	805	259	98	544	689	76	491	92	335	489	245	4,489
<b>SATURDAY</b>	1200	336	383	156	95	231	354	63	404	138	323	408	303	3,194
	1215	345	388	152	89	230	355	60	410	121	318	436	305	3,209
	1230	357	390	147	96	227	357	63	402	132	342	458	288	3,259
	1245	341	364	140	98	231	385	70	402	138	340	429	292	3,230
	1300	327	330	130	100	243	384	64	390	135	351	436	314	3,204

**North-South Road:** Liverpool Road

**East-West Road:** Bayly Street

**Survey Date:** Thu Jun 1, Sat Jun 3, 2017

**Weather:** WKDY-Sunny, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

**HOURLY SUMMARY**

	TIME BEGINNING	PEDESTRIANS					BICYCLES					U-TURN				
		West Side	East Side	South Side	North Side	Total	West Side	East Side	South Side	North Side	Total	EB to WB	WB to EB	NB to SB	SB to NB	Total
<b>WEEKDAY</b>	700	16	46	24	21	107	0	3	0	1	4	1	23	1	2	27
	715	16	42	21	18	97	0	5	0	1	6	1	22	2	1	26
	730	18	35	21	18	92	0	3	0	0	3	1	23	1	1	26
	745	26	35	23	25	109	2	3	0	0	5	1	18	1	3	23
	800	27	28	17	17	89	3	3	0	0	6	0	13	1	2	16
	1600	30	36	20	11	97	3	4	1	0	8	0	7	1	0	8
	1615	33	34	20	14	101	3	2	1	0	6	0	7	1	0	8
	1630	37	36	19	18	110	6	3	1	1	11	0	11	1	0	12
	1645	33	44	21	20	118	8	2	3	4	17	0	13	0	0	13
1700	34	54	29	24	141	6	3	6	4	19	0	14	0	0	14	
<b>SATURDAY</b>	1200	9	33	10	5	57	9	7	6	1	23	0	9	1	0	10
	1215	11	34	14	5	64	8	8	6	1	23	0	10	1	0	11
	1230	15	41	18	8	82	8	2	4	1	15	0	8	0	0	8
	1245	13	44	20	10	87	4	3	6	2	15	0	9	0	0	9
	1300	16	39	26	13	94	2	3	6	3	14	0	8	0	0	8

North-South Road: Liverpool Road

East-West Road: Bayly Street

Survey Date: Thu Jun 1, Sat Jun 3, 2017

Weather: WKDY-Sunny, SAT - Sunny

MUNICIPALITY: Pickering, Ontario

TIG TCS v1.17

TRAF8 GROUP

**PEAK HOUR VOLUMES - ALL VEHICLES**

PEAK HOUR		Bayly Street			Bayly Street			Liverpool Road			Liverpool Road			TOTAL VEHICLES
		Eastbound			Westbound			Northbound			Southbound			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
<b>AM 730 - 830</b>	Autos	198	545	76	54	208	268	59	463	113	491	246	162	2,883
	Medium	1	6	2	2	18	14	1	10	3	5	9	3	74
	Heavy	0	2	20	0	1	22	0	1	4	0	9	2	61
	<b>Total</b>	<b>199</b>	<b>553</b>	<b>98</b>	<b>56</b>	<b>227</b>	<b>304</b>	<b>60</b>	<b>474</b>	<b>120</b>	<b>496</b>	<b>264</b>	<b>167</b>	<b>3,018</b>
	% Hv	0.5%	1.4%	22.4%	3.6%	8.4%	11.8%	1.7%	2.3%	5.8%	1.0%	6.8%	3.0%	4.5%
PHF	0.790	0.859	0.875	0.667	0.873	0.950	0.714	0.835	0.769	0.947	0.767	0.746	0.976	
<b>PM 1700 - 1800</b>	Autos	366	788	228	94	538	671	76	488	90	330	477	241	4,387
	Medium	0	17	6	4	6	7	0	3	1	5	6	3	58
	Heavy	0	0	25	0	0	11	0	0	1	0	6	1	44
	<b>Total</b>	<b>366</b>	<b>805</b>	<b>259</b>	<b>98</b>	<b>544</b>	<b>689</b>	<b>76</b>	<b>491</b>	<b>92</b>	<b>335</b>	<b>489</b>	<b>245</b>	<b>4,489</b>
	% Hv	0.0%	2.1%	12.0%	4.1%	1.1%	2.6%	0.0%	0.6%	2.2%	1.5%	2.5%	1.6%	2.3%
PHF	0.897	0.982	0.912	0.766	0.777	0.916	0.792	0.959	0.793	0.882	0.926	0.875	0.973	
<b>SAT 1230 - 1330</b>	Autos	357	388	138	94	225	349	63	395	129	339	451	284	3,212
	Medium	0	2	2	2	2	1	0	7	2	3	4	3	28
	Heavy	0	0	7	0	0	7	0	0	1	0	3	1	19
	<b>Total</b>	<b>357</b>	<b>390</b>	<b>147</b>	<b>96</b>	<b>227</b>	<b>357</b>	<b>63</b>	<b>402</b>	<b>132</b>	<b>342</b>	<b>458</b>	<b>288</b>	<b>3,259</b>
	% Hv	0.0%	0.5%	6.1%	2.1%	0.9%	2.2%	0.0%	1.7%	2.3%	0.9%	1.5%	1.4%	1.4%
PHF	0.960	0.938	0.766	0.960	0.873	0.902	0.875	0.931	0.805	0.929	0.939	0.878	0.971	

PEAK HOUR	PEDESTRIANS					BICYCLES					U-TURN				
	West Side	East Side	South Side	North Side	Total	West Side	East Side	South Side	North Side	Total	EB to WB	WB to EB	NB to SB	SB to NB	Total
<b>AM</b>	18	35	21	18	92	0	3	0	0	3	1	23	1	1	26
<b>PM</b>	34	54	29	24	141	6	3	6	4	19	0	14	0	0	14
<b>SAT</b>	15	41	18	8	82	8	2	4	1	15	0	8	0	0	8

**North-South Road:** Liverpool Road

**East-West Road:** Bayly Street

**Survey Date:** Thu Jun 1, Sat Jun 3, 2017

**Weather:** WKDY-Sunny, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

**HOURLY SUMMARY - AUTOS**

	TIME BEGINNING	Bayly Street Eastbound			Bayly Street Westbound			Liverpool Road Northbound			Liverpool Road Southbound			TOTAL VEHICLES
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
		<b>WEEKDAY</b>												
	700	141	618	68	60	200	249	57	438	124	461	162	103	2,681
	715	167	632	77	64	199	266	55	444	133	476	202	123	2,838
	730	198	545	76	54	208	268	59	463	113	491	246	162	2,883
	745	203	499	77	50	195	269	54	458	124	473	268	163	2,833
	800	246	458	72	50	192	270	58	414	116	445	290	168	2,779
	1600	382	756	191	101	401	626	72	514	94	291	391	239	4,058
	1615	380	771	210	86	493	650	77	511	84	307	420	240	4,229
	1630	380	779	208	92	542	658	85	523	89	304	425	236	4,321
	1645	380	814	225	93	519	655	80	531	87	314	456	231	4,385
	1700	366	788	228	94	538	671	76	488	90	330	477	241	4,387
<b>SATURDAY</b>														
	1200	336	380	146	92	230	346	62	400	132	321	404	299	3,148
	1215	345	386	143	85	229	346	59	404	118	315	431	301	3,162
	1230	357	388	138	94	225	349	63	395	129	339	451	284	3,212
	1245	341	361	131	95	228	376	70	396	137	338	423	285	3,181
	1300	327	328	123	96	241	374	63	385	134	346	430	308	3,155



**North-South Road:** Liverpool Road

**East-West Road:** Bayly Street

**Survey Date:** Thu Jun 1, Sat Jun 3, 2017

**Weather:** WKDY-Sunny, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

**HOURLY SUMMARY - MEDIUM**

	TIME BEGINNING	Bayly Street			Bayly Street			Liverpool Road			Liverpool Road			TOTAL VEHICLES
		Eastbound			Westbound			Northbound			Southbound			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
<b>WEEKDAY</b>	700	2	6	2	3	19	7	1	9	1	3	5	1	59
	715	2	6	2	2	20	14	1	9	4	3	6	3	72
	730	1	6	2	2	18	14	1	10	3	5	9	3	74
	745	2	11	3	2	15	15	0	10	4	6	10	4	82
	800	5	15	2	1	13	21	2	7	4	6	10	4	90
	1600	3	20	1	0	10	9	0	2	2	5	2	3	57
	1615	3	21	4	1	9	10	0	2	2	7	3	4	66
	1630	1	21	6	3	12	6	0	3	2	5	4	4	67
	1645	0	17	7	3	9	7	0	2	1	5	6	2	59
	1700	0	17	6	4	6	7	0	3	1	5	6	3	58
<b>SATURDAY</b>	1200	0	3	2	3	1	3	0	4	5	2	1	2	26
	1215	0	2	2	4	1	1	0	6	2	3	2	3	26
	1230	0	2	2	2	2	1	0	7	2	3	4	3	28
	1245	0	3	1	2	3	1	0	6	0	2	3	6	27
	1300	0	2	1	3	2	3	0	5	0	5	3	4	28

**North-South Road:** Liverpool Road

**East-West Road:** Bayly Street

**Survey Date:** Thu Jun 1, Sat Jun 3, 2017

**Weather:** WKDY-Sunny, SAT - Sunny

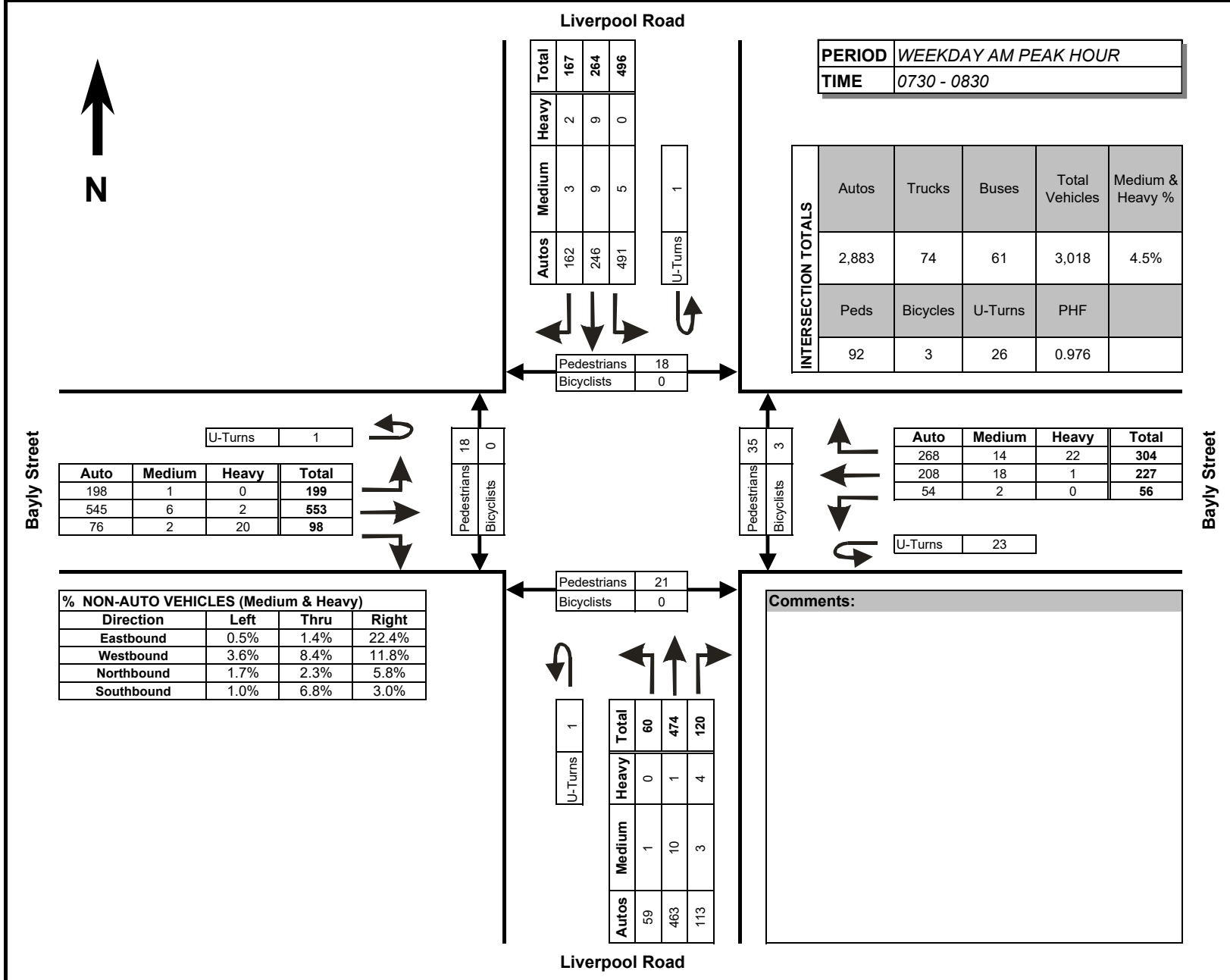
**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

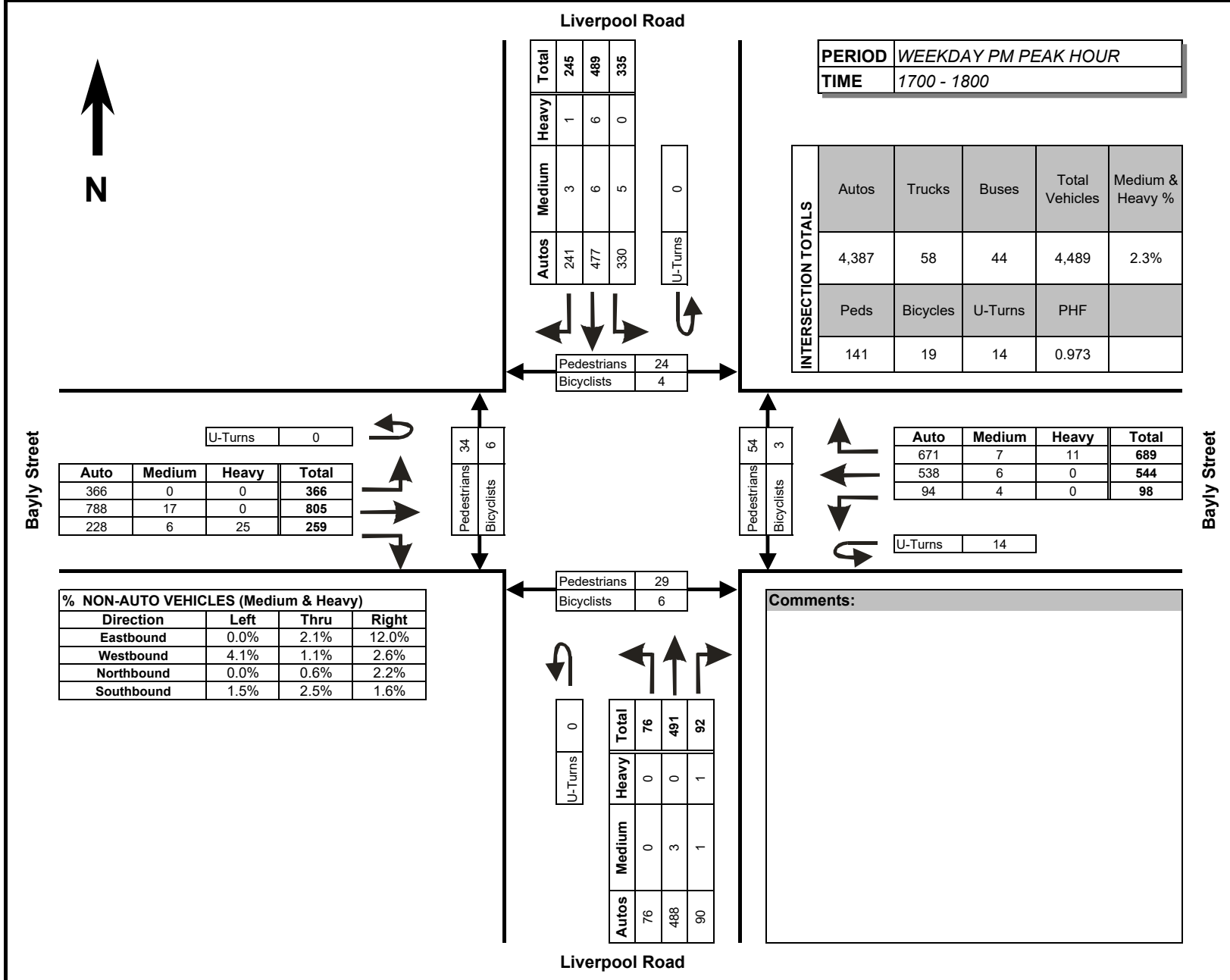
**HOURLY SUMMARY - HEAVY**

	TIME BEGINNING	Bayly Street			Bayly Street			Liverpool Road			Liverpool Road			TOTAL VEHICLES
		Eastbound			Westbound			Northbound			Southbound			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
<b>WEEKDAY</b>	700	0	3	34	0	3	26	0	2	4	0	7	3	82
	715	0	3	27	0	2	24	0	1	4	0	8	2	71
	730	0	2	20	0	1	22	0	1	4	0	9	2	61
	745	0	1	19	0	1	16	0	2	4	0	11	2	56
	800	0	0	24	0	1	16	0	2	2	0	19	0	64
	1600	0	1	20	0	0	8	0	0	0	0	5	1	35
	1615	0	1	24	0	0	12	0	0	0	0	7	1	45
	1630	0	0	24	0	0	12	0	0	0	0	7	0	43
	1645	0	0	25	0	0	11	0	0	1	0	5	1	43
	1700	0	0	25	0	0	11	0	0	1	0	6	1	44
<b>SATURDAY</b>	1200	0	0	8	0	0	5	1	0	1	0	3	2	20
	1215	0	0	7	0	0	8	1	0	1	0	3	1	21
	1230	0	0	7	0	0	7	0	0	1	0	3	1	19
	1245	0	0	8	1	0	8	0	0	1	0	3	1	22
	1300	0	0	6	1	0	7	1	0	1	0	3	2	21



**NORTH-SOUTH ROAD:** Liverpool Road  
**EAST-WEST ROAD:** Bayly Street  
**SURVEY DATE:** Thu Jun 1, Sat Jun 3, 2017  
**MUNICIPALITY:** Pickering, Ontario  
**WEATHER:** WKDY-Sunny, SAT - Sunny

**TURNING  
MOVEMENT  
DIAGRAM**



**NORTH-SOUTH ROAD:** Liverpool Road  
**EAST-WEST ROAD:** Bayly Street  
**SURVEY DATE:** Thu Jun 1, Sat Jun 3, 2017  
**MUNICIPALITY:** Pickering, Ontario  
**WEATHER:** WKDY-Sunny, SAT - Sunny

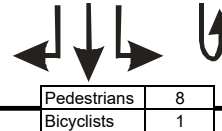
**TURNING  
MOVEMENT  
DIAGRAM**



**Liverpool Road**

	<b>Total</b>	288	458	342
	<b>Heavy</b>	1	3	0
	<b>Medium</b>	3	4	3
	<b>Autos</b>	284	451	339

<b>U-Turns</b>	0
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<b>Pedestrians</b>	8
<b>Bicyclists</b>	1

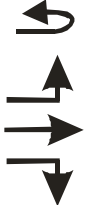
<b>PERIOD</b>	SAT PEAK HOUR
<b>TIME</b>	1230 - 1330

<b>INTERSECTION TOTALS</b>	<b>Autos</b>	<b>Trucks</b>	<b>Buses</b>	<b>Total Vehicles</b>	<b>Medium &amp; Heavy %</b>
	3,212	28	19	3,259	1.4%
	<b>Peds</b>	<b>Bicycles</b>	<b>U-Turns</b>	<b>PHF</b>	
	82	15	8	0.971	

**Bayly Street**

<b>U-Turns</b>	0
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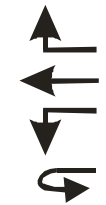
<b>Auto</b>	<b>Medium</b>	<b>Heavy</b>	<b>Total</b>
357	0	0	357
388	2	0	390
138	2	7	147



<b>Pedestrians</b>	15
<b>Bicyclists</b>	8

<b>Pedestrians</b>	41
<b>Bicyclists</b>	2

<b>Auto</b>	<b>Medium</b>	<b>Heavy</b>	<b>Total</b>
349	1	7	357
225	2	0	227
94	2	0	96

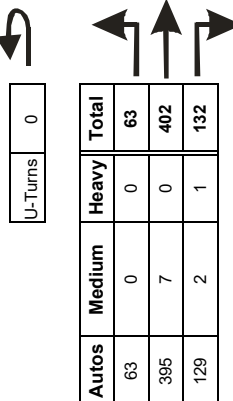


<b>U-Turns</b>	8
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**Bayly Street**

% NON-AUTO VEHICLES (Medium & Heavy)			
<b>Direction</b>	<b>Left</b>	<b>Thru</b>	<b>Right</b>
<b>Eastbound</b>	0.0%	0.5%	6.1%
<b>Westbound</b>	2.1%	0.9%	2.2%
<b>Northbound</b>	0.0%	1.7%	2.3%
<b>Southbound</b>	0.9%	1.5%	1.4%

<b>Pedestrians</b>	18
<b>Bicyclists</b>	4



<b>U-Turns</b>	0		
<b>Autos</b>	<b>Medium</b>	<b>Heavy</b>	<b>Total</b>
63	0	0	63
395	7	0	402
129	2	1	132

**Comments:**

**Liverpool Road**

# TMC Tabular Report

**BAYLY ST (R.R.22) @ LIVERPOOL RD (R.R.29)**

TMC No. : 0220300000

Intersection ID : 10497

Count ID: 26002014134

Count Date: 5/14/2014

<b>AM Peak:</b> 7:45 am  ↑↓ <b>Ped.</b> 25	↑ 0.75 1% 0.84 1% 0.85 2% 36 1023 11 470 3 198 1 155	<b>Ped.</b> 22 ↕ <b>Trucks %</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>Cars</th> <th>Trucks</th> <th>PHF</th> </tr> <tr> <td>348</td> <td>28</td> <td>7%</td> </tr> <tr> <td>190</td> <td>20</td> <td>10%</td> </tr> <tr> <td>62</td> <td>2</td> <td>3%</td> </tr> <tr> <td>1142</td> <td>32</td> <td></td> </tr> </table>	Cars	Trucks	PHF	348	28	7%	190	20	10%	62	2	3%	1142	32																
Cars	Trucks	PHF																															
348	28	7%																															
190	20	10%																															
62	2	3%																															
1142	32																																
← 27 401 0.79 1% 2 235 0.85 2% 14 549 0.72 2% 2 87	↖ ↗ ↘ ↙ ↕	↕ 38 <b>Ped.</b> ↑↓	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>PHF</th> <th>Trucks</th> <th>Cars</th> </tr> <tr> <td></td> <td>56</td> <td>6</td> </tr> <tr> <td></td> <td>6</td> <td>10%</td> </tr> <tr> <td></td> <td>347</td> <td>7</td> </tr> <tr> <td></td> <td>7</td> <td>5%</td> </tr> <tr> <td></td> <td>7</td> <td>0.76</td> </tr> <tr> <td></td> <td>123</td> <td>7</td> </tr> <tr> <td></td> <td>440</td> <td>6</td> </tr> <tr> <td></td> <td>6</td> <td>1%</td> </tr> <tr> <td></td> <td>6</td> <td>0.82</td> </tr> </table>	PHF	Trucks	Cars		56	6		6	10%		347	7		7	5%		7	0.76		123	7		440	6		6	1%		6	0.82
PHF	Trucks	Cars																															
	56	6																															
	6	10%																															
	347	7																															
	7	5%																															
	7	0.76																															
	123	7																															
	440	6																															
	6	1%																															
	6	0.82																															

<b>MD Peak:</b> 12:15 pm  ↑↓ <b>Ped.</b> 9	↑ 0.94 2% 0.94 3% 0.95 4% 30 924 12 293 10 310 4 195	<b>Ped.</b> 8 ↕ <b>Trucks %</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>Cars</th> <th>Trucks</th> <th>PHF</th> </tr> <tr> <td>373</td> <td>21</td> <td>5%</td> </tr> <tr> <td>156</td> <td>18</td> <td>10%</td> </tr> <tr> <td>79</td> <td>2</td> <td>2%</td> </tr> <tr> <td>696</td> <td>40</td> <td></td> </tr> </table>	Cars	Trucks	PHF	373	21	5%	156	18	10%	79	2	2%	696	40																
Cars	Trucks	PHF																															
373	21	5%																															
156	18	10%																															
79	2	2%																															
696	40																																
← 23 413 0.93 1% 2 228 0.96 6% 20 290 0.82 2% 3 131	↖ ↗ ↘ ↙ ↕	↕ 25 <b>Ped.</b> ↑↓	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>PHF</th> <th>Trucks</th> <th>Cars</th> </tr> <tr> <td></td> <td>62</td> <td>1</td> </tr> <tr> <td></td> <td>1</td> <td>2%</td> </tr> <tr> <td></td> <td>520</td> <td>15</td> </tr> <tr> <td></td> <td>7</td> <td>2%</td> </tr> <tr> <td></td> <td>7</td> <td>0.88</td> </tr> <tr> <td></td> <td>113</td> <td>8</td> </tr> <tr> <td></td> <td>323</td> <td>7</td> </tr> <tr> <td></td> <td>62</td> <td>1</td> </tr> <tr> <td></td> <td>1</td> <td>2%</td> </tr> </table>	PHF	Trucks	Cars		62	1		1	2%		520	15		7	2%		7	0.88		113	8		323	7		62	1		1	2%
PHF	Trucks	Cars																															
	62	1																															
	1	2%																															
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	7	2%																															
	7	0.88																															
	113	8																															
	323	7																															
	62	1																															
	1	2%																															

<b>PM Peak:</b> 4:45 pm  ↑↓ <b>Ped.</b> 22	↑ 0.87 0% 0.89 0% 0.91 5% 17 1544 15 312 2 417 1 304	<b>Ped.</b> 13 ↕ <b>Trucks %</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>Cars</th> <th>Trucks</th> <th>PHF</th> </tr> <tr> <td>729</td> <td>13</td> <td>2%</td> </tr> <tr> <td>368</td> <td>15</td> <td>4%</td> </tr> <tr> <td>107</td> <td>0</td> <td>0%</td> </tr> <tr> <td>1291</td> <td>45</td> <td></td> </tr> </table>	Cars	Trucks	PHF	729	13	2%	368	15	4%	107	0	0%	1291	45																
Cars	Trucks	PHF																															
729	13	2%																															
368	15	4%																															
107	0	0%																															
1291	45																																
← 17 745 0.91 0% 0 370 0.91 3% 28 876 0.84 1% 2 192	↖ ↗ ↘ ↙ ↕	↕ 30 <b>Ped.</b> ↑↓	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>PHF</th> <th>Trucks</th> <th>Cars</th> </tr> <tr> <td></td> <td>73</td> <td>1</td> </tr> <tr> <td></td> <td>4</td> <td>1%</td> </tr> <tr> <td></td> <td>716</td> <td>4</td> </tr> <tr> <td></td> <td>2</td> <td>2%</td> </tr> <tr> <td></td> <td>2</td> <td>0.77</td> </tr> <tr> <td></td> <td>103</td> <td>2</td> </tr> <tr> <td></td> <td>445</td> <td>4</td> </tr> <tr> <td></td> <td>4</td> <td>1%</td> </tr> <tr> <td></td> <td>4</td> <td>0.92</td> </tr> </table>	PHF	Trucks	Cars		73	1		4	1%		716	4		2	2%		2	0.77		103	2		445	4		4	1%		4	0.92
PHF	Trucks	Cars																															
	73	1																															
	4	1%																															
	716	4																															
	2	2%																															
	2	0.77																															
	103	2																															
	445	4																															
	4	1%																															
	4	0.92																															

<b>Total Count</b> 8 hours  ↑↓ <b>Ped.</b> 138	↑ 1% 2% 3% 226 8542 91 2525 44 2200 18 1515	<b>Ped.</b> 94 ↕ <b>Trucks %</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>Cars</th> <th>Trucks</th> <th>PHF</th> </tr> <tr> <td>3489</td> <td>166</td> <td>5%</td> </tr> <tr> <td>1584</td> <td>148</td> <td>9%</td> </tr> <tr> <td>604</td> <td>22</td> <td>4%</td> </tr> <tr> <td>7307</td> <td>313</td> <td></td> </tr> </table>	Cars	Trucks	PHF	3489	166	5%	1584	148	9%	604	22	4%	7307	313																
Cars	Trucks	PHF																															
3489	166	5%																															
1584	148	9%																															
604	22	4%																															
7307	313																																
← 185 3560 1% 11 2022 4% 174 3919 2% 18 1086	↖ ↗ ↘ ↙ ↕	↕ 230 <b>Ped.</b> ↑↓	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>PHF</th> <th>Trucks</th> <th>Cars</th> </tr> <tr> <td></td> <td>461</td> <td>19</td> </tr> <tr> <td></td> <td>19</td> <td>4%</td> </tr> <tr> <td></td> <td>3890</td> <td>84</td> </tr> <tr> <td></td> <td>48</td> <td>5%</td> </tr> <tr> <td></td> <td>48</td> <td>2%</td> </tr> <tr> <td></td> <td>863</td> <td>48</td> </tr> <tr> <td></td> <td>3031</td> <td>49</td> </tr> <tr> <td></td> <td>461</td> <td>19</td> </tr> <tr> <td></td> <td>19</td> <td>4%</td> </tr> </table>	PHF	Trucks	Cars		461	19		19	4%		3890	84		48	5%		48	2%		863	48		3031	49		461	19		19	4%
PHF	Trucks	Cars																															
	461	19																															
	19	4%																															
	3890	84																															
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	863	48																															
	3031	49																															
	461	19																															
	19	4%																															

# TMC 15 Min Report

## BAYLY ST (R.R.22) @ LIVERPOOL RD (R.R.29)

Time	NORTH APPROACH									EAST APPROACH									SOUTH APPROACH									WEST APPROACH									Total			
	Cars			Trucks			Heavies			Ped	Cars			Trucks			Heavies			Ped	Cars			Trucks			Heavies			Ped										
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		Left	Thru	Right							
Period 1																																								
6:15	28	11	5	2	0	0	0	0	0	0	6	16	32	0	3	5	0	0	0	5	0	55	10	0	0	0	0	0	0	0	30	48	5	0	3	0	0	0	0	0
6:30	52	14	4	1	0	0	0	0	0	1	10	12	30	1	3	5	0	0	0	2	8	80	20	0	0	1	0	0	0	0	23	81	12	0	4	0	0	0	0	0
6:45	74	21	19	2	0	0	0	0	0	2	6	21	52	1	6	7	0	0	0	2	7	74	21	0	1	1	0	0	0	1	24	110	10	0	3	0	0	0	0	2
7:00	86	15	11	1	0	0	0	0	0	2	4	29	40	2	4	6	0	0	0	2	7	86	29	0	1	1	0	0	0	2	23	124	6	0	10	0	0	0	0	2
7:15	112	23	12	0	0	0	0	0	0	7	8	38	55	0	8	8	0	0	0	5	10	89	19	1	1	1	0	0	0	1	26	122	16	0	2	2	0	0	0	9
7:30	109	26	28	2	0	1	0	0	0	2	8	49	84	4	9	7	0	0	0	11	10	98	36	0	1	1	0	0	0	1	46	116	9	0	4	0	0	0	0	3
7:45	111	42	39	3	1	1	0	0	0	3	12	51	102	1	5	8	0	0	0	10	11	90	23	1	0	1	0	0	0	7	58	136	16	0	4	0	0	0	0	7
8:00	136	46	52	6	1	0	0	0	0	7	16	44	76	0	6	6	0	0	0	15	17	110	28	2	2	3	0	0	0	6	55	160	24	0	6	0	0	0	0	5
8:15	114	60	33	0	0	0	0	0	0	9	15	46	103	0	4	7	0	0	0	8	14	134	42	2	2	1	0	0	0	4	75	156	31	0	4	0	0	0	0	9
8:30	109	50	31	2	1	0	0	0	0	3	19	49	67	1	5	7	0	0	0	5	14	106	30	1	2	2	0	0	0	3	47	97	16	2	0	2	0	0	0	4
8:45	89	77	38	2	5	2	0	0	0	2	12	31	52	0	9	3	0	0	0	3	19	102	20	0	2	3	0	0	0	1	69	116	34	1	6	3	0	0	0	2
9:00	97	72	32	8	3	2	0	0	0	2	19	34	62	1	3	4	0	0	0	7	23	109	31	0	2	5	0	0	0	4	68	92	41	1	7	0	0	0	0	0
Period 2																																								
11:45	56	65	43	2	0	1	0	0	0	1	19	33	96	2	4	6	0	0	0	2	14	77	26	1	0	1	0	0	0	2	56	57	24	0	3	1	0	0	0	5
12:00	71	78	50	3	2	0	0	0	0	2	33	33	106	1	3	6	0	0	0	9	9	66	23	0	4	5	0	0	0	1	47	60	36	0	7	2	0	0	0	8
12:15	75	81	47	1	4	0	0	0	0	1	21	47	102	0	6	6	0	0	0	6	19	93	28	1	1	4	0	0	0	5	57	71	25	1	3	2	0	0	0	3
12:30	71	80	45	6	1	2	0	0	0	2	17	41	93	1	5	7	0	0	0	6	14	83	25	0	3	2	0	0	0	5	60	74	31	0	7	0	0	0	0	2
12:45	71	77	52	1	2	1	0	0	0	2	15	32	88	0	5	5	0	0	0	8	14	63	24	0	2	1	0	0	0	3	61	73	40	1	3	1	0	0	0	2
13:00	76	72	51	4	3	1	0	0	0	3	26	36	90	1	2	3	0	0	0	5	15	84	36	0	1	1	0	0	0	3	50	72	35	0	7	0	0	0	0	2
13:15	73	65	58	3	1	0	0	0	0	2	24	34	87	0	5	6	0	0	0	7	11	67	30	0	1	0	0	0	0	5	42	54	31	0	2	0	0	0	0	5
13:30	73	76	58	2	1	1	0	0	0	2	18	36	98	0	3	5	0	0	0	5	13	76	38	0	2	1	0	0	0	1	63	66	36	1	6	1	0	0	0	2
Period 3																																								
15:15	63	86	57	5	3	1	0	0	0	4	17	48	167	2	4	1	0	0	0	12	16	102	31	1	3	2	0	0	0	4	66	91	42	0	3	1	0	0	0	5
15:30	68	101	54	2	6	0	0	0	0	1	28	63	165	0	4	6	0	0	0	11	19	118	32	1	4	2	0	0	0	7	85	80	38	2	5	0	0	0	0	3
15:45	66	92	67	1	3	2	0	0	0	2	19	59	155	0	8	4	0	0	0	12	29	130	31	7	4	1	0	0	0	6	61	118	41	0	4	0	0	0	0	5
16:00	54	82	77	7	0	0	0	0	0	0	25	62	143	0	4	10	0	0	0	7	18	84	27	0	1	2	0	0	0	3	62	115	60	1	13	1	0	0	0	3
16:15	55	84	72	1	2	0	0	0	0	0	13	58	172	2	7	4	0	0	0	10	14	102	29	0	4	0	0	0	0	2	95	156	42	1	10	0	0	0	0	1
16:30	63	79	56	2	2	2	0	0	0	4	13	49	148	1	2	4	0	0	0	2	14	102	24	0	1	1	0	0	0	5	90	195	61	0	8	0	0	0	0	8
16:45	76	97	68	5	1	1	0	0	0	6	23	86	166	0	5	3	0	0	0	6	29	119	25	1	3	0	0	0	0	4	92	201	42	0	6	0	0	0	0	9
17:00	69	100	72	3	0	0	0	0	0	5	22	104	194	0	3	4	0	0	0	6	21	118	20	0	0	1	0	0	0	7	86	210	52	0	11	0	0	0	0	5
17:15	85	103	88	5	0	0	0	0	0	1	28	69	189	0	5	2	0	0	0	6	14	102	25	0	0	0	0	0	0	5	90	222	41	0	5	1	0	0	0	2
17:30	82	117	76	2	1	0	0	0	0	1	34	109	180	0	2	4	0	0	0	12	9	106	33	0	1	1	0	0	0	11	102	243	57	0	6	1	0	0	0	6
17:45	72	105	70	2	1	0	0	0	0	5	27	59	132	1	4	2	0	0	0	8	15	111	24	0	0	1	0	0	0	6	107	218	52	0	7	0	0	0	0	5
18:00	89	103	50	5	0	0	0	0	0	10	47	106	163	0	2	5	0	0	0	15	14	95	23	0	0	2	0	0	0	8	106	185	80	0	5	0	0	0	0	14

**North-South Road:** Liverpool Road

**East-West Road:** Commerce Street

**Survey Date:** Thu Jun 1, Sat Jun 3, 2017

**Weather:** WKDY-Sunny, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

		<b>AUTOS</b>												<b>PEDESTRIANS</b>				
	TIME BEGINNING	Commerce Street			Commerce Street			Liverpool Road			Liverpool Road			West Side	East Side	South Side	North Side	
		Eastbound			Westbound			Northbound			Southbound							
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right					
<b>WEEKDAY</b>	700	1	0	0	1	0	0	0	22	1	0	4	0	0	0	0	0	
	715	1	1	0	0	0	2	0	10	0	1	9	1	2	0	0	0	
	730	1	1	1	0	1	4	0	26	0	3	16	0	0	0	0	0	
	745	3	1	0	0	1	2	1	28	1	2	36	0	1	0	0	0	
	800	5	0	1	1	1	1	0	30	0	7	26	2	0	0	0	0	
	815	4	1	0	0	0	1	1	21	0	0	14	2	0	0	14	0	
	830	3	1	0	0	1	3	1	29	1	3	21	1	1	0	0	0	
	845	5	2	0	0	2	1	0	25	0	1	33	1	1	0	1	0	
		1600	4	1	0	0	1	2	0	24	0	3	36	1	2	4	1	0
		1615	3	0	0	1	0	4	0	23	0	2	37	2	3	1	0	1
		1630	4	0	0	1	2	0	1	31	0	7	28	7	1	1	1	1
		1645	0	0	0	0	0	4	0	28	0	2	45	4	0	4	0	0
		1700	1	0	1	0	1	2	1	29	0	4	55	2	6	5	1	0
	1715	2	0	0	0	0	3	0	21	1	5	38	5	2	2	0	0	
	1730	1	0	0	0	0	3	0	20	1	1	38	4	2	2	1	0	
	1745	0	3	0	0	1	3	0	30	0	1	41	4	3	4	0	0	
<b>SATURDAY</b>																		
		1200	3	0	0	2	2	5	1	40	0	2	42	6	5	5	0	0
		1215	1	0	0	0	1	2	0	52	1	3	59	2	7	4	0	0
		1230	2	2	1	3	0	1	1	35	2	0	62	3	0	7	0	0
		1245	2	1	0	1	1	2	0	32	0	2	49	7	2	5	0	0
		1300	4	1	1	0	1	4	2	52	0	4	58	4	1	4	0	0
		1315	1	1	1	1	1	0	0	41	0	1	51	6	4	8	0	0
		1330	2	1	0	1	3	1	2	34	1	2	65	1	4	2	0	0
	1345	0	0	1	0	0	1	1	38	0	3	72	5	1	2	0	0	
	<b>TOTALS</b>																	
	AM	23	7	2	2	6	14	3	191	3	17	159	7	5	0	15	0	
	PM	15	4	1	2	5	21	2	206	2	25	318	29	19	23	4	2	
	SAT	15	6	4	8	9	16	7	324	4	17	458	34	24	37	0	0	



**North-South Road:** Liverpool Road

**East-West Road:** Commerce Street

**Survey Date:** Thu Jun 1, Sat Jun 3, 2017

**Weather:** WKDY-Sunny, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

		<b>MEDIUM</b>												<b>BICYCLES</b>			
	TIME BEGINNING	Commerce Street			Commerce Street			Liverpool Road			Liverpool Road			West Side	East Side	South Side	North Side
		Eastbound			Westbound			Northbound			Southbound						
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right				
<b>WEEKDAY</b>	700	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	715	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
	730	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
	745	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0
	800	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0
	815	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	830	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0
	845	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
	1600	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0
	1615	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1630	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1645	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	1700	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0
1715	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1730	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1745	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
<b>SATURDAY</b>	1200	1	0	0	0	0	1	0	3	0	0	0	0	8	0	0	0
	1215	0	0	0	0	0	0	0	0	0	0	3	1	4	0	0	0
	1230	1	0	1	0	0	0	0	2	0	0	2	0	3	0	0	0
	1245	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
	1300	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0
	1315	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
	1330	3	0	0	0	0	0	0	0	0	0	2	0	1	0	0	0
1345	0	0	0	0	0	0	0	0	0	0	1	0	2	0	0	0	
	<b>TOTALS</b>																
	AM	0	0	0	0	0	0	0	1	0	0	3	0	3	3	0	0
	PM	4	0	0	1	0	0	0	0	0	0	2	0	2	0	0	1
	SAT	8	0	1	0	0	1	0	6	0	0	10	2	19	0	0	0

**North-South Road:** Liverpool Road

**East-West Road:** Commerce Street

**Survey Date:** Thu Jun 1, Sat Jun 3, 2017

**Weather:** WKDY-Sunny, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

		<b>HEAVY</b>												<b>U-TURNS</b>			
	TIME BEGINNING	Commerce Street			Commerce Street			Liverpool Road			Liverpool Road			EB to WB	WB to EB	NB to SB	SB to NB
		Eastbound			Westbound			Northbound			Southbound						
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right				
<b>WEEKDAY</b>	700	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	715	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
	730	0	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0
	745	0	0	0	0	0	0	0	0	3	0	0	3	0	0	0	0
	800	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
	815	0	1	0	0	0	0	0	0	2	0	0	0	0	0	0	0
	830	0	0	0	0	0	1	0	0	2	0	0	0	0	0	0	0
	845	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1600	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0
	1615	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1630	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
	1645	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1700	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1715	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1730	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	
1745	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<b>SATURDAY</b>	1200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1215	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1245	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1315	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
	1330	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
	1345	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<b>TOTALS</b>																
	AM	0	2	1	0	0	1	0	0	8	0	0	5	0	0	0	0
	PM	0	0	0	0	0	0	0	0	2	0	0	3	0	0	0	0
	SAT	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0

**North-South Road:** Liverpool Road

**East-West Road:** Commerce Street

**Survey Date:** Thu Jun 1, Sat Jun 3, 2017

**Weather:** WKDY-Sunny, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

<b>TOTAL VEHICLES</b>														
TIME BEGINNING	Commerce Street			Commerce Street			Liverpool Road			Liverpool Road			TOTAL VEHICLES	
	Eastbound			Westbound			Northbound			Southbound				
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
<b>WEEKDAY</b>	700	1	0	0	1	0	0	0	22	1	0	4	0	29
	715	1	1	0	0	0	2	0	10	1	1	9	1	26
	730	1	2	2	0	1	4	0	26	0	3	16	1	56
	745	3	1	0	0	1	2	1	29	4	2	36	3	82
	800	5	0	1	1	1	1	0	30	0	7	26	3	75
	815	4	2	0	0	0	1	1	21	2	0	14	2	47
	830	3	1	0	0	1	4	1	29	3	3	24	1	70
	845	5	2	0	0	2	1	0	25	0	1	33	1	70
	1600	4	1	0	0	1	2	0	24	1	3	36	2	74
	1615	4	0	0	1	0	4	0	23	0	2	37	2	73
	1630	5	0	0	1	2	0	1	31	0	7	28	8	83
	1645	1	0	0	0	0	4	0	28	0	2	46	4	85
	1700	1	0	1	1	1	2	1	29	0	4	56	2	98
	1715	2	0	0	0	0	3	0	21	1	5	38	5	75
1730	2	0	0	0	0	3	0	20	2	1	38	5	71	
1745	0	3	0	0	1	3	0	30	0	1	41	4	83	
<b>SATURDAY</b>	1200	4	0	0	2	2	6	1	43	0	2	42	6	108
	1215	1	0	0	0	1	2	0	52	1	3	62	3	125
	1230	3	2	2	3	0	1	1	37	2	0	64	3	118
	1245	3	1	0	1	1	2	0	32	0	2	50	8	100
	1300	4	1	1	0	1	4	2	53	0	4	59	4	133
	1315	3	1	1	1	1	0	0	41	1	1	51	6	107
	1330	5	1	0	1	3	1	2	34	1	2	67	2	119
1345	0	0	1	0	0	1	1	38	0	3	73	5	122	
<b>TOTALS</b>														
AM	23	9	3	2	6	15	3	192	11	17	162	12	<b>455</b>	
PM	19	4	1	3	5	21	2	206	4	25	320	32	<b>642</b>	
SAT	23	6	5	8	9	17	7	330	5	17	468	37	<b>932</b>	

**North-South Road:** Liverpool Road

**East-West Road:** Commerce Street

**Survey Date:** Thu Jun 1, Sat Jun 3, 2017

**Weather:** WKDY-Sunny, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

**HOURLY SUMMARY - ALL VEHICLES**

	TIME BEGINNING	Commerce Street			Commerce Street			Liverpool Road			Liverpool Road			TOTAL VEHICLES
		Eastbound			Westbound			Northbound			Southbound			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
<b>WEEKDAY</b>	700	6	4	2	1	2	8	1	87	6	6	65	5	193
	715	10	4	3	1	3	9	1	95	5	13	87	8	239
	730	13	5	3	1	3	8	2	106	6	12	92	9	260
	745	15	4	1	1	3	8	3	109	9	12	100	9	274
	800	17	5	1	1	4	7	2	105	5	11	97	7	262
	1600	14	1	0	2	3	10	1	106	1	14	147	16	315
	1615	11	0	1	3	3	10	2	111	0	15	167	16	339
	1630	9	0	1	2	3	9	2	109	1	18	168	19	341
	1645	6	0	1	1	1	12	1	98	3	12	178	16	329
	1700	5	3	1	1	2	11	1	100	3	11	173	16	327
<b>SATURDAY</b>	1200	11	3	2	6	4	11	2	164	3	7	218	20	451
	1215	11	4	3	4	3	9	3	174	3	9	235	18	476
	1230	13	5	4	5	3	7	3	163	3	7	224	21	458
	1245	15	4	2	3	6	7	4	160	2	9	227	20	459
	1300	12	3	3	2	5	6	5	166	2	10	250	17	481

**North-South Road:** Liverpool Road

**East-West Road:** Commerce Street

**Survey Date:** Thu Jun 1, Sat Jun 3, 2017

**Weather:** WKDY-Sunny, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

**HOURLY SUMMARY**

TIME BEGINNING	PEDESTRIANS					BICYCLES					U-TURN					
	West Side	East Side	South Side	North Side	Total	West Side	East Side	South Side	North Side	Total	EB to WB	WB to EB	NB to SB	SB to NB	Total	
<b>WEEKDAY</b>	700	3	0	0	0	3	1	2	0	0	3	0	0	0	0	0
	715	3	0	0	0	3	2	3	0	0	5	0	0	0	0	0
	730	1	0	14	0	15	2	2	0	0	4	0	0	0	0	0
	745	2	0	14	0	16	1	2	0	0	3	0	0	0	0	0
	800	2	0	15	0	17	2	1	0	0	3	0	0	0	0	0
	1600	6	10	2	2	20	2	0	0	0	2	0	0	0	0	0
	1615	10	11	2	2	25	0	0	0	0	0	0	0	0	0	0
	1630	9	12	2	1	24	0	0	0	0	0	0	0	0	0	0
	1645	10	13	2	0	25	0	0	0	0	0	0	0	0	0	0
1700	13	13	2	0	28	0	0	0	1	1	0	0	0	0	0	
<b>SATURDAY</b>	1200	14	21	0	0	35	15	0	0	0	15	0	0	0	0	0
	1215	10	20	0	0	30	7	0	0	0	7	0	0	0	0	0
	1230	7	24	0	0	31	4	0	0	0	4	0	0	0	0	0
	1245	11	19	0	0	30	2	0	0	0	2	0	0	0	0	0
	1300	10	16	0	0	26	4	0	0	0	4	0	0	0	0	0

**North-South Road:** Liverpool Road

**East-West Road:** Commerce Street

**Survey Date:** Thu Jun 1, Sat Jun 3, 2017

**Weather:** WKDY-Sunny, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

**PEAK HOUR VOLUMES - ALL VEHICLES**

PEAK HOUR		Commerce Street			Commerce Street			Liverpool Road			Liverpool Road			TOTAL VEHICLES
		Eastbound			Westbound			Northbound			Southbound			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
<b>AM 745 - 845</b>	Autos	15	3	1	1	3	7	3	108	2	12	97	5	257
	Medium	0	0	0	0	0	0	0	1	0	0	3	0	4
	Heavy	0	1	0	0	0	1	0	0	7	0	0	4	13
	<b>Total</b>	<b>15</b>	<b>4</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>8</b>	<b>3</b>	<b>109</b>	<b>9</b>	<b>12</b>	<b>100</b>	<b>9</b>	<b>274</b>
	% Hv	0.0%	25.0%	0.0%	0.0%	0.0%	12.5%	0.0%	0.9%	77.8%	0.0%	3.0%	44.4%	6.2%
	PHF	0.750	0.500	0.250	0.250	0.750	0.500	0.750	0.908	0.563	0.429	0.694	0.750	0.835
<b>PM 1630 - 1730</b>	Autos	7	0	1	1	3	9	2	109	1	18	166	18	335
	Medium	2	0	0	1	0	0	0	0	0	0	2	0	5
	Heavy	0	0	0	0	0	0	0	0	0	0	0	1	1
	<b>Total</b>	<b>9</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>9</b>	<b>2</b>	<b>109</b>	<b>1</b>	<b>18</b>	<b>168</b>	<b>19</b>	<b>341</b>
	% Hv	22.2%	0.0%	0.0%	50.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.2%	5.3%	1.8%
	PHF	0.450	0.000	0.250	0.500	0.375	0.563	0.500	0.879	0.250	0.643	0.750	0.594	0.870
<b>SAT 1300 - 1400</b>	Autos	7	3	3	2	5	6	5	165	1	10	246	16	469
	Medium	5	0	0	0	0	0	0	1	0	0	4	0	10
	Heavy	0	0	0	0	0	0	0	0	1	0	0	1	2
	<b>Total</b>	<b>12</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>5</b>	<b>6</b>	<b>5</b>	<b>166</b>	<b>2</b>	<b>10</b>	<b>250</b>	<b>17</b>	<b>481</b>
	% Hv	41.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	50.0%	0.0%	1.6%	5.9%	2.5%
	PHF	0.600	0.750	0.750	0.500	0.417	0.375	0.625	0.783	0.500	0.625	0.856	0.708	0.904

PEAK HOUR	PEDESTRIANS					BICYCLES					U-TURN				
	West Side	East Side	South Side	North Side	Total	West Side	East Side	South Side	North Side	Total	EB to WB	WB to EB	NB to SB	SB to NB	Total
<b>AM</b>	2	0	14	0	16	1	2	0	0	3	0	0	0	0	0
<b>PM</b>	9	12	2	1	24	0	0	0	0	0	0	0	0	0	0
<b>SAT</b>	10	16	0	0	26	4	0	0	0	4	0	0	0	0	0

**North-South Road:** Liverpool Road

**East-West Road:** Commerce Street

**Survey Date:** Thu Jun 1, Sat Jun 3, 2017

**Weather:** WKDY-Sunny, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

**HOURLY SUMMARY - AUTOS**

	TIME BEGINNING	Commerce Street Eastbound			Commerce Street Westbound			Liverpool Road Northbound			Liverpool Road Southbound			TOTAL VEHICLES
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
		<b>WEEKDAY</b>												
	700	6	3	1	1	2	8	1	86	2	6	65	1	182
	715	10	3	2	1	3	9	1	94	1	13	87	3	227
	730	13	3	2	1	3	8	2	105	1	12	92	4	246
	745	15	3	1	1	3	7	3	108	2	12	97	5	257
	800	17	4	1	1	4	6	2	105	1	11	94	6	252
	1600	11	1	0	2	3	10	1	106	0	14	146	14	308
	1615	8	0	1	2	3	10	2	111	0	15	165	15	332
	1630	7	0	1	1	3	9	2	109	1	18	166	18	335
	1645	4	0	1	0	1	12	1	98	2	12	176	15	322
	1700	4	3	1	0	2	11	1	100	2	11	172	15	322
<b>SATURDAY</b>														
	1200	8	3	1	6	4	10	2	159	3	7	212	18	433
	1215	9	4	2	4	3	9	3	171	3	9	228	16	461
	1230	9	5	3	5	3	7	3	160	2	7	220	20	444
	1245	9	4	2	3	6	7	4	159	1	9	223	18	445
	1300	7	3	3	2	5	6	5	165	1	10	246	16	469

**North-South Road:** Liverpool Road

**East-West Road:** Commerce Street

**Survey Date:** Thu Jun 1, Sat Jun 3, 2017

**Weather:** WKDY-Sunny, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

**HOURLY SUMMARY - MEDIUM**

	TIME BEGINNING	Commerce Street			Commerce Street			Liverpool Road			Liverpool Road			TOTAL VEHICLES
		Eastbound			Westbound			Northbound			Southbound			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
<b>WEEKDAY</b>	700	0	0	0	0	0	0	0	1	0	0	0	0	1
	715	0	0	0	0	0	0	0	1	0	0	0	0	1
	730	0	0	0	0	0	0	0	1	0	0	0	0	1
	745	0	0	0	0	0	0	0	1	0	0	3	0	4
	800	0	0	0	0	0	0	0	0	0	0	3	0	3
	1600	3	0	0	0	0	0	0	0	0	0	1	0	4
	1615	3	0	0	1	0	0	0	0	0	0	2	0	6
	1630	2	0	0	1	0	0	0	0	0	0	2	0	5
	1645	2	0	0	1	0	0	0	0	0	0	2	0	5
	1700	1	0	0	1	0	0	0	0	0	0	1	0	3
<b>SATURDAY</b>	1200	3	0	1	0	0	1	0	5	0	0	6	2	18
	1215	2	0	1	0	0	0	0	3	0	0	7	2	15
	1230	4	0	1	0	0	0	0	3	0	0	4	1	13
	1245	6	0	0	0	0	0	0	1	0	0	4	1	12
	1300	5	0	0	0	0	0	0	1	0	0	4	0	10



**North-South Road:** Liverpool Road

**East-West Road:** Commerce Street

**Survey Date:** Thu Jun 1, Sat Jun 3, 2017

**Weather:** WKDY-Sunny, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

**HOURLY SUMMARY - HEAVY**

	TIME BEGINNING	Commerce Street			Commerce Street			Liverpool Road			Liverpool Road			TOTAL VEHICLES
		Eastbound			Westbound			Northbound			Southbound			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
<b>WEEKDAY</b>	700	0	1	1	0	0	0	0	0	4	0	0	4	10
	715	0	1	1	0	0	0	0	0	4	0	0	5	11
	730	0	2	1	0	0	0	0	0	5	0	0	5	13
	745	0	1	0	0	0	1	0	0	7	0	0	4	13
	800	0	1	0	0	0	1	0	0	4	0	0	1	7
	1600	0	0	0	0	0	0	0	0	1	0	0	2	3
	1615	0	0	0	0	0	0	0	0	0	0	0	1	1
	1630	0	0	0	0	0	0	0	0	0	0	0	1	1
	1645	0	0	0	0	0	0	0	0	1	0	0	1	2
	1700	0	0	0	0	0	0	0	0	1	0	0	1	2
<b>SATURDAY</b>	1200	0	0	0	0	0	0	0	0	0	0	0	0	0
	1215	0	0	0	0	0	0	0	0	0	0	0	0	0
	1230	0	0	0	0	0	0	0	0	1	0	0	0	1
	1245	0	0	0	0	0	0	0	0	1	0	0	1	2
	1300	0	0	0	0	0	0	0	0	1	0	0	1	2

**NORTH-SOUTH ROAD:** Liverpool Road  
**EAST-WEST ROAD:** Commerce Street  
**SURVEY DATE:** Thu Jun 1, Sat Jun 3, 2017  
**MUNICIPALITY:** Pickering, Ontario  
**WEATHER:** WKDY-Sunny, SAT - Sunny

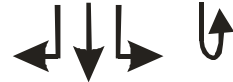
**TURNING  
MOVEMENT  
DIAGRAM**



**Liverpool Road**

	<b>Total</b>	9	100	12
	<b>Heavy</b>	4	0	0
	<b>Medium</b>	0	3	0
	<b>Autos</b>	5	97	12

<b>U-Turns</b>	0
----------------	---



<b>Pedestrians</b>	0
<b>Bicyclists</b>	0

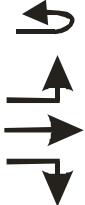
<b>PERIOD</b>	WEEKDAY AM PEAK HOUR
<b>TIME</b>	0745 - 0845

<b>INTERSECTION TOTALS</b>	<b>Autos</b>	<b>Trucks</b>	<b>Buses</b>	<b>Total Vehicles</b>	<b>Medium &amp; Heavy %</b>
	257	4	13	274	6.2%
	<b>Peds</b>	<b>Bicycles</b>	<b>U-Turns</b>	<b>PHF</b>	
	16	3	0	0.835	

Commerce Street

<b>U-Turns</b>	0
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<b>Auto</b>	<b>Medium</b>	<b>Heavy</b>	<b>Total</b>
15	0	0	15
3	0	1	4
1	0	0	1



<b>Pedestrians</b>	2
<b>Bicyclists</b>	1

<b>Pedestrians</b>	0
<b>Bicyclists</b>	2

<b>Auto</b>	<b>Medium</b>	<b>Heavy</b>	<b>Total</b>
7	0	1	8
3	0	0	3
1	0	0	1

<b>U-Turns</b>	0
----------------	---

Commerce Street

% NON-AUTO VEHICLES (Medium & Heavy)			
<b>Direction</b>	<b>Left</b>	<b>Thru</b>	<b>Right</b>
Eastbound	0.0%	25.0%	0.0%
Westbound	0.0%	0.0%	12.5%
Northbound	0.0%	0.9%	77.8%
Southbound	0.0%	3.0%	44.4%

<b>Pedestrians</b>	14
<b>Bicyclists</b>	0



	<b>Total</b>	3	109	9
	<b>Heavy</b>	0	0	7
	<b>Medium</b>	0	1	0
	<b>Autos</b>	3	108	2

**Liverpool Road**

**Comments:**

**NORTH-SOUTH ROAD:** Liverpool Road  
**EAST-WEST ROAD:** Commerce Street  
**SURVEY DATE:** Thu Jun 1, Sat Jun 3, 2017  
**MUNICIPALITY:** Pickering, Ontario  
**WEATHER:** WKDY-Sunny, SAT - Sunny

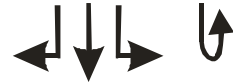
**TURNING  
MOVEMENT  
DIAGRAM**



**Liverpool Road**

	<b>Total</b>	19	168	18
	<b>Heavy</b>	1	0	0
	<b>Medium</b>	0	2	0
	<b>Autos</b>	18	166	18

<b>U-Turns</b>	0
----------------	---



<b>Pedestrians</b>	1
<b>Bicyclists</b>	0

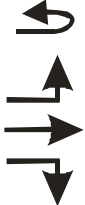
<b>PERIOD</b>	WEEKDAY PM PEAK HOUR
<b>TIME</b>	1630 - 1730

<b>INTERSECTION TOTALS</b>	<b>Autos</b>	<b>Trucks</b>	<b>Buses</b>	<b>Total Vehicles</b>	<b>Medium &amp; Heavy %</b>
	335	5	1	341	1.8%
	<b>Peds</b>	<b>Bicycles</b>	<b>U-Turns</b>	<b>PHF</b>	
	24	0	0	0.870	

Commerce Street

<b>U-Turns</b>	0
----------------	---

<b>Auto</b>	<b>Medium</b>	<b>Heavy</b>	<b>Total</b>
7	2	0	9
0	0	0	0
1	0	0	1



<b>Pedestrians</b>	9
<b>Bicyclists</b>	0

<b>Pedestrians</b>	12
<b>Bicyclists</b>	0

<b>Auto</b>	<b>Medium</b>	<b>Heavy</b>	<b>Total</b>
9	0	0	9
3	0	0	3
1	1	0	2

<b>U-Turns</b>	0
----------------	---

Commerce Street

% NON-AUTO VEHICLES (Medium & Heavy)			
Direction	Left	Thru	Right
Eastbound	22.2%	0.0%	0.0%
Westbound	50.0%	0.0%	0.0%
Northbound	0.0%	0.0%	0.0%
Southbound	0.0%	1.2%	5.3%

<b>Pedestrians</b>	2
<b>Bicyclists</b>	0



	<b>Total</b>	2	109	1
	<b>Heavy</b>	0	0	0
	<b>Medium</b>	0	0	0
	<b>Autos</b>	2	109	1

<b>U-Turns</b>	0
----------------	---

**Comments:**

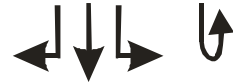
**Liverpool Road**



**Liverpool Road**

	<b>Total</b>	17	250	10
	<b>Heavy</b>	1	0	0
	<b>Medium</b>	0	4	0
	<b>Autos</b>	16	246	10

<b>U-Turns</b>	0
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<b>Pedestrians</b>	0
<b>Bicyclists</b>	0

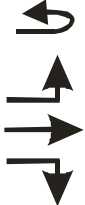
<b>PERIOD</b>	SAT PEAK HOUR
<b>TIME</b>	1300 - 1400

<b>INTERSECTION TOTALS</b>	<b>Autos</b>	<b>Trucks</b>	<b>Buses</b>	<b>Total Vehicles</b>	<b>Medium &amp; Heavy %</b>
	469	10	2	481	2.5%
	<b>Peds</b>	<b>Bicycles</b>	<b>U-Turns</b>	<b>PHF</b>	
	26	4	0	0.904	

Commerce Street

<b>U-Turns</b>	0
----------------	---

<b>Auto</b>	<b>Medium</b>	<b>Heavy</b>	<b>Total</b>
7	5	0	12
3	0	0	3
3	0	0	3



<b>Pedestrians</b>	10
<b>Bicyclists</b>	4

<b>Pedestrians</b>	16
<b>Bicyclists</b>	0

<b>Auto</b>	<b>Medium</b>	<b>Heavy</b>	<b>Total</b>
6	0	0	6
5	0	0	5
2	0	0	2

<b>U-Turns</b>	0
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Commerce Street

% NON-AUTO VEHICLES (Medium & Heavy)			
Direction	Left	Thru	Right
Eastbound	41.7%	0.0%	0.0%
Westbound	0.0%	0.0%	0.0%
Northbound	0.0%	0.6%	50.0%
Southbound	0.0%	1.6%	5.9%

<b>Pedestrians</b>	0
<b>Bicyclists</b>	0



	<b>Total</b>	5	166	2
	<b>Heavy</b>	0	0	1
	<b>Medium</b>	0	1	0
	<b>Autos</b>	5	165	1

<b>U-Turns</b>	0
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**Comments:**

**Liverpool Road**

**North-South Road:** Liverpool Road

**East-West Road:** Illona Park Road (N)

**Survey Date:** Tue Jun 6, Sat Jun 3, 2017

**Weather:** WKDY-Rain/cloud, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

		<b>AUTOS</b>												<b>PEDESTRIANS</b>			
WEEKDAY	TIME BEGINNING	Illona Park Road (N)			Illona Park Road (N)			Liverpool Road			Liverpool Road			West Side	East Side	South Side	North Side
		Eastbound			Westbound			Northbound			Southbound						
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right				
	700	3	0	0	0	0	0	1	24	0	0	8	1	2	2	2	0
	715	3	0	0	0	0	0	0	20	0	0	7	2	5	1	0	0
	730	1	0	0	0	0	0	0	29	0	0	17	0	2	0	0	0
	745	7	0	2	0	0	0	1	27	0	0	32	0	1	0	0	0
	800	1	0	0	0	0	0	0	50	0	0	31	2	2	1	0	0
	815	2	0	0	0	0	0	0	27	0	0	29	1	8	1	0	0
	830	4	0	0	0	0	0	0	34	0	0	22	1	8	3	3	1
	845	0	0	0	0	0	0	1	42	0	0	40	2	4	0	0	0
	1600	3	0	0	0	0	0	0	30	0	0	41	5	4	5	0	0
	1615	1	0	0	0	0	0	0	25	0	0	40	3	3	3	0	0
	1630	1	0	0	0	0	0	0	39	0	0	48	3	1	5	1	0
	1645	1	0	0	0	0	0	1	32	0	0	55	0	0	2	0	0
	1700	2	0	0	0	0	0	0	36	0	0	68	4	6	1	0	0
	1715	2	0	0	0	0	0	0	26	0	0	49	4	3	1	0	0
	1730	1	0	0	0	0	0	1	28	0	0	44	0	4	1	0	0
	1745	4	0	0	0	0	0	0	36	0	0	50	6	3	1	0	0
SATURDAY	1200	4	0	0	0	0	0	0	53	0	0	50	1	1	4	0	0
	1215	2	0	0	0	0	0	0	59	0	0	64	6	7	1	0	0
	1230	2	0	0	0	0	0	0	46	0	0	69	2	0	3	0	0
	1245	2	0	0	0	0	0	0	42	0	0	60	2	0	5	1	0
	1300	4	0	0	0	0	0	0	64	0	0	66	2	2	4	0	0
	1315	3	0	0	0	0	0	1	48	0	0	63	2	4	0	0	0
	1330	1	0	0	0	0	0	0	39	0	0	72	1	3	2	0	0
1345	2	0	0	0	0	0	0	41	0	0	82	2	3	1	0	0	
	<b>TOTALS</b>																
	AM	21	0	2	0	0	0	3	253	0	0	186	9	32	8	5	1
	PM	15	0	0	0	0	0	2	252	0	0	395	25	24	19	1	0
	SAT	20	0	0	0	0	0	1	392	0	0	526	18	20	20	1	0

**North-South Road:** Liverpool Road

**East-West Road:** Illona Park Road (N)

**Survey Date:** Tue Jun 6, Sat Jun 3, 2017

**Weather:** WKDY-Rain/cloud, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

		<b>MEDIUM</b>												<b>BICYCLES</b>			
	TIME BEGINNING	Illona Park Road (N)			Illona Park Road (N)			Liverpool Road			Liverpool Road			West Side	East Side	South Side	North Side
		Eastbound			Westbound			Northbound			Southbound						
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right				
<b>WEEKDAY</b>	700	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
	715	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
	730	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
	745	0	0	0	0	0	0	0	0	0	0	2	0	0	1	0	0
	800	0	0	0	0	0	0	0	0	0	0	1	0	0	3	1	0
	815	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	830	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0
	845	0	0	0	0	0	0	0	0	0	0	3	0	2	1	1	0
	1600	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0
	1615	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
	1630	0	0	0	0	0	0	0	0	0	0	1	0	2	3	0	0
	1645	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
	1700	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
1715	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	
1730	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1745	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<b>SATURDAY</b>	1200	0	0	0	0	0	0	0	8	0	0	0	0	1	4	0	0
	1215	0	0	0	0	0	0	0	4	0	0	4	0	0	4	0	0
	1230	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0
	1245	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0
	1300	0	0	0	0	0	0	0	1	0	0	1	0	1	1	0	0
	1315	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0
	1330	0	0	0	0	0	0	0	4	0	0	2	0	1	4	0	0
1345	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	
	<b>TOTALS</b>																
	AM	0	0	0	0	0	0	0	1	0	0	8	0	3	6	2	0
	PM	0	0	0	0	0	0	0	2	0	0	1	0	4	5	0	0
	SAT	0	0	0	0	0	0	0	20	0	0	12	0	4	14	0	0

**North-South Road:** Liverpool Road

**East-West Road:** Illona Park Road (N)

**Survey Date:** Tue Jun 6, Sat Jun 3, 2017

**Weather:** WKDY-Rain/cloud, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

		<b>HEAVY</b>											<b>U-TURNS</b>				
	TIME BEGINNING	Illona Park Road (N)			Illona Park Road (N)			Liverpool Road			Liverpool Road			EB to WB	WB to EB	NB to SB	SB to NB
		Eastbound			Westbound			Northbound			Southbound						
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right				
<b>WEEKDAY</b>	700	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
	715	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
	730	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
	745	0	0	0	0	0	0	0	0	4	0	0	2	0	0	0	0
	800	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
	815	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
	830	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	1
	845	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
	1600	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0
	1615	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1630	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1645	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1700	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1715	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	
1730	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	
1745	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<b>SATURDAY</b>	1200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1215	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1245	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1315	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
	1330	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
1345	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	<b>TOTALS</b>																
	AM	0	0	0	0	0	0	0	0	12	0	0	4	0	0	0	1
	PM	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0
	SAT	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0

**North-South Road:** Liverpool Road

**East-West Road:** Illona Park Road (N)

**Survey Date:** Tue Jun 6, Sat Jun 3, 2017

**Weather:** WKDY-Rain/cloud, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

<b>TOTAL VEHICLES</b>														
TIME BEGINNING	Illona Park Road (N)			Illona Park Road (N)			Liverpool Road			Liverpool Road			TOTAL VEHICLES	
	Eastbound			Westbound			Northbound			Southbound				
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
<b>WEEKDAY</b>	700	3	0	0	0	0	1	25	1	0	8	1	39	
	715	3	0	0	0	0	0	20	1	0	7	2	33	
	730	1	0	0	0	0	0	29	0	0	17	1	48	
	745	7	0	2	0	0	0	27	4	0	34	2	77	
	800	1	0	0	0	0	0	50	0	0	32	3	86	
	815	2	0	0	0	0	0	27	2	0	29	1	61	
	830	4	0	0	0	0	0	34	3	0	24	1	66	
	845	0	0	0	0	0	0	1	42	1	0	43	2	89
	1600	3	0	0	0	0	0	0	30	1	0	41	6	81
	1615	1	0	0	0	0	0	0	25	0	0	40	3	69
	1630	1	0	0	0	0	0	0	39	0	0	49	3	92
	1645	1	0	0	0	0	0	1	32	0	0	55	0	89
	1700	2	0	0	0	0	0	0	37	0	0	68	4	111
1715	2	0	0	0	0	0	0	27	1	0	49	4	83	
1730	1	0	0	0	0	0	1	28	0	0	44	1	75	
1745	4	0	0	0	0	0	0	36	0	0	50	6	96	
<b>SATURDAY</b>	1200	4	0	0	0	0	0	61	0	0	50	1	116	
	1215	2	0	0	0	0	0	63	0	0	68	6	139	
	1230	2	0	0	0	0	0	48	0	0	71	2	123	
	1245	2	0	0	0	0	0	42	0	0	62	2	108	
	1300	4	0	0	0	0	0	65	0	0	67	2	138	
	1315	3	0	0	0	0	0	1	49	1	63	2	119	
	1330	1	0	0	0	0	0	0	43	0	0	74	2	120
1345	2	0	0	0	0	0	0	41	0	0	83	2	128	
<b>TOTALS</b>														
AM	21	0	2	0	0	0	3	254	12	0	194	13	<b>499</b>	
PM	15	0	0	0	0	0	2	254	2	0	396	27	<b>696</b>	
SAT	20	0	0	0	0	0	1	412	1	0	538	19	<b>991</b>	



**North-South Road:** Liverpool Road

**East-West Road:** Illona Park Road (N)

**Survey Date:** Tue Jun 6, Sat Jun 3, 2017

**Weather:** WKDY-Rain/cloud, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

**HOURLY SUMMARY - ALL VEHICLES**

	TIME BEGINNING	Illona Park Road (N)			Illona Park Road (N)			Liverpool Road			Liverpool Road			TOTAL VEHICLES
		Eastbound			Westbound			Northbound			Southbound			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
<b>WEEKDAY</b>	700	14	0	2	0	0	0	2	101	6	0	66	6	197
	715	12	0	2	0	0	0	1	126	5	0	90	8	244
	730	11	0	2	0	0	0	1	133	6	0	112	7	272
	745	14	0	2	0	0	0	1	138	9	0	119	7	290
	800	7	0	0	0	0	0	1	153	6	0	128	7	302
	1600	6	0	0	0	0	0	1	126	1	0	185	12	331
	1615	5	0	0	0	0	0	1	133	0	0	212	10	361
	1630	6	0	0	0	0	0	1	135	1	0	221	11	375
	1645	6	0	0	0	0	0	2	124	1	0	216	9	358
	1700	9	0	0	0	0	0	1	128	1	0	211	15	365
<b>SATURDAY</b>	1200	10	0	0	0	0	0	0	214	0	0	251	11	486
	1215	10	0	0	0	0	0	0	218	0	0	268	12	508
	1230	11	0	0	0	0	0	1	204	1	0	263	8	488
	1245	10	0	0	0	0	0	1	199	1	0	266	8	485
	1300	10	0	0	0	0	0	1	198	1	0	287	8	505

**North-South Road:** Liverpool Road

**East-West Road:** Illona Park Road (N)

**Survey Date:** Tue Jun 6, Sat Jun 3, 2017

**Weather:** WKDY-Rain/cloud, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

**HOURLY SUMMARY**

TIME BEGINNING	PEDESTRIANS					BICYCLES					U-TURN				
	West Side	East Side	South Side	North Side	Total	West Side	East Side	South Side	North Side	Total	EB to WB	WB to EB	NB to SB	SB to NB	Total
<b>WEEKDAY</b> 700	11	3	2	0	16	1	2	0	0	3	0	0	0	0	0
715	10	2	0	0	12	1	5	1	0	7	0	0	0	0	0
730	13	2	0	0	15	1	4	1	0	6	0	0	0	0	0
745	19	5	3	1	28	0	4	1	0	5	0	0	0	1	1
800	21	5	3	1	30	2	4	2	0	8	0	0	0	1	1
1600	8	15	1	0	24	4	5	0	0	9	0	0	0	0	0
1615	10	11	1	0	22	2	5	0	0	7	0	0	0	0	0
1630	10	9	1	0	20	2	4	0	0	6	0	0	0	0	0
1645	13	5	0	0	18	0	1	0	0	1	0	0	0	0	0
1700	16	4	0	0	20	0	0	0	0	0	0	0	0	0	0
<b>SATURDAY</b> 1200	8	13	1	0	22	1	8	0	0	9	0	0	0	0	0
1215	9	13	1	0	23	1	5	0	0	6	0	0	0	0	0
1230	6	12	1	0	19	2	2	0	0	4	0	0	0	0	0
1245	9	11	1	0	21	3	6	0	0	9	0	0	0	0	0
1300	12	7	0	0	19	3	6	0	0	9	0	0	0	0	0

North-South Road: Liverpool Road

East-West Road: Illona Park Road (N)

Survey Date: Tue Jun 6, Sat Jun 3, 2017

Weather: WKDY-Rain/cloud, SAT - Sunny

MUNICIPALITY: Pickering, Ontario

TIG TCS v1.17

TRAF8 GROUP

**PEAK HOUR VOLUMES - ALL VEHICLES**

PEAK HOUR		Illona Park Road (N)			Illona Park Road (N)			Liverpool Road			Liverpool Road			TOTAL VEHICLES
		Eastbound			Westbound			Northbound			Southbound			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
<b>AM 800 - 900</b>	Autos	7	0	0	0	0	0	1	153	0	0	122	6	289
	Medium	0	0	0	0	0	0	0	0	0	0	6	0	6
	Heavy	0	0	0	0	0	0	0	0	6	0	0	1	7
	<b>Total</b>	<b>7</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>153</b>	<b>6</b>	<b>0</b>	<b>128</b>	<b>7</b>	<b>302</b>
	% Hv	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	4.7%	14.3%	4.3%
	PHF	0.438	0.000	0.000	0.000	0.000	0.000	0.250	0.765	0.500	0.000	0.744	0.583	0.848
<b>PM 1630 - 1730</b>	Autos	6	0	0	0	0	0	1	133	0	0	220	11	371
	Medium	0	0	0	0	0	0	0	2	0	0	1	0	3
	Heavy	0	0	0	0	0	0	0	0	1	0	0	0	1
	<b>Total</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>135</b>	<b>1</b>	<b>0</b>	<b>221</b>	<b>11</b>	<b>375</b>
	% Hv	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.5%	100.0%	0.0%	0.5%	0.0%	1.1%
	PHF	0.750	0.000	0.000	0.000	0.000	0.000	0.250	0.865	0.250	0.000	0.813	0.688	0.845
<b>SAT 1215 - 1315</b>	Autos	10	0	0	0	0	0	0	211	0	0	259	12	492
	Medium	0	0	0	0	0	0	0	7	0	0	9	0	16
	Heavy	0	0	0	0	0	0	0	0	0	0	0	0	0
	<b>Total</b>	<b>10</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>218</b>	<b>0</b>	<b>0</b>	<b>268</b>	<b>12</b>	<b>508</b>
	% Hv	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	3.2%	0.0%	0.0%	3.4%	0.0%	3.1%
	PHF	0.625	0.000	0.000	0.000	0.000	0.000	0.000	0.838	0.000	0.000	0.944	0.500	0.914

PEAK HOUR	PEDESTRIANS					BICYCLES					U-TURN				
	West Side	East Side	South Side	North Side	Total	West Side	East Side	South Side	North Side	Total	EB to WB	WB to EB	NB to SB	SB to NB	Total
<b>AM</b>	21	5	3	1	30	2	4	2	0	8	0	0	0	1	1
<b>PM</b>	10	9	1	0	20	2	4	0	0	6	0	0	0	0	0
<b>SAT</b>	9	13	1	0	23	1	5	0	0	6	0	0	0	0	0

**North-South Road:** Liverpool Road

**East-West Road:** Illona Park Road (N)

**Survey Date:** Tue Jun 6, Sat Jun 3, 2017

**Weather:** WKDY-Rain/cloud, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

**HOURLY SUMMARY - AUTOS**

	TIME BEGINNING	Illona Park Road (N)			Illona Park Road (N)			Liverpool Road			Liverpool Road			TOTAL VEHICLES
		Eastbound			Westbound			Northbound			Southbound			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
<b>WEEKDAY</b>	700	14	0	2	0	0	0	2	100	0	0	64	3	185
	715	12	0	2	0	0	0	1	126	0	0	87	4	232
	730	11	0	2	0	0	0	1	133	0	0	109	3	259
	745	14	0	2	0	0	0	1	138	0	0	114	4	273
	800	7	0	0	0	0	0	1	153	0	0	122	6	289
	1600	6	0	0	0	0	0	1	126	0	0	184	11	328
	1615	5	0	0	0	0	0	1	132	0	0	211	10	359
	1630	6	0	0	0	0	0	1	133	0	0	220	11	371
	1645	6	0	0	0	0	0	2	122	0	0	216	8	354
1700	9	0	0	0	0	0	1	126	0	0	211	14	361	
<b>SATURDAY</b>														
	1200	10	0	0	0	0	0	0	200	0	0	243	11	464
	1215	10	0	0	0	0	0	0	211	0	0	259	12	492
	1230	11	0	0	0	0	0	1	200	0	0	258	8	478
	1245	10	0	0	0	0	0	1	193	0	0	261	7	472
1300	10	0	0	0	0	0	1	192	0	0	283	7	493	

**North-South Road:** Liverpool Road

**East-West Road:** Illona Park Road (N)

**Survey Date:** Tue Jun 6, Sat Jun 3, 2017

**Weather:** WKDY-Rain/cloud, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

**HOURLY SUMMARY - MEDIUM**

	TIME BEGINNING	Illona Park Road (N)			Illona Park Road (N)			Liverpool Road			Liverpool Road			TOTAL VEHICLES
		Eastbound			Westbound			Northbound			Southbound			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
<b>WEEKDAY</b>	700	0	0	0	0	0	0	0	1	0	0	2	0	3
	715	0	0	0	0	0	0	0	0	0	0	3	0	3
	730	0	0	0	0	0	0	0	0	0	0	3	0	3
	745	0	0	0	0	0	0	0	0	0	0	5	0	5
	800	0	0	0	0	0	0	0	0	0	0	6	0	6
	1600	0	0	0	0	0	0	0	0	0	0	1	0	1
	1615	0	0	0	0	0	0	0	1	0	0	1	0	2
	1630	0	0	0	0	0	0	0	2	0	0	1	0	3
	1645	0	0	0	0	0	0	0	2	0	0	0	0	2
	1700	0	0	0	0	0	0	0	2	0	0	0	0	2
<b>SATURDAY</b>	1200	0	0	0	0	0	0	0	14	0	0	8	0	22
	1215	0	0	0	0	0	0	0	7	0	0	9	0	16
	1230	0	0	0	0	0	0	0	4	0	0	5	0	9
	1245	0	0	0	0	0	0	0	6	0	0	5	0	11
	1300	0	0	0	0	0	0	0	6	0	0	4	0	10

**North-South Road:** Liverpool Road

**East-West Road:** Illona Park Road (N)

**Survey Date:** Tue Jun 6, Sat Jun 3, 2017

**Weather:** WKDY-Rain/cloud, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

**HOURLY SUMMARY - HEAVY**

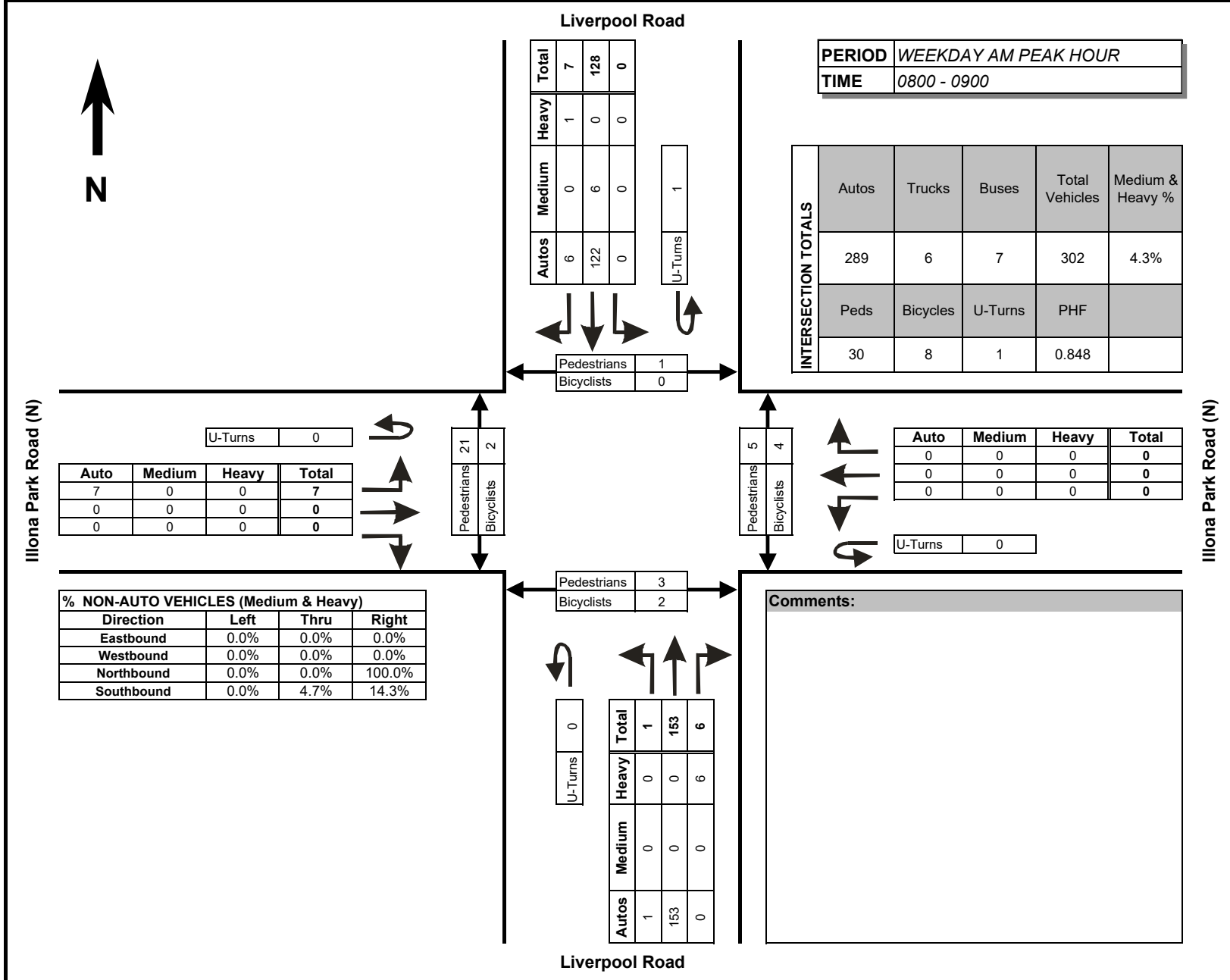
	TIME BEGINNING	Illona Park Road (N)			Illona Park Road (N)			Liverpool Road			Liverpool Road			TOTAL VEHICLES
		Eastbound			Westbound			Northbound			Southbound			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
<b>WEEKDAY</b>	700	0	0	0	0	0	0	0	0	6	0	0	3	9
	715	0	0	0	0	0	0	0	0	5	0	0	4	9
	730	0	0	0	0	0	0	0	0	6	0	0	4	10
	745	0	0	0	0	0	0	0	0	9	0	0	3	12
	800	0	0	0	0	0	0	0	0	6	0	0	1	7
	1600	0	0	0	0	0	0	0	0	1	0	0	1	2
	1615	0	0	0	0	0	0	0	0	0	0	0	0	0
	1630	0	0	0	0	0	0	0	0	1	0	0	0	1
	1645	0	0	0	0	0	0	0	0	1	0	0	1	2
	1700	0	0	0	0	0	0	0	0	1	0	0	1	2
<b>SATURDAY</b>	1200	0	0	0	0	0	0	0	0	0	0	0	0	0
	1215	0	0	0	0	0	0	0	0	0	0	0	0	0
	1230	0	0	0	0	0	0	0	0	1	0	0	0	1
	1245	0	0	0	0	0	0	0	0	1	0	0	1	2
	1300	0	0	0	0	0	0	0	0	1	0	0	1	2

TRAF8 GROUP

TIG TCS v1.17

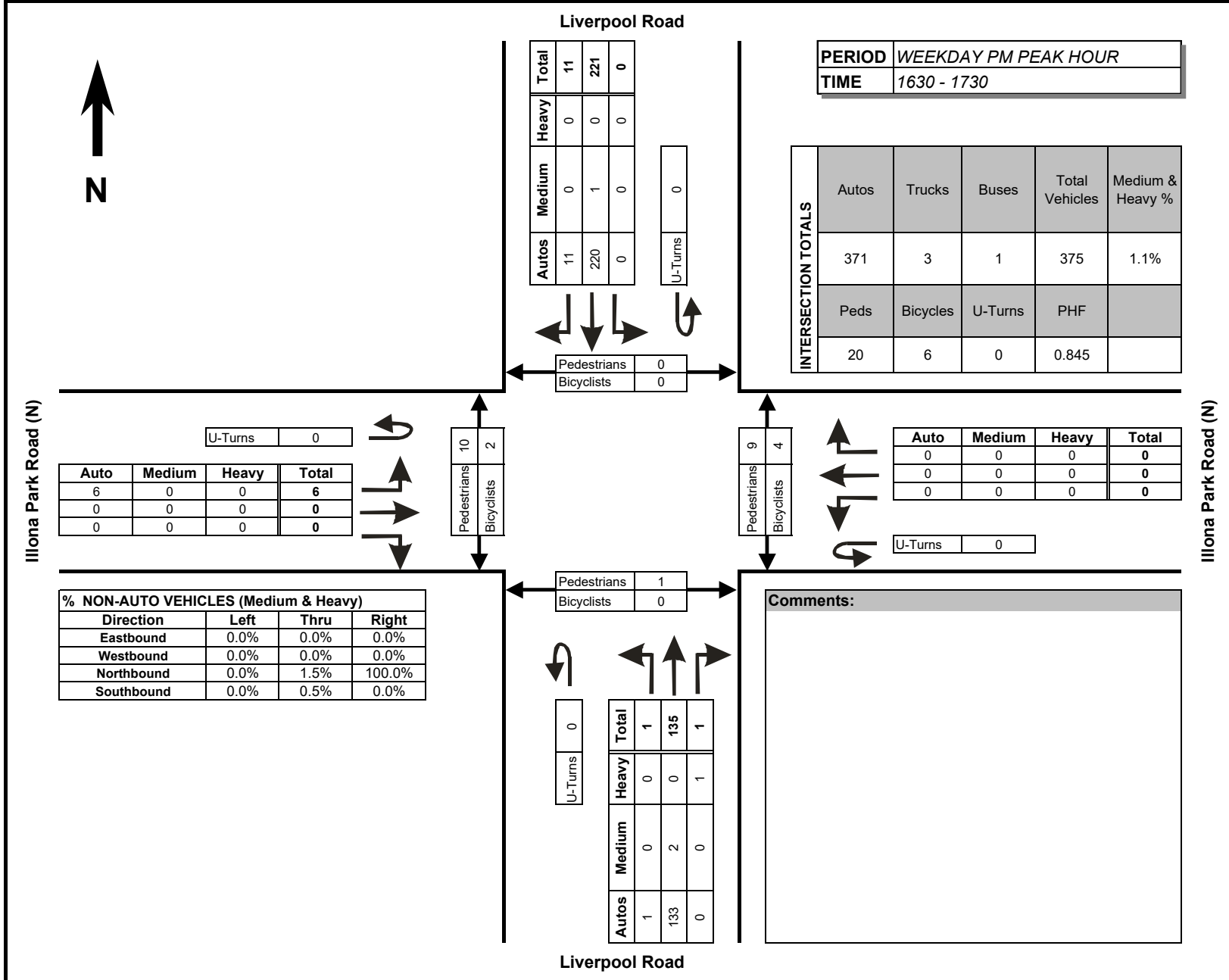
**NORTH-SOUTH ROAD:** Liverpool Road  
**EAST-WEST ROAD:** Illona Park Road (N)  
**SURVEY DATE:** Tue Jun 6, Sat Jun 3, 2017  
**MUNICIPALITY:** Pickering, Ontario  
**WEATHER:** WKDY-Rain/cloud, SAT - Sunny

**TURNING  
MOVEMENT  
DIAGRAM**



**NORTH-SOUTH ROAD:** Liverpool Road  
**EAST-WEST ROAD:** Illona Park Road (N)  
**SURVEY DATE:** Tue Jun 6, Sat Jun 3, 2017  
**MUNICIPALITY:** Pickering, Ontario  
**WEATHER:** WKDY-Rain/cloud, SAT - Sunny

**TURNING  
MOVEMENT  
DIAGRAM**





TRAF8 GROUP

TIG TCS v1.17

**NORTH-SOUTH ROAD:** Liverpool Road  
**EAST-WEST ROAD:** Illona Park Road (N)  
**SURVEY DATE:** Tue Jun 6, Sat Jun 3, 2017  
**MUNICIPALITY:** Pickering, Ontario  
**WEATHER:** WKDY-Rain/cloud, SAT - Sunny

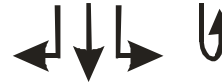
**TURNING  
MOVEMENT  
DIAGRAM**



**Liverpool Road**

	<b>Total</b>	12	268	0
	<b>Heavy</b>	0	0	0
	<b>Medium</b>	0	9	0
	<b>Autos</b>	12	259	0

<b>U-Turns</b>	0
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<b>Pedestrians</b>	0
<b>Bicyclists</b>	0

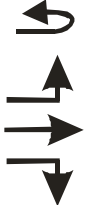
<b>PERIOD</b>	SAT PEAK HOUR
<b>TIME</b>	1215 - 1315

<b>INTERSECTION TOTALS</b>	<b>Autos</b>	<b>Trucks</b>	<b>Buses</b>	<b>Total Vehicles</b>	<b>Medium &amp; Heavy %</b>
	492	16	0	508	3.1%
	<b>Peds</b>	<b>Bicycles</b>	<b>U-Turns</b>	<b>PHF</b>	
	23	6	0	0.914	

Illona Park Road (N)

<b>Auto</b>	<b>Medium</b>	<b>Heavy</b>	<b>Total</b>
10	0	0	10
0	0	0	0
0	0	0	0

<b>U-Turns</b>	0
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<b>Pedestrians</b>	9
<b>Bicyclists</b>	1

<b>Pedestrians</b>	13
<b>Bicyclists</b>	5

<b>Auto</b>	<b>Medium</b>	<b>Heavy</b>	<b>Total</b>
0	0	0	0
0	0	0	0
0	0	0	0

<b>U-Turns</b>	0
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Illona Park Road (N)

% NON-AUTO VEHICLES (Medium & Heavy)			
Direction	Left	Thru	Right
Eastbound	0.0%	0.0%	0.0%
Westbound	0.0%	0.0%	0.0%
Northbound	0.0%	3.2%	0.0%
Southbound	0.0%	3.4%	0.0%

<b>Pedestrians</b>	1
<b>Bicyclists</b>	0



	<b>Total</b>	218	0
	<b>Heavy</b>	0	0
	<b>Medium</b>	7	0
	<b>Autos</b>	211	0

<b>U-Turns</b>	0
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**Liverpool Road**

**Comments:**

<b>North-South Road:</b> Liverpool Road <b>East-West Road:</b> Illona Park Road (S) <b>Survey Date:</b> Tue Jun 6, Sat Jun 3, 2017 <b>Weather:</b> WKDY-Rain/cloud, SAT - Sunny	<b>MUNICIPALITY:</b> Pickering, Ontario	<small>TIG TCS v1.17</small> <b>TRAF8 GROUP</b>
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		<b>AUTOS</b>												<b>PEDESTRIANS</b>			
	TIME BEGINNING	Illona Park Road (S)			Illona Park Road (S)			Liverpool Road			Liverpool Road			West Side	East Side	South Side	North Side
		Eastbound			Westbound			Northbound			Southbound						
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right				
<b>WEEKDAY</b>	700	8	0	0	0	0	0	0	17	0	0	6	1	0	4	0	0
	715	5	0	0	0	0	0	0	16	0	0	6	0	3	2	1	0
	730	0	0	0	0	0	0	0	28	0	0	18	0	2	0	0	0
	745	3	0	1	0	0	0	0	26	0	0	33	1	1	0	0	0
	800	3	0	1	0	0	0	0	47	0	0	31	0	1	0	0	0
	815	5	0	0	0	0	0	0	21	0	0	27	3	8	1	0	0
	830	1	0	0	0	0	0	0	33	0	0	22	1	9	1	0	0
	845	4	0	1	0	0	0	0	39	0	0	38	2	4	0	0	0
	1600	1	0	0	0	0	0	1	28	0	0	37	4	3	5	0	0
	1615	1	0	0	0	0	0	0	25	0	0	36	5	4	3	0	0
	1630	2	0	1	0	0	0	0	35	0	0	45	2	1	5	0	0
	1645	0	0	0	0	0	0	0	34	0	0	54	2	0	2	0	0
	1700	0	0	0	0	0	0	0	36	0	0	62	5	8	1	0	1
1715	0	0	0	0	0	0	1	27	0	0	46	3	0	3	0	2	
1730	1	0	0	0	0	0	1	28	0	0	42	3	4	1	0	0	
1745	1	0	0	0	0	0	0	36	0	0	47	3	2	1	0	1	
<b>SATURDAY</b>	1200	0	0	0	0	0	0	0	49	0	0	49	0	1	3	0	2
	1215	1	0	1	0	0	0	0	58	0	0	64	1	6	1	0	0
	1230	0	0	0	0	0	0	0	44	0	0	64	4	0	3	0	0
	1245	0	0	0	0	0	0	0	38	0	0	58	2	2	3	0	0
	1300	1	0	0	0	0	0	0	59	0	0	67	0	2	4	0	0
	1315	0	0	0	0	0	0	0	48	0	0	57	5	5	0	0	0
	1330	0	0	0	0	0	0	0	39	0	0	68	4	3	2	0	0
1345	1	0	1	0	0	0	0	40	0	0	80	3	1	0	0	0	
	<b>TOTALS</b>																
	AM	29	0	3	0	0	0	0	227	0	0	181	8	28	8	1	0
	PM	6	0	1	0	0	0	3	249	0	0	369	27	22	21	0	4
	SAT	3	0	2	0	0	0	0	375	0	0	507	19	20	16	0	2

**North-South Road:** Liverpool Road

**East-West Road:** Illona Park Road (S)

**Survey Date:** Tue Jun 6, Sat Jun 3, 2017

**Weather:** WKDY-Rain/cloud, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

<b>MEDIUM</b>														<b>BICYCLES</b>			
	TIME BEGINNING	Illona Park Road (S)			Illona Park Road (S)			Liverpool Road			Liverpool Road			West Side	East Side	South Side	North Side
		Eastbound			Westbound			Northbound			Southbound						
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right				
<b>WEEKDAY</b>	700	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
	715	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
	730	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
	745	0	0	0	0	0	0	0	0	0	0	2	0	0	1	0	0
	800	0	0	0	0	0	0	0	0	0	0	1	0	0	3	0	0
	815	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	830	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0
	845	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0
	1600	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0
	1615	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
	1630	0	0	0	0	0	0	0	0	0	0	1	0	0	3	0	0
	1645	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
	1700	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
1715	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	
1730	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1745	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<b>SATURDAY</b>	1200	0	0	0	0	0	0	0	4	0	0	0	0	1	4	0	0
	1215	0	0	0	0	0	0	0	0	0	0	4	0	0	4	0	0
	1230	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0
	1245	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0
	1300	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	0
	1315	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0
	1330	0	0	0	0	0	0	0	0	0	0	2	0	1	4	0	0
1345	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	
	<b>TOTALS</b>																
	AM	0	0	0	0	0	0	0	1	0	0	8	0	1	5	0	0
	PM	0	0	0	0	0	0	0	2	0	0	1	0	2	5	0	0
	SAT	0	0	0	0	0	0	0	7	0	0	12	0	4	13	0	0

**North-South Road:** Liverpool Road

**East-West Road:** Illona Park Road (S)

**Survey Date:** Tue Jun 6, Sat Jun 3, 2017

**Weather:** WKDY-Rain/cloud, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

		<b>HEAVY</b>											<b>U-TURNS</b>				
	TIME BEGINNING	Illona Park Road (S)			Illona Park Road (S)			Liverpool Road			Liverpool Road			EB to WB	WB to EB	NB to SB	SB to NB
		Eastbound			Westbound			Northbound			Southbound						
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right				
<b>WEEKDAY</b>	700	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
	715	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
	730	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
	745	0	0	0	0	0	0	0	0	4	0	0	2	0	0	0	0
	800	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
	815	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
	830	0	1	0	0	0	0	0	0	2	0	0	0	0	0	0	0
	845	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
	1600	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0
	1615	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1630	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1645	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1700	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1715	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	
1730	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	
1745	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<b>SATURDAY</b>	1200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1215	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1245	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1315	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
	1330	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
1345	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	<b>TOTALS</b>																
	AM	0	1	0	0	0	0	0	0	11	0	0	4	0	0	0	0
	PM	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0
	SAT	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0

**North-South Road:** Liverpool Road

**East-West Road:** Illona Park Road (S)

**Survey Date:** Tue Jun 6, Sat Jun 3, 2017

**Weather:** WKDY-Rain/cloud, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

<b>TOTAL VEHICLES</b>														
TIME BEGINNING	Illona Park Road (S)			Illona Park Road (S)			Liverpool Road			Liverpool Road			TOTAL VEHICLES	
	Eastbound			Westbound			Northbound			Southbound				
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
<b>WEEKDAY</b>	700	8	0	0	0	0	0	18	1	0	6	1	34	
	715	5	0	0	0	0	0	16	1	0	6	0	28	
	730	0	0	0	0	0	0	28	0	0	18	1	47	
	745	3	0	1	0	0	0	26	4	0	35	3	72	
	800	3	0	1	0	0	0	47	0	0	32	1	84	
	815	5	0	0	0	0	0	21	2	0	27	3	58	
	830	1	1	0	0	0	0	33	2	0	24	1	62	
	845	4	0	1	0	0	0	39	1	0	41	2	88	
	1600	1	0	0	0	0	0	1	28	1	0	37	5	73
	1615	1	0	0	0	0	0	0	25	0	0	36	5	67
	1630	2	0	1	0	0	0	0	35	0	0	46	2	86
	1645	0	0	0	0	0	0	0	34	0	0	54	2	90
	1700	0	0	0	0	0	0	0	37	0	0	62	5	104
	1715	0	0	0	0	0	0	1	28	1	0	46	3	79
	1730	1	0	0	0	0	0	1	28	0	0	42	4	76
	1745	1	0	0	0	0	0	0	36	0	0	47	3	87
<b>SATURDAY</b>	1200	0	0	0	0	0	0	53	0	0	49	0	102	
	1215	1	0	1	0	0	0	58	0	0	68	1	129	
	1230	0	0	0	0	0	0	46	0	0	66	4	116	
	1245	0	0	0	0	0	0	38	0	0	60	2	100	
	1300	1	0	0	0	0	0	60	0	0	68	0	129	
	1315	0	0	0	0	0	0	48	1	0	57	5	111	
	1330	0	0	0	0	0	0	39	0	0	70	5	114	
	1345	1	0	1	0	0	0	40	0	0	81	3	126	
<b>TOTALS</b>														
AM	29	1	3	0	0	0	0	228	11	0	189	12	<b>473</b>	
PM	6	0	1	0	0	0	3	251	2	0	370	29	<b>662</b>	
SAT	3	0	2	0	0	0	0	382	1	0	519	20	<b>927</b>	

**North-South Road:** Liverpool Road

**East-West Road:** Illona Park Road (S)

**Survey Date:** Tue Jun 6, Sat Jun 3, 2017

**Weather:** WKDY-Rain/cloud, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

**HOURLY SUMMARY - ALL VEHICLES**

	TIME BEGINNING	Illona Park Road (S)			Illona Park Road (S)			Liverpool Road			Liverpool Road			TOTAL VEHICLES
		Eastbound			Westbound			Northbound			Southbound			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
<b>WEEKDAY</b>	700	16	0	1	0	0	0	0	88	6	0	65	5	181
	715	11	0	2	0	0	0	0	117	5	0	91	5	231
	730	11	0	2	0	0	0	0	122	6	0	112	8	261
	745	12	1	2	0	0	0	0	127	8	0	118	8	276
	800	13	1	2	0	0	0	0	140	5	0	124	7	292
	1600	4	0	1	0	0	0	1	122	1	0	173	14	316
	1615	3	0	1	0	0	0	0	131	0	0	198	14	347
	1630	2	0	1	0	0	0	1	134	1	0	208	12	359
	1645	1	0	0	0	0	0	2	127	1	0	204	14	349
	1700	2	0	0	0	0	0	2	129	1	0	197	15	346
<b>SATURDAY</b>	1200	1	0	1	0	0	0	0	195	0	0	243	7	447
	1215	2	0	1	0	0	0	0	202	0	0	262	7	474
	1230	1	0	0	0	0	0	0	192	1	0	251	11	456
	1245	1	0	0	0	0	0	0	185	1	0	255	12	454
	1300	2	0	1	0	0	0	0	187	1	0	276	13	480

**North-South Road:** Liverpool Road

**East-West Road:** Illona Park Road (S)

**Survey Date:** Tue Jun 6, Sat Jun 3, 2017

**Weather:** WKDY-Rain/cloud, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

**HOURLY SUMMARY**

	TIME BEGINNING	PEDESTRIANS					BICYCLES					U-TURN					
		West Side	East Side	South Side	North Side	Total	West Side	East Side	South Side	North Side	Total	EB to WB	WB to EB	NB to SB	SB to NB	Total	
<b>WEEKDAY</b>	700	6	6	1	0	13	1	2	0	0	3	0	0	0	0	0	
	715	7	2	1	0	10	1	5	0	0	6	0	0	0	0	0	
	730	12	1	0	0	13	1	4	0	0	5	0	0	0	0	0	
	745	19	2	0	0	21	0	4	0	0	4	0	0	0	0	0	
	800	22	2	0	0	24	0	3	0	0	3	0	0	0	0	0	
	1600	8	15	0	0	23	2	5	0	0	7	0	0	0	0	0	
	1615	13	11	0	1	25	0	5	0	0	5	0	0	0	0	0	
	1630	9	11	0	3	23	0	4	0	0	4	0	0	0	0	0	
	1645	12	7	0	3	22	0	1	0	0	1	0	0	0	0	0	
1700	14	6	0	4	24	0	0	0	0	0	0	0	0	0	0		
<b>SATURDAY</b>	1200	9	10	0	2	21	1	8	0	0	9	0	0	0	0	0	
	1215	10	11	0	0	21	1	4	0	0	5	0	0	0	0	0	
	1230	9	10	0	0	19	2	1	0	0	3	0	0	0	0	0	
	1245	12	9	0	0	21	3	5	0	0	8	0	0	0	0	0	
	1300	11	6	0	0	17	3	5	0	0	8	0	0	0	0	0	

North-South Road: Liverpool Road

East-West Road: Illona Park Road (S)

Survey Date: Tue Jun 6, Sat Jun 3, 2017

Weather: WKDY-Rain/cloud, SAT - Sunny

MUNICIPALITY: Pickering, Ontario

TIG TCS v1.17

TRAF8 GROUP

**PEAK HOUR VOLUMES - ALL VEHICLES**

PEAK HOUR		Illona Park Road (S)			Illona Park Road (S)			Liverpool Road			Liverpool Road			TOTAL VEHICLES
		Eastbound			Westbound			Northbound			Southbound			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
<b>AM 800 - 900</b>	Autos	13	0	2	0	0	0	0	140	0	0	118	6	279
	Medium	0	0	0	0	0	0	0	0	0	0	6	0	6
	Heavy	0	1	0	0	0	0	0	0	5	0	0	1	7
	<b>Total</b>	<b>13</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>140</b>	<b>5</b>	<b>0</b>	<b>124</b>	<b>7</b>	<b>292</b>
	% Hv	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	4.8%	14.3%	4.5%
	PHF	0.650	0.250	0.500	0.000	0.000	0.000	0.000	0.745	0.625	0.000	0.756	0.583	0.830
<b>PM 1630 - 1730</b>	Autos	2	0	1	0	0	0	1	132	0	0	207	12	355
	Medium	0	0	0	0	0	0	0	2	0	0	1	0	3
	Heavy	0	0	0	0	0	0	0	0	1	0	0	0	1
	<b>Total</b>	<b>2</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>134</b>	<b>1</b>	<b>0</b>	<b>208</b>	<b>12</b>	<b>359</b>
	% Hv	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.5%	100.0%	0.0%	0.5%	0.0%	1.1%
	PHF	0.250	0.000	0.250	0.000	0.000	0.000	0.250	0.905	0.250	0.000	0.839	0.600	0.863
<b>SAT 1300 - 1400</b>	Autos	2	0	1	0	0	0	0	186	0	0	272	12	473
	Medium	0	0	0	0	0	0	0	1	0	0	4	0	5
	Heavy	0	0	0	0	0	0	0	0	1	0	0	1	2
	<b>Total</b>	<b>2</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>187</b>	<b>1</b>	<b>0</b>	<b>276</b>	<b>13</b>	<b>480</b>
	% Hv	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	100.0%	0.0%	1.4%	7.7%	1.5%
	PHF	0.500	0.000	0.250	0.000	0.000	0.000	0.000	0.779	0.250	0.000	0.852	0.650	0.930

PEAK HOUR	PEDESTRIANS					BICYCLES					U-TURN				
	West Side	East Side	South Side	North Side	Total	West Side	East Side	South Side	North Side	Total	EB to WB	WB to EB	NB to SB	SB to NB	Total
<b>AM</b>	22	2	0	0	24	0	3	0	0	3	0	0	0	0	0
<b>PM</b>	9	11	0	3	23	0	4	0	0	4	0	0	0	0	0
<b>SAT</b>	11	6	0	0	17	3	5	0	0	8	0	0	0	0	0



**North-South Road:** Liverpool Road

**East-West Road:** Illona Park Road (S)

**Survey Date:** Tue Jun 6, Sat Jun 3, 2017

**Weather:** WKDY-Rain/cloud, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

**HOURLY SUMMARY - AUTOS**

	TIME BEGINNING	Illona Park Road (S)			Illona Park Road (S)			Liverpool Road			Liverpool Road			TOTAL VEHICLES
		Eastbound			Westbound			Northbound			Southbound			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
<b>WEEKDAY</b>	700	16	0	1	0	0	0	0	87	0	0	63	2	169
	715	11	0	2	0	0	0	0	117	0	0	88	1	219
	730	11	0	2	0	0	0	0	122	0	0	109	4	248
	745	12	0	2	0	0	0	0	127	0	0	113	5	259
	800	13	0	2	0	0	0	0	140	0	0	118	6	279
	1600	4	0	1	0	0	0	1	122	0	0	172	13	313
	1615	3	0	1	0	0	0	0	130	0	0	197	14	345
	1630	2	0	1	0	0	0	1	132	0	0	207	12	355
	1645	1	0	0	0	0	0	2	125	0	0	204	13	345
1700	2	0	0	0	0	0	2	127	0	0	197	14	342	
<b>SATURDAY</b>														
	1200	1	0	1	0	0	0	0	189	0	0	235	7	433
	1215	2	0	1	0	0	0	0	199	0	0	253	7	462
	1230	1	0	0	0	0	0	0	189	0	0	246	11	447
	1245	1	0	0	0	0	0	0	184	0	0	250	11	446
1300	2	0	1	0	0	0	0	186	0	0	272	12	473	

**North-South Road:** Liverpool Road

**East-West Road:** Illona Park Road (S)

**Survey Date:** Tue Jun 6, Sat Jun 3, 2017

**Weather:** WKDY-Rain/cloud, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

**HOURLY SUMMARY - MEDIUM**

	TIME BEGINNING	Illona Park Road (S)			Illona Park Road (S)			Liverpool Road			Liverpool Road			TOTAL VEHICLES
		Eastbound			Westbound			Northbound			Southbound			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
<b>WEEKDAY</b>	700	0	0	0	0	0	0	0	1	0	0	2	0	3
	715	0	0	0	0	0	0	0	0	0	0	3	0	3
	730	0	0	0	0	0	0	0	0	0	0	3	0	3
	745	0	0	0	0	0	0	0	0	0	0	5	0	5
	800	0	0	0	0	0	0	0	0	0	0	6	0	6
	1600	0	0	0	0	0	0	0	0	0	0	1	0	1
	1615	0	0	0	0	0	0	0	1	0	0	1	0	2
	1630	0	0	0	0	0	0	0	2	0	0	1	0	3
	1645	0	0	0	0	0	0	0	2	0	0	0	0	2
	1700	0	0	0	0	0	0	0	2	0	0	0	0	2
<b>SATURDAY</b>	1200	0	0	0	0	0	0	0	6	0	0	8	0	14
	1215	0	0	0	0	0	0	0	3	0	0	9	0	12
	1230	0	0	0	0	0	0	0	3	0	0	5	0	8
	1245	0	0	0	0	0	0	0	1	0	0	5	0	6
	1300	0	0	0	0	0	0	0	1	0	0	4	0	5

**North-South Road:** Liverpool Road

**East-West Road:** Illona Park Road (S)

**Survey Date:** Tue Jun 6, Sat Jun 3, 2017

**Weather:** WKDY-Rain/cloud, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

**HOURLY SUMMARY - HEAVY**

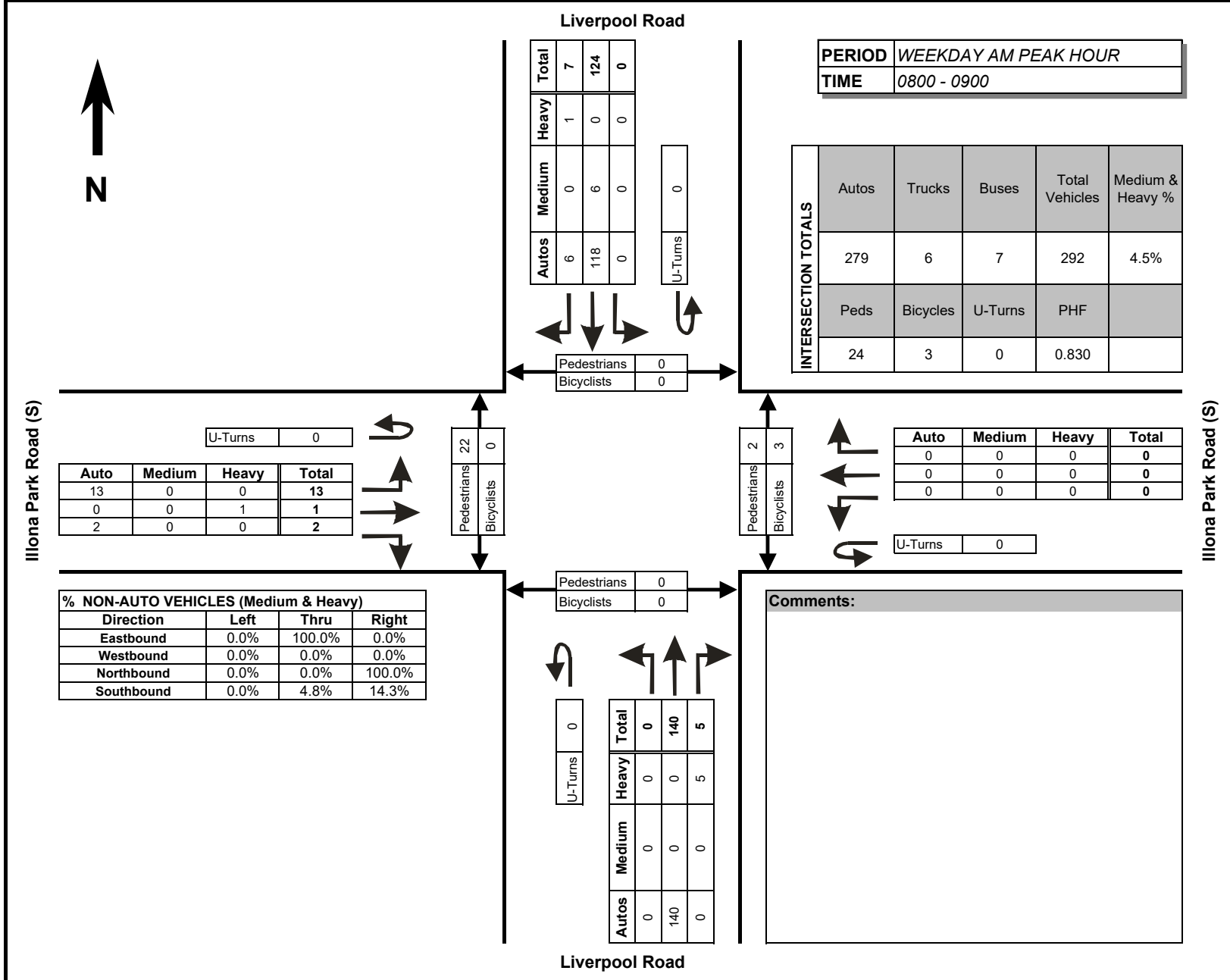
	TIME BEGINNING	Illona Park Road (S)			Illona Park Road (S)			Liverpool Road			Liverpool Road			TOTAL VEHICLES
		Eastbound			Westbound			Northbound			Southbound			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
<b>WEEKDAY</b>	700	0	0	0	0	0	0	0	0	6	0	0	3	9
	715	0	0	0	0	0	0	0	0	5	0	0	4	9
	730	0	0	0	0	0	0	0	0	6	0	0	4	10
	745	0	1	0	0	0	0	0	0	8	0	0	3	12
	800	0	1	0	0	0	0	0	0	5	0	0	1	7
	1600	0	0	0	0	0	0	0	0	1	0	0	1	2
	1615	0	0	0	0	0	0	0	0	0	0	0	0	0
	1630	0	0	0	0	0	0	0	0	1	0	0	0	1
	1645	0	0	0	0	0	0	0	0	1	0	0	1	2
	1700	0	0	0	0	0	0	0	0	1	0	0	1	2
<b>SATURDAY</b>	1200	0	0	0	0	0	0	0	0	0	0	0	0	0
	1215	0	0	0	0	0	0	0	0	0	0	0	0	0
	1230	0	0	0	0	0	0	0	0	1	0	0	0	1
	1245	0	0	0	0	0	0	0	0	1	0	0	1	2
	1300	0	0	0	0	0	0	0	0	1	0	0	1	2

TRAF8 GROUP

TIG TCS v1.17

**NORTH-SOUTH ROAD:** Liverpool Road  
**EAST-WEST ROAD:** Illona Park Road (S)  
**SURVEY DATE:** Tue Jun 6, Sat Jun 3, 2017  
**MUNICIPALITY:** Pickering, Ontario  
**WEATHER:** WKDY-Rain/cloud, SAT - Sunny

**TURNING  
MOVEMENT  
DIAGRAM**



TRAF8 GROUP

TIG TCS v1.17

**NORTH-SOUTH ROAD:** Liverpool Road  
**EAST-WEST ROAD:** Illona Park Road (S)  
**SURVEY DATE:** Tue Jun 6, Sat Jun 3, 2017  
**MUNICIPALITY:** Pickering, Ontario  
**WEATHER:** WKDY-Rain/cloud, SAT - Sunny

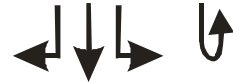
**TURNING  
MOVEMENT  
DIAGRAM**



**Liverpool Road**

	<b>Total</b>	12	208	0
	<b>Heavy</b>	0	0	0
	<b>Medium</b>	0	1	0
	<b>Autos</b>	12	207	0

<b>U-Turns</b>	0
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<b>Pedestrians</b>	3
<b>Bicyclists</b>	0

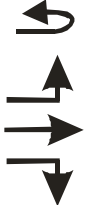
<b>PERIOD</b>	WEEKDAY PM PEAK HOUR
<b>TIME</b>	1630 - 1730

<b>INTERSECTION TOTALS</b>	<b>Autos</b>	<b>Trucks</b>	<b>Buses</b>	<b>Total Vehicles</b>	<b>Medium &amp; Heavy %</b>
	355	3	1	359	1.1%
	<b>Peds</b>	<b>Bicycles</b>	<b>U-Turns</b>	<b>PHF</b>	
	23	4	0	0.863	

Illona Park Road (S)

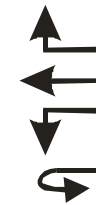
<b>Auto</b>	<b>Medium</b>	<b>Heavy</b>	<b>Total</b>
2	0	0	2
0	0	0	0
1	0	0	1

<b>U-Turns</b>	0
----------------	---



<b>Pedestrians</b>	9
<b>Bicyclists</b>	0

<b>Pedestrians</b>	11
<b>Bicyclists</b>	4



<b>Auto</b>	<b>Medium</b>	<b>Heavy</b>	<b>Total</b>
0	0	0	0
0	0	0	0
0	0	0	0

<b>U-Turns</b>	0
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Illona Park Road (S)

% NON-AUTO VEHICLES (Medium & Heavy)			
Direction	Left	Thru	Right
Eastbound	0.0%	0.0%	0.0%
Westbound	0.0%	0.0%	0.0%
Northbound	0.0%	1.5%	100.0%
Southbound	0.0%	0.5%	0.0%

<b>Pedestrians</b>	0
<b>Bicyclists</b>	0



	<b>Total</b>	1	134	1
	<b>Heavy</b>	0	0	1
	<b>Medium</b>	0	2	0
	<b>Autos</b>	1	132	0

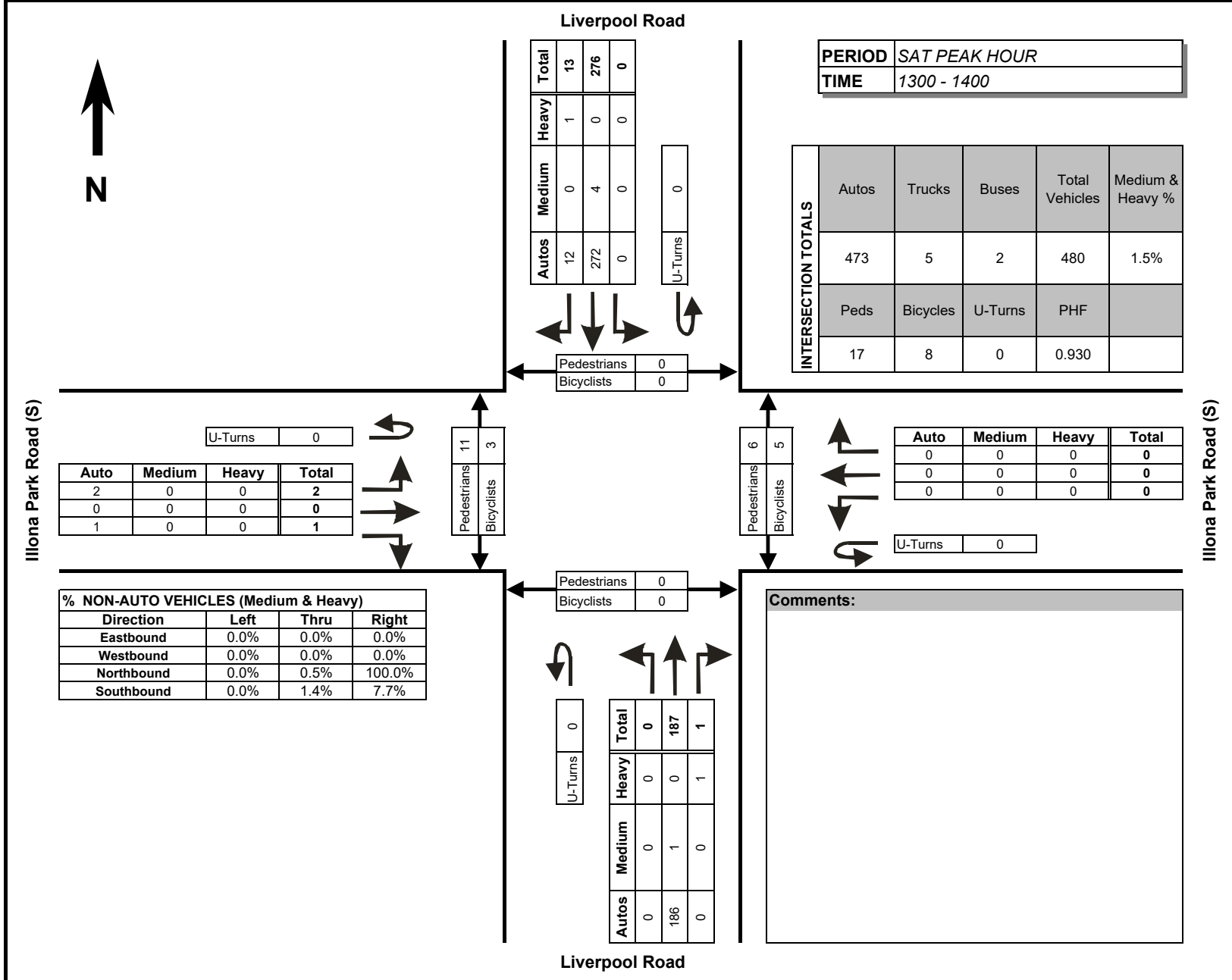
<b>U-Turns</b>	0
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**Liverpool Road**

**Comments:**

**NORTH-SOUTH ROAD:** Liverpool Road  
**EAST-WEST ROAD:** Illona Park Road (S)  
**SURVEY DATE:** Tue Jun 6, Sat Jun 3, 2017  
**MUNICIPALITY:** Pickering, Ontario  
**WEATHER:** WKDY-Rain/cloud, SAT - Sunny

**TURNING  
MOVEMENT  
DIAGRAM**



North-South Road: Liverpool Road

East-West Road: Krosno Blvd

Survey Date: Thu Jun 1, Sat Jun 3, 2017

Weather: WKDY-Sunny, SAT - Sunny

MUNICIPALITY: Pickering, Ontario

TIG TCS v1.17

TRAF8 GROUP

		<b>AUTOS</b>												<b>PEDESTRIANS</b>				
	TIME BEGINNING	Krosno Blvd			Krosno Blvd			Liverpool Road			Liverpool Road			West Side	East Side	South Side	North Side	
		Eastbound			Westbound			Northbound			Southbound							
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right					
<b>WEEKDAY</b>	700	0	0	0	0	0	35	0	30	3	13	10	0	0	2	0	0	
	715	0	0	0	2	0	34	0	34	2	12	15	0	3	1	2	0	
	730	0	0	0	1	0	29	0	41	1	16	18	0	3	1	0	0	
	745	0	0	0	1	0	22	0	70	2	18	28	0	3	2	0	0	
	800	0	0	0	0	0	20	0	36	1	28	22	0	0	1	0	0	
	815	0	0	0	1	0	22	0	48	2	25	25	0	7	5	4	0	
	830	0	0	0	2	0	35	0	42	4	28	25	0	19	5	19	0	
	845	0	0	0	2	0	46	0	40	2	38	42	0	4	1	3	0	
	1600	0	0	0	10	0	24	0	68	5	49	63	0	3	2	0	0	
	1615	0	0	0	6	0	29	0	53	7	33	72	0	2	3	0	0	
	1630	0	0	0	4	0	31	0	53	4	35	86	0	5	5	3	0	
	1645	0	0	0	4	0	25	0	44	1	41	71	0	2	4	0	0	
	1700	0	0	0	11	0	48	0	60	3	47	65	0	4	6	2	0	
1715	0	0	0	9	0	19	0	50	3	48	79	0	2	3	1	0		
1730	0	0	0	3	0	26	0	59	4	36	79	0	5	2	3	0		
1745	0	0	0	2	0	18	0	47	4	32	70	0	5	0	2	0		
<b>SATURDAY</b>	1200	0	0	0	2	0	30	0	57	4	35	59	0	1	4	0	0	
	1215	0	0	0	4	0	24	0	74	3	21	80	0	2	0	0	0	
	1230	0	0	0	3	0	26	0	51	6	37	80	0	2	4	3	0	
	1245	0	0	0	2	0	24	0	58	6	28	74	0	1	0	0	0	
	1300	0	0	0	2	0	22	0	55	6	26	71	0	1	0	0	0	
	1315	0	0	0	3	0	17	0	62	3	28	76	0	6	6	5	0	
	1330	0	0	0	2	0	25	0	60	4	24	89	0	3	1	1	0	
1345	0	0	0	5	0	24	0	50	3	25	93	0	1	0	0	0		
	<b>TOTALS</b>																	
	AM	0	0	0	9	0	243	0	341	17	178	185	0	39	18	28	0	
	PM	0	0	0	49	0	220	0	434	31	321	585	0	28	25	11	0	
	SAT	0	0	0	23	0	192	0	467	35	224	622	0	17	15	9	0	

North-South Road: Liverpool Road

East-West Road: Krosno Blvd

Survey Date: Thu Jun 1, Sat Jun 3, 2017

Weather: WKDY-Sunny, SAT - Sunny

MUNICIPALITY: Pickering, Ontario

TIG TCS v1.17

TRAF8 GROUP

		<b>MEDIUM</b>												<b>BICYCLES</b>			
	TIME BEGINNING	Krosno Blvd			Krosno Blvd			Liverpool Road			Liverpool Road			West Side	East Side	South Side	North Side
		Eastbound			Westbound			Northbound			Southbound						
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right				
<b>WEEKDAY</b>	700	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0
	715	0	0	0	0	0	0	0	1	0	0	0	0	0	3	0	0
	730	0	0	0	0	0	3	0	1	1	1	2	0	0	0	0	0
	745	0	0	0	0	0	0	0	1	0	1	1	0	2	0	0	0
	800	0	0	0	0	0	1	0	3	0	0	0	0	0	0	0	0
	815	0	0	0	0	0	0	0	1	0	0	2	0	1	0	0	0
	830	0	0	0	0	0	0	0	1	0	3	2	0	0	1	0	0
	845	0	0	0	0	0	2	0	3	0	2	0	0	0	1	0	0
	1600	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0
	1615	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
	1630	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	1645	0	0	0	0	0	0	0	3	0	1	2	0	0	0	0	0
	1700	0	0	0	0	0	0	0	0	0	2	5	0	2	1	0	0
1715	0	0	0	0	0	0	0	1	0	1	2	0	0	0	2	0	
1730	0	0	0	0	0	0	0	0	0	0	1	0	2	0	1	0	
1745	0	0	0	0	0	0	0	1	0	0	0	0	4	0	0	0	
<b>SATURDAY</b>	1200	0	0	0	0	0	0	0	3	1	0	2	0	9	1	1	9
	1215	0	0	0	0	0	1	0	0	0	0	2	0	2	2	1	1
	1230	0	0	0	0	0	0	0	4	0	0	3	0	3	0	0	0
	1245	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	0
	1300	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	0
	1315	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0
	1330	0	0	0	0	0	0	0	0	0	0	3	0	2	3	0	0
1345	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	
	<b>TOTALS</b>																
	AM	0	0	0	0	0	6	0	12	1	7	8	0	3	5	0	0
	PM	0	0	0	0	0	2	0	6	0	4	11	0	8	1	3	0
	SAT	0	0	0	0	0	2	0	9	1	0	12	0	19	8	2	10



North-South Road: Liverpool Road

East-West Road: Krosno Blvd

Survey Date: Thu Jun 1, Sat Jun 3, 2017

Weather: WKDY-Sunny, SAT - Sunny

MUNICIPALITY: Pickering, Ontario

TIG TCS v1.17

TRAF8 GROUP

		<b>HEAVY</b>											<b>U-TURNS</b>				
	TIME BEGINNING	Krosno Blvd			Krosno Blvd			Liverpool Road			Liverpool Road			EB to WB	WB to EB	NB to SB	SB to NB
		Eastbound			Westbound			Northbound			Southbound						
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right				
<b>WEEKDAY</b>	700	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0
	715	0	0	0	0	0	0	0	0	2	0	0	1	0	0	0	0
	730	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
	745	0	0	0	0	0	0	0	0	3	0	0	1	0	1	0	0
	800	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0
	815	0	0	0	0	1	0	0	0	1	0	0	0	0	2	0	0
	830	0	0	0	0	0	0	0	0	3	0	1	0	0	0	0	0
	845	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
	1600	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
	1615	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0
	1630	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
	1645	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1700	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
1715	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1730	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	
1745	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<b>SATURDAY</b>	1200	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	1215	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
	1230	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
	1245	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1315	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0
	1330	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
	1345	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<b>TOTALS</b>																
	AM	0	0	0	0	2	0	0	0	11	0	1	4	0	4	0	0
	PM	0	0	0	0	0	0	0	0	2	0	0	3	0	1	0	0
	SAT	0	0	0	0	0	0	0	0	1	0	3	3	0	0	0	0

North-South Road: Liverpool Road

East-West Road: Krosno Blvd

Survey Date: Thu Jun 1, Sat Jun 3, 2017

Weather: WKDY-Sunny, SAT - Sunny

MUNICIPALITY: Pickering, Ontario

TIG TCS v1.17

TRAF8 GROUP

<b>TOTAL VEHICLES</b>														
TIME BEGINNING	Krosno Blvd			Krosno Blvd			Liverpool Road			Liverpool Road			TOTAL VEHICLES	
	Eastbound			Westbound			Northbound			Southbound				
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
<b>WEEKDAY</b>	700	0	0	0	0	0	35	0	31	3	13	11	2	95
	715	0	0	0	2	0	34	0	35	4	12	15	1	103
	730	0	0	0	1	0	32	0	42	3	17	20	0	115
	745	0	0	0	1	0	22	0	71	5	19	29	1	148
	800	0	0	0	0	1	21	0	39	1	28	22	0	112
	815	0	0	0	1	1	22	0	49	3	25	27	0	128
	830	0	0	0	2	0	35	0	43	7	31	28	0	146
	845	0	0	0	2	0	48	0	43	3	40	42	0	178
	1600	0	0	0	10	0	25	0	69	6	49	63	0	222
	1615	0	0	0	6	0	30	0	53	8	33	72	0	202
	1630	0	0	0	4	0	31	0	53	4	35	87	1	215
	1645	0	0	0	4	0	25	0	47	1	42	73	0	192
	1700	0	0	0	11	0	48	0	60	3	49	70	1	242
	1715	0	0	0	9	0	19	0	51	3	49	81	0	212
1730	0	0	0	3	0	26	0	59	4	36	80	1	209	
1745	0	0	0	2	0	18	0	48	4	32	70	0	174	
<b>SATURDAY</b>	1200	0	0	0	2	0	30	0	60	5	35	62	0	194
	1215	0	0	0	4	0	25	0	74	3	21	83	1	211
	1230	0	0	0	3	0	26	0	55	6	37	83	1	211
	1245	0	0	0	2	0	24	0	59	6	28	75	0	194
	1300	0	0	0	2	0	22	0	56	6	26	72	0	184
	1315	0	0	0	3	0	17	0	62	4	28	77	0	191
	1330	0	0	0	2	0	25	0	60	4	24	92	1	208
1345	0	0	0	5	0	25	0	50	3	25	93	0	201	
<b>TOTALS</b>														
AM	0	0	0	9	2	249	0	353	29	185	194	4	<b>1,025</b>	
PM	0	0	0	49	0	222	0	440	33	325	596	3	<b>1,668</b>	
SAT	0	0	0	23	0	194	0	476	37	224	637	3	<b>1,594</b>	

**North-South Road:** Liverpool Road

**East-West Road:** Krosno Blvd

**Survey Date:** Thu Jun 1, Sat Jun 3, 2017

**Weather:** WKDY-Sunny, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

**HOURLY SUMMARY - ALL VEHICLES**

	TIME BEGINNING	Krosno Blvd			Krosno Blvd			Liverpool Road			Liverpool Road			TOTAL VEHICLES
		Eastbound			Westbound			Northbound			Southbound			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
<b>WEEKDAY</b>	700	0	0	0	4	0	123	0	179	15	61	75	4	461
	715	0	0	0	4	1	109	0	187	13	76	86	2	478
	730	0	0	0	3	2	97	0	201	12	89	98	1	503
	745	0	0	0	4	2	100	0	202	16	103	106	1	534
	800	0	0	0	5	2	126	0	174	14	124	119	0	564
	1600	0	0	0	24	0	111	0	222	19	159	295	1	831
	1615	0	0	0	25	0	134	0	213	16	159	302	2	851
	1630	0	0	0	28	0	123	0	211	11	175	311	2	861
	1645	0	0	0	27	0	118	0	217	11	176	304	2	855
	1700	0	0	0	25	0	111	0	218	14	166	301	2	837
<b>SATURDAY</b>	1200	0	0	0	11	0	105	0	248	20	121	303	2	810
	1215	0	0	0	11	0	97	0	244	21	112	313	2	800
	1230	0	0	0	10	0	89	0	232	22	119	307	1	780
	1245	0	0	0	9	0	88	0	237	20	106	316	1	777
	1300	0	0	0	12	0	89	0	228	17	103	334	1	784

**North-South Road:** Liverpool Road

**East-West Road:** Krosno Blvd

**Survey Date:** Thu Jun 1, Sat Jun 3, 2017

**Weather:** WKDY-Sunny, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

**HOURLY SUMMARY**

	TIME BEGINNING	PEDESTRIANS					BICYCLES					U-TURN				
		West Side	East Side	South Side	North Side	Total	West Side	East Side	South Side	North Side	Total	EB to WB	WB to EB	NB to SB	SB to NB	Total
<b>WEEKDAY</b>	700	9	6	2	0	17	2	3	0	0	5	0	1	0	0	1
	715	9	5	2	0	16	2	3	0	0	5	0	2	0	0	2
	730	13	9	4	0	26	3	0	0	0	3	0	4	0	0	4
	745	29	13	23	0	65	3	1	0	0	4	0	4	0	0	4
	800	30	12	26	0	68	1	2	0	0	3	0	3	0	0	3
	1600	12	14	3	0	29	0	0	0	0	0	0	1	0	0	1
	1615	13	18	5	0	36	2	1	0	0	3	0	1	0	0	1
	1630	13	18	6	0	37	2	1	2	0	5	0	0	0	0	0
	1645	13	15	6	0	34	4	1	3	0	8	0	0	0	0	0
1700	16	11	8	0	35	8	1	3	0	12	0	0	0	0	0	
<b>SATURDAY</b>	1200	6	8	3	0	17	15	3	2	10	30	0	0	0	0	0
	1215	6	4	3	0	13	7	2	1	1	11	0	0	0	0	0
	1230	10	10	8	0	28	6	2	0	0	8	0	0	0	0	0
	1245	11	7	6	0	24	5	5	0	0	10	0	0	0	0	0
	1300	11	7	6	0	24	4	5	0	0	9	0	0	0	0	0

North-South Road: Liverpool Road

East-West Road: Krosno Blvd

Survey Date: Thu Jun 1, Sat Jun 3, 2017

Weather: WKDY-Sunny, SAT - Sunny

MUNICIPALITY: Pickering, Ontario

TIG TCS v1.17

TRAF8 GROUP

**PEAK HOUR VOLUMES - ALL VEHICLES**

PEAK HOUR		Krosno Blvd			Krosno Blvd			Liverpool Road			Liverpool Road			TOTAL VEHICLES
		Eastbound			Westbound			Northbound			Southbound			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
<b>AM 800 - 900</b>	Autos	0	0	0	5	0	123	0	166	9	119	114	0	536
	Medium	0	0	0	0	0	3	0	8	0	5	4	0	20
	Heavy	0	0	0	0	2	0	0	0	5	0	1	0	8
	<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>2</b>	<b>126</b>	<b>0</b>	<b>174</b>	<b>14</b>	<b>124</b>	<b>119</b>	<b>0</b>	<b>564</b>
	% Hv	0.0%	0.0%	0.0%	0.0%	100.0%	2.4%	0.0%	4.6%	35.7%	4.0%	4.2%	0.0%	5.0%
	PHF	0.000	0.000	0.000	0.625	0.500	0.656	0.000	0.888	0.500	0.775	0.708	0.000	0.792
<b>PM 1630 - 1730</b>	Autos	0	0	0	28	0	123	0	207	11	171	301	0	841
	Medium	0	0	0	0	0	0	0	4	0	4	10	0	18
	Heavy	0	0	0	0	0	0	0	0	0	0	0	2	2
	<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>28</b>	<b>0</b>	<b>123</b>	<b>0</b>	<b>211</b>	<b>11</b>	<b>175</b>	<b>311</b>	<b>2</b>	<b>861</b>
	% Hv	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.9%	0.0%	2.3%	3.2%	100.0%	2.3%
	PHF	0.000	0.000	0.000	0.636	0.000	0.641	0.000	0.879	0.688	0.893	0.894	0.500	0.889
<b>SAT 1200 - 1300</b>	Autos	0	0	0	11	0	104	0	240	19	121	293	0	788
	Medium	0	0	0	0	0	1	0	8	1	0	8	0	18
	Heavy	0	0	0	0	0	0	0	0	0	0	2	2	4
	<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>11</b>	<b>0</b>	<b>105</b>	<b>0</b>	<b>248</b>	<b>20</b>	<b>121</b>	<b>303</b>	<b>2</b>	<b>810</b>
	% Hv	0.0%	0.0%	0.0%	0.0%	0.0%	1.0%	0.0%	3.2%	5.0%	0.0%	3.3%	100.0%	2.7%
	PHF	0.000	0.000	0.000	0.688	0.000	0.875	0.000	0.838	0.833	0.818	0.913	0.500	0.960

PEAK HOUR	PEDESTRIANS					BICYCLES					U-TURN				
	West Side	East Side	South Side	North Side	Total	West Side	East Side	South Side	North Side	Total	EB to WB	WB to EB	NB to SB	SB to NB	Total
<b>AM</b>	30	12	26	0	68	1	2	0	0	3	0	3	0	0	3
<b>PM</b>	13	18	6	0	37	2	1	2	0	5	0	0	0	0	0
<b>SAT</b>	6	8	3	0	17	15	3	2	10	30	0	0	0	0	0

**North-South Road:** Liverpool Road

**East-West Road:** Krosno Blvd

**Survey Date:** Thu Jun 1, Sat Jun 3, 2017

**Weather:** WKDY-Sunny, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

**HOURLY SUMMARY - AUTOS**

	TIME BEGINNING	Krosno Blvd Eastbound			Krosno Blvd Westbound			Liverpool Road Northbound			Liverpool Road Southbound			TOTAL VEHICLES
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
		<b>WEEKDAY</b>												
	700	0	0	0	4	0	120	0	175	8	59	71	0	437
	715	0	0	0	4	0	105	0	181	6	74	83	0	453
	730	0	0	0	3	0	93	0	195	6	87	93	0	477
	745	0	0	0	4	0	99	0	196	9	99	100	0	507
	800	0	0	0	5	0	123	0	166	9	119	114	0	536
	1600	0	0	0	24	0	109	0	218	17	158	292	0	818
	1615	0	0	0	25	0	133	0	210	15	156	294	0	833
	1630	0	0	0	28	0	123	0	207	11	171	301	0	841
	1645	0	0	0	27	0	118	0	213	11	172	294	0	835
	1700	0	0	0	25	0	111	0	216	14	163	293	0	822
<b>SATURDAY</b>														
	1200	0	0	0	11	0	104	0	240	19	121	293	0	788
	1215	0	0	0	11	0	96	0	238	21	112	305	0	783
	1230	0	0	0	10	0	89	0	226	21	119	301	0	766
	1245	0	0	0	9	0	88	0	235	19	106	310	0	767
	1300	0	0	0	12	0	88	0	227	16	103	329	0	775

**North-South Road:** Liverpool Road

**East-West Road:** Krosno Blvd

**Survey Date:** Thu Jun 1, Sat Jun 3, 2017

**Weather:** WKDY-Sunny, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

**HOURLY SUMMARY - MEDIUM**

	TIME BEGINNING	Krosno Blvd			Krosno Blvd			Liverpool Road			Liverpool Road			TOTAL VEHICLES
		Eastbound			Westbound			Northbound			Southbound			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
<b>WEEKDAY</b>	700	0	0	0	0	0	3	0	4	1	2	4	0	14
	715	0	0	0	0	0	4	0	6	1	2	3	0	16
	730	0	0	0	0	0	4	0	6	1	2	5	0	18
	745	0	0	0	0	0	1	0	6	0	4	5	0	16
	800	0	0	0	0	0	3	0	8	0	5	4	0	20
	1600	0	0	0	0	0	2	0	4	0	1	3	0	10
	1615	0	0	0	0	0	1	0	3	0	3	8	0	15
	1630	0	0	0	0	0	0	0	4	0	4	10	0	18
	1645	0	0	0	0	0	0	0	4	0	4	10	0	18
	1700	0	0	0	0	0	0	0	2	0	3	8	0	13
<b>SATURDAY</b>	1200	0	0	0	0	0	1	0	8	1	0	8	0	18
	1215	0	0	0	0	0	1	0	6	0	0	7	0	14
	1230	0	0	0	0	0	0	0	6	0	0	5	0	11
	1245	0	0	0	0	0	0	0	2	0	0	5	0	7
	1300	0	0	0	0	0	1	0	1	0	0	4	0	6

**North-South Road:** Liverpool Road

**East-West Road:** Krosno Blvd

**Survey Date:** Thu Jun 1, Sat Jun 3, 2017

**Weather:** WKDY-Sunny, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

**HOURLY SUMMARY - HEAVY**

	TIME BEGINNING	Krosno Blvd			Krosno Blvd			Liverpool Road			Liverpool Road			TOTAL VEHICLES
		Eastbound			Westbound			Northbound			Southbound			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
<b>WEEKDAY</b>	700	0	0	0	0	0	0	0	0	6	0	0	4	10
	715	0	0	0	0	1	0	0	0	6	0	0	2	9
	730	0	0	0	0	2	0	0	0	5	0	0	1	8
	745	0	0	0	0	2	0	0	0	7	0	1	1	11
	800	0	0	0	0	2	0	0	0	5	0	1	0	8
	1600	0	0	0	0	0	0	0	0	2	0	0	1	3
	1615	0	0	0	0	0	0	0	0	1	0	0	2	3
	1630	0	0	0	0	0	0	0	0	0	0	0	2	2
	1645	0	0	0	0	0	0	0	0	0	0	0	2	2
	1700	0	0	0	0	0	0	0	0	0	0	0	2	2
<b>SATURDAY</b>	1200	0	0	0	0	0	0	0	0	0	0	2	2	4
	1215	0	0	0	0	0	0	0	0	0	0	1	2	3
	1230	0	0	0	0	0	0	0	0	1	0	1	1	3
	1245	0	0	0	0	0	0	0	0	1	0	1	1	3
	1300	0	0	0	0	0	0	0	0	1	0	1	1	3



**NORTH-SOUTH ROAD:** Liverpool Road  
**EAST-WEST ROAD:** Krosno Blvd  
**SURVEY DATE:** Thu Jun 1, Sat Jun 3, 2017  
**MUNICIPALITY:** Pickering, Ontario  
**WEATHER:** WKDY-Sunny, SAT - Sunny

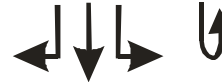
**TURNING  
MOVEMENT  
DIAGRAM**



**Liverpool Road**

	<b>Total</b>	0	119	124
	<b>Heavy</b>	0	1	0
	<b>Medium</b>	0	4	5
	<b>Autos</b>	0	114	119

<b>U-Turns</b>	0
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<b>Pedestrians</b>	0
<b>Bicyclists</b>	0

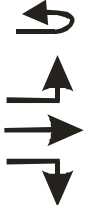
<b>PERIOD</b>	WEEKDAY AM PEAK HOUR
<b>TIME</b>	0800 - 0900

<b>INTERSECTION TOTALS</b>	<b>Autos</b>	<b>Trucks</b>	<b>Buses</b>	<b>Total Vehicles</b>	<b>Medium &amp; Heavy %</b>
	536	20	8	564	5.0%
	<b>Peds</b>	<b>Bicycles</b>	<b>U-Turns</b>	<b>PHF</b>	
	68	3	3	0.792	

**Krosno Blvd**

<b>U-Turns</b>	0
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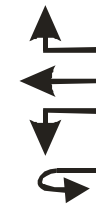
<b>Auto</b>	<b>Medium</b>	<b>Heavy</b>	<b>Total</b>
0	0	0	0
0	0	0	0
0	0	0	0



<b>Pedestrians</b>	30
<b>Bicyclists</b>	1

<b>Pedestrians</b>	12
<b>Bicyclists</b>	2

<b>Auto</b>	<b>Medium</b>	<b>Heavy</b>	<b>Total</b>
123	3	0	126
0	0	2	2
5	0	0	5



<b>U-Turns</b>	3
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**Krosno Blvd**

% NON-AUTO VEHICLES (Medium & Heavy)			
Direction	Left	Thru	Right
Eastbound	0.0%	0.0%	0.0%
Westbound	0.0%	100.0%	2.4%
Northbound	0.0%	4.6%	35.7%
Southbound	4.0%	4.2%	0.0%

<b>Pedestrians</b>	26
<b>Bicyclists</b>	0



	<b>Total</b>	0	174	14
	<b>Heavy</b>	0	0	5
	<b>Medium</b>	0	8	0
	<b>Autos</b>	0	166	9

<b>U-Turns</b>	0
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**Comments:**

**Liverpool Road**

**NORTH-SOUTH ROAD:** Liverpool Road  
**EAST-WEST ROAD:** Krosno Blvd  
**SURVEY DATE:** Thu Jun 1, Sat Jun 3, 2017  
**MUNICIPALITY:** Pickering, Ontario  
**WEATHER:** WKDY-Sunny, SAT - Sunny

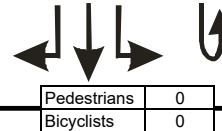
**TURNING  
MOVEMENT  
DIAGRAM**



**Liverpool Road**

<b>Autos</b>	0	301	171	
<b>Medium</b>	0	10	4	
<b>Heavy</b>	2	0	0	
<b>Total</b>	2	311	175	

<b>U-Turns</b>	0
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<b>Pedestrians</b>	0
<b>Bicyclists</b>	0

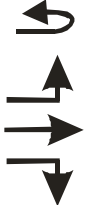
<b>PERIOD</b>	WEEKDAY PM PEAK HOUR
<b>TIME</b>	1630 - 1730

<b>INTERSECTION TOTALS</b>	<b>Autos</b>	841	<b>Trucks</b>	18	<b>Buses</b>	2	<b>Total Vehicles</b>	861	<b>Medium &amp; Heavy %</b>	2.3%
	<b>Peds</b>	37	<b>Bicycles</b>	5	<b>U-Turns</b>	0	<b>PHF</b>	0.889		

Krosno Blvd

<b>Auto</b>	0	0	0	0
<b>Medium</b>	0	0	0	0
<b>Heavy</b>	0	0	0	0
<b>Total</b>	0	0	0	0

<b>U-Turns</b>	0
----------------	---



<b>Pedestrians</b>	13
<b>Bicyclists</b>	2

<b>Pedestrians</b>	18
<b>Bicyclists</b>	1

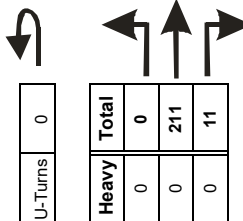
<b>Auto</b>	123	<b>Medium</b>	0	<b>Heavy</b>	0	<b>Total</b>	123
0	0	0	0	0	0	0	
28	0	0	0	0	0	28	

<b>U-Turns</b>	0
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Krosno Blvd

% NON-AUTO VEHICLES (Medium & Heavy)			
Direction	Left	Thru	Right
Eastbound	0.0%	0.0%	0.0%
Westbound	0.0%	0.0%	0.0%
Northbound	0.0%	1.9%	0.0%
Southbound	2.3%	3.2%	100.0%

<b>Pedestrians</b>	6
<b>Bicyclists</b>	2



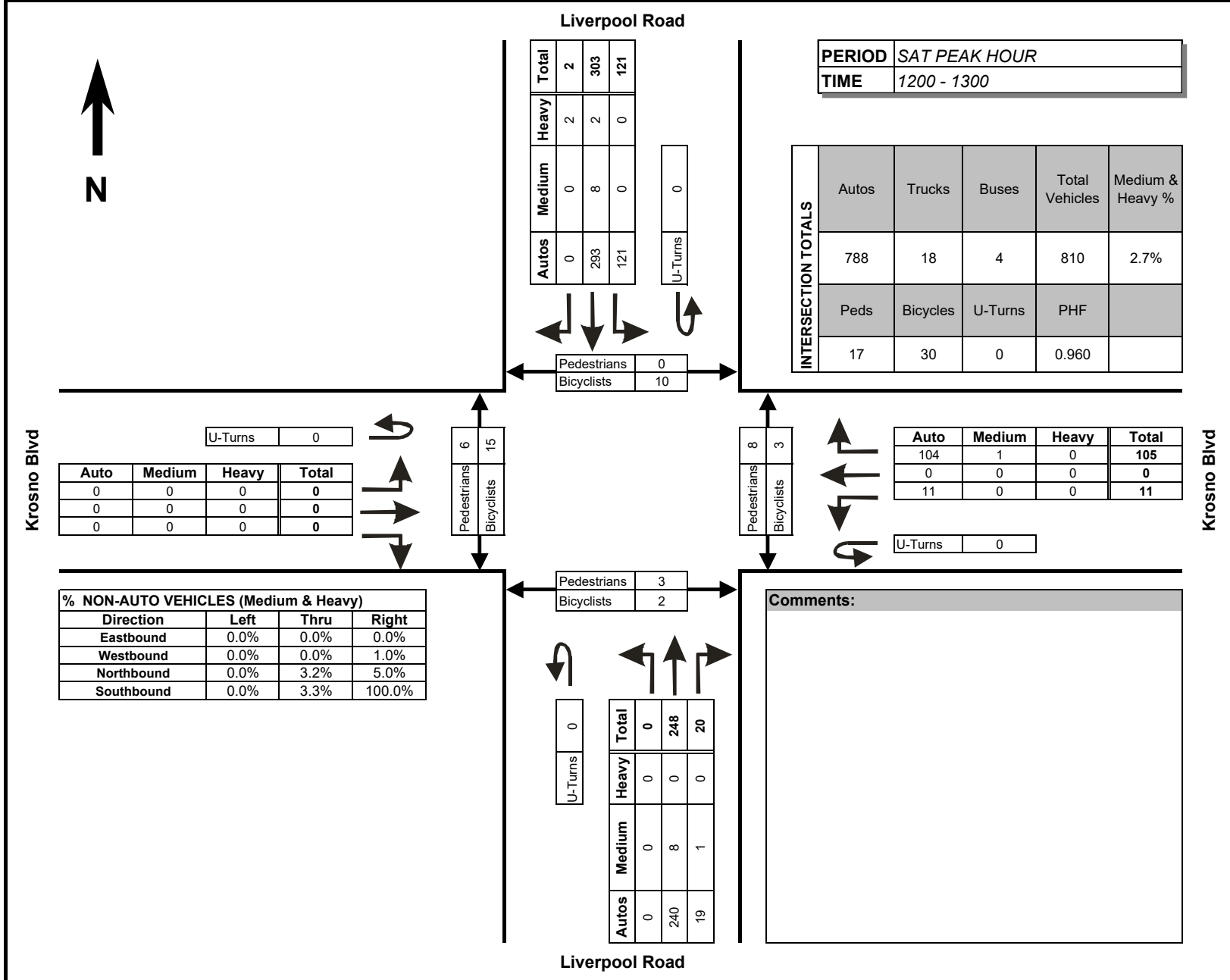
<b>Autos</b>	0	207	11	
<b>Medium</b>	0	4	0	
<b>Heavy</b>	0	0	0	
<b>Total</b>	0	211	11	

**Liverpool Road**

**Comments:**

**NORTH-SOUTH ROAD:** Liverpool Road  
**EAST-WEST ROAD:** Krosno Blvd  
**SURVEY DATE:** Thu Jun 1, Sat Jun 3, 2017  
**MUNICIPALITY:** Pickering, Ontario  
**WEATHER:** WKDY-Sunny, SAT - Sunny

**TURNING  
MOVEMENT  
DIAGRAM**



North-South Road: Liverpool Road

East-West Road: Pumping Station

Survey Date: Thu Jun 1, Sat Jun 3, 2017

Weather: WKDY-Sunny, SAT - Sunny

MUNICIPALITY: Pickering, Ontario

TIG TCS v1.17

TRAF8 GROUP

		<b>AUTOS</b>												<b>PEDESTRIANS</b>			
WEEKDAY	TIME BEGINNING	Pumping Station			Pumping Station			Liverpool Road			Liverpool Road			West Side	East Side	South Side	North Side
		Eastbound			Westbound			Northbound			Southbound						
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right				
	700	0	0	0	0	0	0	0	7	0	0	5	0	2	1	0	0
	715	0	0	0	0	0	0	0	3	0	0	6	0	0	0	0	0
	730	0	0	0	0	0	0	0	7	0	0	9	0	7	2	0	0
	745	0	0	0	0	0	0	0	18	0	0	7	0	2	3	0	0
	800	0	0	0	0	0	0	0	22	0	0	10	0	2	0	0	0
	815	0	0	0	0	0	0	0	11	0	0	11	0	2	2	0	0
	830	0	0	0	0	0	0	0	8	0	0	4	0	6	2	0	0
	845	0	0	0	0	0	0	0	7	0	0	11	0	2	1	1	0
	1600	0	0	0	0	0	1	0	27	0	1	26	0	17	9	2	0
	1615	0	0	0	0	0	1	0	31	0	1	30	0	17	8	0	2
	1630	0	0	0	0	0	0	0	17	0	0	25	0	17	9	2	4
	1645	0	0	0	0	0	0	0	16	0	0	20	0	10	7	0	3
	1700	0	0	0	0	0	1	0	18	1	1	23	0	6	5	0	0
	1715	0	0	0	1	0	0	0	16	0	0	29	0	3	6	0	0
	1730	0	0	0	0	0	0	0	25	0	0	23	0	9	8	2	0
	1745	0	0	0	0	0	0	0	19	0	1	22	0	7	1	0	0
SATURDAY	1200	0	0	0	0	0	0	0	22	0	0	26	0	19	9	0	1
	1215	0	0	0	0	0	0	0	30	0	0	42	0	26	12	0	4
	1230	0	0	0	0	0	0	0	27	0	1	29	0	34	14	0	0
	1245	0	0	0	0	0	2	0	23	0	1	31	0	16	16	0	5
	1300	0	0	0	0	0	2	0	36	0	2	30	0	26	15	0	0
	1315	0	0	0	0	0	1	0	28	0	1	29	0	18	18	0	0
	1330	0	0	0	0	0	1	0	22	0	2	40	0	28	14	3	1
1345	0	0	0	0	0	1	0	20	0	1	48	0	21	17	0	2	
	<b>TOTALS</b>																
	AM	0	0	0	0	0	0	0	83	0	0	63	0	23	11	1	0
	PM	0	0	0	1	0	3	0	169	1	4	198	0	86	53	6	9
	SAT	0	0	0	0	0	7	0	208	0	8	275	0	188	115	3	13

North-South Road: Liverpool Road

East-West Road: Pumping Station

Survey Date: Thu Jun 1, Sat Jun 3, 2017

Weather: WKDY-Sunny, SAT - Sunny

MUNICIPALITY: Pickering, Ontario

TIG TCS v1.17

TRAF8 GROUP

		<b>MEDIUM</b>												<b>BICYCLES</b>			
	TIME BEGINNING	Pumping Station			Pumping Station			Liverpool Road			Liverpool Road			West Side	East Side	South Side	North Side
		Eastbound			Westbound			Northbound			Southbound						
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right				
<b>WEEKDAY</b>	700	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
	715	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
	730	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	745	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	800	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
	815	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	830	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	845	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0
	1600	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0
	1615	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1630	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0
	1645	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1700	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0
1715	0	0	0	0	0	0	0	0	0	0	1	0	4	1	0	0	
1730	0	0	0	0	0	0	0	0	0	0	3	0	2	2	0	0	
1745	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	
<b>SATURDAY</b>	1200	0	0	0	0	0	0	0	2	0	0	0	0	12	1	0	0
	1215	0	0	0	0	0	0	0	0	0	0	1	0	7	3	0	0
	1230	0	0	0	0	0	0	0	2	0	0	2	0	8	8	0	0
	1245	0	0	0	0	0	0	0	0	0	0	1	0	4	3	0	0
	1300	0	0	0	0	0	0	0	0	0	0	1	0	2	1	0	0
	1315	0	0	0	0	0	0	0	0	0	0	0	0	2	8	0	0
	1330	0	0	0	0	0	0	0	0	0	0	1	0	7	2	0	0
1345	0	0	0	0	0	0	0	0	0	0	1	0	7	2	0	0	
	<b>TOTALS</b>																
	AM	0	0	0	0	0	0	0	0	0	0	0	0	3	2	0	0
	PM	0	0	0	0	0	0	0	1	0	0	5	0	9	9	0	0
	SAT	0	0	0	0	0	0	0	4	0	0	7	0	49	28	0	0

North-South Road: Liverpool Road

East-West Road: Pumping Station

Survey Date: Thu Jun 1, Sat Jun 3, 2017

Weather: WKDY-Sunny, SAT - Sunny

MUNICIPALITY: Pickering, Ontario

TIG TCS v1.17

TRAF8 GROUP

		<b>HEAVY</b>												<b>U-TURNS</b>			
	TIME BEGINNING	Pumping Station			Pumping Station			Liverpool Road			Liverpool Road			EB to WB	WB to EB	NB to SB	SB to NB
		Eastbound			Westbound			Northbound			Southbound						
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right				
<b>WEEKDAY</b>	700	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	715	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	730	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	745	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	800	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	815	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	830	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	845	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1600	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1615	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1630	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	1645	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1700	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1715	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1730	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1745	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<b>SATURDAY</b>	1200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1215	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1245	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1315	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1330	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1345	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>TOTALS</b>																	
AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
PM	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	
SAT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

North-South Road: Liverpool Road

East-West Road: Pumping Station

Survey Date: Thu Jun 1, Sat Jun 3, 2017

Weather: WKDY-Sunny, SAT - Sunny

MUNICIPALITY: Pickering, Ontario

TIG TCS v1.17

TRAF8 GROUP

<b>TOTAL VEHICLES</b>														
TIME BEGINNING	Pumping Station			Pumping Station			Liverpool Road			Liverpool Road			TOTAL VEHICLES	
	Eastbound			Westbound			Northbound			Southbound				
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
<b>WEEKDAY</b>	700	0	0	0	0	0	0	7	0	0	5	0	12	
	715	0	0	0	0	0	0	3	0	0	6	0	9	
	730	0	0	0	0	0	0	7	0	0	9	0	16	
	745	0	0	0	0	0	0	18	0	0	7	0	25	
	800	0	0	0	0	0	0	22	0	0	10	0	32	
	815	0	0	0	0	0	0	11	0	0	11	0	22	
	830	0	0	0	0	0	0	8	0	0	4	0	12	
	845	0	0	0	0	0	0	7	0	0	11	0	18	
	1600	0	0	0	0	0	1	0	27	0	1	26	0	55
	1615	0	0	0	0	0	1	0	31	0	1	30	0	63
	1630	0	0	0	1	0	0	0	17	0	0	25	0	43
	1645	0	0	0	0	0	0	0	16	0	0	20	0	36
	1700	0	0	0	0	0	1	0	18	1	1	23	0	44
1715	0	0	0	1	0	0	0	16	0	0	30	0	47	
1730	0	0	0	0	0	0	0	25	0	0	26	0	51	
1745	0	0	0	0	0	0	0	20	0	1	23	0	44	
<b>SATURDAY</b>	1200	0	0	0	0	0	0	24	0	0	26	0	50	
	1215	0	0	0	0	0	0	30	0	0	43	0	73	
	1230	0	0	0	0	0	0	29	0	1	31	0	61	
	1245	0	0	0	0	0	2	0	23	0	1	32	0	58
	1300	0	0	0	0	0	2	0	36	0	2	31	0	71
	1315	0	0	0	0	0	1	0	28	0	1	29	0	59
	1330	0	0	0	0	0	1	0	22	0	2	41	0	66
	1345	0	0	0	0	0	1	0	20	0	1	49	0	71
<b>TOTALS</b>														
AM	0	0	0	0	0	0	0	83	0	0	63	0	146	
PM	0	0	0	2	0	3	0	170	1	4	203	0	383	
SAT	0	0	0	0	0	7	0	212	0	8	282	0	509	

**North-South Road:** Liverpool Road

**East-West Road:** Pumping Station

**Survey Date:** Thu Jun 1, Sat Jun 3, 2017

**Weather:** WKDY-Sunny, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

**HOURLY SUMMARY - ALL VEHICLES**

	TIME BEGINNING	Pumping Station			Pumping Station			Liverpool Road			Liverpool Road			TOTAL VEHICLES
		Eastbound			Westbound			Northbound			Southbound			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
<b>WEEKDAY</b>	700	0	0	0	0	0	0	0	35	0	0	27	0	62
	715	0	0	0	0	0	0	0	50	0	0	32	0	82
	730	0	0	0	0	0	0	0	58	0	0	37	0	95
	745	0	0	0	0	0	0	0	59	0	0	32	0	91
	800	0	0	0	0	0	0	0	48	0	0	36	0	84
	1600	0	0	0	1	0	2	0	91	0	2	101	0	197
	1615	0	0	0	1	0	2	0	82	1	2	98	0	186
	1630	0	0	0	2	0	1	0	67	1	1	98	0	170
	1645	0	0	0	1	0	1	0	75	1	1	99	0	178
	1700	0	0	0	1	0	1	0	79	1	2	102	0	186
<b>SATURDAY</b>	1200	0	0	0	0	0	2	0	106	0	2	132	0	242
	1215	0	0	0	0	0	4	0	118	0	4	137	0	263
	1230	0	0	0	0	0	5	0	116	0	5	123	0	249
	1245	0	0	0	0	0	6	0	109	0	6	133	0	254
	1300	0	0	0	0	0	5	0	106	0	6	150	0	267



**North-South Road:** Liverpool Road

**East-West Road:** Pumping Station

**Survey Date:** Thu Jun 1, Sat Jun 3, 2017

**Weather:** WKDY-Sunny, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

**HOURLY SUMMARY**

	TIME BEGINNING	PEDESTRIANS					BICYCLES					U-TURN				
		West Side	East Side	South Side	North Side	Total	West Side	East Side	South Side	North Side	Total	EB to WB	WB to EB	NB to SB	SB to NB	Total
<b>WEEKDAY</b>	700	11	6	0	0	17	1	1	0	0	2	0	0	0	0	0
	715	11	5	0	0	16	0	2	0	0	2	0	0	0	0	0
	730	13	7	0	0	20	0	1	0	0	1	0	0	0	0	0
	745	12	7	0	0	19	0	1	0	0	1	0	0	0	0	0
	800	12	5	1	0	18	2	1	0	0	3	0	0	0	0	0
	1600	61	33	4	9	107	3	3	0	0	6	0	0	0	0	0
	1615	50	29	2	9	90	1	5	0	0	6	0	0	0	0	0
	1630	36	27	2	7	72	5	6	0	0	11	0	0	0	0	0
	1645	28	26	2	3	59	6	6	0	0	12	0	0	0	0	0
1700	25	20	2	0	47	6	6	0	0	12	0	0	0	0	0	
<b>SATURDAY</b>	1200	95	51	0	10	156	31	15	0	0	46	0	0	0	0	0
	1215	102	57	0	9	168	21	15	0	0	36	0	0	0	0	0
	1230	94	63	0	5	162	16	20	0	0	36	0	0	0	0	0
	1245	88	63	3	6	160	15	14	0	0	29	0	0	0	0	0
	1300	93	64	3	3	163	18	13	0	0	31	0	0	0	0	0

North-South Road: Liverpool Road

East-West Road: Pumping Station

Survey Date: Thu Jun 1, Sat Jun 3, 2017

Weather: WKDY-Sunny, SAT - Sunny

MUNICIPALITY: Pickering, Ontario

TIG TCS v1.17

TRAF8 GROUP

**PEAK HOUR VOLUMES - ALL VEHICLES**

PEAK HOUR		Pumping Station			Pumping Station			Liverpool Road			Liverpool Road			TOTAL VEHICLES
		Eastbound			Westbound			Northbound			Southbound			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
<b>AM 730 - 830</b>	Autos	0	0	0	0	0	0	0	58	0	0	37	0	95
	Medium	0	0	0	0	0	0	0	0	0	0	0	0	0
	Heavy	0	0	0	0	0	0	0	0	0	0	0	0	0
	<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>58</b>	<b>0</b>	<b>0</b>	<b>37</b>	<b>0</b>	<b>95</b>
	% Hv	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%
	PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.659	0.000	0.000	0.841	0.000	0.742
<b>PM 1600 - 1700</b>	Autos	0	0	0	0	0	2	0	91	0	2	101	0	196
	Medium	0	0	0	0	0	0	0	0	0	0	0	0	0
	Heavy	0	0	0	1	0	0	0	0	0	0	0	0	1
	<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>91</b>	<b>0</b>	<b>2</b>	<b>101</b>	<b>0</b>	<b>197</b>
	% Hv	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%
	PHF	0.000	0.000	0.000	0.250	0.000	0.500	0.000	0.734	0.000	0.500	0.842	0.000	0.782
<b>SAT 1300 - 1400</b>	Autos	0	0	0	0	0	5	0	106	0	6	147	0	264
	Medium	0	0	0	0	0	0	0	0	0	0	3	0	3
	Heavy	0	0	0	0	0	0	0	0	0	0	0	0	0
	<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>5</b>	<b>0</b>	<b>106</b>	<b>0</b>	<b>6</b>	<b>150</b>	<b>0</b>	<b>267</b>
	% Hv	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.0%	0.0%	1.1%
	PHF	0.000	0.000	0.000	0.000	0.000	0.625	0.000	0.736	0.000	0.750	0.765	0.000	0.940

PEAK HOUR	PEDESTRIANS					BICYCLES					U-TURN				
	West Side	East Side	South Side	North Side	Total	West Side	East Side	South Side	North Side	Total	EB to WB	WB to EB	NB to SB	SB to NB	Total
<b>AM</b>	13	7	0	0	20	0	1	0	0	1	0	0	0	0	0
<b>PM</b>	61	33	4	9	107	3	3	0	0	6	0	0	0	0	0
<b>SAT</b>	93	64	3	3	163	18	13	0	0	31	0	0	0	0	0

**North-South Road:** Liverpool Road

**East-West Road:** Pumping Station

**Survey Date:** Thu Jun 1, Sat Jun 3, 2017

**Weather:** WKDY-Sunny, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

**HOURLY SUMMARY - AUTOS**

	TIME BEGINNING	Pumping Station			Pumping Station			Liverpool Road			Liverpool Road			TOTAL VEHICLES
		Eastbound			Westbound			Northbound			Southbound			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
<b>WEEKDAY</b>	700	0	0	0	0	0	0	0	35	0	0	27	0	62
	715	0	0	0	0	0	0	0	50	0	0	32	0	82
	730	0	0	0	0	0	0	0	58	0	0	37	0	95
	745	0	0	0	0	0	0	0	59	0	0	32	0	91
	800	0	0	0	0	0	0	0	48	0	0	36	0	84
	1600	0	0	0	0	0	2	0	91	0	2	101	0	196
	1615	0	0	0	0	0	2	0	82	1	2	98	0	185
	1630	0	0	0	1	0	1	0	67	1	1	97	0	168
	1645	0	0	0	1	0	1	0	75	1	1	95	0	174
1700	0	0	0	1	0	1	0	78	1	2	97	0	180	
<b>SATURDAY</b>	1200	0	0	0	0	0	2	0	102	0	2	128	0	234
	1215	0	0	0	0	0	4	0	116	0	4	132	0	256
	1230	0	0	0	0	0	5	0	114	0	5	119	0	243
	1245	0	0	0	0	0	6	0	109	0	6	130	0	251
	1300	0	0	0	0	0	5	0	106	0	6	147	0	264

**North-South Road:** Liverpool Road

**East-West Road:** Pumping Station

**Survey Date:** Thu Jun 1, Sat Jun 3, 2017

**Weather:** WKDY-Sunny, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

**HOURLY SUMMARY - MEDIUM**

	TIME BEGINNING	Pumping Station			Pumping Station			Liverpool Road			Liverpool Road			TOTAL VEHICLES
		Eastbound			Westbound			Northbound			Southbound			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
<b>WEEKDAY</b>	700	0	0	0	0	0	0	0	0	0	0	0	0	0
	715	0	0	0	0	0	0	0	0	0	0	0	0	0
	730	0	0	0	0	0	0	0	0	0	0	0	0	0
	745	0	0	0	0	0	0	0	0	0	0	0	0	0
	800	0	0	0	0	0	0	0	0	0	0	0	0	0
	1600	0	0	0	0	0	0	0	0	0	0	0	0	0
	1615	0	0	0	0	0	0	0	0	0	0	0	0	0
	1630	0	0	0	0	0	0	0	0	0	0	1	0	1
	1645	0	0	0	0	0	0	0	0	0	0	4	0	4
	1700	0	0	0	0	0	0	0	1	0	0	5	0	6
<b>SATURDAY</b>	1200	0	0	0	0	0	0	0	4	0	0	4	0	8
	1215	0	0	0	0	0	0	0	2	0	0	5	0	7
	1230	0	0	0	0	0	0	0	2	0	0	4	0	6
	1245	0	0	0	0	0	0	0	0	0	0	3	0	3
	1300	0	0	0	0	0	0	0	0	0	0	3	0	3

**North-South Road:** Liverpool Road

**East-West Road:** Pumping Station

**Survey Date:** Thu Jun 1, Sat Jun 3, 2017

**Weather:** WKDY-Sunny, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

**HOURLY SUMMARY - HEAVY**

	TIME BEGINNING	Pumping Station			Pumping Station			Liverpool Road			Liverpool Road			TOTAL VEHICLES
		Eastbound			Westbound			Northbound			Southbound			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
<b>WEEKDAY</b>	700	0	0	0	0	0	0	0	0	0	0	0	0	0
	715	0	0	0	0	0	0	0	0	0	0	0	0	0
	730	0	0	0	0	0	0	0	0	0	0	0	0	0
	745	0	0	0	0	0	0	0	0	0	0	0	0	0
	800	0	0	0	0	0	0	0	0	0	0	0	0	0
	1600	0	0	0	1	0	0	0	0	0	0	0	0	1
	1615	0	0	0	1	0	0	0	0	0	0	0	0	1
	1630	0	0	0	1	0	0	0	0	0	0	0	0	1
	1645	0	0	0	0	0	0	0	0	0	0	0	0	0
	1700	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>SATURDAY</b>	1200	0	0	0	0	0	0	0	0	0	0	0	0	0
	1215	0	0	0	0	0	0	0	0	0	0	0	0	0
	1230	0	0	0	0	0	0	0	0	0	0	0	0	0
	1245	0	0	0	0	0	0	0	0	0	0	0	0	0
	1300	0	0	0	0	0	0	0	0	0	0	0	0	0

**NORTH-SOUTH ROAD:** Liverpool Road  
**EAST-WEST ROAD:** Pumping Station  
**SURVEY DATE:** Thu Jun 1, Sat Jun 3, 2017  
**MUNICIPALITY:** Pickering, Ontario  
**WEATHER:** WKDY-Sunny, SAT - Sunny

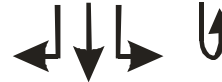
**TURNING  
MOVEMENT  
DIAGRAM**



**Liverpool Road**

<b>Total</b>	0	37	0
<b>Heavy</b>	0	0	0
<b>Medium</b>	0	0	0
<b>Autos</b>	0	37	0

<b>U-Turns</b>	0
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<b>Pedestrians</b>	0
<b>Bicyclists</b>	0

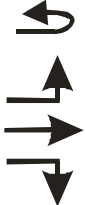
<b>PERIOD</b>	WEEKDAY AM PEAK HOUR
<b>TIME</b>	0730 - 0830

<b>INTERSECTION TOTALS</b>	<b>Autos</b>	<b>Trucks</b>	<b>Buses</b>	<b>Total Vehicles</b>	<b>Medium &amp; Heavy %</b>
	95	0	0	95	0.0%
	<b>Peds</b>	<b>Bicycles</b>	<b>U-Turns</b>	<b>PHF</b>	
	20	1	0	0.742	

Pumping Station

<b>U-Turns</b>	0
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<b>Auto</b>	<b>Medium</b>	<b>Heavy</b>	<b>Total</b>
0	0	0	0
0	0	0	0
0	0	0	0



<b>Pedestrians</b>	13
<b>Bicyclists</b>	0

<b>Pedestrians</b>	7
<b>Bicyclists</b>	1

<b>Auto</b>	<b>Medium</b>	<b>Heavy</b>	<b>Total</b>
0	0	0	0
0	0	0	0
0	0	0	0

<b>U-Turns</b>	0
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Pumping Station

% NON-AUTO VEHICLES (Medium & Heavy)			
Direction	Left	Thru	Right
Eastbound	0.0%	0.0%	0.0%
Westbound	0.0%	0.0%	0.0%
Northbound	0.0%	0.0%	0.0%
Southbound	0.0%	0.0%	0.0%

<b>Pedestrians</b>	0
<b>Bicyclists</b>	0



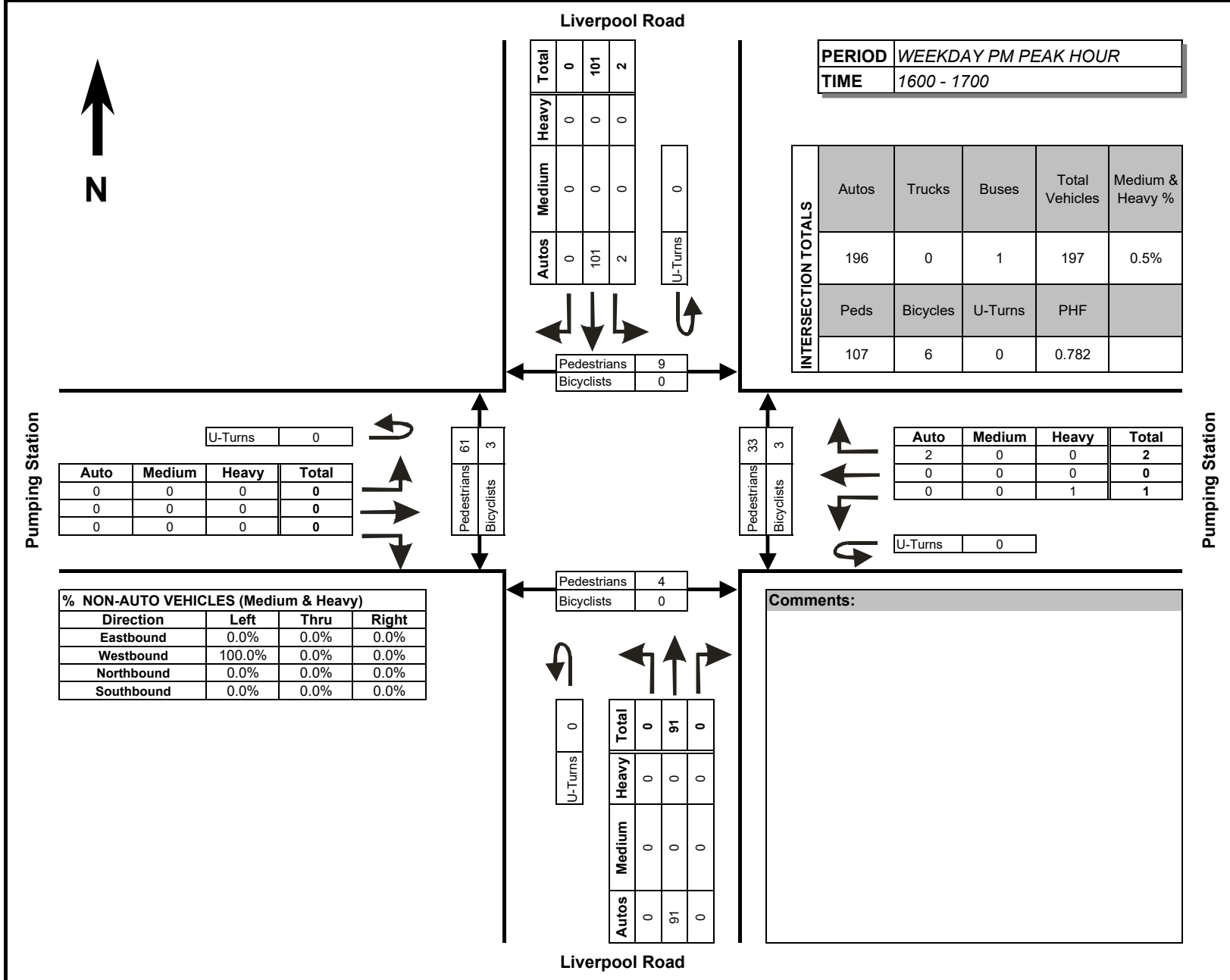
<b>U-Turns</b>	0		
<b>Autos</b>	0	58	0
<b>Medium</b>	0	0	0
<b>Heavy</b>	0	0	0
<b>Total</b>	0	58	0

**Liverpool Road**

**Comments:**

**NORTH-SOUTH ROAD:** Liverpool Road  
**EAST-WEST ROAD:** Pumping Station  
**SURVEY DATE:** Thu Jun 1, Sat Jun 3, 2017  
**MUNICIPALITY:** Pickering, Ontario  
**WEATHER:** WKDY-Sunny, SAT - Sunny

**TURNING  
MOVEMENT  
DIAGRAM**



**NORTH-SOUTH ROAD:** Liverpool Road  
**EAST-WEST ROAD:** Pumping Station  
**SURVEY DATE:** Thu Jun 1, Sat Jun 3, 2017  
**MUNICIPALITY:** Pickering, Ontario  
**WEATHER:** WKDY-Sunny, SAT - Sunny

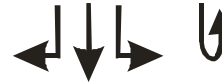
**TURNING  
MOVEMENT  
DIAGRAM**



**Liverpool Road**

	<b>Total</b>	0	150	6
	<b>Heavy</b>	0	0	0
	<b>Medium</b>	0	3	0
	<b>Autos</b>	0	147	6

<b>U-Turns</b>	0
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<b>Pedestrians</b>	3
<b>Bicyclists</b>	0

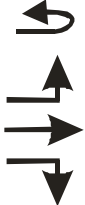
<b>PERIOD</b>	SAT PEAK HOUR
<b>TIME</b>	1300 - 1400

<b>INTERSECTION TOTALS</b>	<b>Autos</b>	<b>Trucks</b>	<b>Buses</b>	<b>Total Vehicles</b>	<b>Medium &amp; Heavy %</b>
	264	3	0	267	1.1%
	<b>Peds</b>	<b>Bicycles</b>	<b>U-Turns</b>	<b>PHF</b>	
	163	31	0	0.940	

Pumping Station

<b>U-Turns</b>	0
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<b>Auto</b>	<b>Medium</b>	<b>Heavy</b>	<b>Total</b>
0	0	0	0
0	0	0	0
0	0	0	0



<b>Pedestrians</b>	93
<b>Bicyclists</b>	18

<b>Pedestrians</b>	64
<b>Bicyclists</b>	13

<b>Auto</b>	<b>Medium</b>	<b>Heavy</b>	<b>Total</b>
5	0	0	5
0	0	0	0
0	0	0	0

<b>U-Turns</b>	0
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Pumping Station

% NON-AUTO VEHICLES (Medium & Heavy)			
Direction	Left	Thru	Right
Eastbound	0.0%	0.0%	0.0%
Westbound	0.0%	0.0%	0.0%
Northbound	0.0%	0.0%	0.0%
Southbound	0.0%	2.0%	0.0%

<b>Pedestrians</b>	3
<b>Bicyclists</b>	0



	<b>Total</b>	0	106	0
	<b>Heavy</b>	0	0	0
	<b>Medium</b>	0	0	0
	<b>Autos</b>	0	106	0

**Liverpool Road**

**Comments:**



**North-South Road:** Liverpool Road

**East-West Road:** Radom Street

**Survey Date:** Thu Jun 1, Sat Jun 3, 2017

**Weather:** WKDY-Sunny, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

<b>AUTOS</b>														<b>PEDESTRIANS</b>				
TIME BEGINNING	Radom Street			Radom Street			Liverpool Road			Liverpool Road			West Side	East Side	South Side	North Side		
	Eastbound			Westbound			Northbound			Southbound								
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right						
<b>WEEKDAY</b>	700	17	0	2	0	0	0	0	73	0	0	24	4	1	1	0	1	
	715	18	0	3	0	0	0	2	75	0	0	23	6	4	2	0	0	
	730	21	0	1	0	0	0	0	81	0	0	32	2	2	3	0	1	
	745	25	0	7	0	0	0	2	100	0	0	42	10	0	4	0	1	
	800	22	0	0	0	0	0	1	76	0	0	46	16	2	3	0	0	
	815	15	0	3	0	0	0	0	66	0	0	64	13	2	4	0	0	
	830	15	0	6	0	0	0	3	96	0	0	47	17	5	2	0	0	
	845	17	0	6	0	0	0	4	75	0	0	64	11	2	3	1	0	
	1600	10	0	7	0	0	0	6	102	0	0	104	26	1	7	0	0	
	1615	20	0	6	0	0	0	1	82	0	0	111	23	3	5	0	0	
	1630	15	0	3	0	0	0	4	97	0	0	101	18	3	9	0	0	
	1645	16	0	8	0	0	0	2	83	0	0	120	18	2	6	0	0	
	1700	13	0	6	0	0	0	3	94	0	0	121	12	5	7	0	0	
1715	19	0	9	0	0	0	7	88	0	0	116	18	3	5	0	0		
1730	17	0	4	0	0	0	4	88	0	0	120	15	0	8	0	0		
1745	9	0	8	0	0	0	4	94	0	0	128	21	3	8	1	0		
<b>SATURDAY</b>	1200	15	0	3	0	0	0	5	87	0	0	106	16	2	3	0	0	
	1215	15	0	3	0	0	0	0	104	0	0	106	14	1	7	0	0	
	1230	15	0	2	0	0	0	3	80	0	0	115	22	0	5	1	0	
	1245	10	0	3	0	0	0	2	85	0	0	108	13	3	6	4	0	
	1300	13	0	7	0	0	0	3	98	0	0	95	20	4	4	0	0	
	1315	17	0	3	0	0	0	0	97	0	0	108	11	4	5	0	0	
	1330	17	0	3	0	0	0	1	85	0	0	109	12	3	3	0	1	
1345	11	0	6	0	0	0	3	81	0	0	129	15	2	1	0	0		
<b>TOTALS</b>																		
AM	150	0	28	0	0	0	12	642	0	0	342	79	18	22	1	3		
PM	119	0	51	0	0	0	31	728	0	0	921	151	20	55	1	0		
SAT	113	0	30	0	0	0	17	717	0	0	876	123	19	34	5	1		

North-South Road: Liverpool Road

East-West Road: Radom Street

Survey Date: Thu Jun 1, Sat Jun 3, 2017

Weather: WKDY-Sunny, SAT - Sunny

MUNICIPALITY: Pickering, Ontario

TIG TCS v1.17

TRAF8 GROUP

		<b>MEDIUM</b>												<b>BICYCLES</b>			
	TIME BEGINNING	Radom Street			Radom Street			Liverpool Road			Liverpool Road			West Side	East Side	South Side	North Side
		Eastbound			Westbound			Northbound			Southbound						
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right				
<b>WEEKDAY</b>	700	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	715	0	0	0	0	0	0	0	2	0	0	1	0	0	2	0	1
	730	0	0	0	0	0	0	1	2	0	0	3	0	0	0	0	0
	745	0	0	0	0	0	0	1	1	0	0	1	1	0	1	0	0
	800	0	0	0	0	0	0	0	3	0	0	0	1	0	2	0	0
	815	0	0	0	0	0	0	1	2	0	0	2	1	0	1	0	0
	830	0	0	0	0	0	0	0	0	0	0	5	0	5	0	0	0
	845	2	0	0	0	0	0	0	4	0	0	0	0	1	0	1	0
	1600	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
	1615	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
	1630	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
	1645	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1700	0	0	1	0	0	0	0	0	0	0	3	0	3	0	0	0
1715	0	0	0	0	0	0	0	0	0	0	3	0	1	0	0	0	
1730	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1745	0	0	0	0	0	0	0	1	0	0	1	0	3	0	0	0	
<b>SATURDAY</b>	1200	0	0	0	0	0	0	0	15	0	0	16	0	1	1	0	0
	1215	0	0	0	0	0	0	0	0	0	0	2	0	3	4	0	0
	1230	0	0	1	0	0	0	0	4	0	0	2	0	2	0	0	0
	1245	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0
	1300	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0
	1315	0	0	0	0	0	0	1	0	0	0	2	0	1	2	0	0
	1330	0	0	0	0	0	0	0	0	0	0	4	0	2	3	0	0
1345	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	
	<b>TOTALS</b>																
	AM	2	0	0	0	0	0	3	14	0	0	13	3	6	6	1	1
	PM	0	0	2	0	0	0	0	4	0	0	7	0	8	0	0	0
	SAT	0	0	1	0	0	0	1	21	0	0	28	1	9	11	0	0

North-South Road: Liverpool Road

East-West Road: Radom Street

Survey Date: Thu Jun 1, Sat Jun 3, 2017

Weather: WKDY-Sunny, SAT - Sunny

MUNICIPALITY: Pickering, Ontario

TIG TCS v1.17

TRAF8 GROUP

		<b>HEAVY</b>											<b>U-TURNS</b>				
	TIME BEGINNING	Radom Street			Radom Street			Liverpool Road			Liverpool Road			EB to WB	WB to EB	NB to SB	SB to NB
		Eastbound			Westbound			Northbound			Southbound						
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right				
<b>WEEKDAY</b>	700	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
	715	0	0	0	0	0	0	0	1	1	0	0	1	0	0	0	0
	730	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
	745	0	0	0	0	0	0	0	0	2	0	0	1	0	0	0	0
	800	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	815	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	1
	830	0	0	0	0	0	0	0	1	3	0	0	0	1	0	0	0
	845	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
	1600	0	0	0	0	0	0	0	0	2	0	0	0	2	0	0	0
	1615	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
	1630	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
	1645	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1700	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0
1715	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1730	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	
1745	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<b>SATURDAY</b>	1200	1	0	0	0	0	0	0	0	3	0	0	1	0	0	0	1
	1215	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0
	1230	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
	1245	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	1315	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1330	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
	1345	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>TOTALS</b>																	
AM	0	0	0	0	0	0	0	3	10	0	0	3	1	0	0	2	
PM	0	0	0	0	0	0	0	0	4	0	0	2	5	0	0	0	
SAT	1	0	0	0	0	0	0	0	4	0	0	1	3	0	0	2	

**North-South Road:** Liverpool Road

**East-West Road:** Radom Street

**Survey Date:** Thu Jun 1, Sat Jun 3, 2017

**Weather:** WKDY-Sunny, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

<b>TOTAL VEHICLES</b>															
	TIME BEGINNING	Radom Street			Radom Street			Liverpool Road			Liverpool Road			TOTAL VEHICLES	
		Eastbound			Westbound			Northbound			Southbound				
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
<b>WEEKDAY</b>	700	17	0	2	0	0	0	0	73	0	0	25	5	122	
	715	18	0	3	0	0	0	2	78	1	0	24	7	133	
	730	21	0	1	0	0	0	1	83	2	0	35	2	145	
	745	25	0	7	0	0	0	3	101	2	0	43	12	193	
	800	22	0	0	0	0	0	1	79	0	0	46	17	165	
	815	15	0	3	0	0	0	1	68	2	0	66	14	169	
	830	15	0	6	0	0	0	3	97	3	0	52	17	193	
	845	19	0	6	0	0	0	4	80	0	0	64	11	184	
	1600	10	0	8	0	0	0	6	103	2	0	104	26	259	
	1615	20	0	6	0	0	0	1	84	1	0	111	23	246	
	1630	15	0	3	0	0	0	4	97	0	0	101	18	238	
	1645	16	0	8	0	0	0	2	83	0	0	120	18	247	
	1700	13	0	7	0	0	0	3	94	0	0	124	13	254	
1715	19	0	9	0	0	0	7	88	0	0	119	18	260		
1730	17	0	4	0	0	0	4	88	1	0	120	16	250		
1745	9	0	8	0	0	0	4	95	0	0	129	21	266		
<b>SATURDAY</b>	1200	16	0	3	0	0	0	5	102	3	0	122	17	268	
	1215	15	0	3	0	0	0	0	104	1	0	108	14	245	
	1230	15	0	3	0	0	0	3	84	0	0	117	22	244	
	1245	10	0	3	0	0	0	2	86	0	0	108	13	222	
	1300	13	0	7	0	0	0	3	98	0	0	97	20	238	
	1315	17	0	3	0	0	0	1	97	0	0	110	11	239	
	1330	17	0	3	0	0	0	1	85	0	0	113	12	231	
1345	11	0	6	0	0	0	3	82	0	0	129	16	247		
	<b>TOTALS</b>														
	AM	152	0	28	0	0	0	15	659	10	0	355	85	<b>1,304</b>	
	PM	119	0	53	0	0	0	31	732	4	0	928	153	<b>2,020</b>	
	SAT	114	0	31	0	0	0	18	738	4	0	904	125	<b>1,934</b>	

**North-South Road:** Liverpool Road

**East-West Road:** Radom Street

**Survey Date:** Thu Jun 1, Sat Jun 3, 2017

**Weather:** WKDY-Sunny, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

**HOURLY SUMMARY - ALL VEHICLES**

	TIME BEGINNING	Radom Street			Radom Street			Liverpool Road			Liverpool Road			TOTAL VEHICLES
		Eastbound			Westbound			Northbound			Southbound			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
<b>WEEKDAY</b>	700	81	0	13	0	0	0	6	335	5	0	127	26	593
	715	86	0	11	0	0	0	7	341	5	0	148	38	636
	730	83	0	11	0	0	0	6	331	6	0	190	45	672
	745	77	0	16	0	0	0	8	345	7	0	207	60	720
	800	71	0	15	0	0	0	9	324	5	0	228	59	711
	1600	61	0	25	0	0	0	13	367	3	0	436	85	990
	1615	64	0	24	0	0	0	10	358	1	0	456	72	985
	1630	63	0	27	0	0	0	16	362	0	0	464	67	999
	1645	65	0	28	0	0	0	16	353	1	0	483	65	1,011
	1700	58	0	28	0	0	0	18	365	1	0	492	68	1,030
<b>SATURDAY</b>	1200	56	0	12	0	0	0	10	376	4	0	455	66	979
	1215	53	0	16	0	0	0	8	372	1	0	430	69	949
	1230	55	0	16	0	0	0	9	365	0	0	432	66	943
	1245	57	0	16	0	0	0	7	366	0	0	428	56	930
	1300	58	0	19	0	0	0	8	362	0	0	449	59	955

**North-South Road:** Liverpool Road

**East-West Road:** Radom Street

**Survey Date:** Thu Jun 1, Sat Jun 3, 2017

**Weather:** WKDY-Sunny, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

**HOURLY SUMMARY**

	TIME BEGINNING	PEDESTRIANS					BICYCLES					U-TURN				
		West Side	East Side	South Side	North Side	Total	West Side	East Side	South Side	North Side	Total	EB to WB	WB to EB	NB to SB	SB to NB	Total
<b>WEEKDAY</b>	700	7	10	0	3	20	0	3	0	1	4	0	0	0	1	1
	715	8	12	0	2	22	0	5	0	1	6	0	0	0	0	0
	730	6	14	0	2	22	0	4	0	0	4	0	0	0	1	1
	745	9	13	0	1	23	5	4	0	0	9	1	0	0	1	2
	800	11	12	1	0	24	6	3	1	0	10	1	0	0	1	2
	1600	9	27	0	0	36	1	0	0	0	1	3	0	0	0	3
	1615	13	27	0	0	40	4	0	0	0	4	2	0	0	0	2
	1630	13	27	0	0	40	5	0	0	0	5	2	0	0	0	2
	1645	10	26	0	0	36	4	0	0	0	4	2	0	0	0	2
1700	11	28	1	0	40	7	0	0	0	7	2	0	0	0	2	
<b>SATURDAY</b>	1200	6	21	5	0	32	6	6	0	0	12	2	0	0	1	3
	1215	8	22	5	0	35	5	5	0	0	10	2	0	0	1	3
	1230	11	20	5	0	36	3	3	0	0	6	1	0	0	1	2
	1245	14	18	4	1	37	3	6	0	0	9	1	0	0	1	2
	1300	13	13	0	1	27	3	5	0	0	8	1	0	0	0	1

North-South Road: Liverpool Road

East-West Road: Radom Street

Survey Date: Thu Jun 1, Sat Jun 3, 2017

Weather: WKDY-Sunny, SAT - Sunny

MUNICIPALITY: Pickering, Ontario

TIG TCS v1.17

TRAF8 GROUP

**PEAK HOUR VOLUMES - ALL VEHICLES**

PEAK HOUR		Radom Street			Radom Street			Liverpool Road			Liverpool Road			TOTAL VEHICLES
		Eastbound			Westbound			Northbound			Southbound			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
<b>AM 745 - 845</b>	Autos	77	0	16	0	0	0	6	338	0	0	199	56	692
	Medium	0	0	0	0	0	0	2	6	0	0	8	3	19
	Heavy	0	0	0	0	0	0	0	1	7	0	0	1	9
	<b>Total</b>	<b>77</b>	<b>0</b>	<b>16</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>345</b>	<b>7</b>	<b>0</b>	<b>207</b>	<b>60</b>	<b>720</b>
	% Hv	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	25.0%	2.0%	100.0%	0.0%	3.9%	6.7%	3.9%
	PHF	0.770	0.000	0.571	0.000	0.000	0.000	0.667	0.854	0.583	0.000	0.784	0.882	0.933
<b>PM 1700 - 1800</b>	Autos	58	0	27	0	0	0	18	364	0	0	485	66	1,018
	Medium	0	0	1	0	0	0	0	1	0	0	7	0	9
	Heavy	0	0	0	0	0	0	0	0	1	0	0	2	3
	<b>Total</b>	<b>58</b>	<b>0</b>	<b>28</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>18</b>	<b>365</b>	<b>1</b>	<b>0</b>	<b>492</b>	<b>68</b>	<b>1,030</b>
	% Hv	0.0%	0.0%	3.6%	0.0%	0.0%	0.0%	0.0%	0.3%	100.0%	0.0%	1.4%	2.9%	1.2%
	PHF	0.763	0.000	0.778	0.000	0.000	0.000	0.643	0.961	0.250	0.000	0.953	0.810	0.968
<b>SAT 1200 - 1300</b>	Autos	55	0	11	0	0	0	10	356	0	0	435	65	932
	Medium	0	0	1	0	0	0	0	20	0	0	20	0	41
	Heavy	1	0	0	0	0	0	0	0	4	0	0	1	6
	<b>Total</b>	<b>56</b>	<b>0</b>	<b>12</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>10</b>	<b>376</b>	<b>4</b>	<b>0</b>	<b>455</b>	<b>66</b>	<b>979</b>
	% Hv	1.8%	0.0%	8.3%	0.0%	0.0%	0.0%	0.0%	5.3%	100.0%	0.0%	4.4%	1.5%	4.8%
	PHF	0.875	0.000	1.000	0.000	0.000	0.000	0.500	0.904	0.333	0.000	0.932	0.750	0.913

PEAK HOUR	PEDESTRIANS					BICYCLES					U-TURN				
	West Side	East Side	South Side	North Side	Total	West Side	East Side	South Side	North Side	Total	EB to WB	WB to EB	NB to SB	SB to NB	Total
<b>AM</b>	9	13	0	1	23	5	4	0	0	9	1	0	0	1	2
<b>PM</b>	11	28	1	0	40	7	0	0	0	7	2	0	0	0	2
<b>SAT</b>	6	21	5	0	32	6	6	0	0	12	2	0	0	1	3

**North-South Road:** Liverpool Road

**East-West Road:** Radom Street

**Survey Date:** Thu Jun 1, Sat Jun 3, 2017

**Weather:** WKDY-Sunny, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

**HOURLY SUMMARY - AUTOS**

	TIME BEGINNING	Radom Street Eastbound			Radom Street Westbound			Liverpool Road Northbound			Liverpool Road Southbound			TOTAL VEHICLES
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
		<b>WEEKDAY</b>												
	700	81	0	13	0	0	0	4	329	0	0	121	22	570
	715	86	0	11	0	0	0	5	332	0	0	143	34	611
	730	83	0	11	0	0	0	3	323	0	0	184	41	645
	745	77	0	16	0	0	0	6	338	0	0	199	56	692
	800	69	0	15	0	0	0	8	313	0	0	221	57	683
	1600	61	0	24	0	0	0	13	364	0	0	436	85	983
	1615	64	0	23	0	0	0	10	356	0	0	453	71	977
	1630	63	0	26	0	0	0	16	362	0	0	458	66	991
	1645	65	0	27	0	0	0	16	353	0	0	477	63	1,001
	1700	58	0	27	0	0	0	18	364	0	0	485	66	1,018
<b>SATURDAY</b>														
	1200	55	0	11	0	0	0	10	356	0	0	435	65	932
	1215	53	0	15	0	0	0	8	367	0	0	424	69	936
	1230	55	0	15	0	0	0	8	360	0	0	426	66	930
	1245	57	0	16	0	0	0	6	365	0	0	420	56	920
	1300	58	0	19	0	0	0	7	361	0	0	441	58	944



**North-South Road:** Liverpool Road

**East-West Road:** Radom Street

**Survey Date:** Thu Jun 1, Sat Jun 3, 2017

**Weather:** WKDY-Sunny, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

**HOURLY SUMMARY - MEDIUM**

	TIME BEGINNING	Radom Street			Radom Street			Liverpool Road			Liverpool Road			TOTAL VEHICLES
		Eastbound			Westbound			Northbound			Southbound			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
<b>WEEKDAY</b>	700	0	0	0	0	0	0	2	5	0	0	6	1	14
	715	0	0	0	0	0	0	2	8	0	0	5	2	17
	730	0	0	0	0	0	0	3	8	0	0	6	3	20
	745	0	0	0	0	0	0	2	6	0	0	8	3	19
	800	2	0	0	0	0	0	1	9	0	0	7	2	21
	1600	0	0	1	0	0	0	0	3	0	0	0	0	4
	1615	0	0	1	0	0	0	0	2	0	0	3	0	6
	1630	0	0	1	0	0	0	0	0	0	0	6	0	7
	1645	0	0	1	0	0	0	0	0	0	0	6	0	7
	1700	0	0	1	0	0	0	0	1	0	0	7	0	9
<b>SATURDAY</b>	1200	0	0	1	0	0	0	0	20	0	0	20	0	41
	1215	0	0	1	0	0	0	0	5	0	0	6	0	12
	1230	0	0	1	0	0	0	1	5	0	0	6	0	13
	1245	0	0	0	0	0	0	1	1	0	0	8	0	10
	1300	0	0	0	0	0	0	1	1	0	0	8	1	11

**North-South Road:** Liverpool Road

**East-West Road:** Radom Street

**Survey Date:** Thu Jun 1, Sat Jun 3, 2017

**Weather:** WKDY-Sunny, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

**HOURLY SUMMARY - HEAVY**

	TIME BEGINNING	Radom Street			Radom Street			Liverpool Road			Liverpool Road			TOTAL VEHICLES
		Eastbound			Westbound			Northbound			Southbound			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
<b>WEEKDAY</b>	700	0	0	0	0	0	0	0	1	5	0	0	3	9
	715	0	0	0	0	0	0	0	1	5	0	0	2	8
	730	0	0	0	0	0	0	0	0	6	0	0	1	7
	745	0	0	0	0	0	0	0	1	7	0	0	1	9
	800	0	0	0	0	0	0	0	2	5	0	0	0	7
	1600	0	0	0	0	0	0	0	0	3	0	0	0	3
	1615	0	0	0	0	0	0	0	0	1	0	0	1	2
	1630	0	0	0	0	0	0	0	0	0	0	0	1	1
	1645	0	0	0	0	0	0	0	0	1	0	0	2	3
	1700	0	0	0	0	0	0	0	0	1	0	0	2	3
<b>SATURDAY</b>	1200	1	0	0	0	0	0	0	0	4	0	0	1	6
	1215	0	0	0	0	0	0	0	0	1	0	0	0	1
	1230	0	0	0	0	0	0	0	0	0	0	0	0	0
	1245	0	0	0	0	0	0	0	0	0	0	0	0	0
	1300	0	0	0	0	0	0	0	0	0	0	0	0	0

**NORTH-SOUTH ROAD:** Liverpool Road  
**EAST-WEST ROAD:** Radom Street  
**SURVEY DATE:** Thu Jun 1, Sat Jun 3, 2017  
**MUNICIPALITY:** Pickering, Ontario  
**WEATHER:** WKDY-Sunny, SAT - Sunny

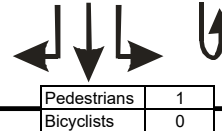
**TURNING  
MOVEMENT  
DIAGRAM**



**Liverpool Road**

	<b>Total</b>	60	207	0
	<b>Heavy</b>	1	0	0
	<b>Medium</b>	3	8	0
	<b>Autos</b>	56	199	0

<b>U-Turns</b>	1
----------------	---



<b>Pedestrians</b>	1
<b>Bicyclists</b>	0

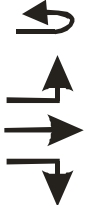
<b>PERIOD</b>	WEEKDAY AM PEAK HOUR
<b>TIME</b>	0745 - 0845

<b>INTERSECTION TOTALS</b>	<b>Autos</b>	<b>Trucks</b>	<b>Buses</b>	<b>Total Vehicles</b>	<b>Medium &amp; Heavy %</b>
	692	19	9	720	3.9%
	<b>Peds</b>	<b>Bicycles</b>	<b>U-Turns</b>	<b>PHF</b>	
	23	9	2	0.933	

Radom Street

<b>U-Turns</b>	1
----------------	---

<b>Auto</b>	<b>Medium</b>	<b>Heavy</b>	<b>Total</b>
77	0	0	77
0	0	0	0
16	0	0	16



<b>Pedestrians</b>	9
<b>Bicyclists</b>	5

<b>Pedestrians</b>	13
<b>Bicyclists</b>	4

<b>Auto</b>	<b>Medium</b>	<b>Heavy</b>	<b>Total</b>
0	0	0	0
0	0	0	0
0	0	0	0

<b>U-Turns</b>	0
----------------	---

Radom Street

% NON-AUTO VEHICLES (Medium & Heavy)			
Direction	Left	Thru	Right
Eastbound	0.0%	0.0%	0.0%
Westbound	0.0%	0.0%	0.0%
Northbound	25.0%	2.0%	100.0%
Southbound	0.0%	3.9%	6.7%

<b>Pedestrians</b>	0
<b>Bicyclists</b>	0



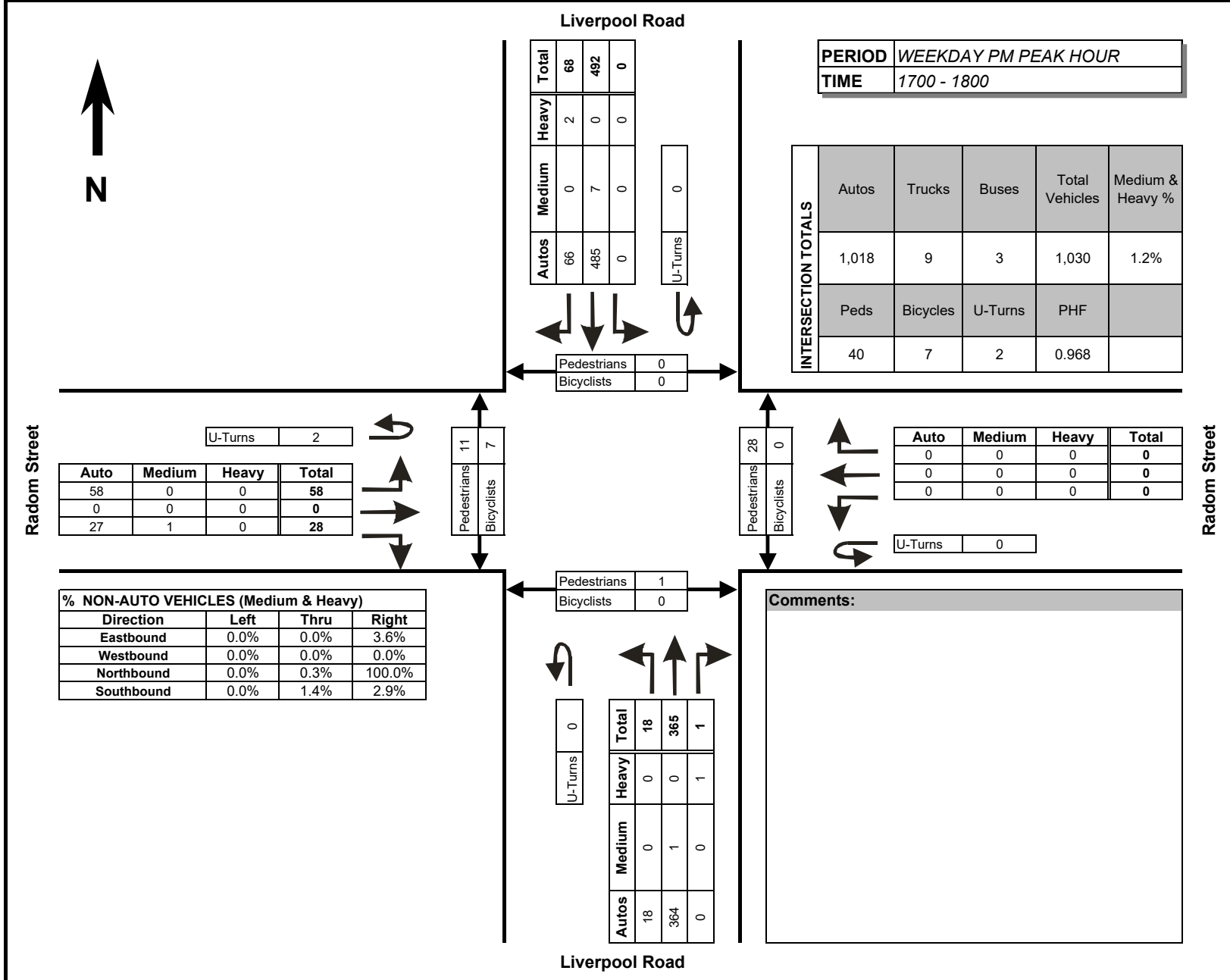
	<b>Total</b>	8	345	7
	<b>Heavy</b>	0	1	7
	<b>Medium</b>	2	6	0
	<b>Autos</b>	6	338	0

**Liverpool Road**

**Comments:**

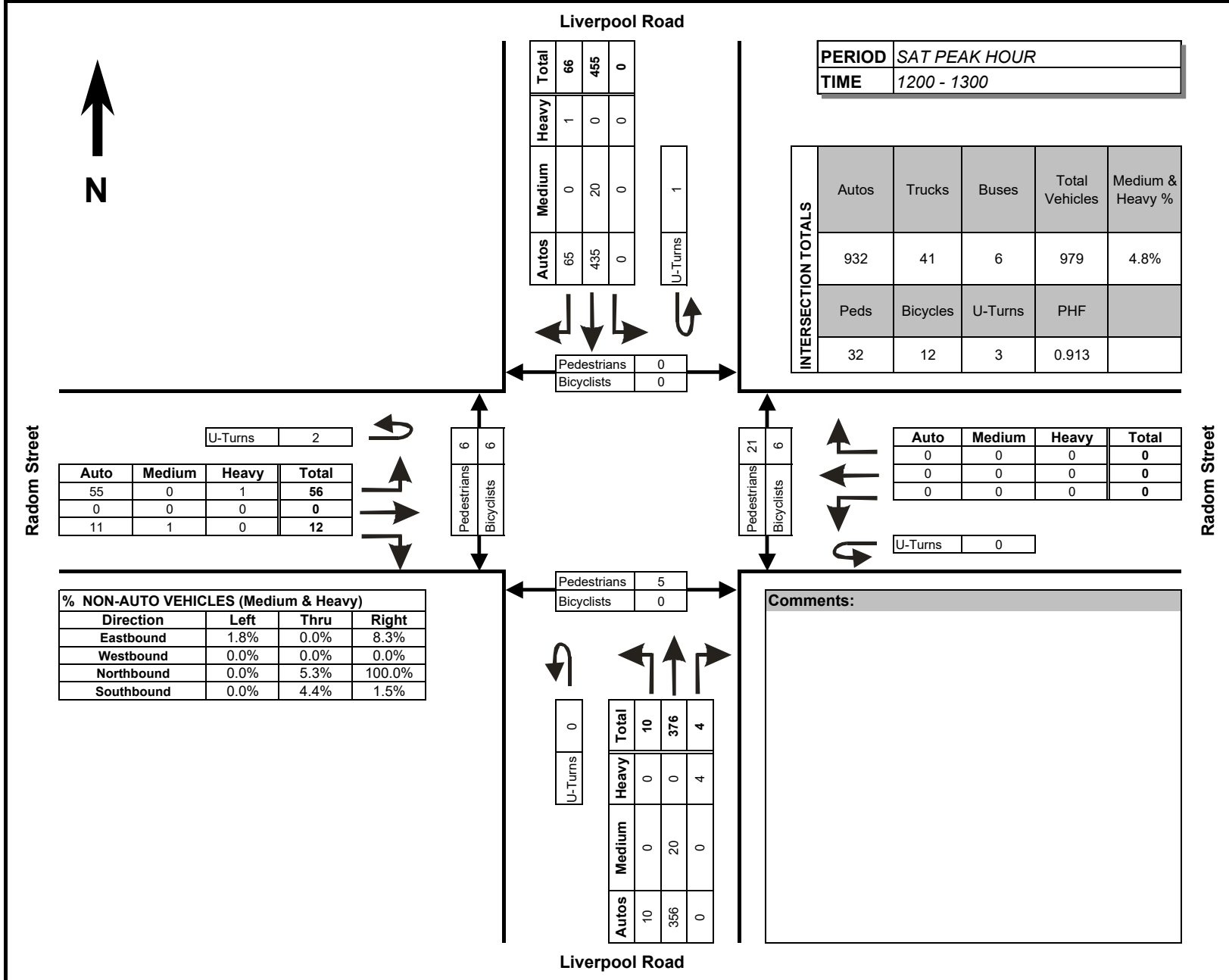
**NORTH-SOUTH ROAD:** Liverpool Road  
**EAST-WEST ROAD:** Radom Street  
**SURVEY DATE:** Thu Jun 1, Sat Jun 3, 2017  
**MUNICIPALITY:** Pickering, Ontario  
**WEATHER:** WKDY-Sunny, SAT - Sunny

**TURNING  
MOVEMENT  
DIAGRAM**



**NORTH-SOUTH ROAD:** Liverpool Road  
**EAST-WEST ROAD:** Radom Street  
**SURVEY DATE:** Thu Jun 1, Sat Jun 3, 2017  
**MUNICIPALITY:** Pickering, Ontario  
**WEATHER:** WKDY-Sunny, SAT - Sunny

**TURNING  
MOVEMENT  
DIAGRAM**



**North-South Road:** Liverpool Road

**East-West Road:** Parking Lot & Tatra Drive

**Survey Date:** Thu Jun 1, Sat Jun 3, 2017

**Weather:** WKDY-Sunny, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

		<b>AUTOS</b>												<b>PEDESTRIANS</b>				
	TIME BEGINNING	Parking Lot			Tatra Drive			Liverpool Road			Liverpool Road			West Side	East Side	South Side	North Side	
		Eastbound			Westbound			Northbound			Southbound							
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right					
<b>WEEKDAY</b>	700	0	0	0	1	0	34	0	89	0	14	28	1	3	2	0	0	
	715	0	1	0	2	3	38	0	93	2	22	28	1	2	4	3	0	
	730	0	0	0	0	0	39	0	92	1	25	35	2	5	3	2	0	
	745	0	0	0	1	0	47	0	131	1	34	53	1	2	4	1	0	
	800	0	0	1	1	0	69	0	99	3	45	64	0	2	3	2	0	
	815	0	0	0	1	0	38	0	88	2	23	70	0	3	7	1	0	
	830	0	0	0	0	0	55	0	104	0	24	64	0	10	2	2	1	
	845	0	0	1	0	0	32	0	98	1	21	80	1	5	4	6	0	
	1600	0	0	1	0	0	51	1	137	4	35	120	0	2	8	1	0	
	1615	1	0	0	2	0	43	0	104	2	62	132	0	2	7	2	0	
	1630	1	1	1	0	0	50	0	114	0	33	120	1	4	13	4	0	
	1645	0	1	0	0	0	58	0	109	2	46	138	0	6	5	4	0	
	1700	2	0	1	0	0	59	1	105	1	60	131	1	3	6	4	0	
1715	1	0	0	0	0	60	0	109	2	57	126	0	10	8	8	2		
1730	1	0	0	1	0	59	0	102	2	52	158	0	4	13	6	0		
1745	0	0	0	0	0	30	0	102	3	51	149	0	10	10	5	0		
<b>SATURDAY</b>	1200	0	0	0	0	0	27	0	117	1	32	124	0	4	3	1	0	
	1215	1	0	0	3	0	32	0	126	0	32	119	1	1	5	1	0	
	1230	0	0	0	1	0	26	0	90	0	40	136	0	0	8	3	0	
	1245	0	0	0	0	0	33	0	103	1	36	131	1	6	7	1	0	
	1300	1	0	0	1	0	28	0	109	3	35	118	1	4	7	3	0	
	1315	0	0	0	0	0	26	0	112	3	44	127	0	4	9	1	1	
	1330	1	0	1	1	0	31	0	100	1	28	126	1	5	8	2	0	
1345	0	0	0	0	0	29	0	90	2	40	136	0	2	11	0	0		
	<b>TOTALS</b>																	
	AM	0	1	2	6	3	352	0	794	10	208	422	6	32	29	17	1	
	PM	6	2	3	3	0	410	2	882	16	396	1,074	2	41	70	34	2	
	SAT	3	0	1	6	0	232	0	847	11	287	1,017	4	26	58	12	1	

**North-South Road:** Liverpool Road

**East-West Road:** Parking Lot & Tatra Drive

**Survey Date:** Thu Jun 1, Sat Jun 3, 2017

**Weather:** WKDY-Sunny, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

		<b>MEDIUM</b>												<b>BICYCLES</b>			
	TIME BEGINNING	Parking Lot			Tatra Drive			Liverpool Road			Liverpool Road			West Side	East Side	South Side	North Side
		Eastbound			Westbound			Northbound			Southbound						
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right				
<b>WEEKDAY</b>	700	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	715	0	0	0	0	0	1	0	1	0	0	1	0	0	1	0	0
	730	0	0	0	0	0	1	0	1	0	1	3	0	0	1	0	0
	745	0	0	0	0	0	2	0	1	0	3	2	0	0	1	0	0
	800	0	0	0	0	0	4	0	4	0	0	1	0	0	2	0	0
	815	0	0	0	0	0	1	0	2	0	0	2	0	0	0	0	0
	830	0	0	0	0	0	1	0	1	0	0	6	0	3	0	0	0
	845	0	0	0	0	0	1	0	4	0	2	1	0	0	1	0	0
	1600	0	0	0	0	0	0	0	2	0	0	1	0	0	0	3	0
	1615	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	0
	1630	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0
	1645	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	1700	0	0	0	0	0	0	0	1	0	0	4	0	2	0	0	0
1715	0	0	0	0	0	0	0	1	0	0	2	0	0	0	0	0	
1730	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	
1745	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	0	
<b>SATURDAY</b>	1200	0	0	0	0	0	0	0	2	0	0	1	0	2	1	0	0
	1215	0	0	0	0	0	0	0	0	0	0	1	0	2	7	1	0
	1230	0	0	0	0	0	0	0	4	0	0	2	0	2	0	0	0
	1245	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
	1300	0	0	0	0	0	0	0	0	0	1	1	0	0	1	2	0
	1315	0	0	0	0	0	0	0	1	0	0	2	0	1	1	0	0
	1330	0	0	0	0	0	0	0	0	0	0	2	0	3	4	0	0
	1345	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0
<b>TOTALS</b>																	
AM	0	0	0	0	0	11	0	14	0	6	17	0	3	6	0	0	
PM	0	0	0	0	0	1	0	9	0	0	13	0	3	0	4	0	
SAT	0	0	0	0	0	0	0	9	0	1	10	0	10	14	3	0	

**North-South Road:** Liverpool Road

**East-West Road:** Parking Lot & Tatra Drive

**Survey Date:** Thu Jun 1, Sat Jun 3, 2017

**Weather:** WKDY-Sunny, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

		<b>HEAVY</b>												<b>U-TURNS</b>			
	TIME BEGINNING	Parking Lot			Tatra Drive			Liverpool Road			Liverpool Road			EB to WB	WB to EB	NB to SB	SB to NB
		Eastbound			Westbound			Northbound			Southbound						
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right				
<b>WEEKDAY</b>	700	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0
	715	0	0	0	0	0	0	0	0	2	0	0	1	0	0	0	0
	730	0	0	0	0	0	0	0	0	2	0	1	0	0	1	0	0
	745	0	0	0	0	0	0	0	0	2	0	2	1	0	0	0	0
	800	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
	815	0	0	0	0	0	0	0	0	0	0	1	0	0	1	2	0
	830	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0
	845	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1600	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
	1615	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1630	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
	1645	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1700	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1715	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1730	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	
1745	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	
<b>SATURDAY</b>	1200	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
	1215	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0
	1230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1245	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1315	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
	1330	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1345	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	<b>TOTALS</b>																
	AM	0	0	0	0	0	0	0	0	9	0	4	4	0	3	2	0
	PM	0	0	0	1	0	0	0	0	4	0	0	0	0	0	0	0
	SAT	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0



**North-South Road:** Liverpool Road

**East-West Road:** Parking Lot & Tatra Drive

**Survey Date:** Thu Jun 1, Sat Jun 3, 2017

**Weather:** WKDY-Sunny, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

<b>TOTAL VEHICLES</b>														
TIME BEGINNING	Parking Lot			Tatra Drive			Liverpool Road			Liverpool Road			TOTAL VEHICLES	
	Eastbound			Westbound			Northbound			Southbound				
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
<b>WEEKDAY</b>	700	0	0	0	1	0	34	0	89	0	14	29	3	170
	715	0	1	0	2	3	39	0	94	4	22	29	2	196
	730	0	0	0	0	0	40	0	93	3	26	39	2	203
	745	0	0	0	1	0	49	0	132	3	37	57	2	281
	800	0	0	1	1	0	73	0	103	3	45	65	0	291
	815	0	0	0	1	0	39	0	90	2	23	73	0	228
	830	0	0	0	0	0	56	0	105	3	24	70	0	258
	845	0	0	1	0	0	33	0	102	1	23	81	1	242
	1600	0	0	1	0	0	51	1	139	6	35	121	0	354
	1615	1	0	0	2	0	44	0	105	2	62	132	0	348
	1630	1	1	1	0	0	50	0	117	1	33	120	1	325
	1645	0	1	0	0	0	58	0	109	2	46	139	0	355
	1700	2	0	1	0	0	59	1	106	1	60	135	1	366
	1715	1	0	0	0	0	60	0	110	2	57	128	0	358
1730	1	0	0	1	0	59	0	102	3	52	162	0	380	
1745	0	0	0	1	0	30	0	103	3	51	150	0	338	
<b>SATURDAY</b>	1200	0	0	0	0	0	27	0	119	1	32	125	1	305
	1215	1	0	0	3	0	32	0	126	1	32	120	2	317
	1230	0	0	0	1	0	26	0	94	0	40	138	0	299
	1245	0	0	0	0	0	33	0	104	1	36	131	1	306
	1300	1	0	0	1	0	28	0	109	3	36	119	1	298
	1315	0	0	0	0	0	26	0	113	4	44	129	0	316
	1330	1	0	1	1	0	31	0	100	1	28	128	1	292
	1345	0	0	0	0	0	29	0	91	2	40	137	0	299
<b>TOTALS</b>														
AM	0	1	2	6	3	363	0	808	19	214	443	10	<b>1,869</b>	
PM	6	2	3	4	0	411	2	891	20	396	1,087	2	<b>2,824</b>	
SAT	3	0	1	6	0	232	0	856	13	288	1,027	6	<b>2,432</b>	

**North-South Road:** Liverpool Road

**East-West Road:** Parking Lot & Tatra Drive

**Survey Date:** Thu Jun 1, Sat Jun 3, 2017

**Weather:** WKDY-Sunny, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

**HOURLY SUMMARY - ALL VEHICLES**

	TIME BEGINNING	Parking Lot			Tatra Drive			Liverpool Road			Liverpool Road			TOTAL VEHICLES
		Eastbound			Westbound			Northbound			Southbound			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
<b>WEEKDAY</b>	700	0	1	0	4	3	162	0	408	10	99	154	9	850
	715	0	1	1	4	3	201	0	422	13	130	190	6	971
	730	0	0	1	3	0	201	0	418	11	131	234	4	1,003
	745	0	0	1	3	0	217	0	430	11	129	265	2	1,058
	800	0	0	2	2	0	201	0	400	9	115	289	1	1,019
	1600	2	2	2	2	0	203	1	470	11	176	512	1	1,382
	1615	4	2	2	2	0	211	1	437	6	201	526	2	1,394
	1630	4	2	2	0	0	227	1	442	6	196	522	2	1,404
	1645	4	1	1	1	0	236	1	427	8	215	564	1	1,459
	1700	4	0	1	2	0	208	1	421	9	220	575	1	1,442
<b>SATURDAY</b>	1200	1	0	0	4	0	118	0	443	3	140	514	4	1,227
	1215	2	0	0	5	0	119	0	433	5	144	508	4	1,220
	1230	1	0	0	2	0	113	0	420	8	156	517	2	1,219
	1245	2	0	1	2	0	118	0	426	9	144	507	3	1,212
	1300	2	0	1	2	0	114	0	413	10	148	513	2	1,205

**North-South Road:** Liverpool Road

**East-West Road:** Parking Lot & Tatra Drive

**Survey Date:** Thu Jun 1, Sat Jun 3, 2017

**Weather:** WKDY-Sunny, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

**HOURLY SUMMARY**

	TIME BEGINNING	PEDESTRIANS					BICYCLES					U-TURN				
		West Side	East Side	South Side	North Side	Total	West Side	East Side	South Side	North Side	Total	EB to WB	WB to EB	NB to SB	SB to NB	Total
<b>WEEKDAY</b>	700	12	13	6	0	31	0	3	0	0	3	0	1	0	0	1
	715	11	14	8	0	33	0	5	0	0	5	0	2	0	0	2
	730	12	17	6	0	35	0	4	0	0	4	0	3	2	0	5
	745	17	16	6	1	40	3	3	0	0	6	0	2	2	0	4
	800	20	16	11	1	48	3	3	0	0	6	0	2	2	0	4
	1600	14	33	11	0	58	0	0	4	0	4	0	0	0	0	0
	1615	15	31	14	0	60	2	0	1	0	3	0	0	0	0	0
	1630	23	32	20	2	77	2	0	0	0	2	0	0	0	0	0
	1645	23	32	22	2	79	2	0	0	0	2	0	0	0	0	0
1700	27	37	23	2	89	3	0	0	0	3	0	0	0	0	0	
<b>SATURDAY</b>	1200	11	23	6	0	40	6	8	1	0	15	0	0	0	0	0
	1215	11	27	8	0	46	4	8	3	0	15	0	0	0	0	0
	1230	14	31	8	1	54	3	2	2	0	7	0	0	0	0	0
	1245	19	31	7	1	58	4	6	2	0	12	0	0	0	0	0
	1300	15	35	6	1	57	4	6	2	0	12	0	0	0	0	0

**North-South Road:** Liverpool Road

**East-West Road:** Parking Lot & Tatra Drive

**Survey Date:** Thu Jun 1, Sat Jun 3, 2017

**Weather:** WKDY-Sunny, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

**PEAK HOUR VOLUMES - ALL VEHICLES**

PEAK HOUR		Parking Lot			Tatra Drive			Liverpool Road			Liverpool Road			TOTAL VEHICLES
		Eastbound			Westbound			Northbound			Southbound			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
<b>AM 745 - 845</b>	Autos	0	0	1	3	0	209	0	422	6	126	251	1	1,019
	Medium	0	0	0	0	0	8	0	8	0	3	11	0	30
	Heavy	0	0	0	0	0	0	0	0	5	0	3	1	9
	<b>Total</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>3</b>	<b>0</b>	<b>217</b>	<b>0</b>	<b>430</b>	<b>11</b>	<b>129</b>	<b>265</b>	<b>2</b>	<b>1,058</b>
	% Hv	0.0%	0.0%	0.0%	0.0%	0.0%	3.7%	0.0%	1.9%	45.5%	2.3%	5.3%	50.0%	3.7%
	PHF	0.000	0.000	0.250	0.750	0.000	0.743	0.000	0.814	0.917	0.717	0.908	0.250	0.909
<b>PM 1645 - 1745</b>	Autos	4	1	1	1	0	236	1	425	7	215	553	1	1,445
	Medium	0	0	0	0	0	0	0	2	0	0	11	0	13
	Heavy	0	0	0	0	0	0	0	0	1	0	0	0	1
	<b>Total</b>	<b>4</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>236</b>	<b>1</b>	<b>427</b>	<b>8</b>	<b>215</b>	<b>564</b>	<b>1</b>	<b>1,459</b>
	% Hv	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.5%	12.5%	0.0%	2.0%	0.0%	1.0%
	PHF	0.500	0.250	0.250	0.250	0.000	0.983	0.250	0.970	0.667	0.896	0.870	0.250	0.960
<b>SAT 1200 - 1300</b>	Autos	1	0	0	4	0	118	0	436	2	140	510	2	1,213
	Medium	0	0	0	0	0	0	0	7	0	0	4	0	11
	Heavy	0	0	0	0	0	0	0	0	1	0	0	2	3
	<b>Total</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>0</b>	<b>118</b>	<b>0</b>	<b>443</b>	<b>3</b>	<b>140</b>	<b>514</b>	<b>4</b>	<b>1,227</b>
	% Hv	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.6%	33.3%	0.0%	0.8%	50.0%	1.1%
	PHF	0.250	0.000	0.000	0.333	0.000	0.894	0.000	0.879	0.750	0.875	0.931	0.500	0.968

PEAK HOUR	PEDESTRIANS					BICYCLES					U-TURN				
	West Side	East Side	South Side	North Side	Total	West Side	East Side	South Side	North Side	Total	EB to WB	WB to EB	NB to SB	SB to NB	Total
<b>AM</b>	17	16	6	1	40	3	3	0	0	6	0	2	2	0	4
<b>PM</b>	23	32	22	2	79	2	0	0	0	2	0	0	0	0	0
<b>SAT</b>	11	23	6	0	40	6	8	1	0	15	0	0	0	0	0

**North-South Road:** Liverpool Road

**East-West Road:** Parking Lot & Tatra Drive

**Survey Date:** Thu Jun 1, Sat Jun 3, 2017

**Weather:** WKDY-Sunny, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

**HOURLY SUMMARY - AUTOS**

	TIME BEGINNING	Parking Lot			Tatra Drive			Liverpool Road			Liverpool Road			TOTAL VEHICLES	
		Eastbound			Westbound			Northbound			Southbound				
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
<b>WEEKDAY</b>	700	0	1	0	4	3	158	0	405	4	95	144	5	819	
	715	0	1	1	4	3	193	0	415	7	126	180	4	934	
	730	0	0	1	3	0	193	0	410	7	127	222	3	966	
	745	0	0	1	3	0	209	0	422	6	126	251	1	1,019	
	800	0	0	2	2	0	194	0	389	6	113	278	1	985	
	1600	2	2	2	2	0	202	1	464	8	176	510	1	1,370	
	1615	4	2	2	2	0	210	1	432	5	201	521	2	1,382	
	1630	4	2	2	0	0	227	1	437	5	196	515	2	1,391	
	1645	4	1	1	1	0	236	1	425	7	215	553	1	1,445	
1700	4	0	1	1	0	208	1	418	8	220	564	1	1,426		
<b>SATURDAY</b>															
	1200	1	0	0	4	0	118	0	436	2	140	510	2	1,213	
	1215	2	0	0	5	0	119	0	428	4	143	504	3	1,208	
	1230	1	0	0	2	0	113	0	414	7	155	512	2	1,206	
	1245	2	0	1	2	0	118	0	424	8	143	502	3	1,203	
	1300	2	0	1	2	0	114	0	411	9	147	507	2	1,195	

**North-South Road:** Liverpool Road

**East-West Road:** Parking Lot & Tatra Drive

**Survey Date:** Thu Jun 1, Sat Jun 3, 2017

**Weather:** WKDY-Sunny, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

**HOURLY SUMMARY - MEDIUM**

	TIME BEGINNING	Parking Lot			Tatra Drive			Liverpool Road			Liverpool Road			TOTAL VEHICLES
		Eastbound			Westbound			Northbound			Southbound			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
<b>WEEKDAY</b>	700	0	0	0	0	0	4	0	3	0	4	7	0	18
	715	0	0	0	0	0	8	0	7	0	4	7	0	26
	730	0	0	0	0	0	8	0	8	0	4	8	0	28
	745	0	0	0	0	0	8	0	8	0	3	11	0	30
	800	0	0	0	0	0	7	0	11	0	2	10	0	30
	1600	0	0	0	0	0	1	0	6	0	0	2	0	9
	1615	0	0	0	0	0	1	0	5	0	0	5	0	11
	1630	0	0	0	0	0	0	0	5	0	0	7	0	12
	1645	0	0	0	0	0	0	0	2	0	0	11	0	13
	1700	0	0	0	0	0	0	0	3	0	0	11	0	14
<b>SATURDAY</b>	1200	0	0	0	0	0	0	0	7	0	0	4	0	11
	1215	0	0	0	0	0	0	0	5	0	1	4	0	10
	1230	0	0	0	0	0	0	0	6	0	1	5	0	12
	1245	0	0	0	0	0	0	0	2	0	1	5	0	8
	1300	0	0	0	0	0	0	0	2	0	1	6	0	9

**North-South Road:** Liverpool Road

**East-West Road:** Parking Lot & Tatra Drive

**Survey Date:** Thu Jun 1, Sat Jun 3, 2017

**Weather:** WKDY-Sunny, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

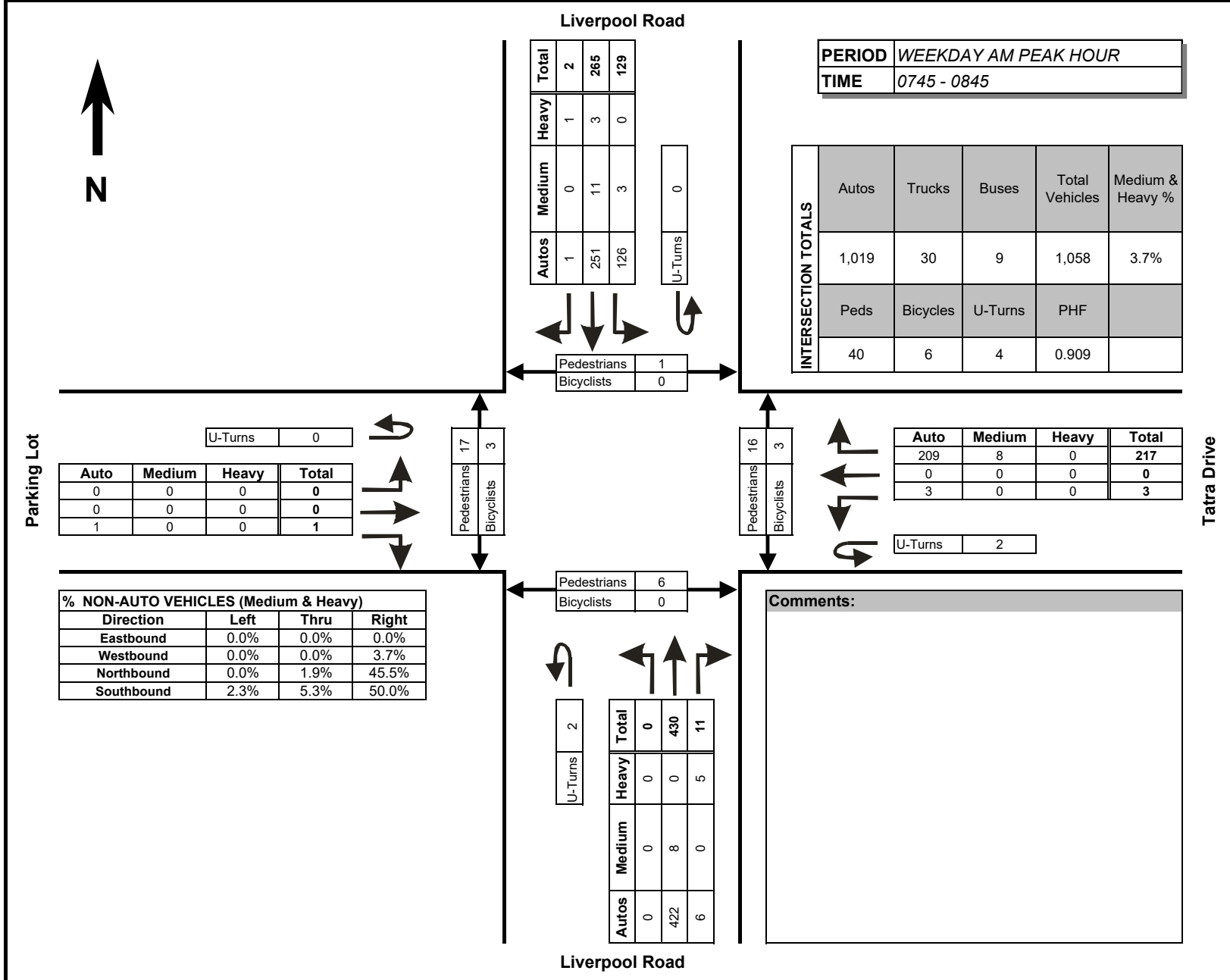
**TRAF8 GROUP**

**HOURLY SUMMARY - HEAVY**

	TIME BEGINNING	Parking Lot			Tatra Drive			Liverpool Road			Liverpool Road			TOTAL VEHICLES
		Eastbound			Westbound			Northbound			Southbound			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
<b>WEEKDAY</b>	700	0	0	0	0	0	0	0	0	6	0	3	4	13
	715	0	0	0	0	0	0	0	0	6	0	3	2	11
	730	0	0	0	0	0	0	0	0	4	0	4	1	9
	745	0	0	0	0	0	0	0	0	5	0	3	1	9
	800	0	0	0	0	0	0	0	0	3	0	1	0	4
	1600	0	0	0	0	0	0	0	0	3	0	0	0	3
	1615	0	0	0	0	0	0	0	0	1	0	0	0	1
	1630	0	0	0	0	0	0	0	0	1	0	0	0	1
	1645	0	0	0	0	0	0	0	0	1	0	0	0	1
	1700	0	0	0	1	0	0	0	0	1	0	0	0	2
<b>SATURDAY</b>	1200	0	0	0	0	0	0	0	0	1	0	0	2	3
	1215	0	0	0	0	0	0	0	0	1	0	0	1	2
	1230	0	0	0	0	0	0	0	0	1	0	0	0	1
	1245	0	0	0	0	0	0	0	0	1	0	0	0	1
	1300	0	0	0	0	0	0	0	0	1	0	0	0	1

**NORTH-SOUTH ROAD:** Liverpool Road  
**EAST-WEST ROAD:** Tatra Drive & Parking Lot  
**SURVEY DATE:** Thu Jun 1, Sat Jun 3, 2017  
**MUNICIPALITY:** Pickering, Ontario  
**WEATHER:** WKDY-Sunny, SAT - Sunny

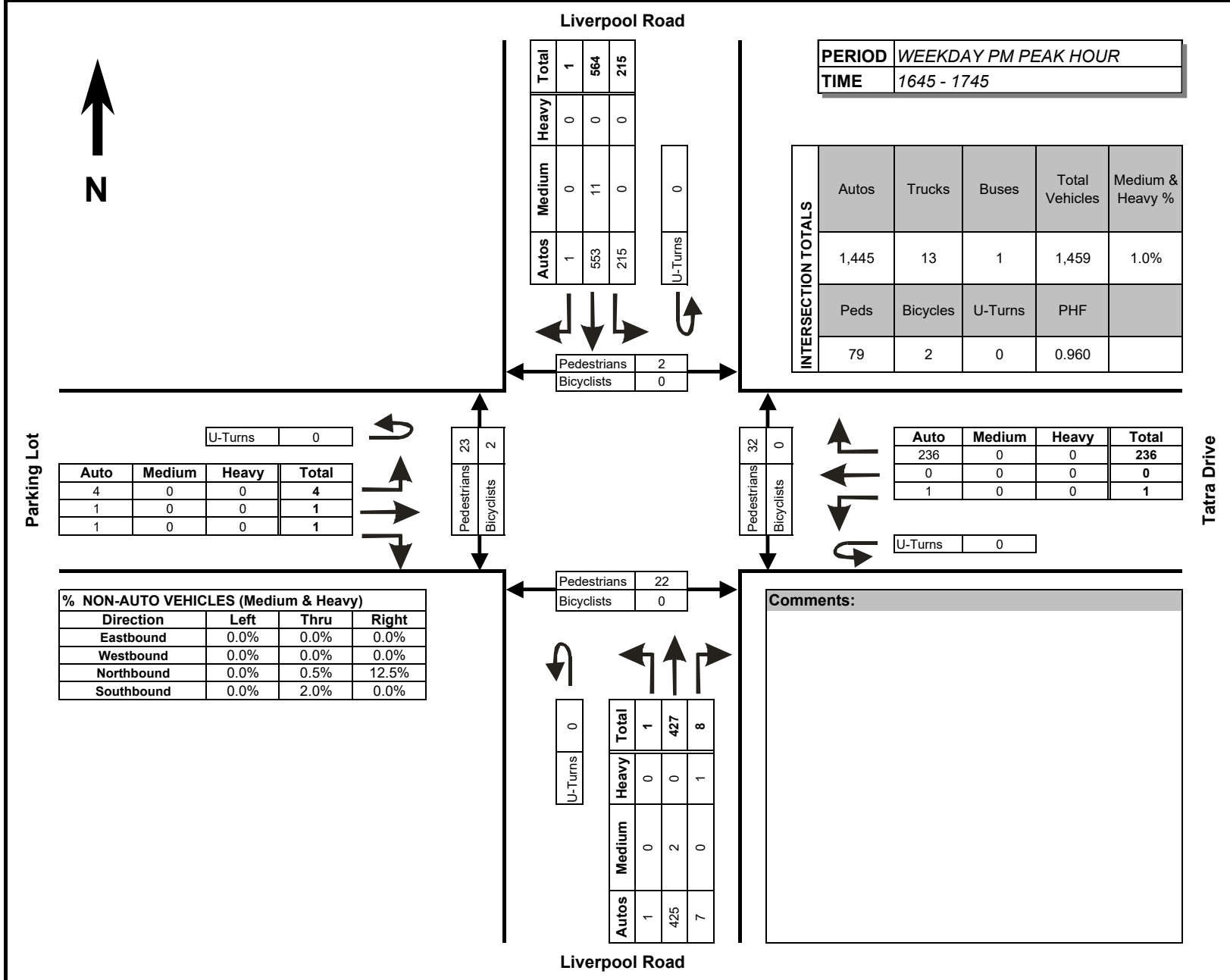
**TURNING  
MOVEMENT  
DIAGRAM**





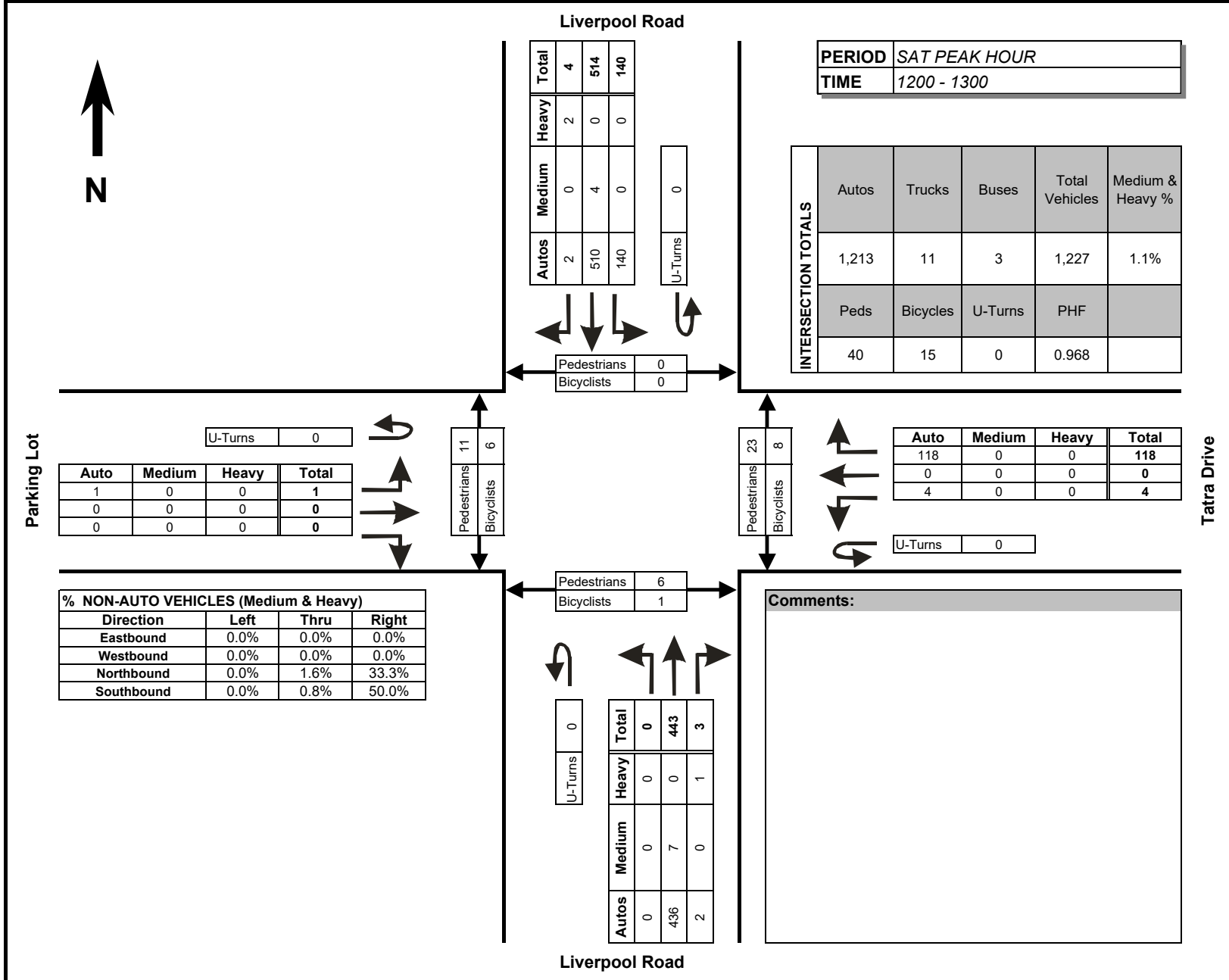
NORTH-SOUTH ROAD: Liverpool Road  
 EAST-WEST ROAD: Tatra Drive & Parking Lot  
 SURVEY DATE: Thu Jun 1, Sat Jun 3, 2017  
 MUNICIPALITY: Pickering, Ontario  
 WEATHER: WKDY-Sunny, SAT - Sunny

**TURNING  
MOVEMENT  
DIAGRAM**



**NORTH-SOUTH ROAD:** Liverpool Road  
**EAST-WEST ROAD:** Tatra Drive & Parking Lot  
**SURVEY DATE:** Thu Jun 1, Sat Jun 3, 2017  
**MUNICIPALITY:** Pickering, Ontario  
**WEATHER:** WKDY-Sunny, SAT - Sunny

**TURNING  
MOVEMENT  
DIAGRAM**



**North-South Road:** Liverpool Road

**East-West Road:** Wharf Street

**Survey Date:** Tue Jun 6, Sat Jun 3, 2017

**Weather:** WKDY-Rain, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

<b>AUTOS</b>														<b>PEDESTRIANS</b>				
TIME BEGINNING	Wharf Street			Wharf Street			Liverpool Road			Liverpool Road			West Side	East Side	South Side	North Side		
	Eastbound			Westbound			Northbound			Southbound								
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right						
<b>WEEKDAY</b>	700	5	0	0	0	0	2	1	4	0	1	5	0	2	1	0	0	
	715	3	0	0	0	0	0	0	5	0	0	3	1	2	0	0	0	
	730	8	0	0	0	0	0	0	16	0	1	20	2	4	0	0	0	
	745	5	0	0	0	1	0	0	23	0	1	28	1	1	0	0	1	
	800	2	0	0	0	0	3	0	30	0	2	16	2	1	1	1	0	
	815	3	0	0	0	0	2	1	9	1	0	13	2	0	2	0	0	
	830	9	0	0	1	0	3	0	9	0	1	11	5	2	1	0	1	
	845	5	1	0	1	0	2	0	8	1	1	10	4	1	2	1	0	
	1600	4	0	0	0	1	0	1	17	0	1	17	5	1	0	1	0	
	1615	3	0	0	0	0	4	2	13	0	3	22	13	6	1	1	0	
	1630	10	0	0	0	0	2	2	26	1	2	25	12	0	2	0	1	
	1645	3	0	1	0	0	0	1	16	0	2	23	10	3	2	0	0	
	1700	2	0	1	0	0	1	0	24	0	3	37	2	6	4	1	0	
1715	0	1	2	0	0	2	1	13	0	1	24	11	4	3	0	3		
1730	6	0	1	0	0	0	0	17	0	0	19	14	8	4	1	0		
1745	4	0	1	1	0	1	1	22	2	0	19	13	6	2	2	0		
<b>SATURDAY</b>	1200	3	0	0	0	0	3	2	29	0	3	29	11	11	7	0	0	
	1215	12	0	0	0	0	4	1	39	1	6	38	8	9	6	0	0	
	1230	4	0	1	0	0	4	2	31	0	7	44	11	17	2	7	0	
	1245	6	0	0	0	0	2	1	23	2	3	36	13	7	2	3	0	
	1300	11	0	4	1	0	5	0	38	2	0	33	20	10	5	1	0	
	1315	10	1	1	0	0	4	2	24	1	3	36	15	11	2	2	0	
	1330	5	0	1	0	1	5	2	29	1	1	52	16	3	3	0	0	
1345	9	1	1	0	0	4	0	22	0	3	48	10	7	4	0	0		
<b>TOTALS</b>																		
AM	40	1	0	2	1	12	2	104	2	7	106	17	13	7	2	2		
PM	32	1	6	1	1	10	8	148	3	12	186	80	34	18	6	4		
SAT	60	2	8	1	1	31	10	235	7	26	316	104	75	31	13	0		

North-South Road: Liverpool Road

East-West Road: Wharf Street

Survey Date: Tue Jun 6, Sat Jun 3, 2017

Weather: WKDY-Rain, SAT - Sunny

MUNICIPALITY: Pickering, Ontario

TIG TCS v1.17

TRAF8 GROUP

<b>MEDIUM</b>														<b>BICYCLES</b>			
	TIME BEGINNING	Wharf Street			Wharf Street			Liverpool Road			Liverpool Road			West Side	East Side	South Side	North Side
		Eastbound			Westbound			Northbound			Southbound						
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right				
<b>WEEKDAY</b>	700	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0
	715	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
	730	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
	745	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0
	800	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0
	815	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0
	830	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	845	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1600	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0
	1615	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0
	1630	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
	1645	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
	1700	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1715	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1730	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1745	0	0	1	0	0	0	0	1	0	0	0	1	0	0	0	0	
<b>SATURDAY</b>	1200	1	0	0	0	0	0	0	0	0	0	0	1	8	6	0	0
	1215	0	0	0	0	0	0	0	0	0	0	0	1	5	3	2	0
	1230	0	0	0	0	0	0	0	1	0	0	2	0	8	4	0	3
	1245	1	0	0	0	0	0	0	1	0	0	0	0	7	6	0	0
	1300	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
	1315	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0
	1330	0	0	0	0	0	0	0	0	0	0	0	0	7	5	0	0
1345	0	0	0	0	0	0	0	0	0	0	0	0	4	3	0	0	
	<b>TOTALS</b>																
	AM	0	0	0	0	0	0	0	1	0	0	2	0	5	1	1	0
	PM	1	0	1	0	0	0	0	1	0	0	0	2	3	3	0	0
	SAT	2	0	0	0	0	0	0	2	0	0	2	2	40	31	2	3

North-South Road: Liverpool Road

East-West Road: Wharf Street

Survey Date: Tue Jun 6, Sat Jun 3, 2017

Weather: WKDY-Rain, SAT - Sunny

MUNICIPALITY: Pickering, Ontario

TIG TCS v1.17

TRAF8 GROUP

		<b>HEAVY</b>												<b>U-TURNS</b>			
	TIME BEGINNING	Wharf Street			Wharf Street			Liverpool Road			Liverpool Road			EB to WB	WB to EB	NB to SB	SB to NB
		Eastbound			Westbound			Northbound			Southbound						
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right				
<b>WEEKDAY</b>	700	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	715	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	730	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	745	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	800	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	815	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	830	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	845	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1600	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1615	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1630	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1645	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1700	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1715	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1730	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1745	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<b>SATURDAY</b>	1200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1215	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1230	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1245	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1300	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1315	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1330	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1345	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>TOTALS</b>																	
AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
SAT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

**North-South Road:** Liverpool Road

**East-West Road:** Wharf Street

**Survey Date:** Tue Jun 6, Sat Jun 3, 2017

**Weather:** WKDY-Rain, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

<b>TOTAL VEHICLES</b>														
TIME BEGINNING	Wharf Street			Wharf Street			Liverpool Road			Liverpool Road			TOTAL VEHICLES	
	Eastbound			Westbound			Northbound			Southbound				
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
<b>WEEKDAY</b>	700	5	0	0	0	2	1	4	0	1	5	0	18	
	715	3	0	0	0	0	0	5	0	0	3	1	12	
	730	8	0	0	0	0	0	16	0	1	20	2	47	
	745	5	0	0	0	1	0	23	0	1	28	1	59	
	800	2	0	0	0	0	3	0	30	0	2	18	2	57
	815	3	0	0	0	0	2	1	10	1	0	13	2	32
	830	9	0	0	1	0	3	0	9	0	1	11	5	39
	845	5	1	0	1	0	2	0	8	1	1	10	4	33
	1600	4	0	0	0	1	0	1	17	0	1	17	5	46
	1615	3	0	0	0	0	4	2	13	0	3	22	13	60
	1630	10	0	0	0	0	2	2	26	1	2	25	12	80
	1645	4	0	1	0	0	0	1	16	0	2	23	11	58
	1700	2	0	1	0	0	1	0	24	0	3	37	2	70
	1715	0	1	2	0	0	2	1	13	0	1	24	11	55
1730	6	0	1	0	0	0	0	17	0	0	19	14	57	
1745	4	0	2	1	0	1	1	23	2	0	19	14	67	
<b>SATURDAY</b>	1200	4	0	0	0	0	3	2	29	0	3	29	12	82
	1215	12	0	0	0	0	4	1	39	1	6	38	9	110
	1230	4	0	1	0	0	4	2	32	0	7	46	11	107
	1245	7	0	0	0	0	2	1	24	2	3	36	13	88
	1300	11	0	4	1	0	5	0	38	2	0	33	20	114
	1315	10	1	1	0	0	4	2	24	1	3	36	15	97
	1330	5	0	1	0	1	5	2	29	1	1	52	16	113
1345	9	1	1	0	0	4	0	22	0	3	48	10	98	
<b>TOTALS</b>														
AM	40	1	0	2	1	12	2	105	2	7	108	17	<b>297</b>	
PM	33	1	7	1	1	10	8	149	3	12	186	82	<b>493</b>	
SAT	62	2	8	1	1	31	10	237	7	26	318	106	<b>809</b>	

**North-South Road:** Liverpool Road

**East-West Road:** Wharf Street

**Survey Date:** Tue Jun 6, Sat Jun 3, 2017

**Weather:** WKDY-Rain, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

**HOURLY SUMMARY - ALL VEHICLES**

	TIME BEGINNING	Wharf Street			Wharf Street			Liverpool Road			Liverpool Road			TOTAL VEHICLES
		Eastbound			Westbound			Northbound			Southbound			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
<b>WEEKDAY</b>	700	21	0	0	0	1	2	1	48	0	3	56	4	136
	715	18	0	0	0	1	3	0	74	0	4	69	6	175
	730	18	0	0	0	1	5	1	79	1	4	79	7	195
	745	19	0	0	1	1	8	1	72	1	4	70	10	187
	800	19	1	0	2	0	10	1	57	2	4	52	13	161
	1600	21	0	1	0	1	6	6	72	1	8	87	41	244
	1615	19	0	2	0	0	7	5	79	1	10	107	38	268
	1630	16	1	4	0	0	5	4	79	1	8	109	36	263
	1645	12	1	5	0	0	3	2	70	0	6	103	38	240
	1700	12	1	6	1	0	4	2	77	2	4	99	41	249
<b>SATURDAY</b>	1200	27	0	1	0	0	13	6	124	3	19	149	45	387
	1215	34	0	5	1	0	15	4	133	5	16	153	53	419
	1230	32	1	6	1	0	15	5	118	5	13	151	59	406
	1245	33	1	6	1	1	16	5	115	6	7	157	64	412
	1300	35	2	7	1	1	18	4	113	4	7	169	61	422

**North-South Road:** Liverpool Road

**East-West Road:** Wharf Street

**Survey Date:** Tue Jun 6, Sat Jun 3, 2017

**Weather:** WKDY-Rain, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

**HOURLY SUMMARY**

	TIME BEGINNING	PEDESTRIANS					BICYCLES					U-TURN				
		West Side	East Side	South Side	North Side	Total	West Side	East Side	South Side	North Side	Total	EB to WB	WB to EB	NB to SB	SB to NB	Total
<b>WEEKDAY</b>	700	9	1	0	1	11	4	1	1	0	6	0	0	0	0	0
	715	8	1	1	1	11	3	1	0	0	4	0	0	0	0	0
	730	6	3	1	1	11	4	0	0	0	4	0	0	0	0	0
	745	4	4	1	2	11	3	0	0	0	3	0	0	0	0	0
	800	4	6	2	1	13	1	0	0	0	1	0	0	0	0	0
	1600	10	5	2	1	18	3	3	0	0	6	0	0	0	0	0
	1615	15	9	2	1	27	1	3	0	0	4	0	0	0	0	0
	1630	13	11	1	4	29	0	1	0	0	1	0	0	0	0	0
	1645	21	13	2	3	39	0	0	0	0	0	0	0	0	0	0
1700	24	13	4	3	44	0	0	0	0	0	0	0	0	0	0	
<b>SATURDAY</b>	1200	44	17	10	0	71	28	19	2	3	52	0	0	0	0	0
	1215	43	15	11	0	69	20	15	2	3	40	0	0	0	0	0
	1230	45	11	13	0	69	16	14	0	3	33	0	0	0	0	0
	1245	31	12	6	0	49	15	15	0	0	30	0	0	0	0	0
	1300	31	14	3	0	48	12	12	0	0	24	0	0	0	0	0



North-South Road: Liverpool Road

East-West Road: Wharf Street

Survey Date: Tue Jun 6, Sat Jun 3, 2017

Weather: WKDY-Rain, SAT - Sunny

MUNICIPALITY: Pickering, Ontario

TIG TCS v1.17

TRAF8 GROUP

**PEAK HOUR VOLUMES - ALL VEHICLES**

PEAK HOUR		Wharf Street			Wharf Street			Liverpool Road			Liverpool Road			TOTAL VEHICLES	
		Eastbound			Westbound			Northbound			Southbound				
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
<b>AM 730 - 830</b>	Autos	18	0	0	0	1	5	1	78	1	4	77	7	192	
	Medium	0	0	0	0	0	0	0	1	0	0	2	0	3	
	Heavy	0	0	0	0	0	0	0	0	0	0	0	0	0	
	<b>Total</b>	<b>18</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>5</b>	<b>1</b>	<b>79</b>	<b>1</b>	<b>4</b>	<b>79</b>	<b>7</b>	<b>195</b>	
	% Hv	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1.3%	0.0%	0.0%	2.5%	0.0%	1.5%
	PHF	0.563	0.000	0.000	0.000	0.250	0.417	0.250	0.658	0.250	0.500	0.705	0.875	0.826	
<b>PM 1615 - 1715</b>	Autos	18	0	2	0	0	7	5	79	1	10	107	37	266	
	Medium	1	0	0	0	0	0	0	0	0	0	0	1	2	
	Heavy	0	0	0	0	0	0	0	0	0	0	0	0	0	
	<b>Total</b>	<b>19</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>5</b>	<b>79</b>	<b>1</b>	<b>10</b>	<b>107</b>	<b>38</b>	<b>268</b>	
	% Hv	5.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.6%	0.7%	
	PHF	0.475	0.000	0.500	0.000	0.000	0.438	0.625	0.760	0.250	0.833	0.723	0.731	0.838	
<b>SAT 1300 - 1400</b>	Autos	35	2	7	1	1	18	4	113	4	7	169	61	422	
	Medium	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Heavy	0	0	0	0	0	0	0	0	0	0	0	0	0	
	<b>Total</b>	<b>35</b>	<b>2</b>	<b>7</b>	<b>1</b>	<b>1</b>	<b>18</b>	<b>4</b>	<b>113</b>	<b>4</b>	<b>7</b>	<b>169</b>	<b>61</b>	<b>422</b>	
	% Hv	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%	
	PHF	0.795	0.500	0.438	0.250	0.250	0.900	0.500	0.743	0.500	0.583	0.813	0.763	0.925	

PEAK HOUR	PEDESTRIANS					BICYCLES					U-TURN				
	West Side	East Side	South Side	North Side	Total	West Side	East Side	South Side	North Side	Total	EB to WB	WB to EB	NB to SB	SB to NB	Total
<b>AM</b>	6	3	1	1	11	4	0	0	0	4	0	0	0	0	0
<b>PM</b>	15	9	2	1	27	1	3	0	0	4	0	0	0	0	0
<b>SAT</b>	31	14	3	0	48	12	12	0	0	24	0	0	0	0	0

**North-South Road:** Liverpool Road

**East-West Road:** Wharf Street

**Survey Date:** Tue Jun 6, Sat Jun 3, 2017

**Weather:** WKDY-Rain, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

**HOURLY SUMMARY - AUTOS**

	TIME BEGINNING	Wharf Street Eastbound			Wharf Street Westbound			Liverpool Road Northbound			Liverpool Road Southbound			TOTAL VEHICLES
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
		<b>WEEKDAY</b>												
	700	21	0	0	0	1	2	1	48	0	3	56	4	136
	715	18	0	0	0	1	3	0	74	0	4	67	6	173
	730	18	0	0	0	1	5	1	78	1	4	77	7	192
	745	19	0	0	1	1	8	1	71	1	4	68	10	184
	800	19	1	0	2	0	10	1	56	2	4	50	13	158
	1600	20	0	1	0	1	6	6	72	1	8	87	40	242
	1615	18	0	2	0	0	7	5	79	1	10	107	37	266
	1630	15	1	4	0	0	5	4	79	1	8	109	35	261
	1645	11	1	5	0	0	3	2	70	0	6	103	37	238
	1700	12	1	5	1	0	4	2	76	2	4	99	40	246
<b>SATURDAY</b>														
	1200	25	0	1	0	0	13	6	122	3	19	147	43	379
	1215	33	0	5	1	0	15	4	131	5	16	151	52	413
	1230	31	1	6	1	0	15	5	116	5	13	149	59	401
	1245	32	1	6	1	1	16	5	114	6	7	157	64	410
	1300	35	2	7	1	1	18	4	113	4	7	169	61	422

**North-South Road:** Liverpool Road

**East-West Road:** Wharf Street

**Survey Date:** Tue Jun 6, Sat Jun 3, 2017

**Weather:** WKDY-Rain, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

**HOURLY SUMMARY - MEDIUM**

	TIME BEGINNING	Wharf Street			Wharf Street			Liverpool Road			Liverpool Road			TOTAL VEHICLES
		Eastbound			Westbound			Northbound			Southbound			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
<b>WEEKDAY</b>	700	0	0	0	0	0	0	0	0	0	0	0	0	0
	715	0	0	0	0	0	0	0	0	0	0	2	0	2
	730	0	0	0	0	0	0	0	1	0	0	2	0	3
	745	0	0	0	0	0	0	0	1	0	0	2	0	3
	800	0	0	0	0	0	0	0	1	0	0	2	0	3
	1600	1	0	0	0	0	0	0	0	0	0	0	1	2
	1615	1	0	0	0	0	0	0	0	0	0	0	1	2
	1630	1	0	0	0	0	0	0	0	0	0	0	1	2
	1645	1	0	0	0	0	0	0	0	0	0	0	1	2
	1700	0	0	1	0	0	0	0	1	0	0	0	1	3
<b>SATURDAY</b>	1200	2	0	0	0	0	0	0	2	0	0	2	2	8
	1215	1	0	0	0	0	0	0	2	0	0	2	1	6
	1230	1	0	0	0	0	0	0	2	0	0	2	0	5
	1245	1	0	0	0	0	0	0	1	0	0	0	0	2
	1300	0	0	0	0	0	0	0	0	0	0	0	0	0

**North-South Road:** Liverpool Road

**East-West Road:** Wharf Street

**Survey Date:** Tue Jun 6, Sat Jun 3, 2017

**Weather:** WKDY-Rain, SAT - Sunny

**MUNICIPALITY:** Pickering, Ontario

TIG TCS v1.17

**TRAF8 GROUP**

**HOURLY SUMMARY - HEAVY**

	TIME BEGINNING	Wharf Street			Wharf Street			Liverpool Road			Liverpool Road			TOTAL VEHICLES
		Eastbound			Westbound			Northbound			Southbound			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
<b>WEEKDAY</b>	700	0	0	0	0	0	0	0	0	0	0	0	0	0
	715	0	0	0	0	0	0	0	0	0	0	0	0	0
	730	0	0	0	0	0	0	0	0	0	0	0	0	0
	745	0	0	0	0	0	0	0	0	0	0	0	0	0
	800	0	0	0	0	0	0	0	0	0	0	0	0	0
	1600	0	0	0	0	0	0	0	0	0	0	0	0	0
	1615	0	0	0	0	0	0	0	0	0	0	0	0	0
	1630	0	0	0	0	0	0	0	0	0	0	0	0	0
	1645	0	0	0	0	0	0	0	0	0	0	0	0	0
	1700	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>SATURDAY</b>	1200	0	0	0	0	0	0	0	0	0	0	0	0	0
	1215	0	0	0	0	0	0	0	0	0	0	0	0	0
	1230	0	0	0	0	0	0	0	0	0	0	0	0	0
	1245	0	0	0	0	0	0	0	0	0	0	0	0	0
	1300	0	0	0	0	0	0	0	0	0	0	0	0	0

TRAF8 GROUP

TIG TCS v1.17

**NORTH-SOUTH ROAD:** Liverpool Road  
**EAST-WEST ROAD:** Wharf Street  
**SURVEY DATE:** Tue Jun 6, Sat Jun 3, 2017  
**MUNICIPALITY:** Pickering, Ontario  
**WEATHER:** WKDY-Rain, SAT - Sunny

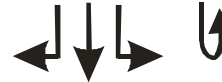
**TURNING  
MOVEMENT  
DIAGRAM**



**Liverpool Road**

	<b>Total</b>	7	79	4
	<b>Heavy</b>	0	0	0
	<b>Medium</b>	0	2	0
	<b>Autos</b>	7	77	4

<b>U-Turns</b>	0
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<b>Pedestrians</b>	1
<b>Bicyclists</b>	0

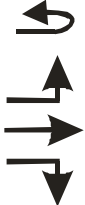
<b>PERIOD</b>	WEEKDAY AM PEAK HOUR
<b>TIME</b>	0730 - 0830

<b>INTERSECTION TOTALS</b>	<b>Autos</b>	<b>Trucks</b>	<b>Buses</b>	<b>Total Vehicles</b>	<b>Medium &amp; Heavy %</b>
	192	3	0	195	1.5%
	<b>Peds</b>	<b>Bicycles</b>	<b>U-Turns</b>	<b>PHF</b>	
	11	4	0	0.826	

Wharf Street

<b>U-Turns</b>	0
----------------	---

<b>Auto</b>	<b>Medium</b>	<b>Heavy</b>	<b>Total</b>
18	0	0	18
0	0	0	0
0	0	0	0



<b>Pedestrians</b>	6
<b>Bicyclists</b>	4

<b>Pedestrians</b>	3
<b>Bicyclists</b>	0

<b>Auto</b>	<b>Medium</b>	<b>Heavy</b>	<b>Total</b>
5	0	0	5
1	0	0	1
0	0	0	0

<b>U-Turns</b>	0
----------------	---

Wharf Street

% NON-AUTO VEHICLES (Medium & Heavy)			
Direction	Left	Thru	Right
Eastbound	0.0%	0.0%	0.0%
Westbound	0.0%	0.0%	0.0%
Northbound	0.0%	1.3%	0.0%
Southbound	0.0%	2.5%	0.0%

<b>Pedestrians</b>	1
<b>Bicyclists</b>	0



	<b>Total</b>	1	79	1
	<b>Heavy</b>	0	0	0
	<b>Medium</b>	0	1	0
	<b>Autos</b>	1	78	1

**Liverpool Road**

**Comments:**

TRAF8 GROUP

TIG TCS v1.17

**NORTH-SOUTH ROAD:** *Liverpool Road*  
**EAST-WEST ROAD:** *Wharf Street*  
**SURVEY DATE:** *Tue Jun 6, Sat Jun 3, 2017*  
**MUNICIPALITY:** *Pickering, Ontario*  
**WEATHER:** *WKDY-Rain, SAT - Sunny*

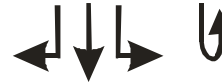
**TURNING  
MOVEMENT  
DIAGRAM**



**Liverpool Road**

	<b>Total</b>	38	107	10
	<b>Heavy</b>	0	0	0
	<b>Medium</b>	1	0	0
	<b>Autos</b>	37	107	10

<b>U-Turns</b>	0
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<b>Pedestrians</b>	1
<b>Bicyclists</b>	0

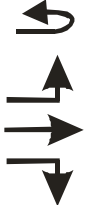
<b>PERIOD</b>	<i>WEEKDAY PM PEAK HOUR</i>
<b>TIME</b>	<i>1615 - 1715</i>

<b>INTERSECTION TOTALS</b>	<b>Autos</b>	<b>Trucks</b>	<b>Buses</b>	<b>Total Vehicles</b>	<b>Medium &amp; Heavy %</b>
	266	2	0	268	0.7%
	<b>Peds</b>	<b>Bicycles</b>	<b>U-Turns</b>	<b>PHF</b>	
	27	4	0	0.838	

**Wharf Street**

<b>U-Turns</b>	0
----------------	---

<b>Auto</b>	<b>Medium</b>	<b>Heavy</b>	<b>Total</b>
18	1	0	19
0	0	0	0
2	0	0	2



<b>Pedestrians</b>	15
<b>Bicyclists</b>	1

<b>Pedestrians</b>	9
<b>Bicyclists</b>	3

<b>Auto</b>	<b>Medium</b>	<b>Heavy</b>	<b>Total</b>
7	0	0	7
0	0	0	0
0	0	0	0

<b>U-Turns</b>	0
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**Wharf Street**

<b>% NON-AUTO VEHICLES (Medium &amp; Heavy)</b>			
<b>Direction</b>	<b>Left</b>	<b>Thru</b>	<b>Right</b>
<b>Eastbound</b>	5.3%	0.0%	0.0%
<b>Westbound</b>	0.0%	0.0%	0.0%
<b>Northbound</b>	0.0%	0.0%	0.0%
<b>Southbound</b>	0.0%	0.0%	2.6%

<b>Pedestrians</b>	2
<b>Bicyclists</b>	0



	<b>Total</b>	5	79	1
	<b>Heavy</b>	0	0	0
	<b>Medium</b>	0	0	0
	<b>Autos</b>	5	79	1

**Liverpool Road**

**Comments:**

TRAF8 GROUP

TIG TCS v1.17

**NORTH-SOUTH ROAD:** Liverpool Road  
**EAST-WEST ROAD:** Wharf Street  
**SURVEY DATE:** Tue Jun 6, Sat Jun 3, 2017  
**MUNICIPALITY:** Pickering, Ontario  
**WEATHER:** WKDY-Rain, SAT - Sunny

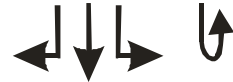
**TURNING  
MOVEMENT  
DIAGRAM**



**Liverpool Road**

	<b>Total</b>	61	169	7
	<b>Heavy</b>	0	0	0
	<b>Medium</b>	0	0	0
	<b>Autos</b>	61	169	7

U-Turns 0



Pedestrians	0
Bicyclists	0

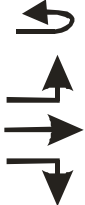
<b>PERIOD</b>	SAT PEAK HOUR
<b>TIME</b>	1300 - 1400

<b>INTERSECTION TOTALS</b>	Autos	Trucks	Buses	Total Vehicles	Medium & Heavy %
	422	0	0	422	0.0%
	Peds	Bicycles	U-Turns	PHF	
	48	24	0	0.925	

Wharf Street

U-Turns	0
---------	---

<b>Auto</b>	<b>Medium</b>	<b>Heavy</b>	<b>Total</b>
35	0	0	35
2	0	0	2
7	0	0	7



Pedestrians	31
Bicyclists	12

Pedestrians	14
Bicyclists	12

<b>Auto</b>	<b>Medium</b>	<b>Heavy</b>	<b>Total</b>
18	0	0	18
1	0	0	1
1	0	0	1

U-Turns	0
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Wharf Street

% NON-AUTO VEHICLES (Medium & Heavy)			
Direction	Left	Thru	Right
Eastbound	0.0%	0.0%	0.0%
Westbound	0.0%	0.0%	0.0%
Northbound	0.0%	0.0%	0.0%
Southbound	0.0%	0.0%	0.0%

Pedestrians	3
Bicyclists	0



	<b>Total</b>	4	113	4
	<b>Heavy</b>	0	0	0
	<b>Medium</b>	0	0	0
	<b>Autos</b>	4	113	4

**Liverpool Road**

**Comments:**

# GAP SURVEY

**LOCATION:**

Tatra @ Liverpool

**MUNICIPALITY:**

Pickering

**DATE:**

Thursday June 1, 2017

**WEATHER:**

Sunny

**CRITICAL GAP VALUES  
MINOR MOVEMENTS**

Type	Left	Thru	Right
Initial	7.5	6.5	6.9
FollowUp	3.5	4	3.3

TIME	GAP	PED CALL	Left	Thru	Right
730	17		3	3	4
730	8		1	1	1
730	8		1	1	1
730	12		2	2	2
730	7		0	1	1
730	5		0	0	0
730	9		1	1	1
730	7		0	1	1
730	11		2	2	2
730	23		5	5	5
730	9		1	1	1
730	18		4	3	4
730	19		4	4	4
730	9		1	1	1
730	16		3	3	3
730	48		12	11	13
730	6		0	0	0
730	17		3	3	4
730	13		2	2	2
730	10		1	1	1
730	18		4	3	4
730	12		2	2	2
730	5		0	0	0
730	9		1	1	1
730	7		0	1	1
730	7		0	1	1
730	9		1	1	1
730	8		1	1	1
730	20		4	4	4
730	8		1	1	1
730	7		0	1	1
730	14		2	2	3
730	21		4	4	5
730	9		1	1	1
730	17		3	3	4
730	7		0	1	1
730	21		4	4	5
745	20		4	4	4
745	15		3	3	3
745	5		0	0	0
745	13		2	2	2
745	9		1	1	1
745	12		2	2	2
745	7		0	1	1
745	10		1	1	1
745	7		0	1	1
745	5		0	0	0
745	9		1	1	1
745	7		0	1	1
745	17		3	3	4
745	18		4	3	4
745	10		1	1	1
745	15		3	3	3
745	11		2	2	2
745		24	0	0	0



745	7		0	1	1
745	16		3	3	3
745	6		0	0	0
745	6		0	0	0
745	5		0	0	0
745	8		1	1	1
745	10		1	1	1
745	18		4	3	4
745	8		1	1	1
745	14		2	2	3
745	6		0	0	0
745	10		1	1	1
745	9		1	1	1
745	14		2	2	3
745	9		1	1	1
745	6		0	0	0
745	16		3	3	3
745	9		1	1	1
745	7		0	1	1
745	17		3	3	4
745	10		1	1	1
800	13		2	2	2
800	7		0	1	1
800		21	0	0	0
800	8		1	1	1
800	6		0	0	0
800	16		3	3	3
800	6		0	0	0
800	6		0	0	0
800	9		1	1	1
800	7		0	1	1
800	14		2	2	3
800	8		1	1	1
800	15		3	3	3
800		24	0	0	0
800	8		1	1	1
800	7		0	1	1
800	6		0	0	0
800	6		0	0	0
800	18		4	3	4
800	10		1	1	1
800	20		4	4	4
800	14		2	2	3
800	26		6	5	6
800	7		0	1	1
800	7		0	1	1
800	16		3	3	3
800	11		2	2	2
800	9		1	1	1
800	10		1	1	1
800	13		2	2	2
800	30		7	6	8
800	6		0	0	0
800	16		3	3	3
800	6		0	0	0
800	8		1	1	1

800	10		1	1	1
800	7		0	1	1
800	13		2	2	2
800	7		0	1	1
815	5		0	0	0
815	8		1	1	1
815	10		1	1	1
815	27		6	6	7
815	14		2	2	3
815	19		4	4	4
815	78		21	18	22
815	12		2	2	2
815	6		0	0	0
815	6		0	0	0
815	9		1	1	1
815	10		1	1	1
815	12		2	2	2
815	14		2	2	3
815	13		2	2	2
815		22	0	0	0
815	12		2	2	2
815	8		1	1	1
815	16		3	3	3
815	9		1	1	1
815	18		4	3	4
815	6		0	0	0
815	9		1	1	1
815	6		0	0	0
815	8		1	1	1
815	8		1	1	1
815	6		0	0	0
815	7		0	1	1
815	13		2	2	2
815	8		1	1	1
815	7		0	1	1
815	5		0	0	0
815	37		9	8	10
815	15		3	3	3
815	6		0	0	0
815	10		1	1	1
815	10		1	1	1
815	7		0	1	1

<b>SUMMARY</b>					
730	471	0	74	77	87
745	401	24	52	55	61
800	406	45	54	58	64
815	474	22	76	74	84
<b>TOTAL</b>	<b>1752</b>	<b>91</b>	<b>256</b>	<b>264</b>	<b>296</b>

# GAP SURVEY

**LOCATION:**

Tatra @ Liverpool

**MUNICIPALITY:**

Pickering

**DATE:**

Thursday June 1, 2017

**WEATHER:**

Sunny

**CRITICAL GAP VALUES  
MINOR MOVEMENTS**

Type	Left	Thru	Right
Initial	7.5	6.5	6.9
FollowUp	3.5	4	3.3

TIME	GAP	PED CALL	Left	Thru	Right
1600		20			
1600	7		0	1	1
1600	7		0	1	1
1600	11		2	2	2
1600	10		1	1	1
1600	19		4	4	4
1600	10		1	1	1
1600	7		0	1	1
1600	8		1	1	1
1600	6		0	0	0
1600	8		1	1	1
1600	9		1	1	1
1600	8		1	1	1
1600	5		0	0	0
1600	10		1	1	1
1600	8		1	1	1
1600	7		0	1	1
1600	9		1	1	1
1600	10		1	1	1
1600	8		1	1	1
1600	13		2	2	2
1600	5		0	0	0
1600	5		0	0	0
1600	17		3	3	4
1600		21			
1600	8		1	1	1
1600	8		1	1	1
1600	6		0	0	0
1600	9		1	1	1
1600	18		4	3	4
1600	5		0	0	0
1600	12		2	2	2
1600	12		2	2	2
1600	5		0	0	0
1600	5		0	0	0
1600	8		1	1	1
1600	10		1	1	1
1600	11		2	2	2
1600	7		0	1	1
1615	35		8	8	9
1615		23			
1615	7		0	1	1
1615	8		1	1	1
1615	6		0	0	0
1615	5		0	0	0
1615	6		0	0	0
1615	7		0	1	1
1615	6		0	0	0
1615	9		1	1	1
1615	6		0	0	0
1615	8		1	1	1
1615	22		5	4	5
1615	7		0	1	1
1615	8		1	1	1
1615	7		0	1	1

1615	18		4	3	4
1615	6		0	0	0
1615	13		2	2	2
1615	6		0	0	0
1615	5		0	0	0
1615	9		1	1	1
1615	5		0	0	0
1615	7		0	1	1
1615	7		0	1	1
1615	6		0	0	0
1615	8		1	1	1
1615	5		0	0	0
1615	12		2	2	2
1615	9		1	1	1
1615		24			
1615	5		0	0	0
1615	10		1	1	1
1615	5		0	0	0
1615	6		0	0	0
1615	8		1	1	1
1615	9		1	1	1
1615	10		1	1	1
1615	17		3	3	4
1615	6		0	0	0
1615	15		3	3	3
1615	10		1	1	1
1615	15		3	3	3
1615	8		1	1	1
1615	6		0	0	0
1615	7		0	1	1
1615	7		0	1	1
1615	7		0	1	1
1615	7		0	1	1
1630	39		10	9	10
1630	12		2	2	2
1630	22		5	4	5
1630	8		1	1	1
1630	9		1	1	1
1630	11		2	2	2
1630	9		1	1	1
1630	5		0	0	0
1630	8		1	1	1
1630	6		0	0	0
1630	7		0	1	1
1630	5		0	0	0
1630	10		1	1	1
1630	13		2	2	2
1630	9		1	1	1
1630	15		3	3	3
1630	15		3	3	3
1630	21		4	4	5
1630	10		1	1	1
1630	28		6	6	7
1630	13		2	2	2
1630	8		1	1	1
1630	10		1	1	1

1630	17		3	3	4
1630	10		1	1	1
1630	14		2	2	3
1630	9		1	1	1
1630	10		1	1	1
1630	12		2	2	2
1630	12		2	2	2
1630	9		1	1	1
1630	12		2	2	2
1630	8		1	1	1
1630	18		4	3	4
1630	11		2	2	2
1630	6		0	0	0
1630	15		3	3	3
1630	6		0	0	0
1630	5		0	0	0
1630	9		1	1	1
1630	13		2	2	2
1630	7		0	1	1
1630	7		0	1	1
1630	6		0	0	0
1630	6		0	0	0
1630	16		3	3	3
1630	7		0	1	1
1630	9		1	1	1
1630	11		2	2	2
1630	6		0	0	0
1645	12		2	2	2
1645	7		0	1	1
1645	8		1	1	1
1645	7		0	1	1
1645		22			
1645	13		2	2	2
1645	7		0	1	1
1645		23			
1645	6		0	0	0
1645	8		1	1	1
1645	8		1	1	1
1645	5		0	0	0
1645	12		2	2	2
1645	9		1	1	1
1645		22			
1645	6		0	0	0
1645	12		2	2	2
1645	13		2	2	2
1645	5		0	0	0
1645	14		2	2	3
1645	14		2	2	3
1645	6		0	0	0
1645	6		0	0	0
1645	15		3	3	3
1645	13		2	2	2
1645	5		0	0	0
1645	10		1	1	1
1645	8		1	1	1
1645	6		0	0	0

1645	27		6	6	7
1645	6		0	0	0
1645	6		0	0	0
1645	23		5	5	5
1645	5		0	0	0
1645	6		0	0	0
1645	7		0	1	1
1645	12		2	2	2
1645	16		3	3	3
1645	5		0	0	0
1645	9		1	1	1
1645	6		0	0	0
1645	8		1	1	1
1645		23			
1645	6		0	0	0
1645	6		0	0	0
1645	7		0	1	1
1645	7		0	1	1
1645	24		5	5	6
1645	6		0	0	0
1645	11		2	2	2
1645	6		0	0	0
1645	7		0	1	1

<b>SUMMARY</b>					
1600	331	41	37	41	43
1615	421	47	43	51	55
1630	564	0	82	83	90
1645	451	90	50	57	61
<b>TOTAL</b>	<b>1767</b>	<b>178</b>	<b>212</b>	<b>232</b>	<b>249</b>

# GAP SURVEY

**LOCATION:**

Tatra @ Liverpool

**MUNICIPALITY:**

Pickering

**DATE:**

Saturday June 3, 2017

**WEATHER:**

Sunny

TIME	GAP	Left	Thru	Right
1300				
1300	7	0	1	1
1300	7	0	1	1
1300	11	2	2	2
1300	10	1	1	1
1300	19	4	4	4
1300	10	1	1	1
1300	7	0	1	1
1300	8	1	1	1
1300	6	0	0	0
1300	8	1	1	1
1300	9	1	1	1
1300	8	1	1	1
1300	5	0	0	0
1300	10	1	1	1
1300	8	1	1	1
1300	7	0	1	1
1300	9	1	1	1
1300	10	1	1	1
1300	8	1	1	1
1300	13	2	2	2
1300	5	0	0	0
1300	7	0	1	1
1315	35	8	8	9
1315				
1315	7	0	1	1
1315	8	1	1	1
1315	6	0	0	0
1315	5	0	0	0
1315	6	0	0	0
1315	7	0	1	1
1315	6	0	0	0
1315	9	1	1	1
1315	6	0	0	0
1315	8	1	1	1
1315	22	5	4	5
1315	7	0	1	1
1315	8	1	1	1
1315	7	0	1	1
1315	18	4	3	4
1315	6	0	0	0
1315	13	2	2	2
1315	6	0	0	0
1315	5	0	0	0
1315	7	0	1	1
1330	39	10	9	10
1330	12	2	2	2
1330	22	5	4	5
1330	8	1	1	1
1330	9	1	1	1
1330	11	2	2	2
1330	9	1	1	1
1330	5	0	0	0
1330	8	1	1	1
1330	6	0	0	0

**CRITICAL GAP VALUES  
MINOR MOVEMENTS**

Type	Left	Thru	Right
Initial	7.5	6.5	6.9
FollowUp	3.5	4	3.3

1330	7	0	1	1
1330	5	0	0	0
1330	10	1	1	1
1330	13	2	2	2
1330	9	1	1	1
1330	15	3	3	3
1330	15	3	3	3
1330	21	4	4	5
1330	10	1	1	1
1330	28	6	6	7
1330	13	2	2	2
1330	8	1	1	1
1330	10	1	1	1
1330	17	3	3	4
1330	10	1	1	1
1330	6	0	0	0
1345	12	2	2	2
1345	7	0	1	1
1345	8	1	1	1
1345	7	0	1	1
1345				
1345	13	2	2	2
1345	7	0	1	1
1345				
1345	6	0	0	0
1345	8	1	1	1
1345	8	1	1	1
1345	5	0	0	0
1345	12	2	2	2
1345	9	1	1	1
1345				
1345	6	0	0	0
1345	12	2	2	2
1345	13	2	2	2
1345	7	0	1	1

<b>SUMMARY</b>				
1300	192	19	24	24
1315	202	23	26	29
1330	326	52	51	56
1345	140	14	18	18
<b>TOTAL</b>	<b>860</b>	<b>108</b>	<b>119</b>	<b>127</b>



# GAP SURVEY

**LOCATION:**

Radom @ Liverpool

**MUNICIPALITY:**

Pickering

**DATE:**

Thursday June 1, 2017

**WEATHER:**

Sunny

TIME	GAP	Left	Thru	Right
730	11	2	2	2
730	5	0	0	0
730	14	2	2	3
730	6	0	0	0
730	13	2	2	2
730	6	0	0	0
730	8	1	1	1
730	6	0	0	0
730	8	1	1	1
730	7	0	1	1
730	8	1	1	1
730	20	4	4	4
730	8	1	1	1
730	16	3	3	3
730	16	3	3	3
730	15	3	3	3
730	19	4	4	4
730	21	4	4	5
730	15	3	3	3
730	65	17	15	18
730	8	1	1	1
730	24	5	5	6
730	8	1	1	1
730	6	0	0	0
730	31	7	7	8
730	6	0	0	0
730	10	1	1	1
730	7	0	1	1
730	19	4	4	4
730	8	1	1	1
730	9	1	1	1
730	7	0	1	1
730	21	4	4	5
730	12	2	2	2
730	17	3	3	4
730	7	0	1	1
730	5	0	0	0
730	12	2	2	2
730	27	6	6	7
730	5	0	0	0
730	14	2	2	3
745	13	2	2	2
745	8	1	1	1
745	20	4	4	4
745	12	2	2	2
745	9	1	1	1
745	7	0	1	1
745	14	2	2	3
745	11	2	2	2
745	8	1	1	1
745	9	1	1	1
745	16	3	3	3
745	7	0	1	1
745	12	2	2	2
745	15	3	3	3

**CRITICAL GAP VALUES  
MINOR MOVEMENTS**

Type	Left	Thru	Right
Initial	7.5	6.5	6.9
FollowUp	3.5	4	3.3

745	10	1	1	1
745	16	3	3	3
745	7	0	1	1
745	9	1	1	1
745	23	5	5	5
745	8	1	1	1
745	17	3	3	4
745	8	1	1	1
745	9	1	1	1
745	9	1	1	1
745	6	0	0	0
745	12	2	2	2
745	6	0	0	0
745	9	1	1	1
745	16	3	3	3
745	8	1	1	1
745	11	2	2	2
745	14	2	2	3
745	14	2	2	3
745	7	0	1	1
745	16	3	3	3
745	7	0	1	1
745	11	2	2	2
745	9	1	1	1
745	5	0	0	0
745	14	2	2	3
745	8	1	1	1
745	13	2	2	2
745	8	1	1	1
745	25	6	5	6
745	6	0	0	0
800	17	3	3	4
800	10	1	1	1
800	6	0	0	0
800	15	3	3	3
800	13	2	2	2
800	18	4	3	4
800	7	0	1	1
800	15	3	3	3
800	17	3	3	4
800	17	3	3	4
800	5	0	0	0
800	30	7	6	8
800	8	1	1	1
800	13	2	2	2
800	5	0	0	0
800	6	0	0	0
800	22	5	4	5
800	22	5	4	5
800	17	3	3	4
800	11	2	2	2
800	17	3	3	4
800	9	1	1	1
800	12	2	2	2
800	10	1	1	1
800	18	4	3	4

800	27	6	6	7
800	15	3	3	3
800	6	0	0	0
800	13	2	2	2
800	8	1	1	1
800	9	1	1	1
800	11	2	2	2
815	31	7	7	8
815	76	20	18	21
815	13	2	2	2
815	15	3	3	3
815	18	4	3	4
815	21	4	4	5
815	15	3	3	3
815	9	1	1	1
815	8	1	1	1
815	8	1	1	1
815	11	2	2	2
815	21	4	4	5
815	5	0	0	0
815	7	0	1	1
815	14	2	2	3
815	29	7	6	7
815	17	3	3	4
815	6	0	0	0
815	22	5	4	5
815	7	0	1	1
815	10	1	1	1
815	9	1	1	1
815	11	2	2	2
815	7	0	1	1
815	13	2	2	2
815	5	0	0	0
815	14	2	2	3
815	28	6	6	7
815	8	1	1	1
815	16	3	3	3
815	9	1	1	1
815	29	7	6	7
815	18	4	3	4
815	5	0	0	0
815	14	2	2	3
815	7	0	1	1

<b>SUMMARY</b>				
730	550	91	93	104
745	502	72	76	82
800	429	73	69	81
815	556	101	98	114
<b>TOTAL</b>	<b>2037</b>	<b>337</b>	<b>336</b>	<b>381</b>

# GAP SURVEY

**LOCATION:**

Radom @ Liverpool

**MUNICIPALITY:**

Pickering

**DATE:**

Thursday June 1, 2017

**WEATHER:**

Sunny

TIME	GAP	Left	Thru	Right
1600	15	3	3	3
1600	5	0	0	0
1600	20	4	4	4
1600	17	3	3	4
1600	5	0	0	0
1600	11	2	2	2
1600	5	0	0	0
1600	11	2	2	2
1600	7	0	1	1
1600	5	0	0	0
1600	5	0	0	0
1600	10	1	1	1
1600	17	3	3	4
1600	11	2	2	2
1600	10	1	1	1
1600	10	1	1	1
1600	12	2	2	2
1600	5	0	0	0
1600	9	1	1	1
1600	8	1	1	1
1600	5	0	0	0
1600	15	3	3	3
1600	7	0	1	1
1600	9	1	1	1
1600	11	2	2	2
1600	15	3	3	3
1600	22	5	4	5
1600	10	1	1	1
1600	7	0	1	1
1600	9	1	1	1
1600	10	1	1	1
1600	8	1	1	1
1600	7	0	1	1
1600	9	1	1	1
1600	7	0	1	1
1615	7	0	1	1
1615	6	0	0	0
1615	7	0	1	1
1615	10	1	1	1
1615	24	5	5	6
1615	12	2	2	2
1615	10	1	1	1
1615	9	1	1	1
1615	10	1	1	1
1615	7	0	1	1
1615	8	1	1	1
1615	6	0	0	0
1615	7	0	1	1
1615	7	0	1	1
1615	5	0	0	0
1615	7	0	1	1
1615	7	0	1	1
1615	6	0	0	0
1615	17	3	3	4
1615	14	2	2	3

**CRITICAL GAP VALUES  
MINOR MOVEMENTS**

Type	Left	Thru	Right
Initial	7.5	6.5	6.9
FollowUp	3.5	4	3.3

1615	8	1	1	1
1615	7	0	1	1
1615	10	1	1	1
1615	5	0	0	0
1615	20	4	4	4
1615	10	1	1	1
1615	5	0	0	0
1615	37	9	8	10
1615	5	0	0	0
1615	9	1	1	1
1615	10	1	1	1
1615	10	1	1	1
1615	15	3	3	3
1615	11	2	2	2
1615	12	2	2	2
1615	6	0	0	0
1615	7	0	1	1
1615	11	2	2	2
1615	6	0	0	0
1630	15	3	3	3
1630	8	1	1	1
1630	12	2	2	2
1630	10	1	1	1
1630	12	2	2	2
1630	6	0	0	0
1630	8	1	1	1
1630	10	1	1	1
1630	5	0	0	0
1630	7	0	1	1
1630	20	4	4	4
1630	11	2	2	2
1630	8	1	1	1
1630	11	2	2	2
1630	12	2	2	2
1630	5	0	0	0
1630	13	2	2	2
1630	9	1	1	1
1630	15	3	3	3
1630	16	3	3	3
1630	6	0	0	0
1630	13	2	2	2
1630	10	1	1	1
1630	18	4	3	4
1630	8	1	1	1
1630	6	0	0	0
1630	8	1	1	1
1630	16	3	3	3
1630	9	1	1	1
1630	24	5	5	6
1630	6	0	0	0
1630	7	0	1	1
1630	7	0	1	1
1630	9	1	1	1
1630	9	1	1	1
1630	11	2	2	2
1630	8	1	1	1

1630	13	2	2	2
1645	5	0	0	0
1645	9	1	1	1
1645	14	2	2	3
1645	13	2	2	2
1645	7	0	1	1
1645	6	0	0	0
1645	7	0	1	1
1645	5	0	0	0
1645	5	0	0	0
1645	11	2	2	2
1645	18	4	3	4
1645	5	0	0	0
1645	8	1	1	1
1645	13	2	2	2
1645	14	2	2	3
1645	10	1	1	1
1645	30	7	6	8
1645	22	5	4	5
1645	5	0	0	0
1645	6	0	0	0
1645	11	2	2	2
1645	7	0	1	1
1645	13	2	2	2
1645	12	2	2	2
1645	5	0	0	0
1645	6	0	0	0
1645	15	3	3	3
1645	7	0	1	1
1645	13	2	2	2
1645	12	2	2	2
1645	16	3	3	3

<b>SUMMARY</b>				
1600	349	45	49	52
1615	390	45	53	58
1630	401	56	58	60
1645	330	45	46	52
<b>TOTAL</b>	<b>1470</b>	<b>191</b>	<b>206</b>	<b>222</b>

# GAP SURVEY

**LOCATION:**

Radom @ Liverpool

**MUNICIPALITY:**

Pickering

**DATE:**

Saturday June 3, 2017

**WEATHER:**

Sunny

TIME	GAP	Left	Thru	Right
1300	10	1	1	1
1300	5	0	0	0
1300	18	4	3	4
1300	18	4	3	4
1300	5	0	0	0
1300	14	2	2	3
1300	11	2	2	2
1300	8	1	1	1
1300	6	0	0	0
1300	10	1	1	1
1300	17	3	3	4
1300	24	5	5	6
1300	10	1	1	1
1300	14	2	2	3
1300	10	1	1	1
1300	6	0	0	0
1300	5	0	0	0
1300	12	2	2	2
1300	12	2	2	2
1300	6	0	0	0
1300	14	2	2	3
1300	9	1	1	1
1300	5	0	0	0
1300	19	4	4	4
1300	11	2	2	2
1300	7	0	1	1
1300	15	3	3	3
1300	9	1	1	1
1300	33	8	7	8
1300	10	1	1	1
1300	16	3	3	3
1315	8	1	1	1
1315	10	1	1	1
1315	10	1	1	1
1315	11	2	2	2
1315	19	4	4	4
1315	8	1	1	1
1315	15	3	3	3
1315	8	1	1	1
1315	16	3	3	3
1315	10	1	1	1
1315	9	1	1	1
1315	7	0	1	1
1315	10	1	1	1
1315	10	1	1	1
1315	7	0	1	1
1315	6	0	0	0
1315	14	2	2	3
1315	8	1	1	1
1315	10	1	1	1
1315	6	0	0	0
1315	6	0	0	0
1315	18	4	3	4
1315	10	1	1	1
1315	8	1	1	1

**CRITICAL GAP VALUES  
MINOR MOVEMENTS**

Type	Left	Thru	Right
Initial	7.5	6.5	6.9
FollowUp	3.5	4	3.3

1315	8	1	1	1
1315	10	1	1	1
1315	18	4	3	4
1315	12	2	2	2
1315	8	1	1	1
1315	8	1	1	1
1315	10	1	1	1
1330	17	3	3	4
1330	9	1	1	1
1330	7	0	1	1
1330	15	3	3	3
1330	9	1	1	1
1330	8	1	1	1
1330	16	3	3	3
1330	5	0	0	0
1330	6	0	0	0
1330	6	0	0	0
1330	7	0	1	1
1330	22	5	4	5
1330	6	0	0	0
1330	8	1	1	1
1330	13	2	2	2
1330	6	0	0	0
1330	16	3	3	3
1330	7	0	1	1
1330	16	3	3	3
1330	7	0	1	1
1330	12	2	2	2
1330	11	2	2	2
1330	12	2	2	2
1330	12	2	2	2
1330	12	2	2	2
1330	7	0	1	1
1330	12	2	2	2
1330	10	1	1	1
1330	12	2	2	2
1330	21	4	4	5
1330	12	2	2	2
1330	17	3	3	4
1330	8	1	1	1
1330	9	1	1	1
1345	9	1	1	1
1345	11	2	2	2
1345	17	3	3	4
1345	15	3	3	3
1345	14	2	2	3
1345	12	2	2	2
1345	9	1	1	1
1345	14	2	2	3
1345	9	1	1	1
1345	10	1	1	1
1345	12	2	2	2
1345	5	0	0	0
1345	13	2	2	2
1345	15	3	3	3
1345	17	3	3	4



1345	8	1	1	1
1345	10	1	1	1
1345	13	2	2	2
1345	5	0	0	0
1345	11	2	2	2
1345	15	3	3	3
1345	10	1	1	1

<b>SUMMARY</b>				
1300	369	56	54	62
1315	318	42	42	45
1330	373	52	56	60
1345	254	38	38	42
<b>TOTAL</b>	<b>1314</b>	<b>188</b>	<b>190</b>	<b>209</b>

<b>Traf8 Group</b>	<b>LOCATION:</b> Public parking lot Located at south end of Liverpool Rd East side <b>MUNICIPALITY:</b> Pickering <b>WEATHER:</b> Saturday - Sunny Thursday - Sunny	<h1>PARKING SURVEY</h1>

Thursday June 8, 2017									
Time	INBOUND				OUTBOUND				Total Two Way
	South Driveway	North Driveway (Wrong Way)	South Driveway Bus	Total	North Driveway	South Driveway (Wrong Way)	North Driveway Bus	Total	
1400	20	0	0	20	22	0	0	22	42
1415	19	1	0	20	20	1	0	21	41
1430	14	0	0	14	14	0	0	14	28
1445	17	1	0	18	16	0	0	16	34
1500	16	0	0	16	24	1	0	25	41
1515	19	1	0	20	26	0	0	26	46
1530	19	0	0	19	19	1	0	20	39
1545	20	0	1	21	18	0	0	18	39
1600	20	0	0	20	24	2	0	26	46
1615	16	0	0	16	19	0	0	19	35
1630	14	0	0	14	13	0	0	13	27
1645	17	1	0	18	12	0	0	12	30
1700	20	0	0	20	19	0	0	19	39
1715	19	1	0	20	12	0	0	12	32
1730	29	0	0	29	24	0	1	25	54
1745	25	0	0	25	17	0	0	17	42
1800	38	0	0	38	36	1	0	37	75
1815	36	1	0	37	33	1	0	34	71
1830	52	1	0	53	53	1	0	54	107
1845	43	1	0	44	43	1	0	44	88

Saturday June 3, 2017									
Time	INBOUND				OUTBOUND				Total Two Way
	South Driveway	North Driveway (Wrong Way)	South Driveway Bus	Total	North Driveway	South Driveway (Wrong Way)	North Driveway Bus	Total	
1500	23	3	0	26	29	0	0	29	55
1515	34	0	0	34	30	1	0	31	65
1530	36	1	0	37	38	1	0	39	76
1545	26	1	0	27	26	0	0	26	53
1600	17	0	0	17	19	1	0	20	37
1615	43	1	0	44	39	0	0	39	83
1630	38	0	0	38	37	1	0	38	76
1645	28	0	0	28	28	0	0	28	56
1700	28	0	0	28	29	0	0	29	57
1715	30	0	0	30	28	1	0	29	59
1730	29	1	0	30	39	1	0	40	70
1745	32	1	0	33	24	2	0	26	59
1800	29	0	0	29	30	0	0	30	59
1815	30	0	0	30	27	0	0	27	57
1830	28	2	0	30	29	0	0	29	59
1845	35	1	0	36	34	2	0	36	72

<b>Traf8 Group</b>	<b>LOCATION:</b> Public parking lot Located at south end of Liverpool Rd East side <b>MUNICIPALITY:</b> Pickering <b>WEATHER:</b> Saturday - Sunny Thursday - Sunny	<b>PARKING SURVEY</b>
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SATURDAY JUNE 3, 2017				
Time	Parked Vehicles	Vehicles In Aisle	Total Vehicles In Lot	Buses
1500	72	3	75	
1515	70	2	72	
1530	72	3	75	
1545	72	1	73	
1600	72	2	74	
1615	70	1	71	
1630	72	4	76	
1645	72	4	76	
1700	72	4	76	
1715	71	4	75	
1730	71	5	76	
1745	66	0	66	
1800	72	1	73	
1815	71	1	72	
1830	72	3	75	
1845	72	4	76	
1900	72	4	76	
<b>MAX</b>	<b>72</b>	<b>5</b>	<b>76</b>	<b>0</b>

THURSDAY JUNE 8, 2017				
Time	Parked Vehicles	Vehicles In Aisle	Total Vehicles In Lot	Buses
1400	67	0	67	
1415	65	0	65	
1430	64	0	64	
1445	64	0	64	
1500	66	0	66	
1515	57	0	57	
1530	51	0	51	
1545	50	0	50	1
1600	52	0	52	1
1615	46	0	46	1
1630	43	0	43	1
1645	44	0	44	1
1700	50	0	50	1
1715	51	0	51	1
1730	59	0	59	
1745	64	0	64	
1800	71	1	72	
1815	72	1	73	
1830	72	4	76	
1845	72	3	75	
1900	72	3	75	
<b>MAX</b>	<b>72</b>	<b>4</b>	<b>76</b>	<b>1</b>

**NOTES:**  
 Lot contains 70 regular parking stalls and 2 disable parking stalls  
 Two driveways serve site - one for inbound traffic and one for outbound traffic - numerous wrong way access/egress observed



# **Appendix B**

## **Signal Timing Plan**



June 19, 2017

HDR  
100 York Boulevard Suite 300  
RICHMOND HILL ON L4B 1J8

**ATTENTION: Alfred Cheng**

**The Regional  
Municipality  
of Durham**

Works Department  
Traffic Operations Centre

101 CONSUMERS DR.  
P.O. BOX 623  
WHITBY ON L1N 6A3  
CANADA  
905-666-8116  
1-866-786-8116  
Fax: 905-666-8826  
E-mail:  
traffic@durhamca

[www.durham.ca](http://www.durham.ca)

**Susan Siopis, P.Eng.**  
Commissioner of Works

**RE: Bayly Street (RR22) and Liverpool Road (RR31)  
Signal Timings – AM, PM and Saturday Peaks  
Our File: 242-T02-2017**

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Attached is a detailed summary of the signal timings for the above-noted intersection, as requested June 9, 2017. The signal timing at this location can vary by time of day depending on the signal program in effect from the Region's Advanced Traffic Management System.

I trust this information will be of assistance to you.

Yours truly,

A handwritten signature in black ink, appearing to read 'L. Potvin'.

Leslie Potvin  
Traffic Engineering Analyst

LP/ra

Encl.

## Signal Timings – AM, PM and Saturday Peaks

### **Bayly Street (RR22) and Liverpool Road (RR31)**

This intersection operates in a Fixed mode of control with Bayly Street assigned as the main street.

Time Of Day	Cycle Length (sec.)		Bayly Street (RR22) EBL/WBL (sec.)		Bayly Street (RR22) EB/WB (sec.)		Liverpool Road (RR31) NBL/SBL (sec.)		Liverpool Road (RR31) NB/SB (sec.)	
			EBL	WBL	EB	WB	NBL	SBL	NB	SB
		Min Green	5.0	5.0	N/A	N/A	5.0	5.0	N/A	N/A
		Amber	3.0	3.0	4.1	4.1	3.0	3.0	3.8	3.8
		All Red	N/A	N/A	2.3	2.3	N/A	N/A	2.9	2.9
		Veh Ext	3.0	3.0	N/A	N/A	3.0	3.0	N/A	N/A
<b>AM Peak 5:30 to 9:00</b>	100	Max Green	7.0	7.0	20.6	20.6	8.0	26.0	27.3	45.3
<b>PM Peak 14:30 to 19:00</b>	100	Max Green	11.0	7.0	29.6	25.6	20.0	20.0	24.3	24.3
<b>Saturday 8:00 to 19:00</b>	100	Max Green	8.0	8.0	25.6	25.6	5.0	14.0	33.3	42.3






























# **Appendix C.1**

## **Synchro Reports – Existing Traffic Intersection Operations**

HCM Signalized Intersection Capacity Analysis  
3: Liverpool Rd & Bayly St

Timing Plan: AM Peak Hour  
Existing Traffic Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Traffic Volume (vph)	199	553	98	56	227	304	60	474	120	496	264	167
Future Volume (vph)	199	553	98	56	227	304	60	474	120	496	264	167
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7		3.0	6.7	3.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00	0.98	1.00	0.99		1.00	1.00	0.97
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00	1.00	0.99	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1804	3614	1281	1751	3380	1433	1774	3404		1801	3411	1539
Flt Permitted	0.61	1.00	1.00	0.24	1.00	1.00	0.59	1.00		0.26	1.00	1.00
Satd. Flow (perm)	1153	3614	1281	446	3380	1433	1094	3404		485	3411	1539
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	203	564	100	57	232	310	61	484	122	506	269	170
RTOR Reduction (vph)	0	0	79	0	0	67	0	23	0	0	0	81
Lane Group Flow (vph)	203	564	21	57	232	243	61	583	0	506	269	89
Confl. Peds. (#/hr)	18		21	21		18	18		35	35		18
Confl. Bikes (#/hr)									3			
Heavy Vehicles (%)	0%	1%	22%	4%	8%	12%	2%	2%	6%	1%	7%	3%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	5	2		1	6	7	3	8		7	4	5
Permitted Phases	2		2	6		6	8			4		4
Actuated Green, G (s)	27.6	20.6	20.6	27.6	20.6	46.6	35.3	27.3		56.3	45.3	52.3
Effective Green, g (s)	27.6	20.6	20.6	27.6	20.6	46.6	35.3	27.3		56.3	45.3	52.3
Actuated g/C Ratio	0.28	0.21	0.21	0.28	0.21	0.47	0.35	0.27		0.56	0.45	0.52
Clearance Time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7		3.0	6.7	3.0
Lane Grp Cap (vph)	363	744	263	214	696	667	440	929		615	1545	804
v/s Ratio Prot	c0.04	c0.16		0.02	0.07	0.09	0.01	0.17		c0.21	0.08	0.01
v/s Ratio Perm	0.11		0.02	0.05		0.08	0.04			c0.25		0.05
v/c Ratio	0.56	0.76	0.08	0.27	0.33	0.36	0.14	0.63		0.82	0.17	0.11
Uniform Delay, d1	29.7	37.4	32.0	27.6	33.8	17.2	21.7	31.9		16.0	16.2	12.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	6.1	7.1	0.6	3.0	1.3	1.5	0.7	3.2		11.8	0.2	0.3
Delay (s)	35.8	44.5	32.6	30.6	35.1	18.7	22.3	35.1		27.8	16.5	12.4
Level of Service	D	D	C	C	D	B	C	D		C	B	B
Approach Delay (s)		41.1			26.2			33.9			21.8	
Approach LOS		D			C			C			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			30.7			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.81									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			19.1			
Intersection Capacity Utilization			92.8%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												



Timings  
3: Liverpool Rd & Bayly St

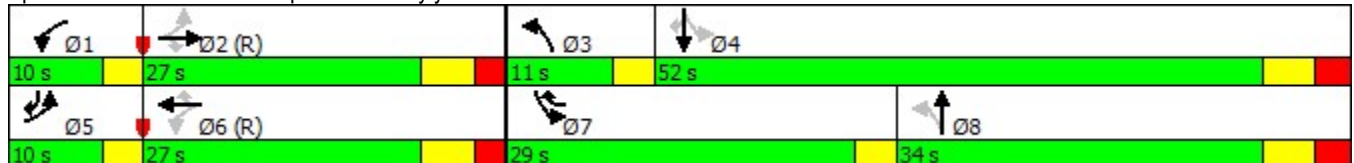
Timing Plan: AM Peak Hour  
Existing Traffic Conditions

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	
Lane Configurations												
Traffic Volume (vph)	199	553	98	56	227	304	60	474	496	264	167	
Future Volume (vph)	199	553	98	56	227	304	60	474	496	264	167	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	pm+pt	NA	pm+ov	
Protected Phases	5	2		1	6	7	3	8	7	4	5	
Permitted Phases	2		2	6		6	8		4		4	
Detector Phase	5	2	2	1	6	7	3	8	7	4	5	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	8.0	26.4	26.4	8.0	26.4	8.0	8.0	30.7	8.0	30.7	8.0	
Total Split (s)	10.0	27.0	27.0	10.0	27.0	29.0	11.0	34.0	29.0	52.0	10.0	
Total Split (%)	10.0%	27.0%	27.0%	10.0%	27.0%	29.0%	11.0%	34.0%	29.0%	52.0%	10.0%	
Yellow Time (s)	3.0	4.1	4.1	3.0	4.1	3.0	3.0	3.8	3.0	3.8	3.0	
All-Red Time (s)	0.0	2.3	2.3	0.0	2.3	0.0	0.0	2.9	0.0	2.9	0.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7	3.0	6.7	3.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lead	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max	
Act Effct Green (s)	31.0	20.6	20.6	31.0	20.6	50.0	39.0	27.3	60.0	45.3	56.0	
Actuated g/C Ratio	0.31	0.21	0.21	0.31	0.21	0.50	0.39	0.27	0.60	0.45	0.56	
v/c Ratio	0.50	0.76	0.27	0.25	0.33	0.40	0.13	0.64	0.80	0.17	0.18	
Control Delay	30.5	44.9	4.2	25.5	35.4	9.6	11.4	33.8	25.3	16.6	1.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	30.5	44.9	4.2	25.5	35.4	9.6	11.4	33.8	25.3	16.6	1.9	
LOS	C	D	A	C	D	A	B	C	C	B	A	
Approach Delay		36.8			21.1			31.8		18.6		
Approach LOS		D			C			C		B		

Intersection Summary

Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green  
 Natural Cycle: 90  
 Control Type: Pretimed  
 Maximum v/c Ratio: 0.80  
 Intersection Signal Delay: 27.1  
 Intersection LOS: C  
 Intersection Capacity Utilization 92.8%  
 ICU Level of Service F  
 Analysis Period (min) 15

Splits and Phases: 3: Liverpool Rd & Bayly St



Queues  
3: Liverpool Rd & Bayly St

Timing Plan: AM Peak Hour  
Existing Traffic Conditions



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	203	564	100	57	232	310	61	606	506	269	170
v/c Ratio	0.50	0.76	0.27	0.25	0.33	0.40	0.13	0.64	0.80	0.17	0.18
Control Delay	30.5	44.9	4.2	25.5	35.4	9.6	11.4	33.8	25.3	16.6	1.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.5	44.9	4.2	25.5	35.4	9.6	11.4	33.8	25.3	16.6	1.9
Queue Length 50th (m)	29.0	54.4	0.0	7.5	20.3	18.3	4.5	51.5	53.1	15.7	0.0
Queue Length 95th (m)	47.4	73.0	6.4	16.2	31.2	36.2	9.6	69.7	#103.0	23.6	7.8
Internal Link Dist (m)		177.5			249.4			51.8		146.7	
Turn Bay Length (m)	115.0		100.0	50.0		150.0	75.0		50.0		65.0
Base Capacity (vph)	402	744	374	228	696	778	480	951	633	1545	935
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.50	0.76	0.27	0.25	0.33	0.40	0.13	0.64	0.80	0.17	0.18

Intersection Summary



















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

Approach	EB	WB	NB	SB
Crosswalk Length (m)	22.45	22.36	18.57	22.20
Crosswalk Width (m)	1.20	1.20	1.20	1.20
Total Number of Lanes Crossed	6	6	5	6
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	4	8	2	6
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (m)	2.74	2.74	2.74	2.74
Right Corner Size B (m)	2.74	2.74	2.74	2.74
Right Corner Curb Radius (m)	0.00	0.00	0.00	0.00
Right Corner Total Area (sq.m)	7.51	7.51	7.51	7.51
Ped. Left-Right Flow Rate (p/h)	0	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (km/h)	40	40	40	40
Right Corner Area per Ped (sq.m)	0.0	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-	-
Ped. Circulation Area (sq.m)	0.0	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-	-
Pedestrian Delay (s/p)	50.0	50.0	50.0	50.0
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.65	2.71	2.49	2.73
Pedestrian Crosswalk LOS	B	B	B	B

Approach	EB	WB	NB	SB
Bicycle Flow Rate (bike/h)	0	0	0	0
Total Flow Rate (veh/h)	867	599	667	945
Effct. Green for Bike (s)	20.6	20.6	27.3	45.3
Cross Street Width (m)	18.57	22.20	22.36	22.45
Through Lanes Number	2	2	2	2
Through Lane Width (m)	3.70	3.70	3.70	3.70
Bicycle Lane Width (m)	0.00	0.00	0.00	0.00
Paved Shoulder Width (m)	0.00	0.00	0.00	0.00
Curb Is Present?	No	No	No	No
On Street Parking?	No	No	No	No
Bicycle Lane Capacity (bike/h)	412	412	546	906
Bicycle Delay (s/bike)	31.5	31.5	26.4	15.0
Bicycle Compliance	Poor	Poor	Fair	Fair
Bicycle LOS Score	3.18	3.14	3.20	3.44
Bicycle LOS	C	C	C	C

HCM Unsignalized Intersection Capacity Analysis  
6: Liverpool Rd & Parking Lot/Tatra Dr

Timing Plan: AM Peak Hour  
Existing Traffic Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	1	3	0	217	0	430	11	129	265	2
Future Volume (Veh/h)	0	0	1	3	0	217	0	430	11	129	265	2
Sign Control		Stop			Stop			Free				Free
Grade		0%			0%			0%				0%
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	0	1	3	0	238	0	473	12	142	291	2
Pedestrians		17			16			6				1
Lane Width (m)		3.7			3.7			3.7				3.7
Walking Speed (m/s)		1.1			1.1			1.1				1.1
Percent Blockage		2			2			1				0
Right turn flare (veh)												
Median type								None				None
Median storage veh												
Upstream signal (m)												153
pX, platoon unblocked	0.96	0.96	0.96	0.96	0.96		0.96					
vC, conflicting volume	1311	1094	315	1077	1089	496	310			501		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1303	1076	262	1058	1071	496	257			501		
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	98	100	58	100			86		
cM capacity (veh/h)	66	177	731	167	178	560	1242			1047		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>	<b>SB 2</b>							
Volume Total	1	241	485	142	293							
Volume Left	0	3	0	142	0							
Volume Right	1	238	12	0	2							
cSH	731	544	1242	1047	1700							
Volume to Capacity	0.00	0.44	0.00	0.14	0.17							
Queue Length 95th (m)	0.0	17.1	0.0	3.6	0.0							
Control Delay (s)	9.9	16.8	0.0	9.0	0.0							
Lane LOS	A	C		A								
Approach Delay (s)	9.9	16.8	0.0	2.9								
Approach LOS	A	C										
<b>Intersection Summary</b>												
Average Delay			4.6									
Intersection Capacity Utilization			63.7%		ICU Level of Service				B			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
 9: Liverpool Rd & Radom St

Timing Plan: AM Peak Hour  
 Existing Traffic Conditions



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	77	16	8	345	207	60
Future Volume (Veh/h)	77	16	8	345	207	60
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	83	17	9	371	223	65
Pedestrians	9				1	
Lane Width (m)	3.7				3.7	
Walking Speed (m/s)	1.1				1.1	
Percent Blockage	1				0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)					337	
pX, platoon unblocked						
vC, conflicting volume	654	264	297			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	654	264	297			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.4			
p0 queue free %	81	98	99			
cM capacity (veh/h)	427	772	1134			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	100	380	288			
Volume Left	83	9	0			
Volume Right	17	0	65			
cSH	462	1134	1700			
Volume to Capacity	0.22	0.01	0.17			
Queue Length 95th (m)	6.2	0.2	0.0			
Control Delay (s)	14.9	0.3	0.0			
Lane LOS	B	A				
Approach Delay (s)	14.9	0.3	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			2.1			
Intersection Capacity Utilization			36.5%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
 11: Liverpool Rd & Krosno Blvd

Timing Plan: AM Peak Hour  
 Existing Traffic Conditions






Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	5	126	174	14	124	119
Future Volume (vph)	5	126	174	14	124	119
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	6	159	220	18	157	151

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	165	238	308
Volume Left (vph)	6	0	157
Volume Right (vph)	159	18	0
Hadj (s)	-0.54	0.06	0.17
Departure Headway (s)	4.7	4.8	4.8
Degree Utilization, x	0.21	0.31	0.41
Capacity (veh/h)	702	725	725
Control Delay (s)	8.9	9.9	11.0
Approach Delay (s)	8.9	9.9	11.0
Approach LOS	A	A	B

Intersection Summary			
Delay		10.2	
Level of Service		B	
Intersection Capacity Utilization		42.9%	ICU Level of Service
Analysis Period (min)		15	A

Intersection	
Intersection Delay, s/veh	10.1
Intersection LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	126	174	14	124	119
Future Vol, veh/h	5	126	174	14	124	119
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles, %	0	2	4	36	4	4
Mvmt Flow	6	159	220	18	157	151
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	8.9	9.8	11
HCM LOS	A	A	B

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	4%	51%
Vol Thru, %	93%	0%	49%
Vol Right, %	7%	96%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	188	131	243
LT Vol	0	5	124
Through Vol	174	0	119
RT Vol	14	126	0
Lane Flow Rate	238	166	308
Geometry Grp	1	1	1
Degree of Util (X)	0.308	0.211	0.404
Departure Headway (Hd)	4.664	4.582	4.726
Convergence, Y/N	Yes	Yes	Yes
Cap	769	779	760
Service Time	2.712	2.63	2.772
HCM Lane V/C Ratio	0.309	0.213	0.405
HCM Control Delay	9.8	8.9	11
HCM Lane LOS	A	A	B
HCM 95th-tile Q	1.3	0.8	2



HCM Unsignalized Intersection Capacity Analysis  
 13: Liverpool Rd & Ilona Park Rd (N)

Timing Plan: AM Peak Hour  
 Existing Traffic Conditions



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	7	0	1	153	128	7
Future Volume (Veh/h)	7	0	1	153	128	7
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	8	0	1	180	151	8
Pedestrians	21			3	1	
Lane Width (m)	3.7			3.7	3.7	
Walking Speed (m/s)	1.1			1.1	1.1	
Percent Blockage	2			0	0	
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	359	179	180			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	359	179	180			
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	100	100			
cM capacity (veh/h)	629	849	1379			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	8	181	159			
Volume Left	8	1	0			
Volume Right	0	0	8			
cSH	629	1379	1700			
Volume to Capacity	0.01	0.00	0.09			
Queue Length 95th (m)	0.3	0.0	0.0			
Control Delay (s)	10.8	0.0	0.0			
Lane LOS	B	A				
Approach Delay (s)	10.8	0.0	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			0.3			
Intersection Capacity Utilization			21.3%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
 15: Liverpool Rd & Ilona Park Rd (S)

















Timing Plan: AM Peak Hour  
 Existing Traffic Conditions



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	13	2	0	140	124	7
Future Volume (Veh/h)	13	2	0	140	124	7
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	16	2	0	169	149	8
Pedestrians	22					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	2					
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	344	175	179			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	344	175	179			
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	100	100			
cM capacity (veh/h)	642	855	1379			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	18	169	157			
Volume Left	16	0	0			
Volume Right	2	0	8			
cSH	661	1379	1700			
Volume to Capacity	0.03	0.00	0.09			
Queue Length 95th (m)	0.6	0.0	0.0			
Control Delay (s)	10.6	0.0	0.0			
Lane LOS	B					
Approach Delay (s)	10.6	0.0	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay	0.6					
Intersection Capacity Utilization	20.3%			ICU Level of Service	A	
Analysis Period (min)	15					

















HCM Unsignalized Intersection Capacity Analysis  
 17: Liverpool Rd & Commerce St

Timing Plan: AM Peak Hour  
 Existing Traffic Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	4	1	1	3	8	3	109	9	12	100	9
Future Volume (Veh/h)	15	4	1	1	3	8	3	109	9	12	100	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)	18	5	1	1	4	10	4	130	11	14	119	11
Pedestrians		2						14				
Lane Width (m)		3.7						3.7				
Walking Speed (m/s)		1.1						1.1				
Percent Blockage		0						1				
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	310	304	140	314	304	136	132			141		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	310	304	140	314	304	136	132			141		
tC, single (s)	7.1	6.8	6.2	7.1	6.5	6.3	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.2	3.3	3.5	4.0	3.4	2.2			2.2		
p0 queue free %	97	99	100	100	99	99	100			99		
cM capacity (veh/h)	628	565	899	622	604	887	1463			1455		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	24	15	145	144								
Volume Left	18	1	4	14								
Volume Right	1	10	11	11								
cSH	621	769	1463	1455								
Volume to Capacity	0.04	0.02	0.00	0.01								
Queue Length 95th (m)	0.9	0.5	0.1	0.2								
Control Delay (s)	11.0	9.8	0.2	0.8								
Lane LOS	B	A	A	A								
Approach Delay (s)	11.0	9.8	0.2	0.8								
Approach LOS	B	A										
<b>Intersection Summary</b>												
Average Delay			1.7									
Intersection Capacity Utilization			27.2%		ICU Level of Service				A			
Analysis Period (min)			15									

















HCM Unsignalized Intersection Capacity Analysis  
20: Liverpool Rd & Annland St

Timing Plan: AM Peak Hour  
Existing Traffic Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	3	2	7	5	0	10	6	102	3	4	67	3
Future Volume (Veh/h)	3	2	7	5	0	10	6	102	3	4	67	3
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	4	2	8	6	0	12	7	123	4	5	81	4
Pedestrians		6			3			2			1	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		1			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	251	243	91	246	243	129	91			130		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	251	243	91	246	243	129	91			130		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.3	4.3			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.4	2.4			2.2		
p0 queue free %	99	100	99	99	100	99	100			100		
cM capacity (veh/h)	683	651	965	692	651	896	1406			1464		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	14	18	134	90								
Volume Left	4	6	7	5								
Volume Right	8	12	4	4								
cSH	813	816	1406	1464								
Volume to Capacity	0.02	0.02	0.00	0.00								
Queue Length 95th (m)	0.4	0.5	0.1	0.1								
Control Delay (s)	9.5	9.5	0.4	0.4								
Lane LOS	A	A	A	A								
Approach Delay (s)	9.5	9.5	0.4	0.4								
Approach LOS	A	A										
<b>Intersection Summary</b>												
Average Delay			1.6									
Intersection Capacity Utilization			18.7%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
 23: Liverpool Rd & Wharf St

Timing Plan: AM Peak Hour  
 Existing Traffic Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	18	0	0	0	1	5	1	79	1	4	79	4
Future Volume (vph)	18	0	0	0	1	5	1	79	1	4	79	4
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	22	0	0	0	1	6	1	95	1	5	95	5
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	22	7	97	105								
Volume Left (vph)	22	0	1	5								
Volume Right (vph)	0	6	1	5								
Hadj (s)	0.20	-0.51	0.01	0.01								
Departure Headway (s)	4.5	3.8	4.1	4.1								
Degree Utilization, x	0.03	0.01	0.11	0.12								
Capacity (veh/h)	755	884	862	871								
Control Delay (s)	7.7	6.9	7.6	7.6								
Approach Delay (s)	7.7	6.9	7.6	7.6								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			7.6									
Level of Service			A									
Intersection Capacity Utilization			22.5%	ICU Level of Service	A							
Analysis Period (min)			15									

Intersection	
Intersection Delay, s/veh	7.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	18	0	0	0	1	5	1	79	1	4	79	4
Future Vol, veh/h	18	0	0	0	1	5	1	79	1	4	79	4
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	2	0
Mvmt Flow	22	0	0	0	1	6	1	95	1	5	95	5
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.7	6.9	7.6	7.6
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	1%	100%	0%	5%
Vol Thru, %	98%	0%	17%	91%
Vol Right, %	1%	0%	83%	5%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	81	18	6	87
LT Vol	1	18	0	4
Through Vol	79	0	1	79
RT Vol	1	0	5	4
Lane Flow Rate	98	22	7	105
Geometry Grp	1	1	1	1
Degree of Util (X)	0.109	0.027	0.008	0.117
Departure Headway (Hd)	4.022	4.453	3.763	4.004
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	887	793	933	892
Service Time	2.063	2.542	1.858	2.042
HCM Lane V/C Ratio	0.11	0.028	0.008	0.118
HCM Control Delay	7.6	7.7	6.9	7.6
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.4	0.1	0	0.4

HCM Unsignalized Intersection Capacity Analysis  
 26: Liverpool Rd & 591 Liverpool Driveway




























Timing Plan: AM Peak Hour  
 Existing Traffic Conditions



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	58	0	0	37
Future Volume (Veh/h)	0	0	58	0	0	37
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74
Hourly flow rate (vph)	0	0	78	0	0	50
Pedestrians	7					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	1					
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	135	85			85	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	135	85			85	
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)	857	973			1514	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	0	78	50			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1514			
Volume to Capacity	0.00	0.05	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					
<b>Intersection Summary</b>						
Average Delay			0.0			
Intersection Capacity Utilization			8.7%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis  
3: Liverpool Rd & Bayly St

Timing Plan: AM Peak Hour  
Existing Traffic Conditions - Bayly Optimized

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Traffic Volume (vph)	199	553	98	56	227	304	60	474	120	496	264	167
Future Volume (vph)	199	553	98	56	227	304	60	474	120	496	264	167
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7		3.0	6.7	3.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00	0.98	1.00	0.99		1.00	1.00	0.97
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00	1.00	0.99	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1807	3614	1281	1749	3380	1434	1774	3403		1802	3411	1538
Flt Permitted	0.56	1.00	1.00	0.30	1.00	1.00	0.59	1.00		0.23	1.00	1.00
Satd. Flow (perm)	1057	3614	1281	560	3380	1434	1094	3403		432	3411	1538
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	203	564	100	57	232	310	61	484	122	506	269	170
RTOR Reduction (vph)	0	0	76	0	0	50	0	22	0	0	0	78
Lane Group Flow (vph)	203	564	24	57	232	260	61	584	0	506	269	92
Confl. Peds. (#/hr)	18		21	21		18	18		35	35		18
Confl. Bikes (#/hr)									3			
Heavy Vehicles (%)	0%	1%	22%	4%	8%	12%	2%	2%	6%	1%	7%	3%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	5	2		1	6	7	3	8		7	4	5
Permitted Phases	2		2	6		6	8		4			4
Actuated Green, G (s)	30.6	23.6	23.6	26.6	21.6	49.6	29.3	24.3		55.3	47.3	54.3
Effective Green, g (s)	30.6	23.6	23.6	26.6	21.6	49.6	29.3	24.3		55.3	47.3	54.3
Actuated g/C Ratio	0.31	0.24	0.24	0.27	0.22	0.50	0.29	0.24		0.55	0.47	0.54
Clearance Time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7		3.0	6.7	3.0
Lane Grp Cap (vph)	375	852	302	208	730	711	354	826		622	1613	835
v/s Ratio Prot	c0.04	c0.16		0.01	0.07	0.10	0.01	0.17		c0.23	0.08	0.01
v/s Ratio Perm	0.13		0.02	0.06		0.08	0.04			c0.22		0.05
v/c Ratio	0.54	0.66	0.08	0.27	0.32	0.37	0.17	0.71		0.81	0.17	0.11
Uniform Delay, d1	27.6	34.6	29.7	28.1	33.0	15.5	25.9	34.6		18.4	15.1	11.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	5.5	4.0	0.5	3.2	1.1	1.4	1.1	5.1		11.1	0.2	0.3
Delay (s)	33.1	38.6	30.2	31.3	34.1	17.0	26.9	39.7		29.6	15.3	11.4
Level of Service	C	D	C	C	C	B	C	D		C	B	B
Approach Delay (s)		36.4			25.0			38.5			22.2	
Approach LOS		D			C			D			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			30.3	HCM 2000 Level of Service				C				
HCM 2000 Volume to Capacity ratio			0.79									
Actuated Cycle Length (s)			100.0	Sum of lost time (s)				19.1				
Intersection Capacity Utilization			92.8%	ICU Level of Service				F				
Analysis Period (min)			15									
c Critical Lane Group												



Timings  
3: Liverpool Rd & Bayly St

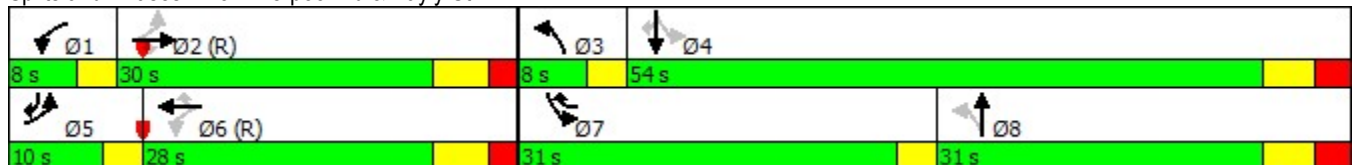
Timing Plan: AM Peak Hour  
Existing Traffic Conditions - Bayly Optimized

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	199	553	98	56	227	304	60	474	496	264	167
Future Volume (vph)	199	553	98	56	227	304	60	474	496	264	167
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	pm+pt	NA	pm+ov
Protected Phases	5	2		1	6	7	3	8	7	4	5
Permitted Phases	2		2	6		6	8		4		4
Detector Phase	5	2	2	1	6	7	3	8	7	4	5
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	8.0	26.4	26.4	8.0	26.4	8.0	8.0	30.7	8.0	30.7	8.0
Total Split (s)	10.0	30.0	30.0	8.0	28.0	31.0	8.0	31.0	31.0	54.0	10.0
Total Split (%)	10.0%	30.0%	30.0%	8.0%	28.0%	31.0%	8.0%	31.0%	31.0%	54.0%	10.0%
Yellow Time (s)	3.0	4.1	4.1	3.0	4.1	3.0	3.0	3.8	3.0	3.8	3.0
All-Red Time (s)	0.0	2.3	2.3	0.0	2.3	0.0	0.0	2.9	0.0	2.9	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7	3.0	6.7	3.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	34.0	23.6	23.6	30.0	21.6	53.0	33.0	24.3	59.0	47.3	58.0
Actuated g/C Ratio	0.34	0.24	0.24	0.30	0.22	0.53	0.33	0.24	0.59	0.47	0.58
v/c Ratio	0.50	0.66	0.25	0.25	0.32	0.39	0.16	0.71	0.79	0.17	0.18
Control Delay	29.1	39.0	3.7	25.0	34.4	9.6	13.3	38.4	26.7	15.4	1.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.1	39.0	3.7	25.0	34.4	9.6	13.3	38.4	26.7	15.4	1.7
LOS	C	D	A	C	C	A	B	D	C	B	A
Approach Delay		32.6			20.7			36.1		19.0	
Approach LOS		C			C			D		B	

Intersection Summary

Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green  
 Natural Cycle: 90  
 Control Type: Pretimed  
 Maximum v/c Ratio: 0.79  
 Intersection Signal Delay: 26.9  
 Intersection Capacity Utilization 92.8%  
 Analysis Period (min) 15  
 Intersection LOS: C  
 ICU Level of Service F

Splits and Phases: 3: Liverpool Rd & Bayly St



Queuing and Blocking Report  
Existing Traffic Conditions

AM Peak Hour  
Existing Traffic Conditions

Intersection: 11: Liverpool Rd & Krosno Blvd

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (m)	20.6	23.8	41.2
Average Queue (m)	8.2	14.2	17.1
95th Queue (m)	14.3	20.9	26.0
Link Distance (m)	265.9	239.9	406.8
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 23: Liverpool Rd & Wharf St




























Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	9.3	9.2	20.3	16.7
Average Queue (m)	3.3	0.9	8.9	9.4
95th Queue (m)	10.5	5.2	15.4	16.2
Link Distance (m)	104.6	110.2	179.8	86.5
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 0
------------------------------

HCM Signalized Intersection Capacity Analysis  
3: Liverpool Rd & Bayly St

Timing Plan: PM Peak Hour  
Existing Traffic Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Traffic Volume (vph)	366	805	259	98	544	689	76	491	92	335	489	245
Future Volume (vph)	366	805	259	98	544	689	76	491	92	335	489	245
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7		3.0	6.7	3.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.94	1.00	1.00	0.97	1.00	0.99		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00		0.99	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1820	3579	1372	1753	3614	1542	1815	3478		1780	3579	1538
Flt Permitted	0.27	1.00	1.00	0.18	1.00	1.00	0.34	1.00		0.26	1.00	1.00
Satd. Flow (perm)	515	3579	1372	328	3614	1542	657	3478		487	3579	1538
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	377	830	267	101	561	710	78	506	95	345	504	253
RTOR Reduction (vph)	0	0	188	0	0	58	0	15	0	0	0	164
Lane Group Flow (vph)	377	830	79	101	561	652	78	586	0	345	504	89
Confl. Peds. (#/hr)	24		29	29		24	34		54	54		34
Confl. Bikes (#/hr)			6			4			3			6
Heavy Vehicles (%)	0%	2%	12%	4%	1%	3%	0%	1%	2%	2%	2%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	5	2		1	6	7	3	8		7	4	5
Permitted Phases	2		2	6		6	8			4		4
Actuated Green, G (s)	39.6	29.6	29.6	32.6	25.6	45.6	44.3	24.3		44.3	24.3	35.3
Effective Green, g (s)	39.6	29.6	29.6	32.6	25.6	45.6	44.3	24.3		44.3	24.3	35.3
Actuated g/C Ratio	0.40	0.30	0.30	0.33	0.26	0.46	0.44	0.24		0.44	0.24	0.35
Clearance Time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7		3.0	6.7	3.0
Lane Grp Cap (vph)	347	1059	406	206	925	703	522	845		474	869	542
v/s Ratio Prot	c0.12	0.23		0.03	0.16	c0.19	0.03	0.17		0.15	0.14	0.02
v/s Ratio Perm	c0.31		0.06	0.12		0.24	0.04			c0.18		0.04
v/c Ratio	1.09	0.78	0.19	0.49	0.61	0.93	0.15	0.69		0.73	0.58	0.16
Uniform Delay, d1	26.6	32.3	26.3	25.0	32.8	25.7	16.4	34.5		20.0	33.4	22.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	73.4	5.8	1.1	8.1	2.9	20.3	0.6	4.7		9.4	2.8	0.7
Delay (s)	100.1	38.1	27.4	33.1	35.7	45.9	17.0	39.1		29.5	36.2	22.9
Level of Service	F	D	C	C	D	D	B	D		C	D	C
Approach Delay (s)		52.0			40.8			36.6			31.0	
Approach LOS		D			D			D			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			41.4			HCM 2000 Level of Service			D			
HCM 2000 Volume to Capacity ratio			0.97									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			19.1			
Intersection Capacity Utilization			97.4%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												

Timings  
3: Liverpool Rd & Bayly St

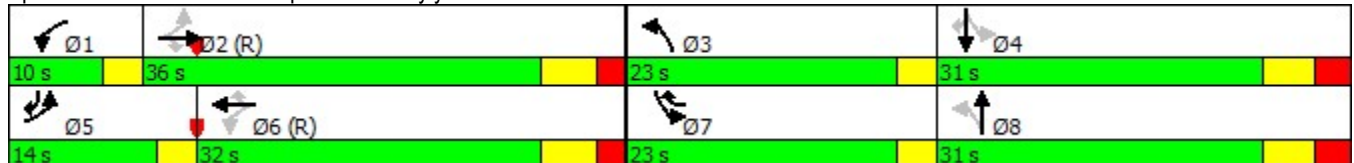
Timing Plan: PM Peak Hour  
Existing Traffic Conditions

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	
Lane Configurations												
Traffic Volume (vph)	366	805	259	98	544	689	76	491	335	489	245	
Future Volume (vph)	366	805	259	98	544	689	76	491	335	489	245	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	pm+pt	NA	pm+ov	
Protected Phases	5	2		1	6	7	3	8	7	4	5	
Permitted Phases	2		2	6		6	8		4		4	
Detector Phase	5	2	2	1	6	7	3	8	7	4	5	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	1.0	5.0	5.0	5.0	
Minimum Split (s)	8.0	26.4	26.4	8.0	26.4	8.0	8.0	30.7	8.0	30.7	8.0	
Total Split (s)	14.0	36.0	36.0	10.0	32.0	23.0	23.0	31.0	23.0	31.0	14.0	
Total Split (%)	14.0%	36.0%	36.0%	10.0%	32.0%	23.0%	23.0%	31.0%	23.0%	31.0%	14.0%	
Yellow Time (s)	3.0	4.1	4.1	3.0	4.1	3.0	3.0	3.8	3.0	3.8	3.0	
All-Red Time (s)	0.0	2.3	2.3	0.0	2.3	0.0	0.0	2.9	0.0	2.9	0.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7	3.0	6.7	3.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lead	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max	
Act Effct Green (s)	43.0	29.6	29.6	36.0	25.6	49.0	48.0	24.3	48.0	24.3	39.0	
Actuated g/C Ratio	0.43	0.30	0.30	0.36	0.26	0.49	0.48	0.24	0.48	0.24	0.39	
v/c Ratio	1.04	0.78	0.45	0.47	0.61	0.88	0.14	0.70	0.70	0.58	0.34	
Control Delay	82.1	38.5	6.1	25.0	36.0	32.2	13.3	38.4	24.5	36.5	3.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	82.1	38.5	6.1	25.0	36.0	32.2	13.3	38.4	24.5	36.5	3.7	
LOS	F	D	A	C	D	C	B	D	C	D	A	
Approach Delay		43.8			33.2			35.5		25.2		
Approach LOS		D			C			D		C		

Intersection Summary

Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 14 (14%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green  
 Natural Cycle: 90  
 Control Type: Pretimed  
 Maximum v/c Ratio: 1.04  
 Intersection Signal Delay: 35.0  
 Intersection LOS: D  
 Intersection Capacity Utilization 97.4%  
 ICU Level of Service F  
 Analysis Period (min) 15

Splits and Phases: 3: Liverpool Rd & Bayly St



Queues  
3: Liverpool Rd & Bayly St

Timing Plan: PM Peak Hour  
Existing Traffic Conditions



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	377	830	267	101	561	710	78	601	345	504	253
v/c Ratio	1.04	0.78	0.45	0.47	0.61	0.88	0.14	0.70	0.70	0.58	0.34
Control Delay	82.1	38.5	6.1	25.0	36.0	32.2	13.3	38.4	24.5	36.5	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	82.1	38.5	6.1	25.0	36.0	32.2	13.3	38.4	24.5	36.5	3.7
Queue Length 50th (m)	~54.3	77.3	0.0	11.5	50.4	94.7	7.4	54.2	38.9	45.4	0.0
Queue Length 95th (m)	#115.4	99.7	17.7	21.6	67.8	#181.2	14.7	73.0	62.1	61.8	13.7
Internal Link Dist (m)		177.5			249.4			51.8		146.7	
Turn Bay Length (m)	115.0		100.0	50.0		150.0	75.0		50.0		65.0
Base Capacity (vph)	364	1059	594	217	925	808	546	860	491	869	752
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.04	0.78	0.45	0.47	0.61	0.88	0.14	0.70	0.70	0.58	0.34

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Approach	EB	WB	NB	SB
Crosswalk Length (m)	22.45	22.36	18.57	22.20
Crosswalk Width (m)	1.20	1.20	1.20	1.20
Total Number of Lanes Crossed	6	6	5	6
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	4	8	2	6
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (m)	2.74	2.74	2.74	2.74
Right Corner Size B (m)	2.74	2.74	2.74	2.74
Right Corner Curb Radius (m)	0.00	0.00	0.00	0.00
Right Corner Total Area (sq.m)	7.51	7.51	7.51	7.51
Ped. Left-Right Flow Rate (p/h)	0	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (km/h)	40	40	40	40
Right Corner Area per Ped (sq.m)	0.0	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-	-
Ped. Circulation Area (sq.m)	0.0	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-	-
Pedestrian Delay (s/p)	50.0	50.0	50.0	50.0
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.79	2.82	2.57	2.83
Pedestrian Crosswalk LOS	C	C	B	C

Approach	EB	WB	NB	SB
Bicycle Flow Rate (bike/h)	0	0	0	0
Total Flow Rate (veh/h)	1474	1372	679	1102
Effct. Green for Bike (s)	29.6	25.6	24.3	24.3
Cross Street Width (m)	18.57	22.20	22.36	22.45
Through Lanes Number	2	2	2	2
Through Lane Width (m)	3.70	3.70	3.70	3.70
Bicycle Lane Width (m)	0.00	0.00	0.00	0.00
Paved Shoulder Width (m)	0.00	0.00	0.00	0.00
Curb Is Present?	No	No	No	No
On Street Parking?	No	No	No	No
Bicycle Lane Capacity (bike/h)	592	512	486	486
Bicycle Delay (s/bike)	24.8	27.7	28.7	28.7
Bicycle Compliance	Fair	Fair	Fair	Fair
Bicycle LOS Score	3.68	3.78	3.21	3.57
Bicycle LOS	D	D	C	D

HCM Unsignalized Intersection Capacity Analysis  
6: Liverpool Rd & Parking Lot/Tatra Dr

Timing Plan: PM Peak Hour  
Existing Traffic Conditions



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕		↕	↕	↕
Traffic Volume (veh/h)	4	1	1	1	0	236	1	427	8	215	564	1
Future Volume (Veh/h)	4	1	1	1	0	236	1	427	8	215	564	1
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)	4	1	1	1	0	246	1	445	8	224	588	1
Pedestrians		23			32			22			2	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		2			3			2			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)											153	
pX, platoon unblocked	0.85	0.85	0.85	0.85	0.85		0.85					
vC, conflicting volume	1758	1546	634	1542	1543	483	612			485		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1803	1555	483	1550	1550	483	458			485		
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 %	83	99	100	98	100	57	100			79		
cM capacity (veh/h)	24	72	479	60	73	568	928			1054		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>	<b>SB 2</b>							
Volume Total	6	247	454	224	589							
Volume Left	4	1	1	224	0							
Volume Right	1	246	8	0	1							
cSH	32	549	928	1054	1700							
Volume to Capacity	0.19	0.45	0.00	0.21	0.35							
Queue Length 95th (m)	4.4	17.6	0.0	6.1	0.0							
Control Delay (s)	140.2	16.8	0.0	9.3	0.0							
Lane LOS	F	C	A	A								
Approach Delay (s)	140.2	16.8	0.0	2.6								
Approach LOS	F	C										
<b>Intersection Summary</b>												
Average Delay			4.7									
Intersection Capacity Utilization			77.7%		ICU Level of Service					D		
Analysis Period (min)			15									



HCM Unsignalized Intersection Capacity Analysis  
 9: Liverpool Rd & Radom St

Timing Plan: PM Peak Hour  
 Existing Traffic Conditions



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	58	28	18	365	492	68
Future Volume (Veh/h)	58	28	18	365	492	68
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	60	29	19	376	507	70
Pedestrians	11			1		
Lane Width (m)	3.7			3.7		
Walking Speed (m/s)	1.1			1.1		
Percent Blockage	1			0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)					337	
pX, platoon unblocked	0.86	0.86	0.86			
vC, conflicting volume	967	554	588			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	878	397	436			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	78	95	98			
cM capacity (veh/h)	267	549	962			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	89	395	577			
Volume Left	60	19	0			
Volume Right	29	0	70			
cSH	321	962	1700			
Volume to Capacity	0.28	0.02	0.34			
Queue Length 95th (m)	8.4	0.5	0.0			
Control Delay (s)	20.5	0.6	0.0			
Lane LOS	C	A				
Approach Delay (s)	20.5	0.6	0.0			
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay			2.0			
Intersection Capacity Utilization			45.8%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
 11: Liverpool Rd & Krosno Blvd

Timing Plan: PM Peak Hour  
 Existing Traffic Conditions






Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	28	123	211	11	175	311
Future Volume (vph)	28	123	211	11	175	311
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	31	138	237	12	197	349

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	169	249	546
Volume Left (vph)	31	0	197
Volume Right (vph)	138	12	0
Hadj (s)	-0.45	0.00	0.12
Departure Headway (s)	5.3	5.1	4.8
Degree Utilization, x	0.25	0.35	0.73
Capacity (veh/h)	601	677	729
Control Delay (s)	10.1	10.8	19.8
Approach Delay (s)	10.1	10.8	19.8
Approach LOS	B	B	C

Intersection Summary			
Delay		15.7	
Level of Service		C	
Intersection Capacity Utilization		57.7%	ICU Level of Service
Analysis Period (min)		15	B

Intersection	
Intersection Delay, s/veh	15.4
Intersection LOS	C

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	28	123	211	11	175	311
Future Vol, veh/h	28	123	211	11	175	311
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles, %	0	0	2	0	2	3
Mvmt Flow	31	138	237	12	197	349
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	10.1	10.7	19.2
HCM LOS	B	B	C

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	19%	36%
Vol Thru, %	95%	0%	64%
Vol Right, %	5%	81%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	222	151	486
LT Vol	0	28	175
Through Vol	211	0	311
RT Vol	11	123	0
Lane Flow Rate	249	170	546
Geometry Grp	1	1	1
Degree of Util (X)	0.345	0.248	0.72
Departure Headway (Hd)	4.98	5.252	4.746
Convergence, Y/N	Yes	Yes	Yes
Cap	713	675	754
Service Time	3.069	3.351	2.82
HCM Lane V/C Ratio	0.349	0.252	0.724
HCM Control Delay	10.7	10.1	19.2
HCM Lane LOS	B	B	C
HCM 95th-tile Q	1.5	1	6.2

HCM Unsignalized Intersection Capacity Analysis  
 13: Liverpool Rd & Ilona Park Rd (N)

Timing Plan: PM Peak Hour  
 Existing Traffic Conditions



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	6	0	1	165	271	11
Future Volume (Veh/h)	6	0	1	165	271	11
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	7	0	1	196	323	13
Pedestrians	10			1		
Lane Width (m)	3.7			3.7		
Walking Speed (m/s)	1.1			1.1		
Percent Blockage	1			0		
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	538	340	346			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	538	340	346			
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	100	100			
cM capacity (veh/h)	503	699	1212			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	7	197	336			
Volume Left	7	1	0			
Volume Right	0	0	13			
cSH	503	1212	1700			
Volume to Capacity	0.01	0.00	0.20			
Queue Length 95th (m)	0.3	0.0	0.0			
Control Delay (s)	12.3	0.0	0.0			
Lane LOS	B	A				
Approach Delay (s)	12.3	0.0	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			0.2			
Intersection Capacity Utilization			25.3%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
 15: Liverpool Rd & Ilona Park Rd (S)

















Timing Plan: PM Peak Hour  
 Existing Traffic Conditions



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	2	1	1	164	258	12
Future Volume (Veh/h)	2	1	1	164	258	12
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)	2	1	1	191	300	14
Pedestrians	9			3		
Lane Width (m)	3.7			3.7		
Walking Speed (m/s)	1.1			1.1		
Percent Blockage	1			0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	512	316	323			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	512	316	323			
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)	519	723	1237			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	3	192	314			
Volume Left	2	1	0			
Volume Right	1	0	14			
cSH	573	1237	1700			
Volume to Capacity	0.01	0.00	0.18			
Queue Length 95th (m)	0.1	0.0	0.0			
Control Delay (s)	11.3	0.0	0.0			
Lane LOS	B	A				
Approach Delay (s)	11.3	0.0	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			0.1			
Intersection Capacity Utilization			24.3%	ICU Level of Service	A	
Analysis Period (min)			15			

















HCM Unsignalized Intersection Capacity Analysis  
 17: Liverpool Rd & Commerce St

Timing Plan: PM Peak Hour  
 Existing Traffic Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	0	1	2	3	9	2	139	1	18	218	19
Future Volume (Veh/h)	9	0	1	2	3	9	2	139	1	18	218	19
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	0	1	2	3	10	2	160	1	21	251	22
Pedestrians		9			12			2			1	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		1			1			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	490	490	273	484	500	174	282			173		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	490	490	273	484	500	174	282			173		
tC, single (s)	7.3	6.5	6.2	7.6	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.7	4.0	3.3	4.0	4.0	3.3	2.2			2.2		
p0 queue free %	98	100	100	100	99	99	100			98		
cM capacity (veh/h)	433	464	762	405	458	864	1281			1399		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	11	15	163	294								
Volume Left	10	2	2	21								
Volume Right	1	10	1	22								
cSH	451	650	1281	1399								
Volume to Capacity	0.02	0.02	0.00	0.02								
Queue Length 95th (m)	0.6	0.5	0.0	0.3								
Control Delay (s)	13.2	10.7	0.1	0.7								
Lane LOS	B	B	A	A								
Approach Delay (s)	13.2	10.7	0.1	0.7								
Approach LOS	B	B										
<b>Intersection Summary</b>												
Average Delay			1.1									
Intersection Capacity Utilization			34.1%		ICU Level of Service				A			
Analysis Period (min)			15									

















HCM Unsignalized Intersection Capacity Analysis  
20: Liverpool Rd & Annland St

Timing Plan: PM Peak Hour  
Existing Traffic Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	0	11	8	3	3	9	166	6	14	206	17
Future Volume (Veh/h)	6	0	11	8	3	3	9	166	6	14	206	17
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	6	0	12	9	3	3	10	178	6	15	222	18
Pedestrians		4			1			2			3	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	474	470	237	477	476	185	244			185		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	474	470	237	477	476	185	244			185		
tC, single (s)	7.3	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.7	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	100	99	98	99	100	99			99		
cM capacity (veh/h)	462	483	802	484	479	859	1329			1400		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	18	15	194	255								
Volume Left	6	9	10	15								
Volume Right	12	3	6	18								
cSH	644	529	1329	1400								
Volume to Capacity	0.03	0.03	0.01	0.01								
Queue Length 95th (m)	0.7	0.7	0.2	0.2								
Control Delay (s)	10.8	12.0	0.5	0.5								
Lane LOS	B	B	A	A								
Approach Delay (s)	10.8	12.0	0.5	0.5								
Approach LOS	B	B										
<b>Intersection Summary</b>												
Average Delay			1.2									
Intersection Capacity Utilization			27.7%		ICU Level of Service					A		
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
 23: Liverpool Rd & Wharf St

Timing Plan: PM Peak Hour  
 Existing Traffic Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	19	0	2	0	0	7	5	109	1	10	157	38
Future Volume (vph)	19	0	2	0	0	7	5	109	1	10	157	38
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)	23	0	2	0	0	8	6	130	1	12	187	45
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	25	8	137	244								
Volume Left (vph)	23	0	6	12								
Volume Right (vph)	2	8	1	45								
Hadj (s)	0.21	-0.60	0.00	-0.09								
Departure Headway (s)	4.9	4.1	4.2	4.0								
Degree Utilization, x	0.03	0.01	0.16	0.27								
Capacity (veh/h)	668	782	831	881								
Control Delay (s)	8.1	7.2	8.0	8.5								
Approach Delay (s)	8.1	7.2	8.0	8.5								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			8.3									
Level of Service			A									
Intersection Capacity Utilization			29.5%	ICU Level of Service	A							
Analysis Period (min)			15									



Intersection	
Intersection Delay, s/veh	8.3
Intersection LOS	A










Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	19	0	2	0	0	7	5	109	1	10	157	38
Future Vol, veh/h	19	0	2	0	0	7	5	109	1	10	157	38
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, %	5	0	0	0	0	0	0	0	0	0	0	3
Mvmt Flow	23	0	2	0	0	8	6	130	1	12	187	45
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.1	7.2	8	8.5
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	4%	90%	0%	5%
Vol Thru, %	95%	0%	0%	77%
Vol Right, %	1%	10%	100%	19%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	115	21	7	205
LT Vol	5	19	0	10
Through Vol	109	0	0	157
RT Vol	1	2	7	38
Lane Flow Rate	137	25	8	244
Geometry Grp	1	1	1	1
Degree of Util (X)	0.158	0.034	0.01	0.268
Departure Headway (Hd)	4.144	4.926	4.136	3.958
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	856	731	870	901
Service Time	2.218	2.927	2.137	2.019
HCM Lane V/C Ratio	0.16	0.034	0.009	0.271
HCM Control Delay	8	8.1	7.2	8.5
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.6	0.1	0	1.1




























HCM Unsignalized Intersection Capacity Analysis  
26: Liverpool Rd

Timing Plan: PM Peak Hour  
Existing Traffic Conditions

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	121	0	0	152
Future Volume (Veh/h)	0	0	121	0	0	152
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Hourly flow rate (vph)	0	0	155	0	0	195
Pedestrians	33		4			9
Lane Width (m)	3.7		3.7			3.7
Walking Speed (m/s)	1.1		1.1			1.1
Percent Blockage	3		0			1
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	387	197			188	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	387	197			188	
tC, single (s)	7.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	4.4	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	447	815			1353	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	0	155	195			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1353			
Volume to Capacity	0.00	0.09	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					
<b>Intersection Summary</b>						
Average Delay			0.0			
Intersection Capacity Utilization			23.6%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis  
3: Liverpool Rd & Bayly St

Timing Plan: PM Peak Hour  
Existing Traffic Conditions - Bayly Optimized

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		 			 			 			 		
Traffic Volume (vph)	366	805	259	98	544	689	76	491	92	335	489	245	
Future Volume (vph)	366	805	259	98	544	689	76	491	92	335	489	245	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7		3.0	6.7	3.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00	
Frpb, ped/bikes	1.00	1.00	0.94	1.00	1.00	0.97	1.00	0.99		1.00	1.00	0.96	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00		1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	1820	3579	1373	1751	3614	1536	1808	3478		1782	3579	1535	
Flt Permitted	0.29	1.00	1.00	0.25	1.00	1.00	0.47	1.00		0.23	1.00	1.00	
Satd. Flow (perm)	547	3579	1373	454	3614	1536	889	3478		428	3579	1535	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	
Adj. Flow (vph)	377	830	267	101	561	710	78	506	95	345	504	253	
RTOR Reduction (vph)	0	0	175	0	0	59	0	15	0	0	0	75	
Lane Group Flow (vph)	377	830	92	101	561	651	78	586	0	345	504	178	
Confl. Peds. (#/hr)	24		29	29		24	34		54	54		34	
Confl. Bikes (#/hr)			6			4			3			6	
Heavy Vehicles (%)	0%	2%	12%	4%	1%	3%	0%	1%	2%	2%	2%	2%	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	pm+ov	
Protected Phases	5	2		1	6	7	3	8		7	4	5	
Permitted Phases	2		2	6		6	8			4		4	
Actuated Green, G (s)	43.6	34.6	34.6	33.6	27.6	43.9	29.0	24.0		43.3	35.3	48.3	
Effective Green, g (s)	43.6	34.6	34.6	33.6	27.6	43.9	29.0	24.0		43.3	35.3	48.3	
Actuated g/C Ratio	0.44	0.35	0.35	0.34	0.28	0.44	0.29	0.24		0.43	0.35	0.48	
Clearance Time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7		3.0	6.7	3.0	
Lane Grp Cap (vph)	403	1238	475	230	997	674	303	834		406	1263	741	
v/s Ratio Prot	c0.12	0.23		0.03	0.16	c0.16	0.01	0.17		0.14	0.14	0.03	
v/s Ratio Perm	c0.29		0.07	0.12		0.27	0.06			c0.23		0.08	
v/c Ratio	0.94	0.67	0.19	0.44	0.56	0.97	0.26	0.70		0.85	0.40	0.24	
Uniform Delay, d1	22.5	27.8	22.9	23.7	31.0	27.3	26.3	34.7		21.3	24.4	15.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Incremental Delay, d2	31.2	2.9	0.9	6.0	2.3	27.1	2.0	4.9		19.5	0.9	0.8	
Delay (s)	53.7	30.7	23.8	29.7	33.3	54.4	28.4	39.6		40.8	25.3	15.9	
Level of Service	D	C	C	C	C	D	C	D		D	C	B	
Approach Delay (s)		35.4			44.0			38.4			28.0		
Approach LOS		D			D			D			C		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			36.6									HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			0.97										
Actuated Cycle Length (s)			100.0									Sum of lost time (s)	19.1
Intersection Capacity Utilization			97.4%									ICU Level of Service	F
Analysis Period (min)			15										
c Critical Lane Group													

Timings  
3: Liverpool Rd & Bayly St

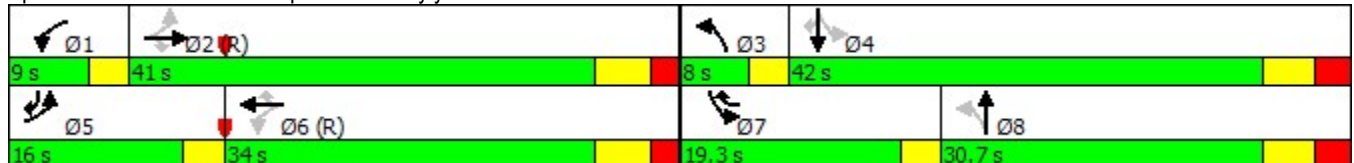
Timing Plan: PM Peak Hour  
Existing Volumes - Bayly Optimized

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	366	805	259	98	544	689	76	491	335	489	245
Future Volume (vph)	366	805	259	98	544	689	76	491	335	489	245
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	pm+pt	NA	pm+ov
Protected Phases	5	2		1	6	7	3	8	7	4	5
Permitted Phases	2		2	6		6	8		4		4
Detector Phase	5	2	2	1	6	7	3	8	7	4	5
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	1.0	5.0	5.0	5.0
Minimum Split (s)	8.0	26.4	26.4	8.0	26.4	8.0	8.0	30.7	8.0	30.7	8.0
Total Split (s)	16.0	41.0	41.0	9.0	34.0	19.3	8.0	30.7	19.3	42.0	16.0
Total Split (%)	16.0%	41.0%	41.0%	9.0%	34.0%	19.3%	8.0%	30.7%	19.3%	42.0%	16.0%
Yellow Time (s)	3.0	4.1	4.1	3.0	4.1	3.0	3.0	3.8	3.0	3.8	3.0
All-Red Time (s)	0.0	2.3	2.3	0.0	2.3	0.0	0.0	2.9	0.0	2.9	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7	3.0	6.7	3.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	47.0	34.6	34.6	37.0	27.6	47.3	32.7	24.0	47.0	35.3	52.0
Actuated g/C Ratio	0.47	0.35	0.35	0.37	0.28	0.47	0.33	0.24	0.47	0.35	0.52
v/c Ratio	0.90	0.67	0.41	0.41	0.56	0.91	0.23	0.71	0.82	0.40	0.29
Control Delay	45.2	31.1	5.1	21.0	33.6	36.9	17.7	38.9	35.5	25.5	5.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.2	31.1	5.1	21.0	33.6	36.9	17.7	38.9	35.5	25.5	5.9
LOS	D	C	A	C	C	D	B	D	D	C	A
Approach Delay		30.0			34.4			36.5		24.2	
Approach LOS		C			C			D		C	

Intersection Summary

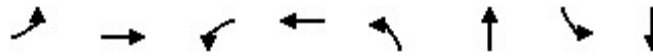
Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 14 (14%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green  
 Natural Cycle: 90  
 Control Type: Pretimed  
 Maximum v/c Ratio: 0.91  
 Intersection Signal Delay: 30.9  
 Intersection LOS: C  
 Intersection Capacity Utilization 97.4%  
 ICU Level of Service F  
 Analysis Period (min) 15

Splits and Phases: 3: Liverpool Rd & Bayly St



Timings  
6: Liverpool Rd & Parking Lot/Tatra Dr

Timing Plan: PM Peak Hour  
Existing Traffic Conditions - Tatra Signalized



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↕		↕		↕	↙	↘
Traffic Volume (vph)	4	1	1	0	1	427	215	564
Future Volume (vph)	4	1	1	0	1	427	215	564
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	25.5	25.5	25.5	25.5	22.5	22.5	22.5	22.5
Total Split (s)	30.0	30.0	30.0	30.0	60.0	60.0	60.0	60.0
Total Split (%)	33.3%	33.3%	33.3%	33.3%	66.7%	66.7%	66.7%	66.7%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0		0.0		0.0	0.0	0.0
Total Lost Time (s)		4.5		4.5		4.5	4.5	4.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
Act Effct Green (s)		7.8		7.8		55.7	55.7	55.7
Actuated g/C Ratio		0.11		0.11		0.77	0.77	0.77
v/c Ratio		0.05		0.63		0.31	0.29	0.41
Control Delay		26.8		12.0		3.6	4.3	4.3
Queue Delay		0.0		0.0		0.0	0.0	0.4
Total Delay		26.8		12.0		3.6	4.3	4.8
LOS		C		B		A	A	A
Approach Delay		26.8		12.0		3.6		4.6
Approach LOS		C		B		A		A

Intersection Summary

Cycle Length: 90	
Actuated Cycle Length: 72.5	
Natural Cycle: 55	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.63	
Intersection Signal Delay: 5.6	Intersection LOS: A
Intersection Capacity Utilization 78.9%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 6: Liverpool Rd & Parking Lot/Tatra Dr



Intersection: 11: Liverpool Rd & Krosno Blvd

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (m)	19.7	24.0	70.3
Average Queue (m)	9.6	14.7	32.6
95th Queue (m)	16.6	22.7	53.7
Link Distance (m)	265.9	239.9	406.8
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 23: Liverpool Rd & Wharf St

























Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	16.5	9.1	16.7	24.3
Average Queue (m)	6.2	0.9	10.0	13.8
95th Queue (m)	13.9	5.3	14.0	20.8
Link Distance (m)	104.6	110.2	179.8	86.5
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 0
------------------------------

HCM Signalized Intersection Capacity Analysis  
3: Liverpool Rd & Bayly St

Timing Plan: Sat Peak Hour  
Existing Traffic Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	357	390	147	96	227	357	63	402	132	342	458	288
Future Volume (vph)	357	390	147	96	227	357	63	402	132	342	458	288
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7		3.0	6.7	3.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00	0.98	1.00	0.98		1.00	1.00	0.97
Flpb, ped/bikes	0.99	1.00	1.00	0.99	1.00	1.00	1.00	1.00		0.99	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1816	3650	1476	1779	3614	1576	1817	3392		1797	3579	1571
Flt Permitted	0.61	1.00	1.00	0.44	1.00	1.00	0.48	1.00		0.33	1.00	1.00
Satd. Flow (perm)	1158	3650	1476	833	3614	1576	921	3392		633	3579	1571
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	368	402	152	99	234	368	65	414	136	353	472	297
RTOR Reduction (vph)	0	0	113	0	0	95	0	32	0	0	0	148
Lane Group Flow (vph)	368	402	39	99	234	273	65	518	0	353	472	149
Confl. Peds. (#/hr)	8		18	18		8	15		41	41		15
Confl. Bikes (#/hr)			4			1			2			8
Heavy Vehicles (%)	0%	0%	6%	2%	1%	2%	0%	2%	2%	1%	2%	1%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	5	2		1	6	7	3	8		7	4	5
Permitted Phases	2		2	6		6	8			4		4
Actuated Green, G (s)	33.6	25.6	25.6	33.6	25.6	39.6	38.3	33.3		50.3	42.3	50.3
Effective Green, g (s)	33.6	25.6	25.6	33.6	25.6	39.6	38.3	33.3		50.3	42.3	50.3
Actuated g/C Ratio	0.34	0.26	0.26	0.34	0.26	0.40	0.38	0.33		0.50	0.42	0.50
Clearance Time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7		3.0	6.7	3.0
Lane Grp Cap (vph)	441	934	377	355	925	624	397	1129		481	1513	790
v/s Ratio Prot	c0.07	0.11		0.02	0.06	0.06	0.01	0.15		c0.10	0.13	0.02
v/s Ratio Perm	c0.21		0.03	0.07		0.11	0.05			c0.27		0.08
v/c Ratio	0.83	0.43	0.10	0.28	0.25	0.44	0.16	0.46		0.73	0.31	0.19
Uniform Delay, d1	28.9	31.1	28.4	23.4	29.6	22.1	19.7	26.3		16.1	19.2	13.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	16.8	1.4	0.5	1.9	0.7	2.2	0.9	1.3		9.6	0.5	0.5
Delay (s)	45.7	32.6	29.0	25.4	30.3	24.3	20.6	27.6		25.6	19.7	14.2
Level of Service	D	C	C	C	C	C	C	C		C	B	B
Approach Delay (s)		37.2			26.4			26.9			20.1	
Approach LOS		D			C			C			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			27.4			HCM 2000 Level of Service		C				
HCM 2000 Volume to Capacity ratio			0.80									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)		19.1				
Intersection Capacity Utilization			93.0%			ICU Level of Service		F				
Analysis Period (min)			15									
c Critical Lane Group												

Timings  
3: Liverpool Rd & Bayly St

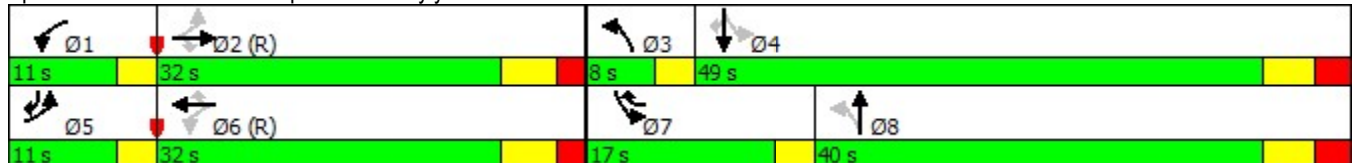
Timing Plan: Sat Peak Hour  
Existing Traffic Conditions

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	
Lane Configurations												
Traffic Volume (vph)	357	390	147	96	227	357	63	402	342	458	288	
Future Volume (vph)	357	390	147	96	227	357	63	402	342	458	288	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	pm+pt	NA	pm+ov	
Protected Phases	5	2		1	6	7	3	8	7	4	5	
Permitted Phases	2		2	6		6	8		4		4	
Detector Phase	5	2	2	1	6	7	3	8	7	4	5	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	8.0	26.4	26.4	8.0	26.4	8.0	8.0	30.7	8.0	30.7	8.0	
Total Split (s)	11.0	32.0	32.0	11.0	32.0	17.0	8.0	40.0	17.0	49.0	11.0	
Total Split (%)	11.0%	32.0%	32.0%	11.0%	32.0%	17.0%	8.0%	40.0%	17.0%	49.0%	11.0%	
Yellow Time (s)	3.0	4.1	4.1	3.0	4.1	3.0	3.0	3.8	3.0	3.8	3.0	
All-Red Time (s)	0.0	2.3	2.3	0.0	2.3	0.0	0.0	2.9	0.0	2.9	0.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7	3.0	6.7	3.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lead	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max	
Act Effct Green (s)	37.0	25.6	25.6	37.0	25.6	43.0	42.0	33.3	54.0	42.3	54.0	
Actuated g/C Ratio	0.37	0.26	0.26	0.37	0.26	0.43	0.42	0.33	0.54	0.42	0.54	
v/c Ratio	0.77	0.43	0.31	0.26	0.25	0.48	0.15	0.47	0.70	0.31	0.30	
Control Delay	37.3	32.8	6.8	21.1	30.5	12.4	12.7	25.6	21.9	19.9	2.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	37.3	32.8	6.8	21.1	30.5	12.4	12.7	25.6	21.9	19.9	2.1	
LOS	D	C	A	C	C	B	B	C	C	B	A	
Approach Delay		30.3			19.7			24.2		15.8		
Approach LOS		C			B			C		B		

Intersection Summary

Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 9.6 (10%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green  
 Natural Cycle: 75  
 Control Type: Pretimed  
 Maximum v/c Ratio: 0.77  
 Intersection Signal Delay: 22.1  
 Intersection Capacity Utilization 93.0%  
 Analysis Period (min) 15  
 Intersection LOS: C  
 ICU Level of Service F

Splits and Phases: 3: Liverpool Rd & Bayly St





Queues  
3: Liverpool Rd & Bayly St

Timing Plan: Sat Peak Hour  
Existing Traffic Conditions



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	368	402	152	99	234	368	65	550	353	472	297
v/c Ratio	0.77	0.43	0.31	0.26	0.25	0.48	0.15	0.47	0.70	0.31	0.30
Control Delay	37.3	32.8	6.8	21.1	30.5	12.4	12.7	25.6	21.9	19.9	2.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.3	32.8	6.8	21.1	30.5	12.4	12.7	25.6	21.9	19.9	2.1
Queue Length 50th (m)	52.6	34.3	0.0	12.0	19.0	25.0	5.7	40.0	37.1	31.2	0.0
Queue Length 95th (m)	#84.1	48.2	14.7	22.4	29.2	47.7	11.9	55.3	56.0	42.8	10.4
Internal Link Dist (m)		177.5			249.4			51.8		146.7	
Turn Bay Length (m)	115.0		100.0	50.0		150.0	75.0		50.0		65.0
Base Capacity (vph)	480	934	490	382	925	767	430	1161	502	1513	984
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.77	0.43	0.31	0.26	0.25	0.48	0.15	0.47	0.70	0.31	0.30

Intersection Summary

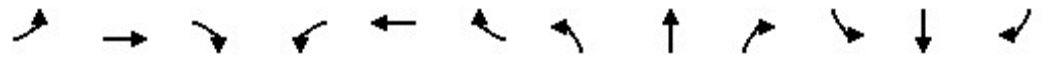
# 95th percentile volume exceeds capacity, queue may be longer.  
Queue shown is maximum after two cycles.

Approach	EB	WB	NB	SB
Crosswalk Length (m)	22.45	22.36	18.57	22.20
Crosswalk Width (m)	1.20	1.20	1.20	1.20
Total Number of Lanes Crossed	6	6	5	6
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	4	8	2	6
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (m)	2.74	2.74	2.74	2.74
Right Corner Size B (m)	2.74	2.74	2.74	2.74
Right Corner Curb Radius (m)	0.00	0.00	0.00	0.00
Right Corner Total Area (sq.m)	7.51	7.51	7.51	7.51
Ped. Left-Right Flow Rate (p/h)	0	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (km/h)	40	40	40	40
Right Corner Area per Ped (sq.m)	0.0	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-	-
Ped. Circulation Area (sq.m)	0.0	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-	-
Pedestrian Delay (s/p)	50.0	50.0	50.0	50.0
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.67	2.68	2.53	2.77
Pedestrian Crosswalk LOS	B	B	B	C

Approach	EB	WB	NB	SB
Bicycle Flow Rate (bike/h)	0	0	0	0
Total Flow Rate (veh/h)	922	701	615	1122
Effct. Green for Bike (s)	25.6	25.6	33.3	42.3
Cross Street Width (m)	18.57	22.20	22.36	22.45
Through Lanes Number	2	2	2	2
Through Lane Width (m)	3.70	3.70	3.70	3.70
Bicycle Lane Width (m)	0.00	0.00	0.00	0.00
Paved Shoulder Width (m)	0.00	0.00	0.00	0.00
Curb Is Present?	No	No	No	No
On Street Parking?	No	No	No	No
Bicycle Lane Capacity (bike/h)	512	512	666	846
Bicycle Delay (s/bike)	27.7	27.7	22.2	16.6
Bicycle Compliance	Fair	Fair	Fair	Fair
Bicycle LOS Score	3.22	3.22	3.16	3.58
Bicycle LOS	C	C	C	D

HCM Unsignalized Intersection Capacity Analysis  
6: Liverpool Rd & Parking Lot/Tatra Dr

Timing Plan: Sat Peak Hour  
Existing Traffic Conditions



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕		↕	↕	
Traffic Volume (veh/h)	1	0	0	4	0	118	0	443	3	140	514	4
Future Volume (Veh/h)	1	0	0	4	0	118	0	443	3	140	514	4
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	1	0	0	4	0	122	0	457	3	144	530	4
Pedestrians		11			23			6				
Lane Width (m)		3.7			3.7			3.7				
Walking Speed (m/s)		1.1			1.1			1.1				
Percent Blockage		1			2			1				
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												153
pX, platoon unblocked	0.89	0.89	0.89	0.89	0.89		0.89					
vC, conflicting volume	1412	1314	549	1306	1314	482	545			483		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1400	1290	426	1280	1290	482	421			483		
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	100	100	96	100	79	100			86		
cM capacity (veh/h)	72	122	551	108	122	576	1006			1066		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>	<b>SB 2</b>							
Volume Total	1	126	460	144	534							
Volume Left	1	4	0	144	0							
Volume Right	0	122	3	0	4							
cSH	72	506	1006	1066	1700							
Volume to Capacity	0.01	0.25	0.00	0.14	0.31							
Queue Length 95th (m)	0.3	7.4	0.0	3.5	0.0							
Control Delay (s)	55.8	14.5	0.0	8.9	0.0							
Lane LOS	F	B		A								
Approach Delay (s)	55.8	14.5	0.0	1.9								
Approach LOS	F	B										
<b>Intersection Summary</b>												
Average Delay			2.5									
Intersection Capacity Utilization			68.2%		ICU Level of Service			C				
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
 9: Liverpool Rd & Radom St

Timing Plan: Sat Peak Hour  
 Existing Traffic Conditions



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	56	12	10	376	455	66
Future Volume (Veh/h)	56	12	10	376	455	66
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	62	13	11	413	500	73
Pedestrians	6			5		
Lane Width (m)	3.7			3.7		
Walking Speed (m/s)	1.1			1.1		
Percent Blockage	1			0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)					337	
pX, platoon unblocked	0.90	0.90	0.90			
vC, conflicting volume	978	548	579			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	917	436	471			
tC, single (s)	6.4	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.4	2.2			
p0 queue free %	77	98	99			
cM capacity (veh/h)	266	538	980			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	75	424	573			
Volume Left	62	11	0			
Volume Right	13	0	73			
cSH	292	980	1700			
Volume to Capacity	0.26	0.01	0.34			
Queue Length 95th (m)	7.6	0.3	0.0			
Control Delay (s)	21.6	0.4	0.0			
Lane LOS	C	A				
Approach Delay (s)	21.6	0.4	0.0			
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay			1.6			
Intersection Capacity Utilization			40.1%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
 11: Liverpool Rd & Krosno Blvd

Timing Plan: Sat Peak Hour  
 Existing Traffic Conditions



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	11	105	248	20	121	303
Future Volume (vph)	11	105	248	20	121	303
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	11	109	258	21	126	316

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	120	279	442
Volume Left (vph)	11	0	126
Volume Right (vph)	109	21	0
Hadj (s)	-0.51	0.01	0.09
Departure Headway (s)	5.0	4.7	4.6
Degree Utilization, x	0.17	0.37	0.57
Capacity (veh/h)	632	730	754
Control Delay (s)	9.1	10.5	13.6
Approach Delay (s)	9.1	10.5	13.6
Approach LOS	A	B	B

Intersection Summary			
Delay		11.9	
Level of Service		B	
Intersection Capacity Utilization		54.1%	ICU Level of Service
Analysis Period (min)		15	A

Intersection	
Intersection Delay, s/veh	11.7
Intersection LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Vol, veh/h	11	105	248	20	121	303
Future Vol, veh/h	11	105	248	20	121	303
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	0	1	3	5	0	3
Mvmt Flow	11	109	258	21	126	316
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	9	10.4	13.3
HCM LOS	A	B	B

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	9%	29%
Vol Thru, %	93%	0%	71%
Vol Right, %	7%	91%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	268	116	424
LT Vol	0	11	121
Through Vol	248	0	303
RT Vol	20	105	0
Lane Flow Rate	279	121	442
Geometry Grp	1	1	1
Degree of Util (X)	0.364	0.167	0.561
Departure Headway (Hd)	4.691	4.968	4.57
Convergence, Y/N	Yes	Yes	Yes
Cap	762	717	786
Service Time	2.743	3.035	2.616
HCM Lane V/C Ratio	0.366	0.169	0.562
HCM Control Delay	10.4	9	13.3
HCM Lane LOS	B	A	B
HCM 95th-tile Q	1.7	0.6	3.5

HCM Unsignalized Intersection Capacity Analysis  
 13: Liverpool Rd & Ilona Park Rd (N)

Timing Plan: Sat Peak Hour  
 Existing Traffic Conditions



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	0	0	218	268	12
Future Volume (Veh/h)	10	0	0	218	268	12
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	11	0	0	240	295	13
Pedestrians	9			1		
Lane Width (m)	3.7			3.7		
Walking Speed (m/s)	1.1			1.1		
Percent Blockage	1			0		
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	550	312	317			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	550	312	317			
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	100	100			
cM capacity (veh/h)	495	726	1243			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	11	240	308			
Volume Left	11	0	0			
Volume Right	0	0	13			
cSH	495	1243	1700			
Volume to Capacity	0.02	0.00	0.18			
Queue Length 95th (m)	0.5	0.0	0.0			
Control Delay (s)	12.4	0.0	0.0			
Lane LOS	B					
Approach Delay (s)	12.4	0.0	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay	0.2					
Intersection Capacity Utilization	25.2%			ICU Level of Service	A	
Analysis Period (min)	15					



HCM Unsignalized Intersection Capacity Analysis  
 15: Liverpool Rd & Ilona Park Rd (S)

















Timing Plan: Sat Peak Hour  
 Existing Traffic Conditions



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	2	1	0	187	276	13
Future Volume (Veh/h)	2	1	0	187	276	13
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	2	1	0	201	297	14
Pedestrians	11					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	1					
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	516	315	322			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	516	315	322			
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)	517	722	1236			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	3	201	311			
Volume Left	2	0	0			
Volume Right	1	0	14			
cSH	571	1236	1700			
Volume to Capacity	0.01	0.00	0.18			
Queue Length 95th (m)	0.1	0.0	0.0			
Control Delay (s)	11.3	0.0	0.0			
Lane LOS	B					
Approach Delay (s)	11.3	0.0	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			0.1			
Intersection Capacity Utilization			25.4%	ICU Level of Service	A	
Analysis Period (min)			15			

















HCM Unsignalized Intersection Capacity Analysis  
 17: Liverpool Rd & Commerce St

Timing Plan: Sat Peak Hour  
 Existing Traffic Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	3	3	2	5	6	5	166	2	10	250	17
Future Volume (Veh/h)	12	3	3	2	5	6	5	166	2	10	250	17
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	13	3	3	2	6	7	6	184	2	11	278	19
Pedestrians		10			16							
Lane Width (m)		3.7			3.7							
Walking Speed (m/s)		1.1			1.1							
Percent Blockage		1			2							
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	526	534	298	527	542	201	307			202		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	526	534	298	527	542	201	307			202		
tC, single (s)	7.5	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.9	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	99	100	100	99	99	100			99		
cM capacity (veh/h)	382	438	739	440	433	832	1253			1360		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	19	15	192	308								
Volume Left	13	2	6	11								
Volume Right	3	7	2	19								
cSH	423	560	1253	1360								
Volume to Capacity	0.04	0.03	0.00	0.01								
Queue Length 95th (m)	1.1	0.6	0.1	0.2								
Control Delay (s)	13.9	11.6	0.3	0.3								
Lane LOS	B	B	A	A								
Approach Delay (s)	13.9	11.6	0.3	0.3								
Approach LOS	B	B										
<b>Intersection Summary</b>												
Average Delay			1.1									
Intersection Capacity Utilization			28.7%		ICU Level of Service					A		
Analysis Period (min)			15									

















HCM Unsignalized Intersection Capacity Analysis  
20: Liverpool Rd & Annland St

Timing Plan: Sat Peak Hour  
Existing Traffic Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	0	13	22	2	8	12	166	4	12	215	16
Future Volume (Veh/h)	4	0	13	22	2	8	12	166	4	12	215	16
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	4	0	14	24	2	9	13	178	4	13	231	17
Pedestrians		15			5			1			2	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		1			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	498	494	256	492	500	187	263			187		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	498	494	256	492	500	187	263			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 %	99	100	98	95	100	99	99			99		
cM capacity (veh/h)	457	461	776	465	457	854	1294			1393		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	18	35	195	261								
Volume Left	4	24	13	13								
Volume Right	14	9	4	17								
cSH	672	526	1294	1393								
Volume to Capacity	0.03	0.07	0.01	0.01								
Queue Length 95th (m)	0.6	1.6	0.2	0.2								
Control Delay (s)	10.5	12.3	0.6	0.5								
Lane LOS	B	B	A	A								
Approach Delay (s)	10.5	12.3	0.6	0.5								
Approach LOS	B	B										
<b>Intersection Summary</b>												
Average Delay			1.7									
Intersection Capacity Utilization			27.6%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
 23: Liverpool Rd & Wharf St

Timing Plan: Sat Peak Hour  
 Existing Traffic Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	35	2	7	1	1	18	4	113	4	7	169	61
Future Volume (vph)	35	2	7	1	1	18	4	113	4	7	169	61
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)	38	2	8	1	1	20	4	123	4	8	184	66
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	48	22	131	258								
Volume Left (vph)	38	1	4	8								
Volume Right (vph)	8	20	4	66								
Hadj (s)	0.06	-0.54	-0.01	-0.15								
Departure Headway (s)	4.8	4.3	4.3	4.1								
Degree Utilization, x	0.06	0.03	0.16	0.29								
Capacity (veh/h)	683	759	806	868								
Control Delay (s)	8.2	7.4	8.1	8.7								
Approach Delay (s)	8.2	7.4	8.1	8.7								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			8.4									
Level of Service			A									
Intersection Capacity Utilization			32.6%	ICU Level of Service	A							
Analysis Period (min)			15									

Intersection	
Intersection Delay, s/veh	8.4
Intersection LOS	A










Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	35	2	7	1	1	18	4	113	4	7	169	61
Future Vol, veh/h	35	2	7	1	1	18	4	113	4	7	169	61
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
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	38	2	8	1	1	20	4	123	4	8	184	66
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.2	7.4	8.1	8.7
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	3%	80%	5%	3%
Vol Thru, %	93%	5%	5%	71%
Vol Right, %	3%	16%	90%	26%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	121	44	20	237
LT Vol	4	35	1	7
Through Vol	113	2	1	169
RT Vol	4	7	18	61
Lane Flow Rate	132	48	22	258
Geometry Grp	1	1	1	1
Degree of Util (X)	0.157	0.064	0.026	0.284
Departure Headway (Hd)	4.31	4.819	4.26	3.973
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	838	747	844	889
Service Time	2.31	2.825	2.268	2.063
HCM Lane V/C Ratio	0.158	0.064	0.026	0.29
HCM Control Delay	8.1	8.2	7.4	8.7
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.6	0.2	0.1	1.2

























HCM Unsignalized Intersection Capacity Analysis  
26: Liverpool Rd

Timing Plan: Sat Peak Hour  
Existing Traffic Conditions

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	106	0	0	150
Future Volume (Veh/h)	0	0	106	0	0	150
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	113	0	0	160
Pedestrians	64		3			3
Lane Width (m)	3.7		3.7			3.7
Walking Speed (m/s)	1.1		1.1			1.1
Percent Blockage	6		0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	340	180			177	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	340	180			177	
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)	617	811			1311	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	0	113	160			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1311			
Volume to Capacity	0.00	0.07	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					
<b>Intersection Summary</b>						
Average Delay			0.0			
Intersection Capacity Utilization			23.4%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis  
3: Liverpool Rd & Bayly St

Timing Plan: Sat Peak Hour  
Existing Traffic Conditions - Bayly Optimized

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	357	390	147	96	227	357	63	402	132	342	458	288
Future Volume (vph)	357	390	147	96	227	357	63	402	132	342	458	288
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7		3.0	6.7	3.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00	0.99	1.00	0.98		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1818	3650	1477	1776	3614	1580	1817	3391		1799	3579	1579
Flt Permitted	0.53	1.00	1.00	0.52	1.00	1.00	0.48	1.00		0.27	1.00	1.00
Satd. Flow (perm)	1020	3650	1477	963	3614	1580	921	3391		505	3579	1579
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	368	402	152	99	234	368	65	414	136	353	472	297
RTOR Reduction (vph)	0	0	104	0	0	76	0	32	0	0	0	137
Lane Group Flow (vph)	368	402	48	99	234	292	65	518	0	353	472	160
Confl. Peds. (#/hr)	8		18	18		8	15		41	41		15
Confl. Bikes (#/hr)			4			1			2			8
Heavy Vehicles (%)	0%	0%	6%	2%	1%	2%	0%	2%	2%	1%	2%	1%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	5	2		1	6	7	3	8		7	4	5
Permitted Phases	2		2	6		6	8			4		4
Actuated Green, G (s)	40.9	31.9	31.9	27.9	21.9	40.9	29.0	24.0		46.0	38.0	54.0
Effective Green, g (s)	40.9	31.9	31.9	27.9	21.9	40.9	29.0	24.0		46.0	38.0	54.0
Actuated g/C Ratio	0.41	0.32	0.32	0.28	0.22	0.41	0.29	0.24		0.46	0.38	0.54
Clearance Time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7		3.0	6.7	3.0
Lane Grp Cap (vph)	544	1164	471	317	791	646	311	813		478	1360	852
v/s Ratio Prot	c0.11	0.11		0.02	0.06	0.09	0.01	0.15		c0.14	0.13	0.03
v/s Ratio Perm	c0.17		0.03	0.07		0.10	0.05			c0.20		0.07
v/c Ratio	0.68	0.35	0.10	0.31	0.30	0.45	0.21	0.64		0.74	0.35	0.19
Uniform Delay, d1	22.0	26.1	24.0	27.5	32.6	21.4	26.1	34.1		19.2	22.1	11.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	6.6	0.8	0.4	2.6	1.0	2.3	1.5	3.8		9.8	0.7	0.5
Delay (s)	28.6	26.9	24.4	30.1	33.6	23.7	27.7	37.9		29.0	22.8	12.3
Level of Service	C	C	C	C	C	C	C	D		C	C	B
Approach Delay (s)		27.1			27.9			36.8			22.0	
Approach LOS		C			C			D			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			27.3			HCM 2000 Level of Service		C				
HCM 2000 Volume to Capacity ratio			0.76									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)		19.1				
Intersection Capacity Utilization			93.0%			ICU Level of Service		F				
Analysis Period (min)			15									
c Critical Lane Group												

Timings  
3: Liverpool Rd & Bayly St

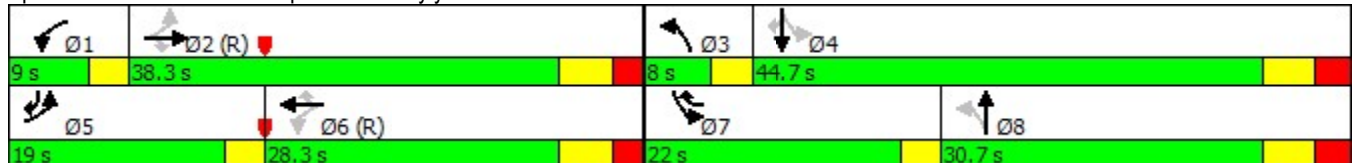
Timing Plan: Sat Peak Hour  
Existing Traffic Conditions - Bayly Optimized

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	357	390	147	96	227	357	63	402	342	458	288
Future Volume (vph)	357	390	147	96	227	357	63	402	342	458	288
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	pm+pt	NA	pm+ov
Protected Phases	5	2		1	6	7	3	8	7	4	5
Permitted Phases	2		2	6		6	8		4		4
Detector Phase	5	2	2	1	6	7	3	8	7	4	5
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	8.0	26.4	26.4	8.0	26.4	8.0	8.0	30.7	8.0	30.7	8.0
Total Split (s)	19.0	38.3	38.3	9.0	28.3	22.0	8.0	30.7	22.0	44.7	19.0
Total Split (%)	19.0%	38.3%	38.3%	9.0%	28.3%	22.0%	8.0%	30.7%	22.0%	44.7%	19.0%
Yellow Time (s)	3.0	4.1	4.1	3.0	4.1	3.0	3.0	3.8	3.0	3.8	3.0
All-Red Time (s)	0.0	2.3	2.3	0.0	2.3	0.0	0.0	2.9	0.0	2.9	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7	3.0	6.7	3.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	44.3	31.9	31.9	31.3	21.9	44.3	32.7	24.0	49.7	38.0	57.7
Actuated g/C Ratio	0.44	0.32	0.32	0.31	0.22	0.44	0.33	0.24	0.50	0.38	0.58
v/c Ratio	0.64	0.35	0.26	0.28	0.30	0.48	0.19	0.65	0.71	0.35	0.29
Control Delay	25.4	27.1	5.5	19.8	33.8	13.4	16.1	35.7	24.5	23.1	1.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.4	27.1	5.5	19.8	33.8	13.4	16.1	35.7	24.5	23.1	1.8
LOS	C	C	A	B	C	B	B	D	C	C	A
Approach Delay		22.8			21.1			33.6		17.9	
Approach LOS		C			C			C		B	

Intersection Summary

Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 9.6 (10%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green  
 Natural Cycle: 75  
 Control Type: Pretimed  
 Maximum v/c Ratio: 0.71  
 Intersection Signal Delay: 22.8  
 Intersection Capacity Utilization 93.0%  
 Analysis Period (min) 15  
 Intersection LOS: C  
 ICU Level of Service F

Splits and Phases: 3: Liverpool Rd & Bayly St





Intersection: 11: Liverpool Rd & Krosno Blvd

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (m)	13.5	35.3	47.8
Average Queue (m)	7.2	17.1	26.7
95th Queue (m)	11.3	27.6	42.3
Link Distance (m)	265.9	239.9	406.8
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 23: Liverpool Rd & Wharf St

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	9.3	9.3	16.4	22.6
Average Queue (m)	7.0	3.9	9.4	13.7
95th Queue (m)	13.3	11.3	14.0	20.8
Link Distance (m)	104.6	110.2	179.8	86.5
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 0
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



























## **Appendix C.2**

### Synchro Reports – 2027 and 2032 Background Traffic Intersection Operations

HCM Signalized Intersection Capacity Analysis  
3: Liverpool Rd & Bayly St

Timing Plan: AM Peak Hour  
2027 Background Traffic Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 			 			 	
Traffic Volume (vph)	199	581	98	56	239	304	60	576	120	496	296	167
Future Volume (vph)	199	581	98	56	239	304	60	576	120	496	296	167
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7		3.0	6.7	3.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.98	1.00	0.99		1.00	1.00	0.97
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00	1.00	0.99	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1804	3614	1278	1751	3380	1431	1774	3427		1805	3411	1534
Flt Permitted	0.60	1.00	1.00	0.25	1.00	1.00	0.57	1.00		0.16	1.00	1.00
Satd. Flow (perm)	1140	3614	1278	467	3380	1431	1060	3427		297	3411	1534
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	203	593	100	57	244	310	61	588	122	506	302	170
RTOR Reduction (vph)	0	0	76	0	0	38	0	17	0	0	0	81
Lane Group Flow (vph)	203	593	24	57	244	272	61	693	0	506	302	89
Confl. Peds. (#/hr)	19		22	22		19	19		37	37		19
Confl. Bikes (#/hr)			1			1			3			1
Heavy Vehicles (%)	0%	1%	22%	4%	8%	12%	2%	2%	6%	1%	7%	3%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	5	2		1	6	7	3	8		7	4	5
Permitted Phases	2		2	6		6	8		4			4
Actuated Green, G (s)	28.6	23.6	23.6	28.6	23.6	51.6	29.3	24.3		55.3	47.3	52.3
Effective Green, g (s)	28.6	23.6	23.6	28.6	23.6	51.6	29.3	24.3		55.3	47.3	52.3
Actuated g/C Ratio	0.29	0.24	0.24	0.29	0.24	0.52	0.29	0.24		0.55	0.47	0.52
Clearance Time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7		3.0	6.7	3.0
Lane Grp Cap (vph)	359	852	301	197	797	738	346	832		586	1613	802
v/s Ratio Prot	c0.03	c0.16		0.01	0.07	0.10	0.01	0.20		c0.24	0.09	0.01
v/s Ratio Perm	0.13		0.02	0.07		0.09	0.04			c0.24		0.05
v/c Ratio	0.57	0.70	0.08	0.29	0.31	0.37	0.18	0.83		0.86	0.19	0.11
Uniform Delay, d1	29.2	34.9	29.7	26.8	31.5	14.5	25.9	35.9		24.0	15.2	12.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	6.3	4.7	0.5	3.7	1.0	1.4	1.1	9.5		15.5	0.3	0.3
Delay (s)	35.5	39.6	30.2	30.5	32.5	15.9	27.0	45.5		39.5	15.5	12.4
Level of Service	D	D	C	C	C	B	C	D		D	B	B
Approach Delay (s)		37.6			23.9			44.0			27.4	
Approach LOS		D			C			D			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			33.5	HCM 2000 Level of Service				C				
HCM 2000 Volume to Capacity ratio			0.82									
Actuated Cycle Length (s)			100.0	Sum of lost time (s)				19.1				
Intersection Capacity Utilization			93.1%	ICU Level of Service				F				
Analysis Period (min)			15									
c Critical Lane Group												

Timings  
3: Liverpool Rd & Bayly St

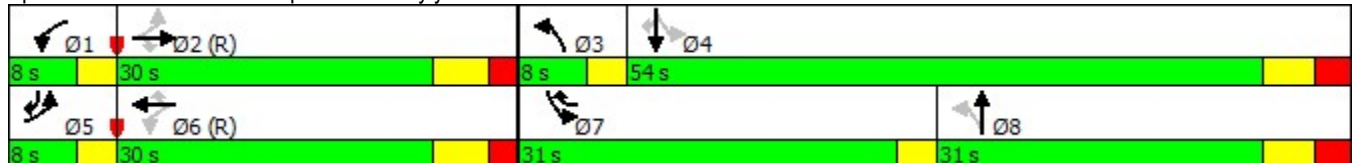
Timing Plan: AM Peak Hour  
2027 Background Traffic Conditions

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	
Lane Configurations												
Traffic Volume (vph)	199	581	98	56	239	304	60	576	496	296	167	
Future Volume (vph)	199	581	98	56	239	304	60	576	496	296	167	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	pm+pt	NA	pm+ov	
Protected Phases	5	2		1	6	7	3	8	7	4	5	
Permitted Phases	2		2	6		6	8		4		4	
Detector Phase	5	2	2	1	6	7	3	8	7	4	5	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	8.0	26.4	26.4	8.0	26.4	8.0	8.0	30.7	8.0	30.7	8.0	
Total Split (s)	8.0	30.0	30.0	8.0	30.0	31.0	8.0	31.0	31.0	54.0	8.0	
Total Split (%)	8.0%	30.0%	30.0%	8.0%	30.0%	31.0%	8.0%	31.0%	31.0%	54.0%	8.0%	
Yellow Time (s)	3.0	4.1	4.1	3.0	4.1	3.0	3.0	3.8	3.0	3.8	3.0	
All-Red Time (s)	0.0	2.3	2.3	0.0	2.3	0.0	0.0	2.9	0.0	2.9	0.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7	3.0	6.7	3.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lead	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max	
Act Effct Green (s)	32.0	23.6	23.6	32.0	23.6	55.0	33.0	24.3	59.0	47.3	56.0	
Actuated g/C Ratio	0.32	0.24	0.24	0.32	0.24	0.55	0.33	0.24	0.59	0.47	0.56	
v/c Ratio	0.51	0.70	0.25	0.27	0.31	0.38	0.16	0.84	0.85	0.19	0.18	
Control Delay	30.7	40.0	3.7	25.3	32.7	9.7	13.4	44.8	36.7	15.6	1.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	30.7	40.0	3.7	25.3	32.7	9.7	13.4	44.8	36.7	15.6	1.9	
LOS	C	D	A	C	C	A	B	D	D	B	A	
Approach Delay		33.8			20.4			42.4		24.1		
Approach LOS		C			C			D		C		

Intersection Summary

Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	
Natural Cycle: 90	
Control Type: Pretimed	
Maximum v/c Ratio: 0.85	
Intersection Signal Delay: 30.4	Intersection LOS: C
Intersection Capacity Utilization 93.1%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 3: Liverpool Rd & Bayly St



Queues  
3: Liverpool Rd & Bayly St

Timing Plan: AM Peak Hour  
2027 Background Traffic Conditions



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	203	593	100	57	244	310	61	710	506	302	170
v/c Ratio	0.51	0.70	0.25	0.27	0.31	0.38	0.16	0.84	0.85	0.19	0.18
Control Delay	30.7	40.0	3.7	25.3	32.7	9.7	13.4	44.8	36.7	15.6	1.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.7	40.0	3.7	25.3	32.7	9.7	13.4	44.8	36.7	15.6	1.9
Queue Length 50th (m)	28.5	55.4	0.0	7.3	20.5	21.1	4.7	67.0	71.4	17.2	0.0
Queue Length 95th (m)	46.6	74.1	6.1	15.9	31.3	37.5	9.9	#94.4	#125.9	25.3	7.8
Internal Link Dist (m)		177.5			249.4			51.8		146.7	
Turn Bay Length (m)	115.0		100.0	50.0		150.0	75.0		50.0		
Base Capacity (vph)	396	852	407	212	797	821	384	850	596	1613	933
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.70	0.25	0.27	0.31	0.38	0.16	0.84	0.85	0.19	0.18

Intersection Summary

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

Approach	EB	WB	NB	SB
Crosswalk Length (m)	22.45	22.36	18.57	22.20
Crosswalk Width (m)	1.20	1.20	1.20	1.20
Total Number of Lanes Crossed	6	6	5	6
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	4	8	2	6
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (m)	2.74	2.74	2.74	2.74
Right Corner Size B (m)	2.74	2.74	2.74	2.74
Right Corner Curb Radius (m)	0.00	0.00	0.00	0.00
Right Corner Total Area (sq.m)	7.51	7.51	7.51	7.51
Ped. Left-Right Flow Rate (p/h)	0	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (km/h)	40	40	40	40
Right Corner Area per Ped (sq.m)	0.0	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-	-
Ped. Circulation Area (sq.m)	0.0	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-	-
Pedestrian Delay (s/p)	50.0	50.0	50.0	50.0
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.65	2.72	2.51	2.75
Pedestrian Crosswalk LOS	B	B	B	B

Approach	EB	WB	NB	SB
Bicycle Flow Rate (bike/h)	0	0	0	0
Total Flow Rate (veh/h)	896	611	771	978
Effct. Green for Bike (s)	23.6	23.6	24.3	47.3
Cross Street Width (m)	18.57	22.20	22.36	22.45
Through Lanes Number	2	2	2	2
Through Lane Width (m)	3.70	3.70	3.70	3.70
Bicycle Lane Width (m)	0.00	0.00	0.00	0.00
Paved Shoulder Width (m)	0.00	0.00	0.00	0.00
Curb Is Present?	No	No	No	No
On Street Parking?	No	No	No	No
Bicycle Lane Capacity (bike/h)	472	472	486	946
Bicycle Delay (s/bike)	29.2	29.2	28.7	13.9
Bicycle Compliance	Fair	Fair	Fair	Fair
Bicycle LOS Score	3.20	3.15	3.29	3.46
Bicycle LOS	C	C	C	C

HCM Unsignalized Intersection Capacity Analysis  
6: Liverpool Rd & Parking Lot/Tatra Dr

Timing Plan: AM Peak Hour  
2027 Background Traffic Conditions

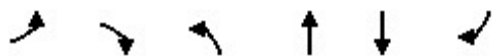


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕		↕	↕	↕
Traffic Volume (veh/h)	0	0	1	3	0	217	0	530	11	129	297	2
Future Volume (Veh/h)	0	0	1	3	0	217	0	530	11	129	297	2
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	0	1	3	0	238	0	582	12	142	326	2
Pedestrians		17			16			6			1	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		2			2			1			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												153
pX, platoon unblocked	0.95	0.95	0.95	0.95	0.95		0.95					
vC, conflicting volume	1455	1238	350	1221	1233	605	345			610		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1452	1223	285	1205	1218	605	280			610		
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	98	100	51	100			85		
cM capacity (veh/h)	45	141	702	130	142	486	1205			954		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>	<b>SB 2</b>							
Volume Total	1	241	594	142	328							
Volume Left	0	3	0	142	0							
Volume Right	1	238	12	0	2							
cSH	702	470	1205	954	1700							
Volume to Capacity	0.00	0.51	0.00	0.15	0.19							
Queue Length 95th (m)	0.0	21.8	0.0	4.0	0.0							
Control Delay (s)	10.1	20.5	0.0	9.4	0.0							
Lane LOS	B	C		A								
Approach Delay (s)	10.1	20.5	0.0	2.9								
Approach LOS	B	C										
<b>Intersection Summary</b>												
Average Delay			4.8									
Intersection Capacity Utilization			70.7%		ICU Level of Service					C		
Analysis Period (min)			15									



HCM Unsignalized Intersection Capacity Analysis  
 9: Liverpool Rd & Radom St

Timing Plan: AM Peak Hour  
 2027 Background Traffic Conditions



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	77	16	8	441	236	60
Future Volume (Veh/h)	77	16	8	441	236	60
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	83	17	9	474	254	65
Pedestrians	9				1	
Lane Width (m)	3.7				3.7	
Walking Speed (m/s)	1.1				1.1	
Percent Blockage	1				0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)					337	
pX, platoon unblocked						
vC, conflicting volume	788	296	328			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	788	296	328			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.4			
p0 queue free %	77	98	99			
cM capacity (veh/h)	356	742	1103			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	100	483	319			
Volume Left	83	9	0			
Volume Right	17	0	65			
cSH	391	1103	1700			
Volume to Capacity	0.26	0.01	0.19			
Queue Length 95th (m)	7.6	0.2	0.0			
Control Delay (s)	17.4	0.2	0.0			
Lane LOS	C	A				
Approach Delay (s)	17.4	0.2	0.0			
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay			2.1			
Intersection Capacity Utilization			41.5%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
 11: Liverpool Rd & Krosno Blvd

Timing Plan: AM Peak Hour  
 2027 Background Traffic Conditions



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	5	126	261	14	124	143
Future Volume (vph)	5	126	261	14	124	143
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	6	159	330	18	157	181

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	165	348	338
Volume Left (vph)	6	0	157
Volume Right (vph)	159	18	0
Hadj (s)	-0.54	0.07	0.16
Departure Headway (s)	5.0	4.8	4.9
Degree Utilization, x	0.23	0.47	0.46
Capacity (veh/h)	645	719	702
Control Delay (s)	9.5	12.0	12.1
Approach Delay (s)	9.5	12.0	12.1
Approach LOS	A	B	B

Intersection Summary			
Delay		11.5	
Level of Service		B	
Intersection Capacity Utilization	47.6%	ICU Level of Service	A
Analysis Period (min)		15	

Intersection	
Intersection Delay, s/veh	11.4
Intersection LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	126	261	14	124	143
Future Vol, veh/h	5	126	261	14	124	143
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles, %	0	2	4	36	4	4
Mvmt Flow	6	159	330	18	157	181
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	9.4	11.8	12
HCM LOS	A	B	B

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	4%	46%
Vol Thru, %	95%	0%	54%
Vol Right, %	5%	96%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	275	131	267
LT Vol	0	5	124
Through Vol	261	0	143
RT Vol	14	126	0
Lane Flow Rate	348	166	338
Geometry Grp	1	1	1
Degree of Util (X)	0.458	0.225	0.457
Departure Headway (Hd)	4.741	4.891	4.867
Convergence, Y/N	Yes	Yes	Yes
Cap	755	728	737
Service Time	2.806	2.966	2.931
HCM Lane V/C Ratio	0.461	0.228	0.459
HCM Control Delay	11.8	9.4	12
HCM Lane LOS	B	A	B
HCM 95th-tile Q	2.4	0.9	2.4

HCM Unsignalized Intersection Capacity Analysis  
 13: Liverpool Rd & Ilona Park Rd (N)

Timing Plan: AM Peak Hour  
 2027 Background Traffic Conditions



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	7	0	1	239	153	7
Future Volume (Veh/h)	7	0	1	239	153	7
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	8	0	1	281	180	8
Pedestrians	21			3	1	
Lane Width (m)	3.7			3.7	3.7	
Walking Speed (m/s)	1.1			1.1	1.1	
Percent Blockage	2			0	0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	489	208	209			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	489	208	209			
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	100	100			
cM capacity (veh/h)	530	818	1346			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	8	282	188			
Volume Left	8	1	0			
Volume Right	0	0	8			
cSH	530	1346	1700			
Volume to Capacity	0.02	0.00	0.11			
Queue Length 95th (m)	0.3	0.0	0.0			
Control Delay (s)	11.9	0.0	0.0			
Lane LOS	B	A				
Approach Delay (s)	11.9	0.0	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay	0.2					
Intersection Capacity Utilization	24.3%			ICU Level of Service	A	
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis  
 15: Liverpool Rd & Ilona Park Rd (S)

















Timing Plan: AM Peak Hour  
 2027 Background Traffic Conditions



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	13	2	0	198	142	7
Future Volume (Veh/h)	13	2	0	198	142	7
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	16	2	0	239	171	8
Pedestrians	22					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	2					
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	436	197	201			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	436	197	201			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	100	100			
cM capacity (veh/h)	569	831	1353			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	18	239	179			
Volume Left	16	0	0			
Volume Right	2	0	8			
cSH	589	1353	1700			
Volume to Capacity	0.03	0.00	0.11			
Queue Length 95th (m)	0.7	0.0	0.0			
Control Delay (s)	11.3	0.0	0.0			
Lane LOS	B					
Approach Delay (s)	11.3	0.0	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			0.5			
Intersection Capacity Utilization			20.8%	ICU Level of Service	A	
Analysis Period (min)			15			

















HCM Unsignalized Intersection Capacity Analysis  
 17: Liverpool Rd & Commerce St

Timing Plan: AM Peak Hour  
 2027 Background Traffic Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	4	1	1	3	8	3	166	9	12	117	9
Future Volume (Veh/h)	15	4	1	1	3	8	3	166	9	12	117	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)	18	5	1	1	4	10	4	198	11	14	139	11
Pedestrians		2						14				
Lane Width (m)		3.7						3.7				
Walking Speed (m/s)		1.1						1.1				
Percent Blockage		0						1				
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	398	392	160	402	392	204	152			209		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	398	392	160	402	392	204	152			209		
tC, single (s)	7.1	6.8	6.2	7.1	6.5	6.3	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.2	3.3	3.5	4.0	3.4	2.2			2.2		
p0 queue free %	97	99	100	100	99	99	100			99		
cM capacity (veh/h)	548	502	876	544	539	812	1438			1374		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	24	15	213	164								
Volume Left	18	1	4	14								
Volume Right	1	10	11	11								
cSH	546	696	1438	1374								
Volume to Capacity	0.04	0.02	0.00	0.01								
Queue Length 95th (m)	1.0	0.5	0.1	0.2								
Control Delay (s)	11.9	10.3	0.2	0.7								
Lane LOS	B	B	A	A								
Approach Delay (s)	11.9	10.3	0.2	0.7								
Approach LOS	B	B										
<b>Intersection Summary</b>												
Average Delay			1.4									
Intersection Capacity Utilization			28.8%		ICU Level of Service				A			
Analysis Period (min)			15									

















HCM Unsignalized Intersection Capacity Analysis  
20: Liverpool Rd & Annland St

Timing Plan: AM Peak Hour  
2027 Background Traffic Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	54	2	7	5	0	10	6	107	3	4	70	15
Future Volume (Veh/h)	54	2	7	5	0	10	6	107	3	4	70	15
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	65	2	8	6	0	12	7	129	4	5	84	18
Pedestrians		6			3			2			1	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		1			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	267	259	101	262	266	135	108			136		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	267	259	101	262	266	135	108			136		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.3	4.3			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.4	2.4			2.2		
p0 queue free %	90	100	99	99	100	99	99			100		
cM capacity (veh/h)	667	638	952	675	632	889	1386			1456		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	75	18	140	107								
Volume Left	65	6	7	5								
Volume Right	8	12	4	18								
cSH	688	804	1386	1456								
Volume to Capacity	0.11	0.02	0.01	0.00								
Queue Length 95th (m)	2.8	0.5	0.1	0.1								
Control Delay (s)	10.9	9.6	0.4	0.4								
Lane LOS	B	A	A	A								
Approach Delay (s)	10.9	9.6	0.4	0.4								
Approach LOS	B	A										
<b>Intersection Summary</b>												
Average Delay			3.2									
Intersection Capacity Utilization			23.4%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
 23: Liverpool Rd & Wharf St

Timing Plan: AM Peak Hour  
 2027 Background Traffic Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	18	0	0	0	1	5	1	83	1	4	83	4
Future Volume (vph)	18	0	0	0	1	5	1	83	1	4	83	4
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	22	0	0	0	1	6	1	100	1	5	100	5
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	22	7	102	110								
Volume Left (vph)	22	0	1	5								
Volume Right (vph)	0	6	1	5								
Hadj (s)	0.20	-0.51	0.01	0.01								
Departure Headway (s)	4.6	3.9	4.1	4.1								
Degree Utilization, x	0.03	0.01	0.12	0.12								
Capacity (veh/h)	750	877	861	869								
Control Delay (s)	7.7	6.9	7.6	7.7								
Approach Delay (s)	7.7	6.9	7.6	7.7								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			7.6									
Level of Service			A									
Intersection Capacity Utilization			22.7%	ICU Level of Service	A							
Analysis Period (min)			15									



Intersection	
Intersection Delay, s/veh	7.6
Intersection LOS	A










Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	18	0	0	0	1	5	1	83	1	4	83	4
Future Vol, veh/h	18	0	0	0	1	5	1	83	1	4	83	4
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	2	0
Mvmt Flow	22	0	0	0	1	6	1	100	1	5	100	5
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.7	6.9	7.6	7.6
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	1%	100%	0%	4%
Vol Thru, %	98%	0%	17%	91%
Vol Right, %	1%	0%	83%	4%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	85	18	6	91
LT Vol	1	18	0	4
Through Vol	83	0	1	83
RT Vol	1	0	5	4
Lane Flow Rate	102	22	7	110
Geometry Grp	1	1	1	1
Degree of Util (X)	0.115	0.027	0.008	0.122
Departure Headway (Hd)	4.026	4.469	3.878	4.008
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	887	789	928	891
Service Time	2.067	2.563	1.878	2.048
HCM Lane V/C Ratio	0.115	0.028	0.008	0.123
HCM Control Delay	7.6	7.7	6.9	7.6
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.4	0.1	0	0.4

























HCM Unsignalized Intersection Capacity Analysis  
 26: Liverpool Rd & Site Access

Timing Plan: AM Peak Hour  
 2027 Background Traffic Conditions

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	61	0	0	39
Future Volume (Veh/h)	0	0	61	0	0	39
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74
Hourly flow rate (vph)	0	0	82	0	0	53
Pedestrians	7					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	1					
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	142	89			89	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	142	89			89	
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)	850	968			1509	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	0	82	53			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1509			
Volume to Capacity	0.00	0.05	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			8.7%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis  
3: Liverpool Rd & Bayly St

Timing Plan: PM Peak Hour  
2027 Background Traffic Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	366	846	259	98	572	689	76	564	92	335	555	245
Future Volume (vph)	366	846	259	98	572	689	76	564	92	335	555	245
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7		3.0	6.7	3.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.94	1.00	1.00	0.97	1.00	0.99		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1820	3579	1371	1752	3614	1535	1810	3491		1785	3579	1532
Flt Permitted	0.27	1.00	1.00	0.22	1.00	1.00	0.44	1.00		0.18	1.00	1.00
Satd. Flow (perm)	508	3579	1371	405	3614	1535	832	3491		335	3579	1532
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	377	872	267	101	590	710	78	581	95	345	572	253
RTOR Reduction (vph)	0	0	166	0	0	60	0	13	0	0	0	70
Lane Group Flow (vph)	377	872	101	101	590	650	78	663	0	345	572	183
Confl. Peds. (#/hr)	25		30	30		25	36		57	57		36
Confl. Bikes (#/hr)			6			4			3			6
Heavy Vehicles (%)	0%	2%	12%	4%	1%	3%	0%	1%	2%	2%	2%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	5	2		1	6	7	3	8		7	4	5
Permitted Phases	2		2	6		6	8			4		4
Actuated Green, G (s)	43.6	34.6	34.6	33.6	27.6	43.6	29.3	24.3		43.3	35.3	48.3
Effective Green, g (s)	43.6	34.6	34.6	33.6	27.6	43.6	29.3	24.3		43.3	35.3	48.3
Actuated g/C Ratio	0.44	0.35	0.35	0.34	0.28	0.44	0.29	0.24		0.43	0.35	0.48
Clearance Time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7		3.0	6.7	3.0
Lane Grp Cap (vph)	392	1238	474	216	997	669	292	848		377	1263	739
v/s Ratio Prot	c0.12	0.24		0.03	0.16	c0.16	0.01	0.19		0.15	0.16	0.03
v/s Ratio Perm	c0.29		0.07	0.13		0.27	0.06			c0.25		0.09
v/c Ratio	0.96	0.70	0.21	0.47	0.59	0.97	0.27	0.78		0.92	0.45	0.25
Uniform Delay, d1	22.9	28.3	23.1	23.9	31.3	27.6	26.1	35.4		22.5	24.9	15.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	36.8	3.4	1.0	7.1	2.6	28.6	2.2	7.1		29.2	1.2	0.8
Delay (s)	59.7	31.7	24.1	31.0	33.9	56.2	28.3	42.5		51.7	26.1	16.0
Level of Service	E	C	C	C	C	E	C	D		D	C	B
Approach Delay (s)		37.3			45.0			41.0			31.5	
Approach LOS		D			D			D			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			38.7			HCM 2000 Level of Service			D			
HCM 2000 Volume to Capacity ratio			1.01									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			19.1			
Intersection Capacity Utilization			97.5%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												

Timings  
3: Liverpool Rd & Bayly St

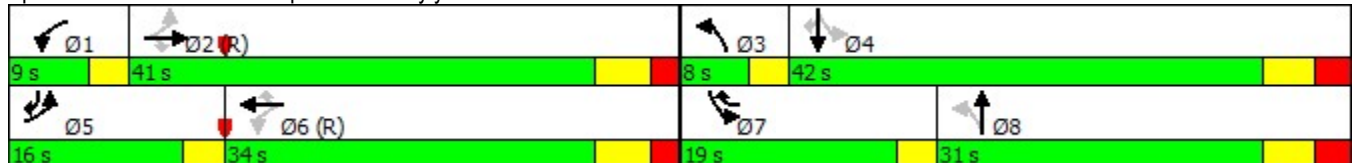
Timing Plan: PM Peak Hour  
2027 Background Traffic Conditions

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	
Lane Configurations												
Traffic Volume (vph)	366	846	259	98	572	689	76	564	335	555	245	
Future Volume (vph)	366	846	259	98	572	689	76	564	335	555	245	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	pm+pt	NA	pm+ov	
Protected Phases	5	2		1	6	7	3	8	7	4	5	
Permitted Phases	2		2	6		6	8		4		4	
Detector Phase	5	2	2	1	6	7	3	8	7	4	5	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	8.0	26.4	26.4	8.0	26.4	8.0	8.0	30.7	8.0	30.7	8.0	
Total Split (s)	16.0	41.0	41.0	9.0	34.0	19.0	8.0	31.0	19.0	42.0	16.0	
Total Split (%)	16.0%	41.0%	41.0%	9.0%	34.0%	19.0%	8.0%	31.0%	19.0%	42.0%	16.0%	
Yellow Time (s)	3.0	4.1	4.1	3.0	4.1	3.0	3.0	3.8	3.0	3.8	3.0	
All-Red Time (s)	0.0	2.3	2.3	0.0	2.3	0.0	0.0	2.9	0.0	2.9	0.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7	3.0	6.7	3.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lead	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max	
Act Effct Green (s)	47.0	34.6	34.6	37.0	27.6	47.0	33.0	24.3	47.0	35.3	52.0	
Actuated g/C Ratio	0.47	0.35	0.35	0.37	0.28	0.47	0.33	0.24	0.47	0.35	0.52	
v/c Ratio	0.92	0.70	0.42	0.44	0.59	0.91	0.24	0.79	0.89	0.45	0.29	
Control Delay	50.4	32.0	5.8	22.0	34.2	38.0	17.8	42.0	47.0	26.3	6.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	50.4	32.0	5.8	22.0	34.2	38.0	17.8	42.0	47.0	26.3	6.3	
LOS	D	C	A	C	C	D	B	D	D	C	A	
Approach Delay		32.0			35.2			39.5		28.1		
Approach LOS		C			D			D		C		

Intersection Summary

Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green  
 Natural Cycle: 90  
 Control Type: Pretimed  
 Maximum v/c Ratio: 0.92  
 Intersection Signal Delay: 33.2  
 Intersection LOS: C  
 Intersection Capacity Utilization 97.5%  
 ICU Level of Service F  
 Analysis Period (min) 15

Splits and Phases: 3: Liverpool Rd & Bayly St



Queues  
3: Liverpool Rd & Bayly St

Timing Plan: PM Peak Hour  
2027 Background Traffic Conditions



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	377	872	267	101	590	710	78	676	345	572	253
v/c Ratio	0.92	0.70	0.42	0.44	0.59	0.91	0.24	0.79	0.89	0.45	0.29
Control Delay	50.4	32.0	5.8	22.0	34.2	38.0	17.8	42.0	47.0	26.3	6.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.4	32.0	5.8	22.0	34.2	38.0	17.8	42.0	47.0	26.3	6.3
Queue Length 50th (m)	47.2	76.1	1.7	10.6	52.0	99.4	8.1	63.2	43.6	44.4	10.4
Queue Length 95th (m)	#89.6	97.6	18.4	20.0	69.5	#133.3	16.1	83.8	#92.9	59.4	22.7
Internal Link Dist (m)		177.5			249.4			51.8		146.7	
Turn Bay Length (m)	115.0		100.0	50.0		150.0	75.0		50.0		
Base Capacity (vph)	408	1238	640	229	997	776	321	861	388	1263	861
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.92	0.70	0.42	0.44	0.59	0.91	0.24	0.79	0.89	0.45	0.29

Intersection Summary

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

Approach	EB	WB	NB	SB
Crosswalk Length (m)	22.45	22.36	18.57	22.20
Crosswalk Width (m)	1.20	1.20	1.20	1.20
Total Number of Lanes Crossed	6	6	5	6
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	4	8	2	6
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (m)	2.74	2.74	2.74	2.74
Right Corner Size B (m)	2.74	2.74	2.74	2.74
Right Corner Curb Radius (m)	0.00	0.00	0.00	0.00
Right Corner Total Area (sq.m)	7.51	7.51	7.51	7.51
Ped. Left-Right Flow Rate (p/h)	0	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (km/h)	40	40	40	40
Right Corner Area per Ped (sq.m)	0.0	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-	-
Ped. Circulation Area (sq.m)	0.0	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-	-
Pedestrian Delay (s/p)	50.0	50.0	50.0	50.0
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.80	2.83	2.59	2.85
Pedestrian Crosswalk LOS	C	C	B	C

Approach	EB	WB	NB	SB
Bicycle Flow Rate (bike/h)	0	0	0	0
Total Flow Rate (veh/h)	1516	1401	754	1170
Effct. Green for Bike (s)	34.6	27.6	24.3	35.3
Cross Street Width (m)	18.57	22.20	22.36	22.45
Through Lanes Number	2	2	2	2
Through Lane Width (m)	3.70	3.70	3.70	3.70
Bicycle Lane Width (m)	0.00	0.00	0.00	0.00
Paved Shoulder Width (m)	0.00	0.00	0.00	0.00
Curb Is Present?	No	No	No	No
On Street Parking?	No	No	No	No
Bicycle Lane Capacity (bike/h)	692	552	486	706
Bicycle Delay (s/bike)	21.4	26.2	28.7	20.9
Bicycle Compliance	Fair	Fair	Fair	Fair
Bicycle LOS Score	3.71	3.80	3.27	3.62
Bicycle LOS	D	D	C	D

# HCM Unsignalized Intersection Capacity Analysis

## 6: Liverpool Rd & Parking Lot/Tatra Dr

Timing Plan: PM Peak Hour  
2027 Background Traffic Conditions



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕		↕	↕	↕
Traffic Volume (veh/h)	4	1	1	1	0	236	1	497	8	215	634	1
Future Volume (Veh/h)	4	1	1	1	0	236	1	497	8	215	634	1
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)	4	1	1	1	0	246	1	518	8	224	660	1
Pedestrians		23			32			22			2	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		2			3			2			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)											153	
pX, platoon unblocked	0.85	0.85	0.85	0.85	0.85		0.85					
vC, conflicting volume	1904	1692	706	1688	1688	556	684			558		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1976	1726	562	1721	1722	556	537			558		
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 %	75	98	100	98	100	52	100			77		
cM capacity (veh/h)	16	56	430	45	56	517	862			991		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>	<b>SB 2</b>							
Volume Total	6	247	527	224	661							
Volume Left	4	1	1	224	0							
Volume Right	1	246	8	0	1							
cSH	22	495	862	991	1700							
Volume to Capacity	0.27	0.50	0.00	0.23	0.39							
Queue Length 95th (m)	6.0	20.8	0.0	6.6	0.0							
Control Delay (s)	217.2	19.3	0.0	9.7	0.0							
Lane LOS	F	C	A	A								
Approach Delay (s)	217.2	19.3	0.0	2.5								
Approach LOS	F	C										
<b>Intersection Summary</b>												
Average Delay			5.0									
Intersection Capacity Utilization			85.0%		ICU Level of Service				E			
Analysis Period (min)			15									



HCM Unsignalized Intersection Capacity Analysis  
 9: Liverpool Rd & Radom St

Timing Plan: PM Peak Hour  
 2027 Background Traffic Conditions



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	58	28	18	432	558	68
Future Volume (Veh/h)	58	28	18	432	558	68
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	60	29	19	445	575	70
Pedestrians	11			1		
Lane Width (m)	3.7			3.7		
Walking Speed (m/s)	1.1			1.1		
Percent Blockage	1			0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)					337	
pX, platoon unblocked	0.85	0.85	0.85			
vC, conflicting volume	1104	622	656			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1033	464	504			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	72	94	98			
cM capacity (veh/h)	213	498	898			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	89	464	645			
Volume Left	60	19	0			
Volume Right	29	0	70			
cSH	262	898	1700			
Volume to Capacity	0.34	0.02	0.38			
Queue Length 95th (m)	11.0	0.5	0.0			
Control Delay (s)	25.6	0.6	0.0			
Lane LOS	D	A				
Approach Delay (s)	25.6	0.6	0.0			
Approach LOS	D					
<b>Intersection Summary</b>						
Average Delay			2.1			
Intersection Capacity Utilization			49.2%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
 11: Liverpool Rd & Krosno Blvd

Timing Plan: PM Peak Hour  
 2027 Background Traffic Conditions






Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	28	123	257	11	175	388
Future Volume (vph)	28	123	257	11	175	388
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	31	138	289	12	197	436

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	169	301	633
Volume Left (vph)	31	0	197
Volume Right (vph)	138	12	0
Hadj (s)	-0.45	0.01	0.11
Departure Headway (s)	5.7	5.2	4.9
Degree Utilization, x	0.27	0.44	0.87
Capacity (veh/h)	592	659	720
Control Delay (s)	10.8	12.3	31.4
Approach Delay (s)	10.8	12.3	31.4
Approach LOS	B	B	D

Intersection Summary			
Delay		23.0	
Level of Service		C	
Intersection Capacity Utilization		63.5%	ICU Level of Service
Analysis Period (min)		15	B

Intersection	
Intersection Delay, s/veh	23
Intersection LOS	C

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	28	123	257	11	175	388
Future Vol, veh/h	28	123	257	11	175	388
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles, %	0	0	2	0	2	3
Mvmt Flow	31	138	289	12	197	436
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	10.8	12.3	31.3
HCM LOS	B	B	D

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	19%	31%
Vol Thru, %	96%	0%	69%
Vol Right, %	4%	81%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	268	151	563
LT Vol	0	28	175
Through Vol	257	0	388
RT Vol	11	123	0
Lane Flow Rate	301	170	633
Geometry Grp	1	1	1
Degree of Util (X)	0.437	0.268	0.868
Departure Headway (Hd)	5.227	5.683	4.939
Convergence, Y/N	Yes	Yes	Yes
Cap	690	631	740
Service Time	3.26	3.729	2.939
HCM Lane V/C Ratio	0.436	0.269	0.855
HCM Control Delay	12.3	10.8	31.3
HCM Lane LOS	B	B	D
HCM 95th-tile Q	2.2	1.1	10.5

HCM Unsignalized Intersection Capacity Analysis  
 13: Liverpool Rd & Ilona Park Rd (N)

Timing Plan: PM Peak Hour  
 2027 Background Traffic Conditions



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	6	0	1	208	346	11
Future Volume (Veh/h)	6	0	1	208	346	11
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	7	0	1	248	412	13
Pedestrians	10			1		
Lane Width (m)	3.7			3.7		
Walking Speed (m/s)	1.1			1.1		
Percent Blockage	1			0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	678	430	435			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	678	430	435			
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	100	100			
cM capacity (veh/h)	416	623	1124			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	7	249	425			
Volume Left	7	1	0			
Volume Right	0	0	13			
cSH	416	1124	1700			
Volume to Capacity	0.02	0.00	0.25			
Queue Length 95th (m)	0.4	0.0	0.0			
Control Delay (s)	13.8	0.0	0.0			
Lane LOS	B	A				
Approach Delay (s)	13.8	0.0	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay	0.2					
Intersection Capacity Utilization	29.2%			ICU Level of Service	A	
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis  
 15: Liverpool Rd & Ilona Park Rd (S)

















Timing Plan: PM Peak Hour  
 2027 Background Traffic Conditions



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	2	1	1	193	306	12
Future Volume (Veh/h)	2	1	1	193	306	12
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)	2	1	1	224	356	14
Pedestrians	9			3		
Lane Width (m)	3.7			3.7		
Walking Speed (m/s)	1.1			1.1		
Percent Blockage	1			0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	601	372	379			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	601	372	379			
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)	461	672	1180			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	3	225	370			
Volume Left	2	1	0			
Volume Right	1	0	14			
cSH	515	1180	1700			
Volume to Capacity	0.01	0.00	0.22			
Queue Length 95th (m)	0.1	0.0	0.0			
Control Delay (s)	12.0	0.0	0.0			
Lane LOS	B	A				
Approach Delay (s)	12.0	0.0	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			0.1			
Intersection Capacity Utilization			26.9%	ICU Level of Service	A	
Analysis Period (min)			15			

















HCM Unsignalized Intersection Capacity Analysis  
 17: Liverpool Rd & Commerce St

Timing Plan: PM Peak Hour  
 2027 Background Traffic Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	0	1	2	3	9	2	167	1	18	264	19
Future Volume (Veh/h)	9	0	1	2	3	9	2	167	1	18	264	19
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	0	1	2	3	10	2	192	1	21	303	22
Pedestrians		9			12			2			1	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		1			1			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	574	574	325	568	584	206	334			205		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	574	574	325	568	584	206	334			205		
tC, single (s)	7.3	6.5	6.2	7.6	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.7	4.0	3.3	4.0	4.0	3.3	2.2			2.2		
p0 queue free %	97	100	100	99	99	99	100			98		
cM capacity (veh/h)	379	416	713	354	410	829	1226			1362		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	11	15	195	346								
Volume Left	10	2	2	21								
Volume Right	1	10	1	22								
cSH	396	599	1226	1362								
Volume to Capacity	0.03	0.03	0.00	0.02								
Queue Length 95th (m)	0.7	0.6	0.0	0.4								
Control Delay (s)	14.4	11.2	0.1	0.6								
Lane LOS	B	B	A	A								
Approach Delay (s)	14.4	11.2	0.1	0.6								
Approach LOS	B	B										
<b>Intersection Summary</b>												
Average Delay			1.0									
Intersection Capacity Utilization			36.9%		ICU Level of Service				A			
Analysis Period (min)			15									

















HCM Unsignalized Intersection Capacity Analysis  
20: Liverpool Rd & Annland St

Timing Plan: PM Peak Hour  
2027 Background Traffic Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	0	11	8	3	3	9	174	6	14	217	52
Future Volume (Veh/h)	27	0	11	8	3	3	9	174	6	14	217	52
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	29	0	12	9	3	3	10	187	6	15	233	56
Pedestrians		4			1			2			3	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	512	509	267	516	534	194	293			194		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	512	509	267	516	534	194	293			194		
tC, single (s)	7.3	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.7	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	93	100	98	98	99	100	99			99		
cM capacity (veh/h)	434	459	772	456	444	849	1275			1390		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	41	15	203	304								
Volume Left	29	9	10	15								
Volume Right	12	3	6	56								
cSH	498	500	1275	1390								
Volume to Capacity	0.08	0.03	0.01	0.01								
Queue Length 95th (m)	2.0	0.7	0.2	0.2								
Control Delay (s)	12.9	12.4	0.5	0.5								
Lane LOS	B	B	A	A								
Approach Delay (s)	12.9	12.4	0.5	0.5								
Approach LOS	B	B										
<b>Intersection Summary</b>												
Average Delay			1.7									
Intersection Capacity Utilization			30.6%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
 23: Liverpool Rd & Wharf St

Timing Plan: PM Peak Hour  
 2027 Background Traffic Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	19	0	2	0	0	7	5	115	1	10	165	38
Future Volume (vph)	19	0	2	0	0	7	5	115	1	10	165	38
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)	23	0	2	0	0	8	6	137	1	12	196	45
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	25	8	144	253								
Volume Left (vph)	23	0	6	12								
Volume Right (vph)	2	8	1	45								
Hadj (s)	0.21	-0.60	0.00	-0.09								
Departure Headway (s)	5.0	4.2	4.2	4.0								
Degree Utilization, x	0.03	0.01	0.17	0.28								
Capacity (veh/h)	662	774	829	878								
Control Delay (s)	8.1	7.2	8.1	8.6								
Approach Delay (s)	8.1	7.2	8.1	8.6								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			8.4									
Level of Service			A									
Intersection Capacity Utilization			30.0%	ICU Level of Service	A							
Analysis Period (min)			15									



Intersection	
Intersection Delay, s/veh	8.4
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	19	0	2	0	0	7	5	115	1	10	165	38
Future Vol, veh/h	19	0	2	0	0	7	5	115	1	10	165	38
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, %	5	0	0	0	0	0	0	0	0	0	0	3
Mvmt Flow	23	0	2	0	0	8	6	137	1	12	196	45
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.1	7.2	8.1	8.6
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	4%	90%	0%	5%
Vol Thru, %	95%	0%	0%	77%
Vol Right, %	1%	10%	100%	18%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	121	21	7	213
LT Vol	5	19	0	10
Through Vol	115	0	0	165
RT Vol	1	2	7	38
Lane Flow Rate	144	25	8	254
Geometry Grp	1	1	1	1
Degree of Util (X)	0.166	0.034	0.01	0.279
Departure Headway (Hd)	4.15	4.96	4.171	3.967
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	854	726	863	898
Service Time	2.227	2.961	2.172	2.03
HCM Lane V/C Ratio	0.169	0.034	0.009	0.283
HCM Control Delay	8.1	8.1	7.2	8.6
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.6	0.1	0	1.1

HCM Unsignalized Intersection Capacity Analysis  
 26: Liverpool Rd & Site Access

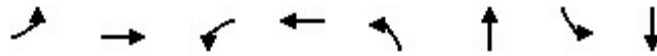
Timing Plan: PM Peak Hour  
 2027 Background Traffic Conditions



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	127	0	0	160
Future Volume (Veh/h)	0	0	127	0	0	160
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Hourly flow rate (vph)	0	0	163	0	0	205
Pedestrians	33		4		9	
Lane Width (m)	3.7		3.7		3.7	
Walking Speed (m/s)	1.1		1.1		1.1	
Percent Blockage	3		0		1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	405	205			196	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	405	205			196	
tC, single (s)	7.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	4.4	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	435	806			1344	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	0	163	205			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1344			
Volume to Capacity	0.00	0.10	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					
<b>Intersection Summary</b>						
Average Delay			0.0			
Intersection Capacity Utilization			23.7%	ICU Level of Service		A
Analysis Period (min)			15			

Timings  
6: Liverpool Rd & Parking Lot/Tatra Dr

Timing Plan: PM Peak Hour  
2027 Background Traffic Cond - Tatra Signalized



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↔		↔		↔	↔	↔
Traffic Volume (vph)	4	1	1	0	1	497	215	634
Future Volume (vph)	4	1	1	0	1	497	215	634
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
Total Split (s)	26.0	26.0	26.0	26.0	64.0	64.0	64.0	64.0
Total Split (%)	28.9%	28.9%	28.9%	28.9%	71.1%	71.1%	71.1%	71.1%
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0		0.0		0.0		0.0
Total Lost Time (s)		4.5		4.5		4.5		4.5
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
Act Effct Green (s)		7.5		7.5		60.8	60.8	60.8
Actuated g/C Ratio		0.10		0.10		0.79	0.79	0.79
v/c Ratio		0.06		0.65		0.35	0.31	0.45
Control Delay		29.5		13.4		3.5	4.1	4.2
Queue Delay		0.0		0.0		0.0	0.0	0.6
Total Delay		29.5		13.4		3.5	4.1	4.8
LOS		C		B		A	A	A
Approach Delay		29.5		13.4		3.5		4.6
Approach LOS		C		B		A		A

Intersection Summary




























Cycle Length: 90	
Actuated Cycle Length: 77.3	
Natural Cycle: 55	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.65	
Intersection Signal Delay: 5.6	Intersection LOS: A
Intersection Capacity Utilization 86.3%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 6: Liverpool Rd & Parking Lot/Tatra Dr



HCM Signalized Intersection Capacity Analysis  
3: Liverpool Rd & Bayly St

Timing Plan: Sat Peak Hour  
2027 Background Traffic Conditions

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		 			 			 			 		
Traffic Volume (vph)	357	410	147	96	239	357	63	486	132	342	515	288	
Future Volume (vph)	357	410	147	96	239	357	63	486	132	342	515	288	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7		3.0	6.7	3.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00	
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00	0.99	1.00	0.99		1.00	1.00	0.98	
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	1818	3650	1476	1776	3614	1580	1818	3416		1803	3579	1578	
Flt Permitted	0.53	1.00	1.00	0.51	1.00	1.00	0.45	1.00		0.19	1.00	1.00	
Satd. Flow (perm)	1012	3650	1476	944	3614	1580	870	3416		367	3579	1578	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	
Adj. Flow (vph)	368	423	152	99	246	368	65	501	136	353	531	297	
RTOR Reduction (vph)	0	0	101	0	0	64	0	25	0	0	0	139	
Lane Group Flow (vph)	368	423	51	99	246	304	65	612	0	353	531	158	
Confl. Peds. (#/hr)	8		19	19		8	16		43	43		16	
Confl. Bikes (#/hr)			4			1			2			8	
Heavy Vehicles (%)	0%	0%	6%	2%	1%	2%	0%	2%	2%	1%	2%	1%	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	pm+ov	
Protected Phases	5	2		1	6	7	3	8		7	4	5	
Permitted Phases	2		2	6		6	8			4		4	
Actuated Green, G (s)	40.6	32.9	32.9	27.2	22.5	40.6	26.3	22.4		43.5	36.6	51.7	
Effective Green, g (s)	40.6	32.9	32.9	27.2	22.5	40.6	26.3	22.4		43.5	36.6	51.7	
Actuated g/C Ratio	0.42	0.34	0.34	0.28	0.23	0.42	0.27	0.23		0.45	0.38	0.53	
Clearance Time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7		3.0	6.7	3.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	547	1235	499	304	836	659	273	787		431	1347	839	
v/s Ratio Prot	c0.10	0.12		0.02	0.07	0.09	0.01	0.18		c0.15	0.15	0.03	
v/s Ratio Perm	c0.18		0.03	0.08		0.11	0.05			c0.21		0.07	
v/c Ratio	0.67	0.34	0.10	0.33	0.29	0.46	0.24	0.78		0.82	0.39	0.19	
Uniform Delay, d1	20.7	24.1	22.0	26.7	30.8	20.4	26.8	35.1		20.1	22.2	11.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Incremental Delay, d2	3.3	0.8	0.4	0.6	0.9	0.5	0.5	4.9		11.5	0.2	0.1	
Delay (s)	24.0	24.8	22.5	27.3	31.7	20.9	27.3	39.9		31.7	22.4	11.9	
Level of Service	C	C	C	C	C	C	C	D		C	C	B	
Approach Delay (s)		24.1			25.5			38.7			22.5		
Approach LOS		C			C			D			C		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			26.8									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.80										
Actuated Cycle Length (s)			97.2									Sum of lost time (s)	19.1
Intersection Capacity Utilization			92.6%									ICU Level of Service	F
Analysis Period (min)			15										
c	Critical Lane Group												

Timings  
3: Liverpool Rd & Bayly St

Timing Plan: Sat Peak Hour  
2027 Background Traffic Conditions

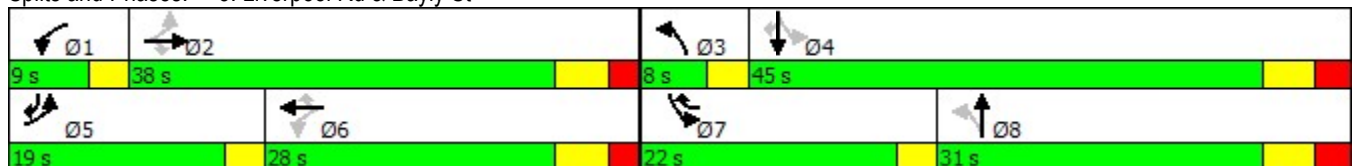


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑	↗	↘	↑↑	↘	↑↑	↗
Traffic Volume (vph)	357	410	147	96	239	357	63	486	342	515	288
Future Volume (vph)	357	410	147	96	239	357	63	486	342	515	288
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	pm+pt	NA	pm+ov
Protected Phases	5	2		1	6	7	3	8	7	4	5
Permitted Phases	2		2	6		6	8		4		4
Detector Phase	5	2	2	1	6	7	3	8	7	4	5
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	8.0	26.4	26.4	8.0	26.4	8.0	8.0	30.7	8.0	30.7	8.0
Total Split (s)	19.0	38.0	38.0	9.0	28.0	22.0	8.0	31.0	22.0	45.0	19.0
Total Split (%)	19.0%	38.0%	38.0%	9.0%	28.0%	22.0%	8.0%	31.0%	22.0%	45.0%	19.0%
Yellow Time (s)	3.0	4.1	4.1	3.0	4.1	3.0	3.0	3.8	3.0	3.8	3.0
All-Red Time (s)	0.0	2.3	2.3	0.0	2.3	0.0	0.0	2.9	0.0	2.9	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7	3.0	6.7	3.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	Max	None	Max	None	None	None	None	None	None
Act Effct Green (s)	43.3	32.9	32.9	31.2	21.8	43.3	30.4	21.7	46.5	36.6	55.3
Actuated g/C Ratio	0.45	0.34	0.34	0.33	0.23	0.45	0.32	0.23	0.49	0.38	0.58
v/c Ratio	0.63	0.34	0.25	0.28	0.30	0.48	0.20	0.80	0.79	0.39	0.29
Control Delay	24.5	25.8	5.4	19.4	33.0	14.1	16.2	41.7	32.1	23.0	1.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.5	25.8	5.4	19.4	33.0	14.1	16.2	41.7	32.1	23.0	1.8
LOS	C	C	A	B	C	B	B	D	C	C	A
Approach Delay		22.0			21.4			39.4		20.4	
Approach LOS		C			C			D		C	

Intersection Summary

Cycle Length: 100  
 Actuated Cycle Length: 95.8  
 Natural Cycle: 75  
 Control Type: Semi Act-Uncoord  
 Maximum v/c Ratio: 0.80  
 Intersection Signal Delay: 24.8  
 Intersection LOS: C  
 Intersection Capacity Utilization 92.6%  
 ICU Level of Service F  
 Analysis Period (min) 15

Splits and Phases: 3: Liverpool Rd & Bayly St



Queues  
3: Liverpool Rd & Bayly St

Timing Plan: Sat Peak Hour  
2027 Background Traffic Conditions



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	368	423	152	99	246	368	65	637	353	531	297
v/c Ratio	0.63	0.34	0.25	0.28	0.30	0.48	0.20	0.80	0.79	0.39	0.29
Control Delay	24.5	25.8	5.4	19.4	33.0	14.1	16.2	41.7	32.1	23.0	1.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.5	25.8	5.4	19.4	33.0	14.1	16.2	41.7	32.1	23.0	1.8
Queue Length 50th (m)	48.7	33.1	0.0	11.1	21.2	31.4	6.3	57.2	40.8	38.6	0.0
Queue Length 95th (m)	72.9	46.1	13.4	20.8	32.2	54.5	13.1	76.8	#80.6	52.1	9.3
Internal Link Dist (m)		177.5			249.4			51.8		146.7	
Turn Bay Length (m)	115.0		100.0	50.0		150.0	75.0		50.0		
Base Capacity (vph)	592	1253	606	358	822	789	324	894	463	1437	1050
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.34	0.25	0.28	0.30	0.47	0.20	0.71	0.76	0.37	0.28

Intersection Summary

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

Approach	EB	WB	NB	SB
Crosswalk Length (m)	22.45	22.36	18.57	22.20
Crosswalk Width (m)	1.20	1.20	1.20	1.20
Total Number of Lanes Crossed	6	6	5	6
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	4	8	2	6
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (m)	2.74	2.74	2.74	2.74
Right Corner Size B (m)	2.74	2.74	2.74	2.74
Right Corner Curb Radius (m)	0.00	0.00	0.00	0.00
Right Corner Total Area (sq.m)	7.51	7.51	7.51	7.51
Ped. Left-Right Flow Rate (p/h)	0	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (km/h)	40	40	40	40
Right Corner Area per Ped (sq.m)	0.0	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-	-
Ped. Circulation Area (sq.m)	0.0	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-	-
Pedestrian Delay (s/p)	50.0	50.0	50.0	50.0
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.68	2.69	2.56	2.79
Pedestrian Crosswalk LOS	B	B	B	C

Approach	EB	WB	NB	SB
Bicycle Flow Rate (bike/h)	0	0	0	0
Total Flow Rate (veh/h)	943	713	702	1181
Effct. Green for Bike (s)	32.9	21.8	21.7	36.6
Cross Street Width (m)	18.57	22.20	22.36	22.45
Through Lanes Number	2	2	2	2
Through Lane Width (m)	3.70	3.70	3.70	3.70
Bicycle Lane Width (m)	0.00	0.00	0.00	0.00
Paved Shoulder Width (m)	0.00	0.00	0.00	0.00
Curb Is Present?	No	No	No	No
On Street Parking?	No	No	No	No
Bicycle Lane Capacity (bike/h)	658	436	434	732
Bicycle Delay (s/bike)	22.5	30.6	30.7	20.1
Bicycle Compliance	Fair	Poor	Poor	Fair
Bicycle LOS Score	3.24	3.23	3.23	3.63
Bicycle LOS	C	C	C	D



# HCM Unsignalized Intersection Capacity Analysis

## 6: Liverpool Rd & Parking Lot/Tatra Dr

Timing Plan: Sat Peak Hour  
2027 Background Traffic Conditions



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕		↕	↕	
Traffic Volume (veh/h)	1	0	0	4	0	118	0	529	3	140	574	4
Future Volume (Veh/h)	1	0	0	4	0	118	0	529	3	140	574	4
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	1	0	0	4	0	122	0	545	3	144	592	4
Pedestrians		11			23			6				
Lane Width (m)		3.7			3.7			3.7				
Walking Speed (m/s)		1.1			1.1			1.1				
Percent Blockage		1			2			1				
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												153
pX, platoon unblocked	0.86	0.86	0.86	0.86	0.86		0.86					
vC, conflicting volume	1562	1464	611	1456	1464	570	607			571		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1572	1458	461	1448	1459	570	456			571		
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 %	98	100	100	95	100	76	100			85		
cM capacity (veh/h)	51	92	509	79	92	513	944			989		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>	<b>SB 2</b>							
Volume Total	1	126	548	144	596							
Volume Left	1	4	0	144	0							
Volume Right	0	122	3	0	4							
cSH	51	437	944	989	1700							
Volume to Capacity	0.02	0.29	0.00	0.15	0.35							
Queue Length 95th (m)	0.5	9.0	0.0	3.9	0.0							
Control Delay (s)	77.7	16.5	0.0	9.3	0.0							
Lane LOS	F	C		A								
Approach Delay (s)	77.7	16.5	0.0	1.8								
Approach LOS	F	C										
<b>Intersection Summary</b>												
Average Delay			2.5									
Intersection Capacity Utilization			75.9%		ICU Level of Service		D					
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
 9: Liverpool Rd & Radom St

Timing Plan: Sat Peak Hour  
 2027 Background Traffic Conditions



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	56	12	10	458	512	66
Future Volume (Veh/h)	56	12	10	458	512	66
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	62	13	11	503	563	73
Pedestrians	6			5		
Lane Width (m)	3.7			3.7		
Walking Speed (m/s)	1.1			1.1		
Percent Blockage	1			0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)					337	
pX, platoon unblocked	0.85	0.85	0.85			
vC, conflicting volume	1130	610	642			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1066	455	492			
tC, single (s)	6.4	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.4	2.2			
p0 queue free %	70	97	99			
cM capacity (veh/h)	206	499	915			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	75	514	636			
Volume Left	62	11	0			
Volume Right	13	0	73			
cSH	229	915	1700			
Volume to Capacity	0.33	0.01	0.37			
Queue Length 95th (m)	10.4	0.3	0.0			
Control Delay (s)	28.2	0.3	0.0			
Lane LOS	D	A				
Approach Delay (s)	28.2	0.3	0.0			
Approach LOS	D					
<b>Intersection Summary</b>						
Average Delay			1.9			
Intersection Capacity Utilization			44.2%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
 11: Liverpool Rd & Krosno Blvd

Timing Plan: Sat Peak Hour  
 2027 Background Traffic Conditions






Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	11	105	313	20	121	366
Future Volume (vph)	11	105	313	20	121	366
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	11	109	326	21	126	381

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	120	347	507
Volume Left (vph)	11	0	126
Volume Right (vph)	109	21	0
Hadj (s)	-0.51	0.02	0.09
Departure Headway (s)	5.3	4.9	4.7
Degree Utilization, x	0.18	0.47	0.67
Capacity (veh/h)	589	716	740
Control Delay (s)	9.5	12.1	16.8
Approach Delay (s)	9.5	12.1	16.8
Approach LOS	A	B	C

Intersection Summary			
Delay		14.2	
Level of Service		B	
Intersection Capacity Utilization	60.8%	ICU Level of Service	B
Analysis Period (min)		15	

Intersection	
Intersection Delay, s/veh	13.9
Intersection LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	11	105	313	20	121	366
Future Vol, veh/h	11	105	313	20	121	366
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	0	1	3	5	0	3
Mvmt Flow	11	109	326	21	126	381
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	9.5	12	16.2
HCM LOS	A	B	C

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	9%	25%
Vol Thru, %	94%	0%	75%
Vol Right, %	6%	91%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	333	116	487
LT Vol	0	11	121
Through Vol	313	0	366
RT Vol	20	105	0
Lane Flow Rate	347	121	507
Geometry Grp	1	1	1
Degree of Util (X)	0.462	0.176	0.656
Departure Headway (Hd)	4.793	5.251	4.658
Convergence, Y/N	Yes	Yes	Yes
Cap	746	675	771
Service Time	2.858	3.343	2.716
HCM Lane V/C Ratio	0.465	0.179	0.658
HCM Control Delay	12	9.5	16.2
HCM Lane LOS	B	A	C
HCM 95th-tile Q	2.5	0.6	5

HCM Unsignalized Intersection Capacity Analysis  
 13: Liverpool Rd & Ilona Park Rd (N)

Timing Plan: Sat Peak Hour  
 2027 Background Traffic Conditions



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	0	0	281	330	12
Future Volume (Veh/h)	10	0	0	281	330	12
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	11	0	0	309	363	13
Pedestrians	9			1		
Lane Width (m)	3.7			3.7		
Walking Speed (m/s)	1.1			1.1		
Percent Blockage	1			0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	688	380	385			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	688	380	385			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	100	100			
cM capacity (veh/h)	412	665	1174			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	11	309	376			
Volume Left	11	0	0			
Volume Right	0	0	13			
cSH	412	1174	1700			
Volume to Capacity	0.03	0.00	0.22			
Queue Length 95th (m)	0.6	0.0	0.0			
Control Delay (s)	14.0	0.0	0.0			
Lane LOS	B					
Approach Delay (s)	14.0	0.0	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			0.2			
Intersection Capacity Utilization			28.5%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
 15: Liverpool Rd & Ilona Park Rd (S)

















Timing Plan: Sat Peak Hour  
 2027 Background Traffic Conditions



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	2	1	0	233	318	13
Future Volume (Veh/h)	2	1	0	233	318	13
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	2	1	0	251	342	14
Pedestrians	11					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	1					
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	611	360	367			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	611	360	367			
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)	455	682	1190			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	3	251	356			
Volume Left	2	0	0			
Volume Right	1	0	14			
cSH	512	1190	1700			
Volume to Capacity	0.01	0.00	0.21			
Queue Length 95th (m)	0.1	0.0	0.0			
Control Delay (s)	12.1	0.0	0.0			
Lane LOS	B					
Approach Delay (s)	12.1	0.0	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			0.1			
Intersection Capacity Utilization			27.6%	ICU Level of Service	A	
Analysis Period (min)			15			

















HCM Unsignalized Intersection Capacity Analysis  
 17: Liverpool Rd & Commerce St

Timing Plan: Sat Peak Hour  
 2027 Background Traffic Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	3	3	2	5	6	5	210	2	10	291	17
Future Volume (Veh/h)	12	3	3	2	5	6	5	210	2	10	291	17
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	13	3	3	2	6	7	6	233	2	11	323	19
Pedestrians		10			16							
Lane Width (m)		3.7			3.7							
Walking Speed (m/s)		1.1			1.1							
Percent Blockage		1			2							
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	620	628	342	621	636	250	352			251		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	620	628	342	621	636	250	352			251		
tC, single (s)	7.5	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.9	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	96	99	100	99	98	99	100			99		
cM capacity (veh/h)	328	387	698	381	383	781	1206			1305		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	19	15	241	353								
Volume Left	13	2	6	11								
Volume Right	3	7	2	19								
cSH	367	502	1206	1305								
Volume to Capacity	0.05	0.03	0.00	0.01								
Queue Length 95th (m)	1.2	0.7	0.1	0.2								
Control Delay (s)	15.3	12.4	0.2	0.3								
Lane LOS	C	B	A	A								
Approach Delay (s)	15.3	12.4	0.2	0.3								
Approach LOS	C	B										
<b>Intersection Summary</b>												
Average Delay			1.0									
Intersection Capacity Utilization			31.3%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
20: Liverpool Rd & Annland St

















Timing Plan: Sat Peak Hour  
2027 Background Traffic Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	0	13	22	2	8	12	174	4	12	226	44
Future Volume (Veh/h)	40	0	13	22	2	8	12	174	4	12	226	44
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	43	0	14	24	2	9	13	187	4	13	243	47
Pedestrians		15			5			1			2	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		1			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	534	530	282	528	551	196	305			196		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	534	530	282	528	551	196	305			196		
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 %	90	100	98	95	100	99	99			99		
cM capacity (veh/h)	432	440	749	440	428	845	1249			1382		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	57	35	204	303								
Volume Left	43	24	13	13								
Volume Right	14	9	4	47								
cSH	482	501	1249	1382								
Volume to Capacity	0.12	0.07	0.01	0.01								
Queue Length 95th (m)	3.0	1.7	0.2	0.2								
Control Delay (s)	13.5	12.7	0.6	0.4								
Lane LOS	B	B	A	A								
Approach Delay (s)	13.5	12.7	0.6	0.4								
Approach LOS	B	B										
<b>Intersection Summary</b>												
Average Delay			2.4									
Intersection Capacity Utilization			29.0%		ICU Level of Service					A		
Analysis Period (min)			15									



HCM Unsignalized Intersection Capacity Analysis  
 23: Liverpool Rd & Wharf St

Timing Plan: Sat Peak Hour  
 2027 Background Traffic Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	35	2	7	1	1	18	4	119	4	7	178	61
Future Volume (vph)	35	2	7	1	1	18	4	119	4	7	178	61
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)	38	2	8	1	1	20	4	129	4	8	193	66
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	48	22	137	267								
Volume Left (vph)	38	1	4	8								
Volume Right (vph)	8	20	4	66								
Hadj (s)	0.06	-0.54	-0.01	-0.14								
Departure Headway (s)	4.9	4.3	4.3	4.1								
Degree Utilization, x	0.06	0.03	0.16	0.30								
Capacity (veh/h)	677	752	803	866								
Control Delay (s)	8.2	7.4	8.2	8.8								
Approach Delay (s)	8.2	7.4	8.2	8.8								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			8.5									
Level of Service			A									
Intersection Capacity Utilization			33.1%	ICU Level of Service	A							
Analysis Period (min)			15									

Intersection	
Intersection Delay, s/veh	8.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	35	2	7	1	1	18	4	119	4	7	178	61
Future Vol, veh/h	35	2	7	1	1	18	4	119	4	7	178	61
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
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	38	2	8	1	1	20	4	129	4	8	193	66
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.2	7.4	8.2	8.8
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	3%	80%	5%	3%
Vol Thru, %	94%	5%	5%	72%
Vol Right, %	3%	16%	90%	25%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	127	44	20	246
LT Vol	4	35	1	7
Through Vol	119	2	1	178
RT Vol	4	7	18	61
Lane Flow Rate	138	48	22	267
Geometry Grp	1	1	1	1
Degree of Util (X)	0.165	0.065	0.026	0.296
Departure Headway (Hd)	4.315	4.856	4.297	3.983
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	835	741	836	888
Service Time	2.323	2.862	2.306	2.078
HCM Lane V/C Ratio	0.165	0.065	0.026	0.301
HCM Control Delay	8.2	8.2	7.4	8.8
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.6	0.2	0.1	1.2

HCM Unsignalized Intersection Capacity Analysis  
26: Liverpool Rd

























Timing Plan: Sat Peak Hour  
2027 Background Traffic Conditions



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	5	111	0	6	158
Future Volume (Veh/h)	0	5	111	0	6	158
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	5	118	0	6	168
Pedestrians	64		3			3
Lane Width (m)	3.7		3.7			3.7
Walking Speed (m/s)	1.1		1.1			1.1
Percent Blockage	6		0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	365	185			182	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	365	185			182	
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			100	
cM capacity (veh/h)	594	806			1306	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	5	118	174			
Volume Left	0	0	6			
Volume Right	5	0	0			
cSH	806	1700	1306			
Volume to Capacity	0.01	0.07	0.00			
Queue Length 95th (m)	0.1	0.0	0.1			
Control Delay (s)	9.5	0.0	0.3			
Lane LOS	A		A			
Approach Delay (s)	9.5	0.0	0.3			
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			0.3			
Intersection Capacity Utilization			24.1%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis  
3: Liverpool Rd & Bayly St

Timing Plan: AM Peak Hour  
2032 Background Traffic Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	199	596	98	56	245	304	60	589	120	496	303	167
Future Volume (vph)	199	596	98	56	245	304	60	589	120	496	303	167
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7		3.0	6.7	3.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.98	1.00	0.99		1.00	1.00	0.97
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00	1.00	0.99	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1804	3614	1276	1751	3380	1431	1774	3429		1805	3411	1534
Flt Permitted	0.60	1.00	1.00	0.24	1.00	1.00	0.56	1.00		0.15	1.00	1.00
Satd. Flow (perm)	1133	3614	1276	444	3380	1431	1053	3429		281	3411	1534
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	203	608	100	57	250	310	61	601	122	506	309	170
RTOR Reduction (vph)	0	0	76	0	0	37	0	17	0	0	0	81
Lane Group Flow (vph)	203	608	24	57	250	273	61	706	0	506	309	89
Confl. Peds. (#/hr)	19		23	23		19	19		38	38		19
Confl. Bikes (#/hr)			1			1			3			1
Heavy Vehicles (%)	0%	1%	22%	4%	8%	12%	2%	2%	6%	1%	7%	3%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	5	2		1	6	7	3	8		7	4	5
Permitted Phases	2		2	6		6	8			4		4
Actuated Green, G (s)	28.6	23.6	23.6	28.6	23.6	51.6	29.3	24.3		55.3	47.3	52.3
Effective Green, g (s)	28.6	23.6	23.6	28.6	23.6	51.6	29.3	24.3		55.3	47.3	52.3
Actuated g/C Ratio	0.29	0.24	0.24	0.29	0.24	0.52	0.29	0.24		0.55	0.47	0.52
Clearance Time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7		3.0	6.7	3.0
Lane Grp Cap (vph)	357	852	301	192	797	738	344	833		582	1613	802
v/s Ratio Prot	c0.03	c0.17		0.01	0.07	0.10	0.01	0.21		c0.24	0.09	0.01
v/s Ratio Perm	0.13		0.02	0.07		0.09	0.04			c0.24		0.05
v/c Ratio	0.57	0.71	0.08	0.30	0.31	0.37	0.18	0.85		0.87	0.19	0.11
Uniform Delay, d1	29.2	35.1	29.7	26.9	31.5	14.5	25.9	36.1		24.6	15.3	12.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	6.4	5.1	0.5	3.9	1.0	1.4	1.1	10.5		16.2	0.3	0.3
Delay (s)	35.6	40.2	30.2	30.8	32.5	15.9	27.0	46.5		40.8	15.5	12.4
Level of Service	D	D	C	C	C	B	C	D		D	B	B
Approach Delay (s)		38.1			24.0			45.0			28.0	
Approach LOS		D			C			D			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			34.1			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.83									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			19.1			
Intersection Capacity Utilization			93.4%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												

Timings  
3: Liverpool Rd & Bayly St

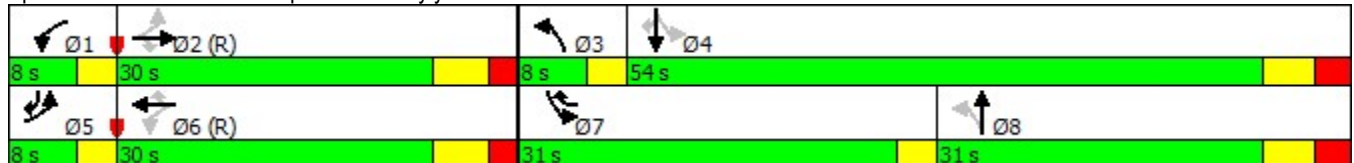
Timing Plan: AM Peak Hour  
2032 Background Traffic Conditions

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	199	596	98	56	245	304	60	589	496	303	167
Future Volume (vph)	199	596	98	56	245	304	60	589	496	303	167
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	pm+pt	NA	pm+ov
Protected Phases	5	2		1	6	7	3	8	7	4	5
Permitted Phases	2		2	6		6	8		4		4
Detector Phase	5	2	2	1	6	7	3	8	7	4	5
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	8.0	26.4	26.4	8.0	26.4	8.0	8.0	30.7	8.0	30.7	8.0
Total Split (s)	8.0	30.0	30.0	8.0	30.0	31.0	8.0	31.0	31.0	54.0	8.0
Total Split (%)	8.0%	30.0%	30.0%	8.0%	30.0%	31.0%	8.0%	31.0%	31.0%	54.0%	8.0%
Yellow Time (s)	3.0	4.1	4.1	3.0	4.1	3.0	3.0	3.8	3.0	3.8	3.0
All-Red Time (s)	0.0	2.3	2.3	0.0	2.3	0.0	0.0	2.9	0.0	2.9	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7	3.0	6.7	3.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	32.0	23.6	23.6	32.0	23.6	55.0	33.0	24.3	59.0	47.3	56.0
Actuated g/C Ratio	0.32	0.24	0.24	0.32	0.24	0.55	0.33	0.24	0.59	0.47	0.56
v/c Ratio	0.52	0.71	0.25	0.28	0.31	0.38	0.16	0.85	0.85	0.19	0.18
Control Delay	30.8	40.5	3.7	25.5	32.8	9.8	13.4	46.0	37.9	15.7	1.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.8	40.5	3.7	25.5	32.8	9.8	13.4	46.0	37.9	15.7	1.9
LOS	C	D	A	C	C	A	B	D	D	B	A
Approach Delay		34.3			20.6			43.5		24.7	
Approach LOS		C			C			D		C	

Intersection Summary

Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green  
 Natural Cycle: 90  
 Control Type: Pretimed  
 Maximum v/c Ratio: 0.85  
 Intersection Signal Delay: 31.1  
 Intersection Capacity Utilization 93.4%  
 Analysis Period (min) 15  
 Intersection LOS: C  
 ICU Level of Service F

Splits and Phases: 3: Liverpool Rd & Bayly St



Queues  
3: Liverpool Rd & Bayly St

Timing Plan: AM Peak Hour  
2032 Background Traffic Conditions



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	203	608	100	57	250	310	61	723	506	309	170
v/c Ratio	0.52	0.71	0.25	0.28	0.31	0.38	0.16	0.85	0.85	0.19	0.18
Control Delay	30.8	40.5	3.7	25.5	32.8	9.8	13.4	46.0	37.9	15.7	1.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.8	40.5	3.7	25.5	32.8	9.8	13.4	46.0	37.9	15.7	1.9
Queue Length 50th (m)	28.5	57.2	0.0	7.3	21.1	21.4	4.7	68.6	72.7	17.6	0.0
Queue Length 95th (m)	46.6	76.0	6.1	15.9	32.0	37.7	9.9	#97.3	#127.9	25.7	7.8
Internal Link Dist (m)		177.5			249.4			51.8		146.7	
Turn Bay Length (m)	115.0		100.0	50.0		150.0	75.0		50.0		
Base Capacity (vph)	394	852	407	206	797	820	382	850	592	1613	933
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.71	0.25	0.28	0.31	0.38	0.16	0.85	0.85	0.19	0.18

Intersection Summary

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



















Approach	EB	WB	NB	SB
Crosswalk Length (m)	22.45	22.36	18.57	22.20
Crosswalk Width (m)	1.20	1.20	1.20	1.20
Total Number of Lanes Crossed	6	6	5	6
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	4	8	2	6
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (m)	2.74	2.74	2.74	2.74
Right Corner Size B (m)	2.74	2.74	2.74	2.74
Right Corner Curb Radius (m)	0.00	0.00	0.00	0.00
Right Corner Total Area (sq.m)	7.51	7.51	7.51	7.51
Ped. Left-Right Flow Rate (p/h)	0	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (km/h)	40	40	40	40
Right Corner Area per Ped (sq.m)	0.0	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-	-
Ped. Circulation Area (sq.m)	0.0	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-	-
Pedestrian Delay (s/p)	50.0	50.0	50.0	50.0
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.66	2.72	2.52	2.75
Pedestrian Crosswalk LOS	B	B	B	C

Approach	EB	WB	NB	SB
Bicycle Flow Rate (bike/h)	0	0	0	0
Total Flow Rate (veh/h)	911	617	784	985
Effct. Green for Bike (s)	23.6	23.6	24.3	47.3
Cross Street Width (m)	18.57	22.20	22.36	22.45
Through Lanes Number	2	2	2	2
Through Lane Width (m)	3.70	3.70	3.70	3.70
Bicycle Lane Width (m)	0.00	0.00	0.00	0.00
Paved Shoulder Width (m)	0.00	0.00	0.00	0.00
Curb Is Present?	No	No	No	No
On Street Parking?	No	No	No	No
Bicycle Lane Capacity (bike/h)	472	472	486	946
Bicycle Delay (s/bike)	29.2	29.2	28.7	13.9
Bicycle Compliance	Fair	Fair	Fair	Fair
Bicycle LOS Score	3.21	3.15	3.30	3.47
Bicycle LOS	C	C	C	C



HCM Unsignalized Intersection Capacity Analysis  
6: Liverpool Rd & Parking Lot/Tatra Dr

Timing Plan: AM Peak Hour  
2032 Background Traffic Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	1	3	0	217	0	541	11	129	304	2
Future Volume (Veh/h)	0	0	1	3	0	217	0	541	11	129	304	2
Sign Control		Stop			Stop			Free				Free
Grade		0%			0%			0%				0%
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	0	1	3	0	238	0	595	12	142	334	2
Pedestrians		17			16			6				1
Lane Width (m)		3.7			3.7			3.7				3.7
Walking Speed (m/s)		1.1			1.1			1.1				1.1
Percent Blockage		2			2			1				0
Right turn flare (veh)												
Median type								None				None
Median storage veh												
Upstream signal (m)												153
pX, platoon unblocked	0.94	0.94	0.94	0.94	0.94		0.94					
vC, conflicting volume	1476	1259	358	1242	1254	618	353			623		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1475	1245	290	1227	1239	618	285			623		
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	98	100	50	100			85		
cM capacity (veh/h)	42	136	696	125	137	478	1196			943		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>	<b>SB 2</b>							
Volume Total	1	241	607	142	336							
Volume Left	0	3	0	142	0							
Volume Right	1	238	12	0	2							
cSH	696	461	1196	943	1700							
Volume to Capacity	0.00	0.52	0.00	0.15	0.20							
Queue Length 95th (m)	0.0	22.5	0.0	4.0	0.0							
Control Delay (s)	10.2	21.0	0.0	9.5	0.0							
Lane LOS	B	C		A								
Approach Delay (s)	10.2	21.0	0.0	2.8								
Approach LOS	B	C										
<b>Intersection Summary</b>												
Average Delay			4.8									
Intersection Capacity Utilization			71.6%		ICU Level of Service				C			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
 9: Liverpool Rd & Radom St

Timing Plan: AM Peak Hour  
 2032 Background Traffic Conditions



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	77	16	8	450	241	60
Future Volume (Veh/h)	77	16	8	450	241	60
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	83	17	9	484	259	65
Pedestrians	9				1	
Lane Width (m)	3.7				3.7	
Walking Speed (m/s)	1.1				1.1	
Percent Blockage	1				0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)					337	
pX, platoon unblocked						
vC, conflicting volume	804	300	333			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	804	300	333			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.4			
p0 queue free %	76	98	99			
cM capacity (veh/h)	349	737	1098			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	100	493	324			
Volume Left	83	9	0			
Volume Right	17	0	65			
cSH	383	1098	1700			
Volume to Capacity	0.26	0.01	0.19			
Queue Length 95th (m)	7.8	0.2	0.0			
Control Delay (s)	17.7	0.2	0.0			
Lane LOS	C	A				
Approach Delay (s)	17.7	0.2	0.0			
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay			2.1			
Intersection Capacity Utilization			42.0%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
 11: Liverpool Rd & Krosno Blvd

Timing Plan: AM Peak Hour  
 2032 Background Traffic Conditions






Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	5	126	266	14	124	146
Future Volume (vph)	5	126	266	14	124	146
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	6	159	337	18	157	185

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	165	355	342
Volume Left (vph)	6	0	157
Volume Right (vph)	159	18	0
Hadj (s)	-0.54	0.07	0.16
Departure Headway (s)	5.0	4.8	4.9
Degree Utilization, x	0.23	0.48	0.47
Capacity (veh/h)	641	718	701
Control Delay (s)	9.5	12.2	12.2
Approach Delay (s)	9.5	12.2	12.2
Approach LOS	A	B	B

Intersection Summary			
Delay		11.7	
Level of Service		B	
Intersection Capacity Utilization		48.1%	ICU Level of Service
Analysis Period (min)		15	A

Intersection	
Intersection Delay, s/veh	11.5
Intersection LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	126	266	14	124	146
Future Vol, veh/h	5	126	266	14	124	146
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles, %	0	2	4	36	4	4
Mvmt Flow	6	159	337	18	157	185
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	9.4	12	12.1
HCM LOS	A	B	B

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	4%	46%
Vol Thru, %	95%	0%	54%
Vol Right, %	5%	96%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	280	131	270
LT Vol	0	5	124
Through Vol	266	0	146
RT Vol	14	126	0
Lane Flow Rate	354	166	342
Geometry Grp	1	1	1
Degree of Util (X)	0.468	0.226	0.463
Departure Headway (Hd)	4.75	4.914	4.875
Convergence, Y/N	Yes	Yes	Yes
Cap	751	723	735
Service Time	2.814	2.992	2.942
HCM Lane V/C Ratio	0.471	0.23	0.465
HCM Control Delay	12	9.4	12.1
HCM Lane LOS	B	A	B
HCM 95th-tile Q	2.5	0.9	2.5

HCM Unsignalized Intersection Capacity Analysis  
 13: Liverpool Rd & Ilona Park Rd (N)

Timing Plan: AM Peak Hour  
 2032 Background Traffic Conditions



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	7	0	1	243	156	7
Future Volume (Veh/h)	7	0	1	243	156	7
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	8	0	1	286	184	8
Pedestrians	21			3	1	
Lane Width (m)	3.7			3.7	3.7	
Walking Speed (m/s)	1.1			1.1	1.1	
Percent Blockage	2			0	0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	498	212	213			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	498	212	213			
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	100	100			
cM capacity (veh/h)	523	814	1341			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	8	287	192			
Volume Left	8	1	0			
Volume Right	0	0	8			
cSH	523	1341	1700			
Volume to Capacity	0.02	0.00	0.11			
Queue Length 95th (m)	0.4	0.0	0.0			
Control Delay (s)	12.0	0.0	0.0			
Lane LOS	B	A				
Approach Delay (s)	12.0	0.0	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay	0.2					
Intersection Capacity Utilization	24.5%			ICU Level of Service	A	
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis  
 15: Liverpool Rd & Ilona Park Rd (S)

















Timing Plan: AM Peak Hour  
 2032 Background Traffic Conditions



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	13	2	0	202	146	7
Future Volume (Veh/h)	13	2	0	202	146	7
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	16	2	0	243	176	8
Pedestrians	22					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	2					
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	445	202	206			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	445	202	206			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	100	100			
cM capacity (veh/h)	562	826	1348			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	18	243	184			
Volume Left	16	0	0			
Volume Right	2	0	8			
cSH	583	1348	1700			
Volume to Capacity	0.03	0.00	0.11			
Queue Length 95th (m)	0.7	0.0	0.0			
Control Delay (s)	11.4	0.0	0.0			
Lane LOS	B					
Approach Delay (s)	11.4	0.0	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			0.5			
Intersection Capacity Utilization			20.9%	ICU Level of Service	A	
Analysis Period (min)			15			

















HCM Unsignalized Intersection Capacity Analysis  
 17: Liverpool Rd & Commerce St

Timing Plan: AM Peak Hour  
 2032 Background Traffic Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	4	1	1	3	8	3	168	9	12	120	9
Future Volume (Veh/h)	15	4	1	1	3	8	3	168	9	12	120	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)	18	5	1	1	4	10	4	200	11	14	143	11
Pedestrians		2						14				
Lane Width (m)		3.7						3.7				
Walking Speed (m/s)		1.1						1.1				
Percent Blockage		0						1				
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	404	398	164	408	398	206	156			211		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	404	398	164	408	398	206	156			211		
tC, single (s)	7.1	6.8	6.2	7.1	6.5	6.3	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.2	3.3	3.5	4.0	3.4	2.2			2.2		
p0 queue free %	97	99	100	100	99	99	100			99		
cM capacity (veh/h)	543	498	871	539	535	810	1434			1372		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	24	15	215	168								
Volume Left	18	1	4	14								
Volume Right	1	10	11	11								
cSH	542	692	1434	1372								
Volume to Capacity	0.04	0.02	0.00	0.01								
Queue Length 95th (m)	1.1	0.5	0.1	0.2								
Control Delay (s)	12.0	10.3	0.2	0.7								
Lane LOS	B	B	A	A								
Approach Delay (s)	12.0	10.3	0.2	0.7								
Approach LOS	B	B										
<b>Intersection Summary</b>												
Average Delay			1.4									
Intersection Capacity Utilization			29.0%		ICU Level of Service					A		
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
20: Liverpool Rd & Annland St

















Timing Plan: AM Peak Hour  
2032 Background Traffic Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	54	2	7	5	0	10	6	110	3	4	72	15
Future Volume (Veh/h)	54	2	7	5	0	10	6	110	3	4	72	15
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	65	2	8	6	0	12	7	133	4	5	87	18
Pedestrians		6			3			2			1	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		1			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	274	266	104	269	273	139	111			140		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	274	266	104	269	273	139	111			140		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.3	4.3			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.4	2.4			2.2		
p0 queue free %	90	100	99	99	100	99	99			100		
cM capacity (veh/h)	660	632	949	668	626	885	1382			1451		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	75	18	144	110								
Volume Left	65	6	7	5								
Volume Right	8	12	4	18								
cSH	681	798	1382	1451								
Volume to Capacity	0.11	0.02	0.01	0.00								
Queue Length 95th (m)	2.8	0.5	0.1	0.1								
Control Delay (s)	10.9	9.6	0.4	0.4								
Lane LOS	B	A	A	A								
Approach Delay (s)	10.9	9.6	0.4	0.4								
Approach LOS	B	A										
<b>Intersection Summary</b>												
Average Delay			3.1									
Intersection Capacity Utilization			23.6%		ICU Level of Service				A			
Analysis Period (min)			15									



HCM Unsignalized Intersection Capacity Analysis  
 23: Liverpool Rd & Wharf St

Timing Plan: AM Peak Hour  
 2032 Background Traffic Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	18	0	0	0	1	5	1	85	1	4	85	4
Future Volume (vph)	18	0	0	0	1	5	1	85	1	4	85	4
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	22	0	0	0	1	6	1	102	1	5	102	5
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	22	7	104	112								
Volume Left (vph)	22	0	1	5								
Volume Right (vph)	0	6	1	5								
Hadj (s)	0.20	-0.51	0.01	0.01								
Departure Headway (s)	4.6	3.9	4.1	4.1								
Degree Utilization, x	0.03	0.01	0.12	0.13								
Capacity (veh/h)	748	874	860	869								
Control Delay (s)	7.7	6.9	7.6	7.7								
Approach Delay (s)	7.7	6.9	7.6	7.7								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			7.6									
Level of Service			A									
Intersection Capacity Utilization			22.8%	ICU Level of Service	A							
Analysis Period (min)			15									

Intersection	
Intersection Delay, s/veh	7.6
Intersection LOS	A










Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	18	0	0	0	1	5	1	85	1	4	85	4
Future Vol, veh/h	18	0	0	0	1	5	1	85	1	4	85	4
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	2	0
Mvmt Flow	22	0	0	0	1	6	1	102	1	5	102	5
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.7	6.9	7.6	7.6
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	1%	100%	0%	4%
Vol Thru, %	98%	0%	17%	91%
Vol Right, %	1%	0%	83%	4%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	87	18	6	93
LT Vol	1	18	0	4
Through Vol	85	0	1	85
RT Vol	1	0	5	4
Lane Flow Rate	105	22	7	112
Geometry Grp	1	1	1	1
Degree of Util (X)	0.117	0.027	0.008	0.125
Departure Headway (Hd)	4.029	4.478	3.788	4.01
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	886	788	926	891
Service Time	2.07	2.573	1.888	2.05
HCM Lane V/C Ratio	0.119	0.028	0.008	0.126
HCM Control Delay	7.6	7.7	6.9	7.6
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.4	0.1	0	0.4

HCM Unsignalized Intersection Capacity Analysis  
26: Liverpool Rd

Timing Plan: AM Peak Hour  
2032 Background Traffic Conditions

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	63	0	0	40
Future Volume (Veh/h)	0	0	63	0	0	40
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74
Hourly flow rate (vph)	0	0	85	0	0	54
Pedestrians	7					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	1					
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	146	92			92	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	146	92			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 %	100	100			100	
cM capacity (veh/h)	845	964			1505	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	0	85	54			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1505			
Volume to Capacity	0.00	0.05	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			8.7%	ICU Level of Service		A
Analysis Period (min)			15			

Intersection: 11: Liverpool Rd & Krosno Blvd

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (m)	19.7	42.4	30.2
Average Queue (m)	8.3	17.2	19.6
95th Queue (m)	15.7	28.9	28.6
Link Distance (m)	265.9	239.9	406.8
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 23: Liverpool Rd & Wharf St
























Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	9.3	9.1	15.8	16.4
Average Queue (m)	3.6	1.8	9.2	11.0
95th Queue (m)	10.9	7.7	11.3	16.0
Link Distance (m)	104.6	110.2	179.8	86.5
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 0
------------------------------

HCM Signalized Intersection Capacity Analysis  
3: Liverpool Rd & Bayly St

Timing Plan: PM Peak Hour  
2032 Background Traffic Conditions

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	366	868	259	98	586	689	76	577	92	335	568	245	
Future Volume (vph)	366	868	259	98	586	689	76	577	92	335	568	245	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7		3.0	6.7	3.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00	
Frpb, ped/bikes	1.00	1.00	0.94	1.00	1.00	0.97	1.00	0.99		1.00	1.00	0.96	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00		1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	1820	3579	1369	1752	3614	1533	1810	3493		1785	3579	1531	
Flt Permitted	0.26	1.00	1.00	0.21	1.00	1.00	0.43	1.00		0.17	1.00	1.00	
Satd. Flow (perm)	490	3579	1369	379	3614	1533	821	3493		318	3579	1531	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	
Adj. Flow (vph)	377	895	267	101	604	710	78	595	95	345	586	253	
RTOR Reduction (vph)	0	0	162	0	0	60	0	13	0	0	0	68	
Lane Group Flow (vph)	377	895	105	101	604	650	78	677	0	345	586	185	
Confl. Peds. (#/hr)	26		31	31		26	37		58	58		37	
Confl. Bikes (#/hr)			6			4			3			6	
Heavy Vehicles (%)	0%	2%	12%	4%	1%	3%	0%	1%	2%	2%	2%	2%	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	pm+ov	
Protected Phases	5	2		1	6	7	3	8		7	4	5	
Permitted Phases	2		2	6		6	8			4		4	
Actuated Green, G (s)	43.6	34.6	34.6	33.6	27.6	43.6	29.3	24.3		43.3	35.3	48.3	
Effective Green, g (s)	43.6	34.6	34.6	33.6	27.6	43.6	29.3	24.3		43.3	35.3	48.3	
Actuated g/C Ratio	0.44	0.35	0.35	0.34	0.28	0.44	0.29	0.24		0.43	0.35	0.48	
Clearance Time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7		3.0	6.7	3.0	
Lane Grp Cap (vph)	386	1238	473	209	997	668	290	848		372	1263	739	
v/s Ratio Prot	c0.13	0.25		0.03	0.17	c0.16	0.01	0.19		0.15	0.16	0.03	
v/s Ratio Perm	c0.30		0.08	0.13		0.27	0.07			c0.25		0.09	
v/c Ratio	0.98	0.72	0.22	0.48	0.61	0.97	0.27	0.80		0.93	0.46	0.25	
Uniform Delay, d1	23.1	28.5	23.2	24.0	31.5	27.6	26.1	35.6		23.7	25.0	15.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Incremental Delay, d2	40.3	3.7	1.1	7.8	2.7	28.9	2.3	7.7		31.5	1.2	0.8	
Delay (s)	63.4	32.2	24.3	31.8	34.2	56.5	28.4	43.3		55.2	26.3	16.0	
Level of Service	E	C	C	C	C	E	C	D		E	C	B	
Approach Delay (s)		38.5			45.2			41.8			32.5		
Approach LOS		D			D			D			C		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			39.5									HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			1.02										
Actuated Cycle Length (s)			100.0									Sum of lost time (s)	19.1
Intersection Capacity Utilization			97.6%									ICU Level of Service	F
Analysis Period (min)			15										
c Critical Lane Group													

Timings  
3: Liverpool Rd & Bayly St

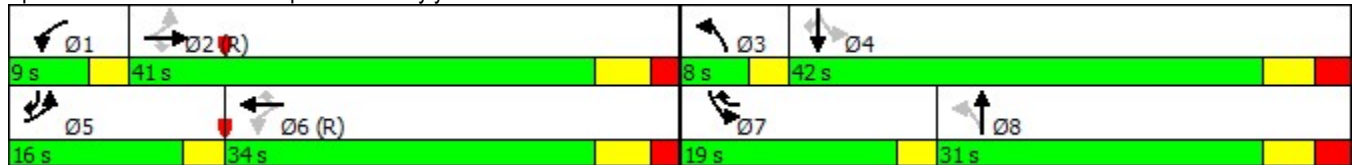
Timing Plan: PM Peak Hour  
2032 Background Traffic Conditions

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	366	868	259	98	586	689	76	577	335	568	245
Future Volume (vph)	366	868	259	98	586	689	76	577	335	568	245
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	pm+pt	NA	pm+ov
Protected Phases	5	2		1	6	7	3	8	7	4	5
Permitted Phases	2		2	6		6	8		4		4
Detector Phase	5	2	2	1	6	7	3	8	7	4	5
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	8.0	26.4	26.4	8.0	26.4	8.0	8.0	30.7	8.0	30.7	8.0
Total Split (s)	16.0	41.0	41.0	9.0	34.0	19.0	8.0	31.0	19.0	42.0	16.0
Total Split (%)	16.0%	41.0%	41.0%	9.0%	34.0%	19.0%	8.0%	31.0%	19.0%	42.0%	16.0%
Yellow Time (s)	3.0	4.1	4.1	3.0	4.1	3.0	3.0	3.8	3.0	3.8	3.0
All-Red Time (s)	0.0	2.3	2.3	0.0	2.3	0.0	0.0	2.9	0.0	2.9	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7	3.0	6.7	3.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	47.0	34.6	34.6	37.0	27.6	47.0	33.0	24.3	47.0	35.3	52.0
Actuated g/C Ratio	0.47	0.35	0.35	0.37	0.28	0.47	0.33	0.24	0.47	0.35	0.52
v/c Ratio	0.94	0.72	0.42	0.46	0.61	0.92	0.25	0.80	0.90	0.46	0.29
Control Delay	53.3	32.6	6.3	22.6	34.5	38.2	17.9	42.9	50.1	26.5	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.3	32.6	6.3	22.6	34.5	38.2	17.9	42.9	50.1	26.5	6.5
LOS	D	C	A	C	C	D	B	D	D	C	A
Approach Delay		33.1			35.5			40.4		29.1	
Approach LOS		C			D			D		C	

Intersection Summary

Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 20 (20%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green  
 Natural Cycle: 90  
 Control Type: Pretimed  
 Maximum v/c Ratio: 0.94  
 Intersection Signal Delay: 34.0  
 Intersection LOS: C  
 Intersection Capacity Utilization 97.6%  
 ICU Level of Service F  
 Analysis Period (min) 15

Splits and Phases: 3: Liverpool Rd & Bayly St



Queues  
3: Liverpool Rd & Bayly St

Timing Plan: PM Peak Hour  
2032 Background Traffic Conditions



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	377	895	267	101	604	710	78	690	345	586	253
v/c Ratio	0.94	0.72	0.42	0.46	0.61	0.92	0.25	0.80	0.90	0.46	0.29
Control Delay	53.3	32.6	6.3	22.6	34.5	38.2	17.9	42.9	50.1	26.5	6.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.3	32.6	6.3	22.6	34.5	38.2	17.9	42.9	50.1	26.5	6.5
Queue Length 50th (m)	47.2	78.7	2.6	10.6	53.5	99.4	8.1	64.7	45.1	45.6	10.8
Queue Length 95th (m)	#92.1	101.0	19.8	20.0	71.2	#133.4	16.1	85.7	#95.3	61.1	23.2
Internal Link Dist (m)		177.5			249.4			51.8		146.7	
Turn Bay Length (m)	115.0		100.0	50.0		150.0	75.0		50.0		
Base Capacity (vph)	402	1238	635	221	997	775	318	861	382	1263	858
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.94	0.72	0.42	0.46	0.61	0.92	0.25	0.80	0.90	0.46	0.29

Intersection Summary

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



















Approach	EB	WB	NB	SB
Crosswalk Length (m)	22.45	22.36	18.57	22.20
Crosswalk Width (m)	1.20	1.20	1.20	1.20
Total Number of Lanes Crossed	6	6	5	6
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	4	8	2	6
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (m)	2.74	2.74	2.74	2.74
Right Corner Size B (m)	2.74	2.74	2.74	2.74
Right Corner Curb Radius (m)	0.00	0.00	0.00	0.00
Right Corner Total Area (sq.m)	7.51	7.51	7.51	7.51
Ped. Left-Right Flow Rate (p/h)	0	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (km/h)	40	40	40	40
Right Corner Area per Ped (sq.m)	0.0	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-	-
Ped. Circulation Area (sq.m)	0.0	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-	-
Pedestrian Delay (s/p)	50.0	50.0	50.0	50.0
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.80	2.84	2.59	2.86
Pedestrian Crosswalk LOS	C	C	B	C



Approach	EB	WB	NB	SB
Bicycle Flow Rate (bike/h)	0	0	0	0
Total Flow Rate (veh/h)	1539	1415	768	1184
Effct. Green for Bike (s)	34.6	27.6	24.3	35.3
Cross Street Width (m)	18.57	22.20	22.36	22.45
Through Lanes Number	2	2	2	2
Through Lane Width (m)	3.70	3.70	3.70	3.70
Bicycle Lane Width (m)	0.00	0.00	0.00	0.00
Paved Shoulder Width (m)	0.00	0.00	0.00	0.00
Curb Is Present?	No	No	No	No
On Street Parking?	No	No	No	No
Bicycle Lane Capacity (bike/h)	692	552	486	706
Bicycle Delay (s/bike)	21.4	26.2	28.7	20.9
Bicycle Compliance	Fair	Fair	Fair	Fair
Bicycle LOS Score	3.73	3.81	3.29	3.63
Bicycle LOS	D	D	C	D

HCM Unsignalized Intersection Capacity Analysis  
6: Liverpool Rd & Parking Lot/Tatra Dr

Timing Plan: PM Peak Hour  
2032 Background Traffic Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	1	1	1	0	236	1	508	8	215	649	1
Future Volume (Veh/h)	4	1	1	1	0	236	1	508	8	215	649	1
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)	4	1	1	1	0	246	1	529	8	224	676	1
Pedestrians		23			32			22			2	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		2			3			2			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)											153	
pX, platoon unblocked	0.84	0.84	0.84	0.84	0.84		0.84					
vC, conflicting volume	1930	1718	722	1714	1715	567	700			569		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2012	1760	575	1755	1755	567	549			569		
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 %	73	98	100	98	100	52	100			77		
cM capacity (veh/h)	15	53	420	42	53	509	848			982		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>	<b>SB 2</b>							
Volume Total	6	247	538	224	677							
Volume Left	4	1	1	224	0							
Volume Right	1	246	8	0	1							
cSH	21	487	848	982	1700							
Volume to Capacity	0.29	0.51	0.00	0.23	0.40							
Queue Length 95th (m)	6.4	21.4	0.0	6.7	0.0							
Control Delay (s)	238.8	19.7	0.0	9.7	0.0							
Lane LOS	F	C	A	A								
Approach Delay (s)	238.8	19.7	0.0	2.4								
Approach LOS	F	C										
<b>Intersection Summary</b>												
Average Delay			5.0									
Intersection Capacity Utilization			86.4%		ICU Level of Service				E			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
 9: Liverpool Rd & Radom St

Timing Plan: PM Peak Hour  
 2032 Background Traffic Conditions



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	58	28	18	441	571	68
Future Volume (Veh/h)	58	28	18	441	571	68
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	60	29	19	455	589	70
Pedestrians	11			1		
Lane Width (m)	3.7			3.7		
Walking Speed (m/s)	1.1			1.1		
Percent Blockage	1			0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)					337	
pX, platoon unblocked	0.84	0.84	0.84			
vC, conflicting volume	1128	636	670			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1057	471	512			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	71	94	98			
cM capacity (veh/h)	204	488	884			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	89	474	659			
Volume Left	60	19	0			
Volume Right	29	0	70			
cSH	252	884	1700			
Volume to Capacity	0.35	0.02	0.39			
Queue Length 95th (m)	11.6	0.5	0.0			
Control Delay (s)	26.9	0.6	0.0			
Lane LOS	D	A				
Approach Delay (s)	26.9	0.6	0.0			
Approach LOS	D					
<b>Intersection Summary</b>						
Average Delay			2.2			
Intersection Capacity Utilization			49.7%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
 11: Liverpool Rd & Krosno Blvd

Timing Plan: PM Peak Hour  
 2032 Background Traffic Conditions



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	28	123	262	11	175	396
Future Volume (vph)	28	123	262	11	175	396
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	31	138	294	12	197	445

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	169	306	642
Volume Left (vph)	31	0	197
Volume Right (vph)	138	12	0
Hadj (s)	-0.45	0.01	0.11
Departure Headway (s)	5.7	5.3	5.0
Degree Utilization, x	0.27	0.45	0.88
Capacity (veh/h)	589	657	642
Control Delay (s)	10.8	12.5	33.3
Approach Delay (s)	10.8	12.5	33.3
Approach LOS	B	B	D

Intersection Summary			
Delay		24.2	
Level of Service		C	
Intersection Capacity Utilization		64.2%	ICU Level of Service
Analysis Period (min)		15	C

Intersection	
Intersection Delay, s/veh	24.1
Intersection LOS	C

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	28	123	262	11	175	396
Future Vol, veh/h	28	123	262	11	175	396
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles, %	0	0	2	0	2	3
Mvmt Flow	31	138	294	12	197	445
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	10.9	12.5	33.2
HCM LOS	B	B	D

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	19%	31%
Vol Thru, %	96%	0%	69%
Vol Right, %	4%	81%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	273	151	571
LT Vol	0	28	175
Through Vol	262	0	396
RT Vol	11	123	0
Lane Flow Rate	307	170	642
Geometry Grp	1	1	1
Degree of Util (X)	0.447	0.27	0.883
Departure Headway (Hd)	5.243	5.719	4.952
Convergence, Y/N	Yes	Yes	Yes
Cap	687	626	738
Service Time	3.279	3.767	2.952
HCM Lane V/C Ratio	0.447	0.272	0.87
HCM Control Delay	12.5	10.9	33.2
HCM Lane LOS	B	B	D
HCM 95th-tile Q	2.3	1.1	11.1

HCM Unsignalized Intersection Capacity Analysis  
 13: Liverpool Rd & Ilona Park Rd (N)

Timing Plan: PM Peak Hour  
 2032 Background Traffic Conditions



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	6	0	1	213	353	11
Future Volume (Veh/h)	6	0	1	213	353	11
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	7	0	1	254	420	13
Pedestrians	10			1		
Lane Width (m)	3.7			3.7		
Walking Speed (m/s)	1.1			1.1		
Percent Blockage	1			0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	692	438	443			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	692	438	443			
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	100	100			
cM capacity (veh/h)	408	617	1117			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	7	255	433			
Volume Left	7	1	0			
Volume Right	0	0	13			
cSH	408	1117	1700			
Volume to Capacity	0.02	0.00	0.25			
Queue Length 95th (m)	0.4	0.0	0.0			
Control Delay (s)	14.0	0.0	0.0			
Lane LOS	B	A				
Approach Delay (s)	14.0	0.0	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			0.2			
Intersection Capacity Utilization			29.6%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
 15: Liverpool Rd & Ilona Park Rd (S)

















Timing Plan: PM Peak Hour  
 2032 Background Traffic Conditions



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	2	1	1	198	313	12
Future Volume (Veh/h)	2	1	1	198	313	12
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)	2	1	1	230	364	14
Pedestrians	9			3		
Lane Width (m)	3.7			3.7		
Walking Speed (m/s)	1.1			1.1		
Percent Blockage	1			0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	615	380	387			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	615	380	387			
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)	452	666	1172			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	3	231	378			
Volume Left	2	1	0			
Volume Right	1	0	14			
cSH	506	1172	1700			
Volume to Capacity	0.01	0.00	0.22			
Queue Length 95th (m)	0.1	0.0	0.0			
Control Delay (s)	12.2	0.0	0.0			
Lane LOS	B	A				
Approach Delay (s)	12.2	0.0	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			0.1			
Intersection Capacity Utilization			27.2%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
 17: Liverpool Rd & Commerce St

















Timing Plan: PM Peak Hour  
 2032 Background Traffic Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	0	1	2	3	9	2	171	1	18	270	19
Future Volume (Veh/h)	9	0	1	2	3	9	2	171	1	18	270	19
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	0	1	2	3	10	2	197	1	21	310	22
Pedestrians		9			12			2			1	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		1			1			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	586	586	332	580	596	210	341			210		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	586	586	332	580	596	210	341			210		
tC, single (s)	7.3	6.5	6.2	7.6	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.7	4.0	3.3	4.0	4.0	3.3	2.2			2.2		
p0 queue free %	97	100	100	99	99	99	100			98		
cM capacity (veh/h)	372	409	707	347	404	824	1219			1357		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	11	15	200	353								
Volume Left	10	2	2	21								
Volume Right	1	10	1	22								
cSH	389	592	1219	1357								
Volume to Capacity	0.03	0.03	0.00	0.02								
Queue Length 95th (m)	0.7	0.6	0.0	0.4								
Control Delay (s)	14.5	11.2	0.1	0.6								
Lane LOS	B	B	A	A								
Approach Delay (s)	14.5	11.2	0.1	0.6								
Approach LOS	B	B										
<b>Intersection Summary</b>												
Average Delay			1.0									
Intersection Capacity Utilization			37.3%		ICU Level of Service				A			
Analysis Period (min)			15									



















HCM Unsignalized Intersection Capacity Analysis  
 20: Liverpool Rd & Annland St

Timing Plan: PM Peak Hour  
 2032 Background Traffic Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	0	11	8	3	3	9	179	6	14	222	52
Future Volume (Veh/h)	27	0	11	8	3	3	9	179	6	14	222	52
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	29	0	12	9	3	3	10	192	6	15	239	56
Pedestrians		4			1			2			3	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	524	520	273	527	545	199	299			199		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	524	520	273	527	545	199	299			199		
tC, single (s)	7.3	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.7	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	93	100	98	98	99	100	99			99		
cM capacity (veh/h)	427	453	766	448	438	844	1269			1384		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	41	15	208	310								
Volume Left	29	9	10	15								
Volume Right	12	3	6	56								
cSH	490	492	1269	1384								
Volume to Capacity	0.08	0.03	0.01	0.01								
Queue Length 95th (m)	2.1	0.7	0.2	0.2								
Control Delay (s)	13.0	12.5	0.4	0.5								
Lane LOS	B	B	A	A								
Approach Delay (s)	13.0	12.5	0.4	0.5								
Approach LOS	B	B										
<b>Intersection Summary</b>												
Average Delay			1.7									
Intersection Capacity Utilization			30.9%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
23: Liverpool Rd & Wharf St

Timing Plan: PM Peak Hour  
2032 Background Traffic Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	19	0	2	0	0	7	5	117	1	10	169	38
Future Volume (vph)	19	0	2	0	0	7	5	117	1	10	169	38
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)	23	0	2	0	0	8	6	139	1	12	201	45
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	25	8	146	258								
Volume Left (vph)	23	0	6	12								
Volume Right (vph)	2	8	1	45								
Hadj (s)	0.21	-0.60	0.00	-0.09								
Departure Headway (s)	5.0	4.2	4.2	4.0								
Degree Utilization, x	0.03	0.01	0.17	0.29								
Capacity (veh/h)	659	770	828	877								
Control Delay (s)	8.2	7.2	8.1	8.7								
Approach Delay (s)	8.2	7.2	8.1	8.7								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			8.4									
Level of Service			A									
Intersection Capacity Utilization			30.2%	ICU Level of Service	A							
Analysis Period (min)			15									

Intersection	
Intersection Delay, s/veh	8.4
Intersection LOS	A










Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	19	0	2	0	0	7	5	117	1	10	169	38
Future Vol, veh/h	19	0	2	0	0	7	5	117	1	10	169	38
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, %	5	0	0	0	0	0	0	0	0	0	0	3
Mvmt Flow	23	0	2	0	0	8	6	139	1	12	201	45
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.2	7.2	8.1	8.6
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	4%	90%	0%	5%
Vol Thru, %	95%	0%	0%	78%
Vol Right, %	1%	10%	100%	18%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	123	21	7	217
LT Vol	5	19	0	10
Through Vol	117	0	0	169
RT Vol	1	2	7	38
Lane Flow Rate	146	25	8	258
Geometry Grp	1	1	1	1
Degree of Util (X)	0.169	0.035	0.01	0.285
Departure Headway (Hd)	4.154	4.977	4.187	3.971
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	852	724	860	896
Service Time	2.234	2.978	2.189	2.036
HCM Lane V/C Ratio	0.171	0.035	0.009	0.288
HCM Control Delay	8.1	8.2	7.2	8.6
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.6	0.1	0	1.2

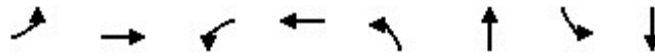
HCM Unsignalized Intersection Capacity Analysis  
26: Liverpool Rd

Timing Plan: PM Peak Hour  
2032 Background Traffic Conditions

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	130	0	0	164
Future Volume (Veh/h)	0	0	130	0	0	164
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Hourly flow rate (vph)	0	0	167	0	0	210
Pedestrians	33		4			9
Lane Width (m)	3.7		3.7			3.7
Walking Speed (m/s)	1.1		1.1			1.1
Percent Blockage	3		0			1
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	414	209			200	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	414	209			200	
tC, single (s)	7.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	4.4	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	429	802			1340	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	0	167	210			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1340			
Volume to Capacity	0.00	0.10	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					
<b>Intersection Summary</b>						
Average Delay			0.0			
Intersection Capacity Utilization			23.8%		ICU Level of Service	A
Analysis Period (min)			15			

Timings  
6: Liverpool Rd & Parking Lot/Tatra Dr

Timing Plan: PM Peak Hour  
2032 Background Traffic Cond. -Tatra Signalized



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↕		↕		↕	↕	↕
Traffic Volume (vph)	4	1	1	0	1	508	215	649
Future Volume (vph)	4	1	1	0	1	508	215	649
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	25.5	25.5	25.5	25.5	22.5	22.5	22.5	22.5
Total Split (s)	26.0	26.0	26.0	26.0	64.0	64.0	64.0	64.0
Total Split (%)	28.9%	28.9%	28.9%	28.9%	71.1%	71.1%	71.1%	71.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)		0.0		0.0		0.0		0.0
Total Lost Time (s)		7.0		7.0		7.0		7.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
Act Effct Green (s)		7.9		7.9		57.1	57.1	57.1
Actuated g/C Ratio		0.10		0.10		0.72	0.72	0.72
v/c Ratio		0.08		0.64		0.39	0.33	0.50
Control Delay		31.2		13.1		5.7	6.3	6.8
Queue Delay		0.0		0.0		0.0	0.0	0.8
Total Delay		31.2		13.1		5.7	6.3	7.6
LOS		C		B		A	A	A
Approach Delay		31.2		13.1		5.7		7.3
Approach LOS		C		B		A		A

Intersection Summary

Cycle Length: 90	
Actuated Cycle Length: 79	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.64	
Intersection Signal Delay: 7.7	Intersection LOS: A
Intersection Capacity Utilization 93.9%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 6: Liverpool Rd & Parking Lot/Tatra Dr



Intersection: 11: Liverpool Rd & Krosno Blvd

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (m)	13.5	30.4	76.7
Average Queue (m)	9.4	17.6	34.3
95th Queue (m)	14.9	27.7	58.0
Link Distance (m)	265.9	239.9	406.8
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 23: Liverpool Rd & Wharf St

























Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	15.6	9.3	16.3	16.9
Average Queue (m)	4.8	2.1	9.9	14.5
95th Queue (m)	12.9	8.4	15.2	19.5
Link Distance (m)	104.6	110.2	179.8	86.5
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 0
------------------------------

HCM Signalized Intersection Capacity Analysis  
3: Liverpool Rd & Bayly St

Timing Plan: Sat Peak Hour  
2032 Background Traffic Condition

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	357	420	147	96	245	357	63	496	132	342	528	288	
Future Volume (vph)	357	420	147	96	245	357	63	496	132	342	528	288	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7		3.0	6.7	3.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00	
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00	0.99	1.00	0.99		1.00	1.00	0.97	
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	1817	3650	1477	1777	3614	1578	1818	3418		1802	3579	1575	
Flt Permitted	0.53	1.00	1.00	0.50	1.00	1.00	0.45	1.00		0.20	1.00	1.00	
Satd. Flow (perm)	1009	3650	1477	935	3614	1578	859	3418		385	3579	1575	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	
Adj. Flow (vph)	368	433	152	99	253	368	65	511	136	353	544	297	
RTOR Reduction (vph)	0	0	103	0	0	60	0	25	0	0	0	144	
Lane Group Flow (vph)	368	433	49	99	253	308	65	622	0	353	544	153	
Confl. Peds. (#/hr)	9		19	19		9	16		44	44		16	
Confl. Bikes (#/hr)			4			1			2			9	
Heavy Vehicles (%)	0%	0%	6%	2%	1%	2%	0%	2%	2%	1%	2%	1%	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	pm+ov	
Protected Phases	5	2		1	6	7	3	8		7	4	5	
Permitted Phases	2		2	6		6	8			4		4	
Actuated Green, G (s)	38.4	30.7	30.7	28.0	23.3	41.1	27.2	23.3		44.1	37.2	49.3	
Effective Green, g (s)	38.4	30.7	30.7	28.0	23.3	41.1	27.2	23.3		44.1	37.2	49.3	
Actuated g/C Ratio	0.40	0.32	0.32	0.29	0.24	0.43	0.28	0.24		0.46	0.39	0.52	
Clearance Time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7		3.0	6.7	3.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	507	1172	474	315	880	678	283	833		441	1392	812	
v/s Ratio Prot	c0.09	0.12		0.02	0.07	0.08	0.01	0.18		c0.15	0.15	0.02	
v/s Ratio Perm	c0.20		0.03	0.08		0.11	0.06			c0.22		0.07	
v/c Ratio	0.73	0.37	0.10	0.31	0.29	0.45	0.23	0.75		0.80	0.39	0.19	
Uniform Delay, d1	22.1	25.0	22.8	25.3	29.4	19.3	25.4	33.4		18.9	21.0	12.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Incremental Delay, d2	5.1	0.9	0.4	0.6	0.8	0.5	0.4	3.7		10.0	0.2	0.1	
Delay (s)	27.2	25.9	23.2	25.9	30.2	19.8	25.8	37.1		28.9	21.2	12.5	
Level of Service	C	C	C	C	C	B	C	D		C	C	B	
Approach Delay (s)		26.0			24.3			36.1			21.3		
Approach LOS		C			C			D			C		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			26.1									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.82										
Actuated Cycle Length (s)			95.6									Sum of lost time (s)	19.1
Intersection Capacity Utilization			92.7%									ICU Level of Service	F
Analysis Period (min)			15										
c	Critical Lane Group												

Timings  
3: Liverpool Rd & Bayly St

Timing Plan: Sat Peak Hour  
2032 Background Traffic Condition

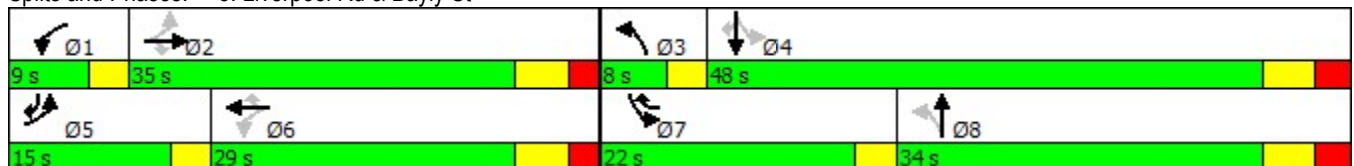


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	357	420	147	96	245	357	63	496	342	528	288
Future Volume (vph)	357	420	147	96	245	357	63	496	342	528	288
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	pm+pt	NA	pm+ov
Protected Phases	5	2		1	6	7	3	8	7	4	5
Permitted Phases	2		2	6		6	8		4		4
Detector Phase	5	2	2	1	6	7	3	8	7	4	5
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	8.0	26.4	26.4	8.0	26.4	8.0	8.0	30.7	8.0	30.7	8.0
Total Split (s)	15.0	35.0	35.0	9.0	29.0	22.0	8.0	34.0	22.0	48.0	15.0
Total Split (%)	15.0%	35.0%	35.0%	9.0%	29.0%	22.0%	8.0%	34.0%	22.0%	48.0%	15.0%
Yellow Time (s)	3.0	4.1	4.1	3.0	4.1	3.0	3.0	3.8	3.0	3.8	3.0
All-Red Time (s)	0.0	2.3	2.3	0.0	2.3	0.0	0.0	2.9	0.0	2.9	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7	3.0	6.7	3.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	Max	None	Max	None	None	None	None	None	None
Act Effct Green (s)	41.2	30.7	30.7	32.1	22.7	43.9	31.4	22.6	47.1	37.2	52.9
Actuated g/C Ratio	0.44	0.33	0.33	0.34	0.24	0.47	0.33	0.24	0.50	0.39	0.56
v/c Ratio	0.68	0.36	0.26	0.27	0.29	0.47	0.19	0.77	0.77	0.39	0.29
Control Delay	28.1	27.3	5.9	20.1	31.5	13.4	14.8	38.2	29.0	21.5	1.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.1	27.3	5.9	20.1	31.5	13.4	14.8	38.2	29.0	21.5	1.9
LOS	C	C	A	C	C	B	B	D	C	C	A
Approach Delay		24.2			20.7			36.1		18.8	
Approach LOS		C			C			D		B	

Intersection Summary

Cycle Length: 100  
 Actuated Cycle Length: 94.3  
 Natural Cycle: 75  
 Control Type: Semi Act-Uncoord  
 Maximum v/c Ratio: 0.77  
 Intersection Signal Delay: 24.1  
 Intersection LOS: C  
 Intersection Capacity Utilization 92.7%  
 ICU Level of Service F  
 Analysis Period (min) 15

Splits and Phases: 3: Liverpool Rd & Bayly St





Queues  
3: Liverpool Rd & Bayly St

Timing Plan: Sat Peak Hour  
2032 Background Traffic Condition



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	368	433	152	99	253	368	65	647	353	544	297
v/c Ratio	0.68	0.36	0.26	0.27	0.29	0.47	0.19	0.77	0.77	0.39	0.29
Control Delay	28.1	27.3	5.9	20.1	31.5	13.4	14.8	38.2	29.0	21.5	1.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.1	27.3	5.9	20.1	31.5	13.4	14.8	38.2	29.0	21.5	1.9
Queue Length 50th (m)	48.3	33.8	0.0	11.0	20.5	28.9	5.9	55.8	38.1	37.5	0.0
Queue Length 95th (m)	77.4	49.5	14.0	22.0	32.6	53.9	12.2	75.0	#73.3	50.6	9.6
Internal Link Dist (m)		177.5			249.4			51.8		146.7	
Turn Bay Length (m)	115.0		100.0	50.0		150.0	75.0		50.0		
Base Capacity (vph)	543	1189	583	370	869	811	335	1015	478	1573	1012
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.36	0.26	0.27	0.29	0.45	0.19	0.64	0.74	0.35	0.29

Intersection Summary

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

Approach	EB	WB	NB	SB
Crosswalk Length (m)	22.45	22.36	18.57	22.20
Crosswalk Width (m)	1.20	1.20	1.20	1.20
Total Number of Lanes Crossed	6	6	5	6
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	4	8	2	6
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (m)	2.74	2.74	2.74	2.74
Right Corner Size B (m)	2.74	2.74	2.74	2.74
Right Corner Curb Radius (m)	0.00	0.00	0.00	0.00
Right Corner Total Area (sq.m)	7.51	7.51	7.51	7.51
Ped. Left-Right Flow Rate (p/h)	0	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (km/h)	40	40	40	40
Right Corner Area per Ped (sq.m)	0.0	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-	-
Ped. Circulation Area (sq.m)	0.0	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-	-
Pedestrian Delay (s/p)	50.0	50.0	50.0	50.0
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.68	2.69	2.56	2.80
Pedestrian Crosswalk LOS	B	B	B	C

Approach	EB	WB	NB	SB
Bicycle Flow Rate (bike/h)	0	0	0	0
Total Flow Rate (veh/h)	953	720	712	1194
Effct. Green for Bike (s)	30.7	22.7	22.6	37.2
Cross Street Width (m)	18.57	22.20	22.36	22.45
Through Lanes Number	2	2	2	2
Through Lane Width (m)	3.70	3.70	3.70	3.70
Bicycle Lane Width (m)	0.00	0.00	0.00	0.00
Paved Shoulder Width (m)	0.00	0.00	0.00	0.00
Curb Is Present?	No	No	No	No
On Street Parking?	No	No	No	No
Bicycle Lane Capacity (bike/h)	614	454	452	744
Bicycle Delay (s/bike)	24.0	29.9	30.0	19.7
Bicycle Compliance	Fair	Fair	Fair	Fair
Bicycle LOS Score	3.25	3.24	3.24	3.64
Bicycle LOS	C	C	C	D

HCM Unsignalized Intersection Capacity Analysis  
6: Liverpool Rd & Parking Lot/Tatra Dr

Timing Plan: Sat Peak Hour  
2032 Background Traffic Condition



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕		↕	↕	↕
Traffic Volume (veh/h)	1	0	0	4	0	118	0	540	3	140	588	4
Future Volume (Veh/h)	1	0	0	4	0	118	0	540	3	140	588	4
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	1	0	0	4	0	122	0	557	3	144	606	4
Pedestrians		11			23			6				
Lane Width (m)		3.7			3.7			3.7				
Walking Speed (m/s)		1.1			1.1			1.1				
Percent Blockage		1			2			1				
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												153
pX, platoon unblocked	0.85	0.85	0.85	0.85	0.85		0.85					
vC, conflicting volume	1588	1490	625	1482	1490	582	621			583		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1603	1488	474	1478	1489	582	469			583		
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 %	98	100	100	95	100	76	100			85		
cM capacity (veh/h)	48	88	499	75	88	505	930			979		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>	<b>SB 2</b>							
Volume Total	1	126	560	144	610							
Volume Left	1	4	0	144	0							
Volume Right	0	122	3	0	4							
cSH	48	428	930	979	1700							
Volume to Capacity	0.02	0.29	0.00	0.15	0.36							
Queue Length 95th (m)	0.5	9.2	0.0	3.9	0.0							
Control Delay (s)	82.1	16.9	0.0	9.3	0.0							
Lane LOS	F	C		A								
Approach Delay (s)	82.1	16.9	0.0	1.8								
Approach LOS	F	C										
<b>Intersection Summary</b>												
Average Delay			2.5									
Intersection Capacity Utilization			77.2%		ICU Level of Service					D		
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
 9: Liverpool Rd & Radom St

Timing Plan: Sat Peak Hour  
 2032 Background Traffic Condition



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	56	12	10	468	524	66
Future Volume (Veh/h)	56	12	10	468	524	66
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	62	13	11	514	576	73
Pedestrians	6			5		
Lane Width (m)	3.7			3.7		
Walking Speed (m/s)	1.1			1.1		
Percent Blockage	1			0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)					337	
pX, platoon unblocked	0.85	0.85	0.85			
vC, conflicting volume	1154	624	655			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1092	466	503			
tC, single (s)	6.4	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.4	2.2			
p0 queue free %	69	97	99			
cM capacity (veh/h)	198	490	903			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	75	525	649			
Volume Left	62	11	0			
Volume Right	13	0	73			
cSH	220	903	1700			
Volume to Capacity	0.34	0.01	0.38			
Queue Length 95th (m)	10.9	0.3	0.0			
Control Delay (s)	29.5	0.3	0.0			
Lane LOS	D	A				
Approach Delay (s)	29.5	0.3	0.0			
Approach LOS	D					
<b>Intersection Summary</b>						
Average Delay			1.9			
Intersection Capacity Utilization			44.7%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
 11: Liverpool Rd & Krosno Blvd

Timing Plan: Sat Peak Hour  
 2032 Background Traffic Condition






Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	11	105	319	20	121	375
Future Volume (vph)	11	105	319	20	121	375
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	11	109	332	21	126	391

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	120	353	517
Volume Left (vph)	11	0	126
Volume Right (vph)	109	21	0
Hadj (s)	-0.51	0.02	0.09
Departure Headway (s)	5.4	4.9	4.8
Degree Utilization, x	0.18	0.48	0.68
Capacity (veh/h)	585	714	739
Control Delay (s)	9.6	12.3	17.4
Approach Delay (s)	9.6	12.3	17.4
Approach LOS	A	B	C

Intersection Summary			
Delay		14.6	
Level of Service		B	
Intersection Capacity Utilization	61.6%		ICU Level of Service B
Analysis Period (min)		15	

Intersection	
Intersection Delay, s/veh	14.2
Intersection LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	11	105	319	20	121	375
Future Vol, veh/h	11	105	319	20	121	375
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	0	1	3	5	0	3
Mvmt Flow	11	109	332	21	126	391
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	9.5	12.1	16.8
HCM LOS	A	B	C

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	9%	24%
Vol Thru, %	94%	0%	76%
Vol Right, %	6%	91%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	339	116	496
LT Vol	0	11	121
Through Vol	319	0	375
RT Vol	20	105	0
Lane Flow Rate	353	121	517
Geometry Grp	1	1	1
Degree of Util (X)	0.471	0.177	0.67
Departure Headway (Hd)	4.805	5.285	4.665
Convergence, Y/N	Yes	Yes	Yes
Cap	745	671	770
Service Time	2.873	3.379	2.726
HCM Lane V/C Ratio	0.474	0.18	0.671
HCM Control Delay	12.1	9.5	16.8
HCM Lane LOS	B	A	C
HCM 95th-tile Q	2.5	0.6	5.2

HCM Unsignalized Intersection Capacity Analysis  
 13: Liverpool Rd & Ilona Park Rd (N)

Timing Plan: Sat Peak Hour  
 2032 Background Traffic Condition



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	0	0	287	337	12
Future Volume (Veh/h)	10	0	0	287	337	12
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	11	0	0	315	370	13
Pedestrians	9			1		
Lane Width (m)	3.7			3.7		
Walking Speed (m/s)	1.1			1.1		
Percent Blockage	1			0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	700	386	392			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	700	386	392			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	100	100			
cM capacity (veh/h)	405	659	1167			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	11	315	383			
Volume Left	11	0	0			
Volume Right	0	0	13			
cSH	405	1167	1700			
Volume to Capacity	0.03	0.00	0.23			
Queue Length 95th (m)	0.6	0.0	0.0			
Control Delay (s)	14.1	0.0	0.0			
Lane LOS	B					
Approach Delay (s)	14.1	0.0	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay	0.2					
Intersection Capacity Utilization	28.8%			ICU Level of Service	A	
Analysis Period (min)	15					



HCM Unsignalized Intersection Capacity Analysis  
 15: Liverpool Rd & Ilona Park Rd (S)

















Timing Plan: Sat Peak Hour  
 2032 Background Traffic Condition



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	2	1	0	238	325	13
Future Volume (Veh/h)	2	1	0	238	325	13
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	2	1	0	256	349	14
Pedestrians	11					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	1					
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	623	367	374			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	623	367	374			
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)	448	675	1183			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	3	256	363			
Volume Left	2	0	0			
Volume Right	1	0	14			
cSH	505	1183	1700			
Volume to Capacity	0.01	0.00	0.21			
Queue Length 95th (m)	0.1	0.0	0.0			
Control Delay (s)	12.2	0.0	0.0			
Lane LOS	B					
Approach Delay (s)	12.2	0.0	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			0.1			
Intersection Capacity Utilization			27.9%	ICU Level of Service	A	
Analysis Period (min)			15			

















HCM Unsignalized Intersection Capacity Analysis  
 17: Liverpool Rd & Commerce St

Timing Plan: Sat Peak Hour  
 2032 Background Traffic Condition

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	3	3	2	5	6	5	215	2	10	297	17
Future Volume (Veh/h)	12	3	3	2	5	6	5	215	2	10	297	17
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	13	3	3	2	6	7	6	239	2	11	330	19
Pedestrians		10			16							
Lane Width (m)		3.7			3.7							
Walking Speed (m/s)		1.1			1.1							
Percent Blockage		1			2							
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	634	640	350	634	649	256	359			257		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	634	640	350	634	649	256	359			257		
tC, single (s)	7.5	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.9	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	96	99	100	99	98	99	99			99		
cM capacity (veh/h)	321	381	692	373	376	775	1199			1299		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	19	15	247	360								
Volume Left	13	2	6	11								
Volume Right	3	7	2	19								
cSH	360	495	1199	1299								
Volume to Capacity	0.05	0.03	0.01	0.01								
Queue Length 95th (m)	1.3	0.7	0.1	0.2								
Control Delay (s)	15.5	12.5	0.2	0.3								
Lane LOS	C	B	A	A								
Approach Delay (s)	15.5	12.5	0.2	0.3								
Approach LOS	C	B										
<b>Intersection Summary</b>												
Average Delay			1.0									
Intersection Capacity Utilization			31.6%		ICU Level of Service				A			
Analysis Period (min)			15									

















HCM Unsignalized Intersection Capacity Analysis  
20: Liverpool Rd & Annland St

Timing Plan: Sat Peak Hour  
2032 Background Traffic Condition

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	0	13	22	2	8	12	179	4	12	232	44
Future Volume (Veh/h)	40	0	13	22	2	8	12	179	4	12	232	44
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	43	0	14	24	2	9	13	192	4	13	249	47
Pedestrians		15			5			1			2	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		1			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	546	540	288	538	562	201	311			201		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	546	540	288	538	562	201	311			201		
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 %	90	100	98	94	100	99	99			99		
cM capacity (veh/h)	425	434	744	432	422	839	1242			1376		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	57	35	209	309								
Volume Left	43	24	13	13								
Volume Right	14	9	4	47								
cSH	475	493	1242	1376								
Volume to Capacity	0.12	0.07	0.01	0.01								
Queue Length 95th (m)	3.1	1.7	0.2	0.2								
Control Delay (s)	13.6	12.9	0.6	0.4								
Lane LOS	B	B	A	A								
Approach Delay (s)	13.6	12.9	0.6	0.4								
Approach LOS	B	B										
<b>Intersection Summary</b>												
Average Delay			2.4									
Intersection Capacity Utilization			29.4%		ICU Level of Service					A		
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
 23: Liverpool Rd & Wharf St

Timing Plan: Sat Peak Hour  
 2032 Background Traffic Condition

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	35	2	7	1	1	18	4	122	4	7	182	61
Future Volume (vph)	35	2	7	1	1	18	4	122	4	7	182	61
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)	38	2	8	1	1	20	4	133	4	8	198	66
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	48	22	141	272								
Volume Left (vph)	38	1	4	8								
Volume Right (vph)	8	20	4	66								
Hadj (s)	0.06	-0.54	-0.01	-0.14								
Departure Headway (s)	4.9	4.3	4.3	4.1								
Degree Utilization, x	0.07	0.03	0.17	0.31								
Capacity (veh/h)	673	747	802	864								
Control Delay (s)	8.2	7.4	8.2	8.9								
Approach Delay (s)	8.2	7.4	8.2	8.9								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			8.6									
Level of Service			A									
Intersection Capacity Utilization			33.3%	ICU Level of Service	A							
Analysis Period (min)			15									

Intersection	
Intersection Delay, s/veh	8.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	35	2	7	1	1	18	4	122	4	7	182	61
Future Vol, veh/h	35	2	7	1	1	18	4	122	4	7	182	61
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
Heavy Vehicles, %	0	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	38	2	8	1	1	20	4	133	4	8	198	66
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.2	7.4	8.2	8.8
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	3%	80%	5%	3%
Vol Thru, %	94%	5%	5%	73%
Vol Right, %	3%	16%	90%	24%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	130	44	20	250
LT Vol	4	35	1	7
Through Vol	122	2	1	182
RT Vol	4	7	18	61
Lane Flow Rate	141	48	22	272
Geometry Grp	1	1	1	1
Degree of Util (X)	0.17	0.065	0.026	0.301
Departure Headway (Hd)	4.32	4.872	4.313	3.988
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	834	738	833	886
Service Time	2.328	2.88	2.324	2.084
HCM Lane V/C Ratio	0.169	0.065	0.026	0.307
HCM Control Delay	8.2	8.2	7.4	8.8
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.6	0.2	0.1	1.3

HCM Unsignalized Intersection Capacity Analysis  
26: Liverpool Rd

Timing Plan: Sat Peak Hour  
2032 Background Traffic Condition



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	5	114	0	6	162
Future Volume (Veh/h)	0	5	114	0	6	162
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	5	121	0	6	172
Pedestrians	64		3			3
Lane Width (m)	3.7		3.7			3.7
Walking Speed (m/s)	1.1		1.1			1.1
Percent Blockage	6		0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	372	188			185	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	372	188			185	
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			100	
cM capacity (veh/h)	589	803			1303	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	5	121	178			
Volume Left	0	0	6			
Volume Right	5	0	0			
cSH	803	1700	1303			
Volume to Capacity	0.01	0.07	0.00			
Queue Length 95th (m)	0.1	0.0	0.1			
Control Delay (s)	9.5	0.0	0.3			
Lane LOS	A		A			
Approach Delay (s)	9.5	0.0	0.3			
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			0.3			
Intersection Capacity Utilization			24.3%		ICU Level of Service	A
Analysis Period (min)			15			

Intersection: 11: Liverpool Rd & Krosno Blvd

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (m)	13.3	35.4	64.6
Average Queue (m)	7.9	19.5	28.8
95th Queue (m)	12.8	26.8	42.0
Link Distance (m)	265.9	239.9	406.8
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 23: Liverpool Rd & Wharf St

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	15.8	9.3	16.8	23.4
Average Queue (m)	7.8	3.3	10.7	14.6
95th Queue (m)	13.9	10.6	15.6	21.2
Link Distance (m)	104.6	110.2	179.8	86.5
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 0
------------------------------



## **Appendix C.3**

### **Synchro Reports – 2027 and 2032**

### **Total Traffic Intersection Operations**



Timings  
3: Liverpool Rd & Bayly St

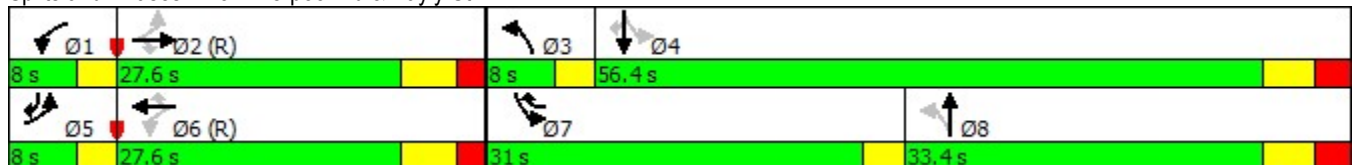
2027 Total Traffic Conditions  
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	
Lane Configurations												
Traffic Volume (vph)	199	581	99	61	239	304	65	636	496	312	167	
Future Volume (vph)	199	581	99	61	239	304	65	636	496	312	167	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	pm+pt	NA	pm+ov	
Protected Phases	5	2		1	6	7	3	8	7	4	5	
Permitted Phases	2		2	6		6	8		4		4	
Detector Phase	5	2	2	1	6	7	3	8	7	4	5	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	8.0	27.0	27.0	8.0	27.0	8.0	8.0	31.0	8.0	31.0	8.0	
Total Split (s)	8.0	27.6	27.6	8.0	27.6	31.0	8.0	33.4	31.0	56.4	8.0	
Total Split (%)	8.0%	27.6%	27.6%	8.0%	27.6%	31.0%	8.0%	33.4%	31.0%	56.4%	8.0%	
Yellow Time (s)	3.0	4.1	4.1	3.0	4.1	3.0	3.0	3.8	3.0	3.8	3.0	
All-Red Time (s)	0.0	2.3	2.3	0.0	2.3	0.0	0.0	2.9	0.0	2.9	0.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7	3.0	6.7	3.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lead	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max	
Act Effct Green (s)	29.6	21.2	21.2	29.6	21.2	52.6	35.4	26.7	61.4	49.7	58.4	
Actuated g/C Ratio	0.30	0.21	0.21	0.30	0.21	0.53	0.35	0.27	0.61	0.50	0.58	
v/c Ratio	0.55	0.77	0.27	0.33	0.34	0.39	0.16	0.85	0.86	0.19	0.18	
Control Delay	33.9	45.1	4.2	28.7	35.1	11.1	12.4	43.7	38.6	14.3	1.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	33.9	45.1	4.2	28.7	35.1	11.1	12.4	43.7	38.6	14.3	1.7	
LOS	C	D	A	C	D	B	B	D	D	B	A	
Approach Delay		37.9			22.3			41.3		24.5		
Approach LOS		D			C			D		C		

Intersection Summary

Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green  
 Natural Cycle: 90  
 Control Type: Pretimed  
 Maximum v/c Ratio: 0.86  
 Intersection Signal Delay: 32.0  
 Intersection LOS: C  
 Intersection Capacity Utilization 95.4%  
 ICU Level of Service F  
 Analysis Period (min) 15

Splits and Phases: 3: Liverpool Rd & Bayly St



Queues  
3: Liverpool Rd & Bayly St

2027 Total Traffic Conditions  
AM Peak Hour



























Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	203	593	101	62	244	310	66	792	506	318	170
v/c Ratio	0.55	0.77	0.27	0.33	0.34	0.39	0.16	0.85	0.86	0.19	0.18
Control Delay	33.9	45.1	4.2	28.7	35.1	11.1	12.4	43.7	38.6	14.3	1.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.9	45.1	4.2	28.7	35.1	11.1	12.4	43.7	38.6	14.3	1.7
Queue Length 50th (m)	29.7	57.3	0.0	8.3	21.2	23.2	4.7	74.3	73.1	17.2	0.0
Queue Length 95th (m)	48.4	76.6	6.5	17.6	32.4	40.7	9.7	#104.1	#128.5	25.2	7.3
Internal Link Dist (m)		177.5			249.4			51.8		146.7	
Turn Bay Length (m)	115.0		100.0	50.0		150.0	75.0		50.0		65.0
Base Capacity (vph)	368	766	380	188	716	786	404	932	590	1695	966
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.77	0.27	0.33	0.34	0.39	0.16	0.85	0.86	0.19	0.18

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
3: Liverpool Rd & Bayly St

2027 Total Traffic Conditions  
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	199	581	99	61	239	304	65	636	140	496	312	167
Future Volume (vph)	199	581	99	61	239	304	65	636	140	496	312	167
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7		3.0	6.7	3.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.98	1.00	0.99		1.00	1.00	0.97
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00	1.00	0.99	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1804	3614	1278	1751	3380	1433	1775	3420		1805	3411	1534
Flt Permitted	0.60	1.00	1.00	0.22	1.00	1.00	0.56	1.00		0.13	1.00	1.00
Satd. Flow (perm)	1140	3614	1278	412	3380	1433	1044	3420		256	3411	1534
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	203	593	101	62	244	310	66	649	143	506	318	170
RTOR Reduction (vph)	0	0	80	0	0	37	0	19	0	0	0	77
Lane Group Flow (vph)	203	593	21	62	244	273	66	773	0	506	318	93
Confl. Peds. (#/hr)	19		22	22		19	19		37	37		19
Confl. Bikes (#/hr)			1			1			3			1
Heavy Vehicles (%)	0%	1%	22%	4%	8%	12%	2%	2%	6%	1%	7%	3%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	5	2		1	6	7	3	8		7	4	5
Permitted Phases	2		2	6		6	8			4		4
Actuated Green, G (s)	26.2	21.2	21.2	26.2	21.2	49.2	31.7	26.7		57.7	49.7	54.7
Effective Green, g (s)	26.2	21.2	21.2	26.2	21.2	49.2	31.7	26.7		57.7	49.7	54.7
Actuated g/C Ratio	0.26	0.21	0.21	0.26	0.21	0.49	0.32	0.27		0.58	0.50	0.55
Clearance Time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7		3.0	6.7	3.0
Lane Grp Cap (vph)	331	766	270	174	716	705	367	913		581	1695	839
v/s Ratio Prot	c0.03	c0.16		0.02	0.07	0.11	0.01	0.23		c0.24	0.09	0.01
v/s Ratio Perm	0.13		0.02	0.08		0.08	0.05			c0.26		0.06
v/c Ratio	0.61	0.77	0.08	0.36	0.34	0.39	0.18	0.85		0.87	0.19	0.11
Uniform Delay, d1	31.2	37.1	31.6	28.8	33.5	15.9	24.2	34.7		25.0	14.0	10.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	8.2	7.5	0.6	5.6	1.3	1.6	1.1	9.6		16.3	0.2	0.3
Delay (s)	39.5	44.6	32.2	34.4	34.8	17.5	25.3	44.3		41.4	14.2	11.2
Level of Service	D	D	C	C	C	B	C	D		D	B	B
Approach Delay (s)		42.1			26.1			42.8			27.5	
Approach LOS		D			C			D			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			35.0			HCM 2000 Level of Service			D			
HCM 2000 Volume to Capacity ratio			0.86									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			19.1			
Intersection Capacity Utilization			95.4%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												

Approach	EB	WB	NB	SB
Crosswalk Length (m)	22.45	22.36	18.57	22.20
Crosswalk Width (m)	1.20	1.20	1.20	1.20
Total Number of Lanes Crossed	6	6	5	6
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	4	8	2	6
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (m)	2.74	2.74	2.74	2.74
Right Corner Size B (m)	2.74	2.74	2.74	2.74
Right Corner Curb Radius (m)	0.00	0.00	0.00	0.00
Right Corner Total Area (sq.m)	7.51	7.51	7.51	7.51
Ped. Left-Right Flow Rate (p/h)	0	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (km/h)	40	40	40	40
Right Corner Area per Ped (sq.m)	0.0	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-	-
Ped. Circulation Area (sq.m)	0.0	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-	-
Pedestrian Delay (s/p)	50.0	50.0	50.0	50.0
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.65	2.72	2.53	2.76
Pedestrian Crosswalk LOS	B	B	B	C

Approach	EB	WB	NB	SB
Bicycle Flow Rate (bike/h)	0	0	0	0
Total Flow Rate (veh/h)	897	616	858	994
Effct. Green for Bike (s)	21.2	21.2	26.7	49.7
Cross Street Width (m)	18.57	22.20	22.36	22.45
Through Lanes Number	2	2	2	2
Through Lane Width (m)	3.70	3.70	3.70	3.70
Bicycle Lane Width (m)	0.00	0.00	0.00	0.00
Paved Shoulder Width (m)	0.00	0.00	0.00	0.00
Curb Is Present?	No	No	No	No
On Street Parking?	No	No	No	No
Bicycle Lane Capacity (bike/h)	424	424	534	994
Bicycle Delay (s/bike)	31.0	31.0	26.9	12.7
Bicycle Compliance	Poor	Poor	Fair	Fair
Bicycle LOS Score	3.20	3.15	3.36	3.48
Bicycle LOS	C	C	C	C

HCM Unsignalized Intersection Capacity Analysis  
6: Liverpool Rd & Parking Lot/Tatra Dr

2027 Total Traffic Conditions  
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕		↕	↕	
Traffic Volume (veh/h)	0	0	1	3	0	217	0	615	11	129	319	2
Future Volume (Veh/h)	0	0	1	3	0	217	0	615	11	129	319	2
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	0	1	3	0	238	0	676	12	142	351	2
Pedestrians		17			16			6			1	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		2			2			1			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												153
pX, platoon unblocked	0.94	0.94	0.94	0.94	0.94		0.94					
vC, conflicting volume	1574	1357	375	1340	1352	699	370			704		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1578	1348	308	1330	1343	699	303			704		
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	97	100	45	100			84		
cM capacity (veh/h)	32	117	680	105	117	429	1178			880		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>	<b>SB 2</b>							
Volume Total	1	241	688	142	353							
Volume Left	0	3	0	142	0							
Volume Right	1	238	12	0	2							
cSH	680	413	1178	880	1700							
Volume to Capacity	0.00	0.58	0.00	0.16	0.21							
Queue Length 95th (m)	0.0	27.3	0.0	4.4	0.0							
Control Delay (s)	10.3	25.2	0.0	9.9	0.0							
Lane LOS	B	D		A								
Approach Delay (s)	10.3	25.2	0.0	2.8								
Approach LOS	B	D										
<b>Intersection Summary</b>												
Average Delay			5.3									
Intersection Capacity Utilization			76.3%		ICU Level of Service					D		
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
 9: Liverpool Rd & Radom St

2027 Total Traffic Conditions  
 AM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	77	17	9	526	258	60
Future Volume (Veh/h)	77	17	9	526	258	60
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	83	18	10	566	277	65
Pedestrians	9				1	
Lane Width (m)	3.7				3.7	
Walking Speed (m/s)	1.1				1.1	
Percent Blockage	1				0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)					337	
pX, platoon unblocked	1.00	1.00	1.00			
vC, conflicting volume	906	318	351			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	905	317	350			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.4			
p0 queue free %	73	98	99			
cM capacity (veh/h)	303	721	1081			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	101	576	342			
Volume Left	83	10	0			
Volume Right	18	0	65			
cSH	338	1081	1700			
Volume to Capacity	0.30	0.01	0.20			
Queue Length 95th (m)	9.3	0.2	0.0			
Control Delay (s)	20.1	0.3	0.0			
Lane LOS	C	A				
Approach Delay (s)	20.1	0.3	0.0			
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay			2.1			
Intersection Capacity Utilization			46.9%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
 11: Liverpool Rd & Krosno Blvd

2027 Total Traffic Conditions  
 AM Peak Hour



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	8	126	347	25	124	166
Future Volume (vph)	8	126	347	25	124	166
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	10	159	439	32	157	210

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	169	471	367
Volume Left (vph)	10	0	157
Volume Right (vph)	159	32	0
Hadj (s)	-0.52	0.06	0.15
Departure Headway (s)	5.4	5.0	5.2
Degree Utilization, x	0.25	0.65	0.53
Capacity (veh/h)	593	703	675
Control Delay (s)	10.2	16.6	13.7
Approach Delay (s)	10.2	16.6	13.7
Approach LOS	B	C	B

Intersection Summary			
Delay		14.5	
Level of Service		B	
Intersection Capacity Utilization		54.2%	ICU Level of Service
Analysis Period (min)		15	A



HCM Unsignalized Intersection Capacity Analysis  
 13: Liverpool Rd & Ilona Park Rd (N)

2027 Total Traffic Conditions  
 AM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	7	0	1	336	179	7
Future Volume (Veh/h)	7	0	1	336	179	7
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	8	0	1	395	211	8
Pedestrians	21			3	1	
Lane Width (m)	3.7			3.7	3.7	
Walking Speed (m/s)	1.1			1.1	1.1	
Percent Blockage	2			0	0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	634	239	240			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	634	239	240			
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	100	100			
cM capacity (veh/h)	436	786	1311			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	8	396	219			
Volume Left	8	1	0			
Volume Right	0	0	8			
cSH	436	1311	1700			
Volume to Capacity	0.02	0.00	0.13			
Queue Length 95th (m)	0.4	0.0	0.0			
Control Delay (s)	13.4	0.0	0.0			
Lane LOS	B	A				
Approach Delay (s)	13.4	0.0	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			0.2			
Intersection Capacity Utilization			29.4%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
 15: Liverpool Rd & Ilona Park Rd (S)

















2027 Total Traffic Conditions  
 AM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	13	0	0	295	168	7
Future Volume (Veh/h)	13	0	0	295	168	7
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	16	0	0	355	202	8
Pedestrians	22					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	2					
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	583	228	232			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	583	228	232			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	100	100			
cM capacity (veh/h)	468	799	1319			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	16	355	210			
Volume Left	16	0	0			
Volume Right	0	0	8			
cSH	468	1319	1700			
Volume to Capacity	0.03	0.00	0.12			
Queue Length 95th (m)	0.8	0.0	0.0			
Control Delay (s)	13.0	0.0	0.0			
Lane LOS	B					
Approach Delay (s)	13.0	0.0	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			0.4			
Intersection Capacity Utilization			25.5%	ICU Level of Service	A	
Analysis Period (min)			15			

















HCM Unsignalized Intersection Capacity Analysis  
 17: Liverpool Rd & Commerce St

2027 Total Traffic Conditions  
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	4	1	3	3	8	3	263	13	12	143	9
Future Volume (Veh/h)	15	4	1	3	3	8	3	263	13	12	143	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)	18	5	1	4	4	10	4	313	15	14	170	11
Pedestrians		2						14				
Lane Width (m)		3.7						3.7				
Walking Speed (m/s)		1.1						1.1				
Percent Blockage		0						1				
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	546	542	192	550	540	320	183			328		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	546	542	192	550	540	320	183			328		
tC, single (s)	7.1	6.8	6.2	7.1	6.5	6.3	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.2	3.3	3.5	4.0	3.4	2.2			2.2		
p0 queue free %	96	99	100	99	99	99	100			99		
cM capacity (veh/h)	436	410	842	433	444	698	1401			1243		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	24	18	332	195								
Volume Left	18	4	4	14								
Volume Right	1	10	15	11								
cSH	439	553	1401	1243								
Volume to Capacity	0.05	0.03	0.00	0.01								
Queue Length 95th (m)	1.3	0.8	0.1	0.3								
Control Delay (s)	13.7	11.7	0.1	0.7								
Lane LOS	B	B	A	A								
Approach Delay (s)	13.7	11.7	0.1	0.7								
Approach LOS	B	B										
<b>Intersection Summary</b>												
Average Delay			1.2									
Intersection Capacity Utilization			29.5%		ICU Level of Service					A		
Analysis Period (min)			15									

















HCM Unsignalized Intersection Capacity Analysis  
20: Liverpool Rd & Annland St

2027 Total Traffic Conditions  
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	54	2	8	8	0	10	7	208	7	4	98	15
Future Volume (Veh/h)	54	2	8	8	0	10	7	208	7	4	98	15
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	65	2	10	10	0	12	8	251	8	5	118	18
Pedestrians		6			3			2			1	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		1			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	427	421	135	424	426	259	142			262		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	427	421	135	424	426	259	142			262		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.3	4.3			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.4	2.4			2.2		
p0 queue free %	88	100	99	98	100	98	99			100		
cM capacity (veh/h)	522	517	912	526	514	758	1346			1310		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	77	22	267	141								
Volume Left	65	10	8	5								
Volume Right	10	12	8	18								
cSH	552	631	1346	1310								
Volume to Capacity	0.14	0.03	0.01	0.00								
Queue Length 95th (m)	3.7	0.8	0.1	0.1								
Control Delay (s)	12.6	10.9	0.3	0.3								
Lane LOS	B	B	A	A								
Approach Delay (s)	12.6	10.9	0.3	0.3								
Approach LOS	B	B										
<b>Intersection Summary</b>												
Average Delay			2.6									
Intersection Capacity Utilization			27.7%		ICU Level of Service				A			
Analysis Period (min)			15									










HCM Unsignalized Intersection Capacity Analysis  
 23: Liverpool Rd & Wharf St

2027 Total Traffic Conditions  
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	18	0	0	0	1	5	1	189	1	4	115	4
Future Volume (vph)	18	0	0	0	1	5	1	189	1	4	115	4
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	22	0	0	0	1	6	1	228	1	5	139	5
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	22	7	230	149								
Volume Left (vph)	22	0	1	5								
Volume Right (vph)	0	6	1	5								
Hadj (s)	0.20	-0.51	0.02	0.02								
Departure Headway (s)	4.9	4.2	4.1	4.2								
Degree Utilization, x	0.03	0.01	0.26	0.17								
Capacity (veh/h)	669	767	853	839								
Control Delay (s)	8.1	7.3	8.6	8.1								
Approach Delay (s)	8.1	7.3	8.6	8.1								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			8.4									
Level of Service			A									
Intersection Capacity Utilization			25.2%	ICU Level of Service	A							
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
26: Liverpool Rd & Site Access

2027 Total Traffic Conditions  
AM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	106	61	0	32	39
Future Volume (Veh/h)	0	106	61	0	32	39
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74
Hourly flow rate (vph)	0	143	82	0	43	53
Pedestrians	7					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	1					
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	228	89			89	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	228	89			89	
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	85			97	
cM capacity (veh/h)	738	968			1509	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	143	82	96			
Volume Left	0	0	43			
Volume Right	143	0	0			
cSH	968	1700	1509			
Volume to Capacity	0.15	0.05	0.03			
Queue Length 95th (m)	3.9	0.0	0.7			
Control Delay (s)	9.4	0.0	3.5			
Lane LOS	A		A			
Approach Delay (s)	9.4	0.0	3.5			
Approach LOS	A					
Intersection Summary						
Average Delay			5.2			
Intersection Capacity Utilization			23.7%		ICU Level of Service	A
Analysis Period (min)			15			

Timings  
11: Liverpool Rd & Krosno Blvd

2027 Total Traffic Conditions  
AM Peak Hour (Krosno Signalized)

Lane Group	WBL	NBT	SBL	SBT
Lane Configurations				
Traffic Volume (vph)	8	347	124	166
Future Volume (vph)	8	347	124	166
Turn Type	Prot	NA	Perm	NA
Protected Phases	8	2		6
Permitted Phases			6	
Detector Phase	8	2	6	6
Switch Phase				
Minimum Initial (s)	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	24.0
Total Split (s)	26.0	64.0	64.0	64.0
Total Split (%)	28.9%	71.1%	71.1%	71.1%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0
Total Lost Time (s)	6.0	6.0		6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	None	Max	Max	Max
Act Effct Green (s)	7.4	62.3		62.3
Actuated g/C Ratio	0.09	0.76		0.76
v/c Ratio	0.58	0.35		0.39
Control Delay	15.5	4.2		5.1
Queue Delay	0.0	0.0		0.0
Total Delay	15.5	4.2		5.1
LOS	B	A		A
Approach Delay	15.5	4.2		5.1
Approach LOS	B	A		A

Intersection Summary

Cycle Length: 90	
Actuated Cycle Length: 81.8	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.58	
Intersection Signal Delay: 6.4	Intersection LOS: A
Intersection Capacity Utilization 59.3%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 11: Liverpool Rd & Krosno Blvd



Queues  
11: Liverpool Rd & Krosno Blvd

2027 Total Traffic Conditions  
AM Peak Hour (Krosno Signalized)












Lane Group	WBL	NBT	SBT
Lane Group Flow (vph)	169	471	367
v/c Ratio	0.58	0.35	0.39
Control Delay	15.5	4.2	5.1
Queue Delay	0.0	0.0	0.0
Total Delay	15.5	4.2	5.1
Queue Length 50th (m)	1.4	15.9	13.3
Queue Length 95th (m)	12.4	29.9	27.0
Internal Link Dist (m)	251.2	233.4	388.4
Turn Bay Length (m)			
Base Capacity (vph)	513	1363	940
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.33	0.35	0.39
<b>Intersection Summary</b>			



HCM Signalized Intersection Capacity Analysis  
 11: Liverpool Rd & Krosno Blvd

2027 Total Traffic Conditions  
 AM Peak Hour (Krosno Signalized)

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	8	126	347	25	124	166
Future Volume (vph)	8	126	347	25	124	166
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0			6.0
Lane Util. Factor	1.00		1.00			1.00
Frbp, ped/bikes	0.98		1.00			1.00
Flpb, ped/bikes	1.00		1.00			0.99
Frt	0.87		0.99			1.00
Flt Protected	1.00		1.00			0.98
Satd. Flow (prot)	1604		1787			1798
Flt Permitted	1.00		1.00			0.67
Satd. Flow (perm)	1604		1787			1234
Peak-hour factor, PHF	0.79	0.79	0.79	0.79	0.79	0.79
Adj. Flow (vph)	10	159	439	32	157	210
RTOR Reduction (vph)	145	0	2	0	0	0
Lane Group Flow (vph)	24	0	469	0	0	367
Confl. Peds. (#/hr)	6	2		12	12	
Confl. Bikes (#/hr)				2		
Heavy Vehicles (%)	0%	2%	4%	36%	4%	4%
Turn Type	Prot		NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases					6	
Actuated Green, G (s)	7.4		62.4			62.4
Effective Green, g (s)	7.4		62.4			62.4
Actuated g/C Ratio	0.09		0.76			0.76
Clearance Time (s)	6.0		6.0			6.0
Vehicle Extension (s)	3.0		3.0			3.0
Lane Grp Cap (vph)	145		1363			941
v/s Ratio Prot	c0.02		0.26			
v/s Ratio Perm						c0.30
v/c Ratio	0.17		0.34			0.39
Uniform Delay, d1	34.4		3.1			3.3
Progression Factor	1.00		1.00			1.00
Incremental Delay, d2	0.6		0.7			1.2
Delay (s)	34.9		3.8			4.5
Level of Service	C		A			A
Approach Delay (s)	34.9		3.8			4.5
Approach LOS	C		A			A
<b>Intersection Summary</b>						
HCM 2000 Control Delay			9.3		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.37			
Actuated Cycle Length (s)			81.8		Sum of lost time (s)	12.0
Intersection Capacity Utilization			59.3%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

Approach	WB	NB	SB
Crosswalk Length (m)	8.51	7.40	7.40
Crosswalk Width (m)	1.20	1.20	1.20
Total Number of Lanes Crossed	2	2	2
Number of Right-Turn Islands	0	0	0
Type of Control	None	None	None
Corresponding Signal Phase	2	6	8
Effective Walk Time (s)	0.0	0.0	0.0
Right Corner Size A (m)	2.74	2.74	2.74
Right Corner Size B (m)	2.74	2.74	2.74
Right Corner Curb Radius (m)	0.00	0.00	0.00
Right Corner Total Area (sq.m)	7.51	7.51	7.51
Ped. Left-Right Flow Rate (p/h)	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0
85th percentile speed (km/h)	40	40	40
Right Corner Area per Ped (sq.m)	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-
Ped. Circulation Area (sq.m)	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-
Pedestrian Delay (s/p)	45.0	45.0	45.0
Pedestrian Compliance Code	Poor	Poor	Poor
Pedestrian Crosswalk Score	1.87	2.01	2.12
Pedestrian Crosswalk LOS	A	B	B

Approach	WB	NB	SB
Bicycle Flow Rate (bike/h)	0	0	0
Total Flow Rate (veh/h)	169	471	367
Effct. Green for Bike (s)	7.4	62.3	62.3
Cross Street Width (m)	7.40	8.51	7.40
Through Lanes Number	1	1	1
Through Lane Width (m)	3.70	3.70	3.70
Bicycle Lane Width (m)	0.00	0.00	0.00
Paved Shoulder Width (m)	0.00	0.00	0.00
Curb Is Present?	No	No	No
On Street Parking?	No	No	No
Bicycle Lane Capacity (bike/h)	164	1384	1384
Bicycle Delay (s/bike)	37.9	4.3	4.3
Bicycle Compliance	Poor	Good	Good
Bicycle LOS Score	2.18	2.73	2.51
Bicycle LOS	B	B	B

Intersection: 11: Liverpool Rd & Krosno Blvd

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (m)	20.0	59.2	36.4
Average Queue (m)	8.8	23.4	18.3
95th Queue (m)	15.6	38.7	29.4
Link Distance (m)	265.9	239.9	406.8
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 23: Liverpool Rd & Wharf St

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	9.3	9.2	20.4	21.9
Average Queue (m)	3.0	0.9	11.9	10.9
95th Queue (m)	9.9	5.4	17.9	16.6
Link Distance (m)	104.6	110.2	179.8	86.5
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Timings  
3: Liverpool Rd & Bayly St

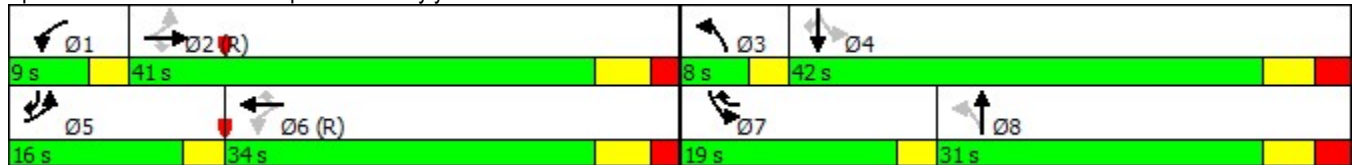
2027 Total Traffic Conditions  
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	366	846	273	123	572	689	88	644	335	652	245
Future Volume (vph)	366	846	273	123	572	689	88	644	335	652	245
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	pm+pt	NA	pm+ov
Protected Phases	5	2		1	6	7	3	8	7	4	5
Permitted Phases	2		2	6		6	8		4		4
Detector Phase	5	2	2	1	6	7	3	8	7	4	5
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	8.0	26.4	26.4	8.0	26.4	8.0	8.0	30.7	8.0	30.7	8.0
Total Split (s)	16.0	41.0	41.0	9.0	34.0	19.0	8.0	31.0	19.0	42.0	16.0
Total Split (%)	16.0%	41.0%	41.0%	9.0%	34.0%	19.0%	8.0%	31.0%	19.0%	42.0%	16.0%
Yellow Time (s)	3.0	4.1	4.1	3.0	4.1	3.0	3.0	3.8	3.0	3.8	3.0
All-Red Time (s)	0.0	2.3	2.3	0.0	2.3	0.0	0.0	2.9	0.0	2.9	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7	3.0	6.7	3.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max
Act Effct Green (s)	47.0	34.6	34.6	37.0	27.6	47.0	33.0	24.3	47.0	35.3	52.0
Actuated g/C Ratio	0.47	0.35	0.35	0.37	0.28	0.47	0.33	0.24	0.47	0.35	0.52
v/c Ratio	0.92	0.70	0.46	0.55	0.59	0.91	0.30	0.90	0.93	0.53	0.30
Control Delay	50.4	32.0	9.1	26.5	34.2	38.0	18.9	51.3	57.6	27.7	6.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.4	32.0	9.1	26.5	34.2	38.0	18.9	51.3	57.6	27.7	6.9
LOS	D	C	A	C	C	D	B	D	E	C	A
Approach Delay		32.4			35.4			48.0		31.7	
Approach LOS		C			D			D		C	

Intersection Summary

Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green  
 Natural Cycle: 90  
 Control Type: Pretimed  
 Maximum v/c Ratio: 0.93  
 Intersection Signal Delay: 35.7  
 Intersection LOS: D  
 Intersection Capacity Utilization 99.5%  
 ICU Level of Service F  
 Analysis Period (min) 15

Splits and Phases: 3: Liverpool Rd & Bayly St



## Queues

2027 Total Traffic Conditions

## 3: Liverpool Rd &amp; Bayly St

PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	377	872	281	127	590	710	91	778	345	672	253
v/c Ratio	0.92	0.70	0.46	0.55	0.59	0.91	0.30	0.90	0.93	0.53	0.30
Control Delay	50.4	32.0	9.1	26.5	34.2	38.0	18.9	51.3	57.6	27.7	6.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.4	32.0	9.1	26.5	34.2	38.0	18.9	51.3	57.6	27.7	6.9
Queue Length 50th (m)	47.2	76.1	8.4	13.6	52.0	99.4	9.5	75.6	48.3	53.9	11.7
Queue Length 95th (m)	#89.6	97.6	28.8	24.2	69.5	#133.3	18.3	#109.3	#100.4	71.0	24.3
Internal Link Dist (m)		177.5			249.4			51.8		146.7	
Turn Bay Length (m)	115.0		100.0	50.0		150.0	75.0		50.0		65.0
Base Capacity (vph)	408	1238	616	229	997	776	300	860	370	1263	854
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.92	0.70	0.46	0.55	0.59	0.91	0.30	0.90	0.93	0.53	0.30




























## Intersection Summary

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

Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis  
3: Liverpool Rd & Bayly St

2027 Total Traffic Conditions  
PM Peak Hour

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		 			 			 			 		
Traffic Volume (vph)	366	846	273	123	572	689	88	644	111	335	652	245	
Future Volume (vph)	366	846	273	123	572	689	88	644	111	335	652	245	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7		3.0	6.7	3.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00	
Frpb, ped/bikes	1.00	1.00	0.94	1.00	1.00	0.97	1.00	0.99		1.00	1.00	0.96	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00		1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	1820	3579	1371	1752	3614	1535	1813	3486		1787	3579	1532	
Flt Permitted	0.27	1.00	1.00	0.22	1.00	1.00	0.40	1.00		0.15	1.00	1.00	
Satd. Flow (perm)	508	3579	1371	405	3614	1535	756	3486		276	3579	1532	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	
Adj. Flow (vph)	377	872	281	127	590	710	91	664	114	345	672	253	
RTOR Reduction (vph)	0	0	142	0	0	60	0	14	0	0	0	64	
Lane Group Flow (vph)	377	872	139	127	590	650	91	764	0	345	672	189	
Confl. Peds. (#/hr)	25		30	30		25	36		57	57		36	
Confl. Bikes (#/hr)			6			4			3			6	
Heavy Vehicles (%)	0%	2%	12%	4%	1%	3%	0%	1%	2%	2%	2%	2%	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	pm+ov	
Protected Phases	5	2		1	6	7	3	8		7	4	5	
Permitted Phases	2		2	6		6	8			4		4	
Actuated Green, G (s)	43.6	34.6	34.6	33.6	27.6	43.6	29.3	24.3		43.3	35.3	48.3	
Effective Green, g (s)	43.6	34.6	34.6	33.6	27.6	43.6	29.3	24.3		43.3	35.3	48.3	
Actuated g/C Ratio	0.44	0.35	0.35	0.34	0.28	0.44	0.29	0.24		0.43	0.35	0.48	
Clearance Time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7		3.0	6.7	3.0	
Lane Grp Cap (vph)	392	1238	474	216	997	669	274	847		361	1263	739	
v/s Ratio Prot	c0.12	0.24		0.04	0.16	c0.16	0.02	0.22		0.15	0.19	0.03	
v/s Ratio Perm	c0.29		0.10	0.16		0.27	0.08			c0.26		0.09	
v/c Ratio	0.96	0.70	0.29	0.59	0.59	0.97	0.33	0.90		0.96	0.53	0.26	
Uniform Delay, d1	22.9	28.3	23.8	24.3	31.3	27.6	26.3	36.7		26.6	25.8	15.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Incremental Delay, d2	36.8	3.4	1.6	11.2	2.6	28.6	3.2	14.7		37.4	1.6	0.8	
Delay (s)	59.7	31.7	25.4	35.5	33.9	56.2	29.5	51.4		64.0	27.4	16.1	
Level of Service	E	C	C	D	C	E	C	D		E	C	B	
Approach Delay (s)		37.4			45.1			49.1			35.1		
Approach LOS		D			D			D			D		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			41.0									HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			1.02										
Actuated Cycle Length (s)			100.0									Sum of lost time (s)	19.1
Intersection Capacity Utilization			99.5%									ICU Level of Service	F
Analysis Period (min)			15										
c Critical Lane Group													



Approach	EB	WB	NB	SB
Crosswalk Length (m)	22.45	22.36	18.57	22.20
Crosswalk Width (m)	1.20	1.20	1.20	1.20
Total Number of Lanes Crossed	6	6	5	6
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	4	8	2	6
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (m)	2.74	2.74	2.74	2.74
Right Corner Size B (m)	2.74	2.74	2.74	2.74
Right Corner Curb Radius (m)	0.00	0.00	0.00	0.00
Right Corner Total Area (sq.m)	7.51	7.51	7.51	7.51
Ped. Left-Right Flow Rate (p/h)	0	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (km/h)	40	40	40	40
Right Corner Area per Ped (sq.m)	0.0	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-	-
Ped. Circulation Area (sq.m)	0.0	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-	-
Pedestrian Delay (s/p)	50.0	50.0	50.0	50.0
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.80	2.84	2.63	2.88
Pedestrian Crosswalk LOS	C	C	B	C

Approach	EB	WB	NB	SB
Bicycle Flow Rate (bike/h)	0	0	0	0
Total Flow Rate (veh/h)	1530	1427	869	1270
Effct. Green for Bike (s)	34.6	27.6	24.3	35.3
Cross Street Width (m)	18.57	22.20	22.36	22.45
Through Lanes Number	2	2	2	2
Through Lane Width (m)	3.70	3.70	3.70	3.70
Bicycle Lane Width (m)	0.00	0.00	0.00	0.00
Paved Shoulder Width (m)	0.00	0.00	0.00	0.00
Curb Is Present?	No	No	No	No
On Street Parking?	No	No	No	No
Bicycle Lane Capacity (bike/h)	692	552	486	706
Bicycle Delay (s/bike)	21.4	26.2	28.7	20.9
Bicycle Compliance	Fair	Fair	Fair	Fair
Bicycle LOS Score	3.72	3.82	3.37	3.70
Bicycle LOS	D	D	C	D

HCM Unsignalized Intersection Capacity Analysis  
6: Liverpool Rd & Parking Lot/Tatra Dr

2027 Total Traffic Conditions  
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕		↕	↕	↕
Traffic Volume (veh/h)	4	1	1	1	0	236	1	608	8	215	770	1
Future Volume (Veh/h)	4	1	1	1	0	236	1	608	8	215	770	1
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)	4	1	1	1	0	246	1	633	8	224	802	1
Pedestrians		23			32			22			2	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		2			3			2			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)											153	
pX, platoon unblocked	0.81	0.81	0.81	0.81	0.81		0.81					
vC, conflicting volume	2160	1948	848	1944	1945	671	826			673		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2317	2055	693	2050	2050	671	667			673		
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 %	45	97	100	96	100	45	100			75		
cM capacity (veh/h)	7	32	346	24	32	445	737			898		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>	<b>SB 2</b>							
Volume Total	6	247	642	224	803							
Volume Left	4	1	1	224	0							
Volume Right	1	246	8	0	1							
cSH	10	415	737	898	1700							
Volume to Capacity	0.58	0.59	0.00	0.25	0.47							
Queue Length 95th (m)	9.5	28.4	0.0	7.5	0.0							
Control Delay (s)	573.5	25.6	0.0	10.3	0.0							
Lane LOS	F	D	A	B								
Approach Delay (s)	573.5	25.6	0.0	2.3								
Approach LOS	F	D										
<b>Intersection Summary</b>												
Average Delay			6.3									
Intersection Capacity Utilization			98.0%		ICU Level of Service				F			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
9: Liverpool Rd & Radom St

2027 Total Traffic Conditions  
PM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	58	31	21	543	694	68
Future Volume (Veh/h)	58	31	21	543	694	68
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	60	32	22	560	715	70
Pedestrians	11			1		
Lane Width (m)	3.7			3.7		
Walking Speed (m/s)	1.1			1.1		
Percent Blockage	1			0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)					337	
pX, platoon unblocked	0.79	0.79	0.79			
vC, conflicting volume	1365	762	796			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1329	567	610			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	54	92	97			
cM capacity (veh/h)	131	406	766			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	92	582	785			
Volume Left	60	22	0			
Volume Right	32	0	70			
cSH	171	766	1700			
Volume to Capacity	0.54	0.03	0.46			
Queue Length 95th (m)	20.7	0.7	0.0			
Control Delay (s)	48.0	0.8	0.0			
Lane LOS	E	A				
Approach Delay (s)	48.0	0.8	0.0			
Approach LOS	E					
<b>Intersection Summary</b>						
Average Delay			3.3			
Intersection Capacity Utilization			57.7%	ICU Level of Service	B	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
 11: Liverpool Rd & Krosno Blvd

2027 Total Traffic Conditions  
 PM Peak Hour



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	39	123	371	19	175	527
Future Volume (vph)	39	123	371	19	175	527
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	44	138	417	21	197	592

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	182	438	789
Volume Left (vph)	44	0	197
Volume Right (vph)	138	21	0
Hadj (s)	-0.41	0.00	0.10
Departure Headway (s)	6.2	5.4	5.2
Degree Utilization, x	0.31	0.66	1.15
Capacity (veh/h)	559	647	679
Control Delay (s)	11.9	18.2	103.8
Approach Delay (s)	11.9	18.2	103.8
Approach LOS	B	C	F

Intersection Summary			
Delay		65.3	
Level of Service		F	
Intersection Capacity Utilization		77.9%	ICU Level of Service
Analysis Period (min)		15	D

HCM Unsignalized Intersection Capacity Analysis  
 13: Liverpool Rd & Ilona Park Rd (N)

2027 Total Traffic Conditions  
 PM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	6	0	1	330	496	11
Future Volume (Veh/h)	6	0	1	330	496	11
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	7	0	1	393	590	13
Pedestrians	10			1		
Lane Width (m)	3.7			3.7		
Walking Speed (m/s)	1.1			1.1		
Percent Blockage	1			0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1002	608	613			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1002	608	613			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	100	100			
cM capacity (veh/h)	268	494	967			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	7	394	603			
Volume Left	7	1	0			
Volume Right	0	0	13			
cSH	268	967	1700			
Volume to Capacity	0.03	0.00	0.35			
Queue Length 95th (m)	0.6	0.0	0.0			
Control Delay (s)	18.8	0.0	0.0			
Lane LOS	C	A				
Approach Delay (s)	18.8	0.0	0.0			
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay			0.1			
Intersection Capacity Utilization			37.1%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
 15: Liverpool Rd & Ilona Park Rd (S)

















2027 Total Traffic Conditions  
 PM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	2	1	1	315	456	12
Future Volume (Veh/h)	2	1	1	315	456	12
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)	2	1	1	366	530	14
Pedestrians	9			3		
Lane Width (m)	3.7			3.7		
Walking Speed (m/s)	1.1			1.1		
Percent Blockage	1			0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	917	546	553			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	917	546	553			
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	100	100			
cM capacity (veh/h)	301	537	1018			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	3	367	544			
Volume Left	2	1	0			
Volume Right	1	0	14			
cSH	352	1018	1700			
Volume to Capacity	0.01	0.00	0.32			
Queue Length 95th (m)	0.2	0.0	0.0			
Control Delay (s)	15.3	0.0	0.0			
Lane LOS	C	A				
Approach Delay (s)	15.3	0.0	0.0			
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay			0.1			
Intersection Capacity Utilization			34.8%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
 17: Liverpool Rd & Commerce St

















2027 Total Traffic Conditions  
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	0	2	7	3	9	3	289	5	18	414	19
Future Volume (Veh/h)	9	0	2	7	3	9	3	289	5	18	414	19
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	0	2	8	3	10	3	332	6	21	476	22
Pedestrians		9			12			2			1	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		1			1			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	892	894	498	886	902	348	507			350		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	892	894	498	886	902	348	507			350		
tC, single (s)	7.3	6.5	6.2	7.6	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.7	4.0	3.3	4.0	4.0	3.3	2.2			2.2		
p0 queue free %	96	100	100	96	99	99	100			98		
cM capacity (veh/h)	228	271	570	209	268	691	1059			1206		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	12	21	341	519								
Volume Left	10	8	3	21								
Volume Right	2	10	6	22								
cSH	253	329	1059	1206								
Volume to Capacity	0.05	0.06	0.00	0.02								
Queue Length 95th (m)	1.1	1.5	0.1	0.4								
Control Delay (s)	19.9	16.7	0.1	0.5								
Lane LOS	C	C	A	A								
Approach Delay (s)	19.9	16.7	0.1	0.5								
Approach LOS	C	C										
<b>Intersection Summary</b>												
Average Delay			1.0									
Intersection Capacity Utilization			45.0%		ICU Level of Service				A			
Analysis Period (min)			15									



















HCM Unsignalized Intersection Capacity Analysis  
20: Liverpool Rd & Annland St

2027 Total Traffic Conditions  
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	0	15	18	3	3	13	301	16	14	373	52
Future Volume (Veh/h)	27	0	15	18	3	3	13	301	16	14	373	52
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	29	0	16	19	3	3	14	324	17	15	401	56
Pedestrians		4			1			2			3	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	831	833	435	838	852	336	461			342		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	831	833	435	838	852	336	461			342		
tC, single (s)	7.3	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.7	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	89	100	97	93	99	100	99			99		
cM capacity (veh/h)	261	298	622	273	290	707	1106			1227		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	45	25	355	472								
Volume Left	29	19	14	15								
Volume Right	16	3	17	56								
cSH	329	297	1106	1227								
Volume to Capacity	0.14	0.08	0.01	0.01								
Queue Length 95th (m)	3.6	2.1	0.3	0.3								
Control Delay (s)	17.7	18.2	0.5	0.4								
Lane LOS	C	C	A	A								
Approach Delay (s)	17.7	18.2	0.5	0.4								
Approach LOS	C	C										
<b>Intersection Summary</b>												
Average Delay			1.8									
Intersection Capacity Utilization			39.2%		ICU Level of Service				A			
Analysis Period (min)			15									










HCM Unsignalized Intersection Capacity Analysis  
 23: Liverpool Rd & Wharf St

2027 Total Traffic Conditions  
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	19	0	2	0	0	7	5	256	1	10	335	38
Future Volume (vph)	19	0	2	0	0	7	5	256	1	10	335	38
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)	23	0	2	0	0	8	6	305	1	12	399	45
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	25	8	312	456								
Volume Left (vph)	23	0	6	12								
Volume Right (vph)	2	8	1	45								
Hadj (s)	0.21	-0.60	0.00	-0.05								
Departure Headway (s)	5.8	5.0	4.5	4.3								
Degree Utilization, x	0.04	0.01	0.39	0.54								
Capacity (veh/h)	543	609	787	825								
Control Delay (s)	9.0	8.1	10.2	12.2								
Approach Delay (s)	9.0	8.1	10.2	12.2								
Approach LOS	A	A	B	B								
Intersection Summary												
Delay			11.3									
Level of Service			B									
Intersection Capacity Utilization			40.2%	ICU Level of Service	A							
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
 26: Liverpool Rd & Site Access

2027 Total Traffic Conditions  
 PM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	141	127	0	170	160
Future Volume (Veh/h)	0	141	127	0	170	160
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Hourly flow rate (vph)	0	181	163	0	218	205
Pedestrians	33		4			9
Lane Width (m)	3.7		3.7			3.7
Walking Speed (m/s)	1.1		1.1			1.1
Percent Blockage	3		0			1
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	841	205			196	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	841	205			196	
tC, single (s)	7.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	4.4	3.3			2.2	
p0 queue free %	100	78			84	
cM capacity (veh/h)	188	806			1344	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	181	163	423			
Volume Left	0	0	218			
Volume Right	181	0	0			
cSH	806	1700	1344			
Volume to Capacity	0.22	0.10	0.16			
Queue Length 95th (m)	6.5	0.0	4.4			
Control Delay (s)	10.8	0.0	5.0			
Lane LOS	B		A			
Approach Delay (s)	10.8	0.0	5.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			5.3			
Intersection Capacity Utilization			49.6%		ICU Level of Service	A
Analysis Period (min)			15			

Timings  
11: Liverpool Rd & Krosno Blvd

2027 Total Traffic Conditions  
PM Peak Hour (Krosno Signalized)

	↙	↑	↘	↓
Lane Group	WBL	NBT	SBL	SBT
Lane Configurations	↘	↘		↘
Traffic Volume (vph)	39	371	175	527
Future Volume (vph)	39	371	175	527
Turn Type	Prot	NA	Perm	NA
Protected Phases	8	2		6
Permitted Phases			6	
Detector Phase	8	2	6	6
Switch Phase				
Minimum Initial (s)	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	24.0
Total Split (s)	24.0	66.0	66.0	66.0
Total Split (%)	26.7%	73.3%	73.3%	73.3%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0
Total Lost Time (s)	6.0	6.0		6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	None	Max	Max	Max
Act Effect Green (s)	8.4	63.8		63.8
Actuated g/C Ratio	0.10	0.76		0.76
v/c Ratio	0.62	0.31		0.72
Control Delay	20.1	4.3		11.2
Queue Delay	0.0	0.0		0.0
Total Delay	20.1	4.3		11.2
LOS	C	A		B
Approach Delay	20.1	4.3		11.2
Approach LOS	C	A		B

Intersection Summary

Cycle Length: 90	
Actuated Cycle Length: 84.3	
Natural Cycle: 80	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.72	
Intersection Signal Delay: 10.2	Intersection LOS: B
Intersection Capacity Utilization 82.9%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 11: Liverpool Rd & Krosno Blvd



Queues  
11: Liverpool Rd & Krosno Blvd

2027 Total Traffic Conditions  
PM Peak Hour (Krosno Signalized)



Lane Group	WBL	NBT	SBT
Lane Group Flow (vph)	182	438	789
v/c Ratio	0.62	0.31	0.72
Control Delay	20.1	4.3	11.2
Queue Delay	0.0	0.0	0.0
Total Delay	20.1	4.3	11.2
Queue Length 50th (m)	6.3	16.2	50.1
Queue Length 95th (m)	23.4	34.9	121.2
Internal Link Dist (m)	251.2	233.4	388.4
Turn Bay Length (m)			
Base Capacity (vph)	473	1416	1095
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.38	0.31	0.72
<b>Intersection Summary</b>			

HCM Signalized Intersection Capacity Analysis  
 11: Liverpool Rd & Krosno Blvd

2027 Total Traffic Conditions  
 PM Peak Hour (Krosno Signalized)



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			L
Traffic Volume (vph)	39	123	371	19	175	527
Future Volume (vph)	39	123	371	19	175	527
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0			6.0
Lane Util. Factor	1.00		1.00			1.00
Frbp, ped/bikes	1.00		1.00			1.00
Flpb, ped/bikes	1.00		1.00			0.99
Frt	0.90		0.99			1.00
Flt Protected	0.99		1.00			0.99
Satd. Flow (prot)	1704		1867			1836
Flt Permitted	0.99		1.00			0.78
Satd. Flow (perm)	1704		1867			1446
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	44	138	417	21	197	592
RTOR Reduction (vph)	124	0	1	0	0	0
Lane Group Flow (vph)	58	0	437	0	0	789
Confl. Peds. (#/hr)	6			18	18	
Confl. Bikes (#/hr)				1		
Heavy Vehicles (%)	0%	0%	2%	0%	2%	3%
Turn Type	Prot		NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases					6	
Actuated Green, G (s)	8.4		63.9			63.9
Effective Green, g (s)	8.4		63.9			63.9
Actuated g/C Ratio	0.10		0.76			0.76
Clearance Time (s)	6.0		6.0			6.0
Vehicle Extension (s)	3.0		3.0			3.0
Lane Grp Cap (vph)	169		1415			1096
v/s Ratio Prot	c0.03		0.23			
v/s Ratio Perm						c0.55
v/c Ratio	0.34		0.31			0.72
Uniform Delay, d1	35.4		3.2			5.4
Progression Factor	1.00		1.00			1.00
Incremental Delay, d2	1.2		0.6			4.1
Delay (s)	36.6		3.8			9.5
Level of Service	D		A			A
Approach Delay (s)	36.6		3.8			9.5
Approach LOS	D		A			A
<b>Intersection Summary</b>						
HCM 2000 Control Delay			11.2		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.68			
Actuated Cycle Length (s)			84.3		Sum of lost time (s)	12.0
Intersection Capacity Utilization			82.9%		ICU Level of Service	E
Analysis Period (min)			15			
c Critical Lane Group						

Approach	WB	NB	SB
Crosswalk Length (m)	8.51	7.40	7.40
Crosswalk Width (m)	1.20	1.20	1.20
Total Number of Lanes Crossed	2	2	2
Number of Right-Turn Islands	0	0	0
Type of Control	None	None	None
Corresponding Signal Phase	2	6	8
Effective Walk Time (s)	0.0	0.0	0.0
Right Corner Size A (m)	2.74	2.74	2.74
Right Corner Size B (m)	2.74	2.74	2.74
Right Corner Curb Radius (m)	0.00	0.00	0.00
Right Corner Total Area (sq.m)	7.51	7.51	7.51
Ped. Left-Right Flow Rate (p/h)	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0
85th percentile speed (km/h)	40	40	40
Right Corner Area per Ped (sq.m)	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-
Ped. Circulation Area (sq.m)	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-
Pedestrian Delay (s/p)	45.0	45.0	45.0
Pedestrian Compliance Code	Poor	Poor	Poor
Pedestrian Crosswalk Score	1.89	2.16	2.27
Pedestrian Crosswalk LOS	A	B	B

Approach	WB	NB	SB
Bicycle Flow Rate (bike/h)	0	0	0
Total Flow Rate (veh/h)	182	438	789
Effct. Green for Bike (s)	8.4	63.8	63.8
Cross Street Width (m)	7.40	8.51	7.40
Through Lanes Number	1	1	1
Through Lane Width (m)	3.70	3.70	3.70
Bicycle Lane Width (m)	0.00	0.00	0.00
Paved Shoulder Width (m)	0.00	0.00	0.00
Curb Is Present?	No	No	No
On Street Parking?	No	No	No
Bicycle Lane Capacity (bike/h)	187	1418	1418
Bicycle Delay (s/bike)	37.0	3.8	3.8
Bicycle Compliance	Poor	Good	Good
Bicycle LOS Score	2.20	2.68	3.20
Bicycle LOS	B	B	C



Timings  
6: Liverpool Rd & Parking Lot/Tatra Dr

2027 Total Traffic Conditions  
PM Peak Hour (Tatra Signalized)



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↕		↕		↕	↗	↘
Traffic Volume (vph)	4	1	1	0	1	608	215	770
Future Volume (vph)	4	1	1	0	1	608	215	770
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0
Total Split (s)	26.0	26.0	26.0	26.0	64.0	64.0	64.0	64.0
Total Split (%)	28.9%	28.9%	28.9%	28.9%	71.1%	71.1%	71.1%	71.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)		0.0		0.0		0.0		0.0
Total Lost Time (s)		7.0		7.0		7.0		7.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
Act Effct Green (s)		7.5		7.5		57.9	57.9	57.9
Actuated g/C Ratio		0.09		0.09		0.73	0.73	0.73
v/c Ratio		0.08		0.66		0.46	0.37	0.59
Control Delay		31.5		13.7		6.1	6.7	7.7
Queue Delay		0.0		0.0		0.0	0.0	1.2
Total Delay		31.5		13.7		6.1	6.7	9.0
LOS		C		B		A	A	A
Approach Delay		31.5		13.7		6.1		8.5
Approach LOS		C		B		A		A

Intersection Summary

Cycle Length: 90	
Actuated Cycle Length: 79.4	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.66	
Intersection Signal Delay: 8.4	Intersection LOS: A
Intersection Capacity Utilization 105.5%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 6: Liverpool Rd & Parking Lot/Tatra Dr



Queues  
6: Liverpool Rd & Parking Lot/Tatra Dr

2027 Total Traffic Conditions  
PM Peak Hour (Tatra Signalized)



Lane Group	EBT	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	6	247	642	224	803
v/c Ratio	0.08	0.66	0.46	0.37	0.59
Control Delay	31.5	13.7	6.1	6.7	7.7
Queue Delay	0.0	0.0	0.0	0.0	1.2
Total Delay	31.5	13.7	6.1	6.7	9.0
Queue Length 50th (m)	0.7	0.1	28.0	8.9	40.6
Queue Length 95th (m)	4.0	19.1	63.9	26.6	93.6
Internal Link Dist (m)	73.5	201.1	160.3		52.8
Turn Bay Length (m)				45.0	
Base Capacity (vph)	197	578	1391	598	1372
Starvation Cap Reductn	0	0	0	0	336
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.03	0.43	0.46	0.37	0.78

Intersection Summary

HCM Signalized Intersection Capacity Analysis  
6: Liverpool Rd & Parking Lot/Tatra Dr

2027 Total Traffic Conditions  
PM Peak Hour (Tatra Signalized)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕		↕	↕	
Traffic Volume (vph)	4	1	1	1	0	236	1	608	8	215	770	1
Future Volume (vph)	4	1	1	1	0	236	1	608	8	215	770	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.0			7.0			7.0		7.0	7.0	
Lane Util. Factor		1.00			1.00			1.00		1.00	1.00	
Frbp, ped/bikes		0.99			0.99			1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00			1.00		0.97	1.00	
Frt		0.98			0.87			1.00		1.00	1.00	
Flt Protected		0.97			1.00			1.00		0.95	1.00	
Satd. Flow (prot)		1795			1638			1913		1776	1883	
Flt Permitted		0.44			1.00			1.00		0.44	1.00	
Satd. Flow (perm)		824			1636			1912		820	1883	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	4	1	1	1	0	246	1	633	8	224	802	1
RTOR Reduction (vph)	0	1	0	0	223	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	5	0	0	24	0	0	642	0	224	803	0
Confl. Peds. (#/hr)	2		22	22		2	23		32	32		23
Confl. Bikes (#/hr)												2
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	12%	0%	2%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		7.5			7.5			57.9		57.9	57.9	
Effective Green, g (s)		7.5			7.5			57.9		57.9	57.9	
Actuated g/C Ratio		0.09			0.09			0.73		0.73	0.73	
Clearance Time (s)		7.0			7.0			7.0		7.0	7.0	
Vehicle Extension (s)		3.0			3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)		77			154			1394		597	1373	
v/s Ratio Prot											c0.43	
v/s Ratio Perm		0.01			c0.01			0.34		0.27		
v/c Ratio		0.07			0.16			0.46		0.38	0.58	
Uniform Delay, d1		32.8			33.0			4.4		4.0	5.1	
Progression Factor		1.00			1.00			1.00		1.00	1.00	
Incremental Delay, d2		0.4			0.5			1.1		1.8	1.8	
Delay (s)		33.1			33.5			5.5		5.8	6.9	
Level of Service		C			C			A		A	A	
Approach Delay (s)		33.1			33.5			5.5		6.7		
Approach LOS		C			C			A		A		

Intersection Summary

HCM 2000 Control Delay	9.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	79.4	Sum of lost time (s)	14.0
Intersection Capacity Utilization	105.5%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Approach	EB	WB	NB	SB
Crosswalk Length (m)	7.40	8.26	10.99	14.80
Crosswalk Width (m)	1.20	1.20	1.20	1.20
Total Number of Lanes Crossed	2	2	2	4
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	6	2	4	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (m)	2.74	2.74	2.74	2.74
Right Corner Size B (m)	2.74	2.74	2.74	2.74
Right Corner Curb Radius (m)	0.00	0.00	0.00	0.00
Right Corner Total Area (sq.m)	7.51	7.51	7.51	7.51
Ped. Left-Right Flow Rate (p/h)	0	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (km/h)	40	40	40	40
Right Corner Area per Ped (sq.m)	0.0	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-	-
Ped. Circulation Area (sq.m)	0.0	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-	-
Pedestrian Delay (s/p)	45.0	45.0	45.0	45.0
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	1.73	1.92	2.31	2.53
Pedestrian Crosswalk LOS	A	A	B	B

Approach	EB	WB	NB	SB
Bicycle Flow Rate (bike/h)	0	0	0	0
Total Flow Rate (veh/h)	6	247	642	1027
Effct. Green for Bike (s)	7.5	7.5	57.9	57.9
Cross Street Width (m)	10.99	14.80	8.26	7.40
Through Lanes Number	1	1	1	1
Through Lane Width (m)	3.70	3.70	3.70	3.70
Bicycle Lane Width (m)	0.00	0.00	0.00	0.00
Paved Shoulder Width (m)	0.00	0.00	0.00	0.00
Curb Is Present?	No	No	No	No
On Street Parking?	No	No	No	No
Bicycle Lane Capacity (bike/h)	167	167	1287	1287
Bicycle Delay (s/bike)	37.8	37.8	5.7	5.7
Bicycle Compliance	Poor	Poor	Good	Good
Bicycle LOS Score	2.09	2.68	3.00	3.60
Bicycle LOS	B	B	C	D

Intersection: 11: Liverpool Rd & Krosno Blvd

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (m)	13.7	30.4	55.2
Average Queue (m)	10.2	24.4	43.9
95th Queue (m)	15.7	37.6	60.0
Link Distance (m)	265.9	239.9	406.8
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 23: Liverpool Rd & Wharf St

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	9.3	9.0	16.9	22.6
Average Queue (m)	5.5	3.6	14.7	17.7
95th Queue (m)	12.9	10.8	19.5	21.8
Link Distance (m)	104.6	110.2	179.8	86.5
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Timings  
3: Liverpool Rd & Bayly St

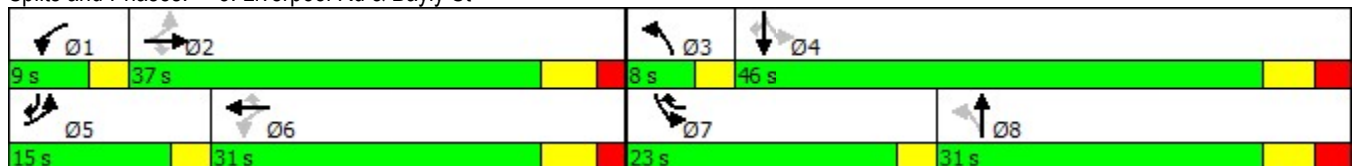
2027 Total Traffic Conditions  
SAT Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	357	410	161	116	239	357	78	577	342	597	288
Future Volume (vph)	357	410	161	116	239	357	78	577	342	597	288
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	pm+pt	NA	pm+ov
Protected Phases	5	2		1	6	7	3	8	7	4	5
Permitted Phases	2		2	6		6	8		4		4
Detector Phase	5	2	2	1	6	7	3	8	7	4	5
Switch Phase											
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	8.0	26.4	26.4	8.0	26.4	8.0	8.0	30.7	8.0	30.7	8.0
Total Split (s)	15.0	37.0	37.0	9.0	31.0	23.0	8.0	31.0	23.0	46.0	15.0
Total Split (%)	15.0%	37.0%	37.0%	9.0%	31.0%	23.0%	8.0%	31.0%	23.0%	46.0%	15.0%
Yellow Time (s)	3.0	4.1	4.1	3.0	4.1	3.0	3.0	3.8	3.0	3.8	3.0
All-Red Time (s)	0.0	2.3	2.3	0.0	2.3	0.0	0.0	2.9	0.0	2.9	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7	3.0	6.7	3.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Max	Max	None	Max	None	None	None	None	None	None
Act Effct Green (s)	43.1	30.6	30.6	34.1	24.7	47.1	32.2	23.5	49.2	39.2	54.9
Actuated g/C Ratio	0.44	0.31	0.31	0.35	0.25	0.48	0.33	0.24	0.50	0.40	0.56
v/c Ratio	0.68	0.37	0.29	0.32	0.27	0.45	0.26	0.90	0.81	0.43	0.29
Control Delay	27.8	27.9	5.6	20.7	31.1	12.6	16.6	50.0	37.3	22.9	2.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.8	27.9	5.6	20.7	31.1	12.6	16.6	50.0	37.3	22.9	2.0
LOS	C	C	A	C	C	B	B	D	D	C	A
Approach Delay		24.0			20.1			46.8		22.0	
Approach LOS		C			C			D		C	

Intersection Summary

Cycle Length: 100  
 Actuated Cycle Length: 98.3  
 Natural Cycle: 80  
 Control Type: Semi Act-Uncoord  
 Maximum v/c Ratio: 0.90  
 Intersection Signal Delay: 27.6  
 Intersection LOS: C  
 Intersection Capacity Utilization 94.7%  
 ICU Level of Service F  
 Analysis Period (min) 15

Splits and Phases: 3: Liverpool Rd & Bayly St





Queues  
3: Liverpool Rd & Bayly St

2027 Total Traffic Conditions  
SAT Peak Hour


























Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	368	423	166	120	246	368	80	756	353	615	297
v/c Ratio	0.68	0.37	0.29	0.32	0.27	0.45	0.26	0.90	0.81	0.43	0.29
Control Delay	27.8	27.9	5.6	20.7	31.1	12.6	16.6	50.0	37.3	22.9	2.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.8	27.9	5.6	20.7	31.1	12.6	16.6	50.0	37.3	22.9	2.0
Queue Length 50th (m)	49.7	33.6	0.0	13.8	20.3	29.2	7.6	71.7	45.9	45.1	0.0
Queue Length 95th (m)	74.4	46.8	14.1	25.0	30.8	50.2	15.0	#103.6	#87.6	60.0	10.2
Internal Link Dist (m)		177.5			249.4			51.8		146.7	
Turn Bay Length (m)	115.0		100.0	50.0		150.0	75.0		50.0		65.0
Base Capacity (vph)	544	1137	574	376	906	826	313	869	450	1433	1009
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.37	0.29	0.32	0.27	0.45	0.26	0.87	0.78	0.43	0.29

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
3: Liverpool Rd & Bayly St

2027 Total Traffic Conditions  
SAT Peak Hour



















													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	357	410	161	116	239	357	78	577	156	342	597	288	
Future Volume (vph)	357	410	161	116	239	357	78	577	156	342	597	288	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7		3.0	6.7	3.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00	
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00	0.99	1.00	0.99		1.00	1.00	0.97	
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	1818	3650	1475	1776	3614	1579	1819	3416		1805	3579	1574	
Flt Permitted	0.53	1.00	1.00	0.51	1.00	1.00	0.42	1.00		0.15	1.00	1.00	
Satd. Flow (perm)	1022	3650	1475	944	3614	1579	802	3416		280	3579	1574	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	
Adj. Flow (vph)	368	423	166	120	246	368	80	595	161	353	615	297	
RTOR Reduction (vph)	0	0	115	0	0	59	0	24	0	0	0	143	
Lane Group Flow (vph)	368	423	51	120	246	309	80	732	0	353	615	154	
Confl. Peds. (#/hr)	8		19	19		8	16		43	43		16	
Confl. Bikes (#/hr)			4			1			2			8	
Heavy Vehicles (%)	0%	0%	6%	2%	1%	2%	0%	2%	2%	1%	2%	1%	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	pm+ov	
Protected Phases	5	2		1	6	7	3	8		7	4	5	
Permitted Phases	2		2	6		6	8			4		4	
Actuated Green, G (s)	39.6	30.6	30.6	30.6	24.6	43.6	28.0	24.1		46.1	39.2	51.2	
Effective Green, g (s)	39.6	30.6	30.6	30.6	24.6	43.6	28.0	24.1		46.1	39.2	51.2	
Actuated g/C Ratio	0.40	0.31	0.31	0.31	0.25	0.44	0.28	0.24		0.47	0.40	0.52	
Clearance Time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7		3.0	6.7	3.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)	506	1130	456	342	899	696	267	833		423	1420	815	
v/s Ratio Prot	c0.09	0.12		0.02	0.07	0.09	0.01	0.21		c0.16	0.17	0.02	
v/s Ratio Perm	c0.20		0.03	0.09		0.11	0.07			c0.23		0.07	
v/c Ratio	0.73	0.37	0.11	0.35	0.27	0.44	0.30	0.88		0.83	0.43	0.19	
Uniform Delay, d1	23.0	26.6	24.4	25.2	29.9	19.2	26.5	35.9		23.9	21.7	12.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Incremental Delay, d2	5.2	0.9	0.5	0.6	0.8	0.5	0.6	10.4		13.3	0.2	0.1	
Delay (s)	28.2	27.6	24.9	25.9	30.7	19.6	27.2	46.3		37.1	21.9	12.8	
Level of Service	C	C	C	C	C	B	C	D		D	C	B	
Approach Delay (s)		27.3			24.3			44.5			24.0		
Approach LOS		C			C			D			C		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			29.4									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.84										
Actuated Cycle Length (s)			98.8									Sum of lost time (s)	19.1
Intersection Capacity Utilization			94.7%									ICU Level of Service	F
Analysis Period (min)			15										
c	Critical Lane Group												

Approach	EB	WB	NB	SB
Crosswalk Length (m)	22.45	22.36	18.57	22.20
Crosswalk Width (m)	1.20	1.20	1.20	1.20
Total Number of Lanes Crossed	6	6	5	6
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	4	8	2	6
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (m)	2.74	2.74	2.74	2.74
Right Corner Size B (m)	2.74	2.74	2.74	2.74
Right Corner Curb Radius (m)	0.00	0.00	0.00	0.00
Right Corner Total Area (sq.m)	7.51	7.51	7.51	7.51
Ped. Left-Right Flow Rate (p/h)	0	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (km/h)	40	40	40	40
Right Corner Area per Ped (sq.m)	0.0	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-	-
Ped. Circulation Area (sq.m)	0.0	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-	-
Pedestrian Delay (s/p)	50.0	50.0	50.0	50.0
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.68	2.69	2.60	2.82
Pedestrian Crosswalk LOS	B	B	B	C

Approach	EB	WB	NB	SB
Bicycle Flow Rate (bike/h)	0	0	0	0
Total Flow Rate (veh/h)	957	734	836	1265
Effct. Green for Bike (s)	30.6	24.7	23.5	39.2
Cross Street Width (m)	18.57	22.20	22.36	22.45
Through Lanes Number	2	2	2	2
Through Lane Width (m)	3.70	3.70	3.70	3.70
Bicycle Lane Width (m)	0.00	0.00	0.00	0.00
Paved Shoulder Width (m)	0.00	0.00	0.00	0.00
Curb Is Present?	No	No	No	No
On Street Parking?	No	No	No	No
Bicycle Lane Capacity (bike/h)	612	494	470	784
Bicycle Delay (s/bike)	24.1	28.4	29.3	18.5
Bicycle Compliance	Fair	Fair	Fair	Fair
Bicycle LOS Score	3.25	3.25	3.34	3.70
Bicycle LOS	C	C	C	D

HCM Unsignalized Intersection Capacity Analysis  
6: Liverpool Rd & Parking Lot/Tatra Dr

2027 Total Traffic Conditions  
SAT Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	0	0	4	0	118	0	659	3	140	690	4
Future Volume (Veh/h)	1	0	0	4	0	118	0	659	3	140	690	4
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	1	0	0	4	0	122	0	679	3	144	711	4
Pedestrians		11			23			6				
Lane Width (m)		3.7			3.7			3.7				
Walking Speed (m/s)		1.1			1.1			1.1				
Percent Blockage		1			2			1				
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)											153	
pX, platoon unblocked	0.83	0.83	0.83	0.83	0.83		0.83					
vC, conflicting volume	1814	1717	730	1708	1718	704	726			705		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1879	1762	572	1751	1762	704	567			705		
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 %	96	100	100	91	100	72	100			84		
cM capacity (veh/h)	28	57	427	47	57	431	833			882		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2							
Volume Total	1	126	682	144	715							
Volume Left	1	4	0	144	0							
Volume Right	0	122	3	0	4							
cSH	28	341	833	882	1700							
Volume to Capacity	0.04	0.37	0.00	0.16	0.42							
Queue Length 95th (m)	0.8	12.6	0.0	4.4	0.0							
Control Delay (s)	140.2	21.6	0.0	9.9	0.0							
Lane LOS	F	C		A								
Approach Delay (s)	140.2	21.6	0.0	1.7								
Approach LOS	F	C										
Intersection Summary												
Average Delay			2.6									
Intersection Capacity Utilization			88.8%		ICU Level of Service	E						
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
9: Liverpool Rd & Radom St

2027 Total Traffic Conditions  
SAT Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	56	16	14	588	628	66
Future Volume (Veh/h)	56	16	14	588	628	66
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	62	18	15	646	690	73
Pedestrians	6			5		
Lane Width (m)	3.7			3.7		
Walking Speed (m/s)	1.1			1.1		
Percent Blockage	1			0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)					337	
pX, platoon unblocked	0.81	0.81	0.81			
vC, conflicting volume	1408	738	769			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1387	558	597			
tC, single (s)	6.4	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.4	2.2			
p0 queue free %	50	96	98			
cM capacity (veh/h)	124	415	796			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	80	661	763			
Volume Left	62	15	0			
Volume Right	18	0	73			
cSH	148	796	1700			
Volume to Capacity	0.54	0.02	0.45			
Queue Length 95th (m)	20.4	0.4	0.0			
Control Delay (s)	55.0	0.5	0.0			
Lane LOS	F	A				
Approach Delay (s)	55.0	0.5	0.0			
Approach LOS	F					
<b>Intersection Summary</b>						
Average Delay			3.1			
Intersection Capacity Utilization			54.5%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
 11: Liverpool Rd & Krosno Blvd

2027 Total Traffic Conditions  
 SAT Peak Hour



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	21	105	447	31	121	486
Future Volume (vph)	21	105	447	31	121	486
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	22	109	466	32	126	506

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	131	498	632
Volume Left (vph)	22	0	126
Volume Right (vph)	109	32	0
Hadj (s)	-0.45	0.01	0.08
Departure Headway (s)	6.1	5.2	5.1
Degree Utilization, x	0.22	0.71	0.89
Capacity (veh/h)	550	678	697
Control Delay (s)	10.9	20.0	34.8
Approach Delay (s)	10.9	20.0	34.8
Approach LOS	B	C	D

Intersection Summary			
Delay		26.5	
Level of Service		D	
Intersection Capacity Utilization		75.4%	ICU Level of Service
Analysis Period (min)		15	D

HCM Unsignalized Intersection Capacity Analysis  
 13: Liverpool Rd & Ilona Park Rd (N)

2027 Total Traffic Conditions  
 SAT Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	0	0	426	460	12
Future Volume (Veh/h)	10	0	0	426	460	12
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	11	0	0	468	505	13
Pedestrians	9			1		
Lane Width (m)	3.7			3.7		
Walking Speed (m/s)	1.1			1.1		
Percent Blockage	1			0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	988	522	527			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	988	522	527			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	96	100	100			
cM capacity (veh/h)	274	554	1041			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	11	468	518			
Volume Left	11	0	0			
Volume Right	0	0	13			
cSH	274	1041	1700			
Volume to Capacity	0.04	0.00	0.30			
Queue Length 95th (m)	1.0	0.0	0.0			
Control Delay (s)	18.7	0.0	0.0			
Lane LOS	C					
Approach Delay (s)	18.7	0.0	0.0			
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay			0.2			
Intersection Capacity Utilization			35.3%	ICU Level of Service	A	
Analysis Period (min)			15			



HCM Unsignalized Intersection Capacity Analysis  
 15: Liverpool Rd & Ilona Park Rd (S)

















2027 Total Traffic Conditions  
 SAT Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	2	1	0	378	448	13
Future Volume (Veh/h)	2	1	0	378	448	13
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	2	1	0	406	482	14
Pedestrians	11					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	1					
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	906	500	507			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	906	500	507			
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	100	100			
cM capacity (veh/h)	306	569	1057			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	3	406	496			
Volume Left	2	0	0			
Volume Right	1	0	14			
cSH	361	1057	1700			
Volume to Capacity	0.01	0.00	0.29			
Queue Length 95th (m)	0.2	0.0	0.0			
Control Delay (s)	15.0	0.0	0.0			
Lane LOS	C					
Approach Delay (s)	15.0	0.0	0.0			
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay	0.0					
Intersection Capacity Utilization	34.4%			ICU Level of Service	A	
Analysis Period (min)	15					

















HCM Unsignalized Intersection Capacity Analysis  
 17: Liverpool Rd & Commerce St

2027 Total Traffic Conditions  
 SAT Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	3	5	8	5	6	7	355	8	10	421	17
Future Volume (Veh/h)	12	3	5	8	5	6	7	355	8	10	421	17
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	13	3	6	9	6	7	8	394	9	11	468	19
Pedestrians		10			16							
Lane Width (m)		3.7			3.7							
Walking Speed (m/s)		1.1			1.1							
Percent Blockage		1			2							
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	934	944	488	938	950	414	497			419		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	934	944	488	938	950	414	497			419		
tC, single (s)	7.5	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.9	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	93	99	99	96	98	99	99			99		
cM capacity (veh/h)	195	253	579	231	251	632	1067			1133		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	22	22	411	498								
Volume Left	13	9	8	11								
Volume Right	6	7	9	19								
cSH	247	297	1067	1133								
Volume to Capacity	0.09	0.07	0.01	0.01								
Queue Length 95th (m)	2.2	1.8	0.2	0.2								
Control Delay (s)	21.0	18.1	0.2	0.3								
Lane LOS	C	C	A	A								
Approach Delay (s)	21.0	18.1	0.2	0.3								
Approach LOS	C	C										
<b>Intersection Summary</b>												
Average Delay			1.2									
Intersection Capacity Utilization			38.4%		ICU Level of Service				A			
Analysis Period (min)			15									

















HCM Unsignalized Intersection Capacity Analysis  
20: Liverpool Rd & Annland St

2027 Total Traffic Conditions  
SAT Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	0	19	33	2	8	17	327	16	12	364	44
Future Volume (Veh/h)	40	0	19	33	2	8	17	327	16	12	364	44
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	43	0	20	35	2	9	18	352	17	13	391	47
Pedestrians		15			5			1			2	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		1			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	864	866	430	863	880	368	453			374		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	864	866	430	863	880	368	453			374		
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 %	83	100	97	86	99	99	98			99		
cM capacity (veh/h)	258	280	619	257	275	678	1102			1190		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	63	46	387	451								
Volume Left	43	35	18	13								
Volume Right	20	9	17	47								
cSH	316	294	1102	1190								
Volume to Capacity	0.20	0.16	0.02	0.01								
Queue Length 95th (m)	5.5	4.2	0.4	0.3								
Control Delay (s)	19.2	19.5	0.6	0.3								
Lane LOS	C	C	A	A								
Approach Delay (s)	19.2	19.5	0.6	0.3								
Approach LOS	C	C										
<b>Intersection Summary</b>												
Average Delay			2.6									
Intersection Capacity Utilization			36.8%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
 23: Liverpool Rd & Wharf St

2027 Total Traffic Conditions  
 SAT Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	35	2	7	1	1	18	4	289	4	7	333	61
Future Volume (vph)	35	2	7	1	1	18	4	289	4	7	333	61
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)	38	2	8	1	1	20	4	314	4	8	362	66
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	48	22	322	436								
Volume Left (vph)	38	1	4	8								
Volume Right (vph)	8	20	4	66								
Hadj (s)	0.06	-0.54	0.00	-0.09								
Departure Headway (s)	5.7	5.1	4.6	4.4								
Degree Utilization, x	0.08	0.03	0.41	0.53								
Capacity (veh/h)	554	593	767	802								
Control Delay (s)	9.1	8.3	10.7	12.2								
Approach Delay (s)	9.1	8.3	10.7	12.2								
Approach LOS	A	A	B	B								
Intersection Summary												
Delay			11.3									
Level of Service			B									
Intersection Capacity Utilization			42.0%	ICU Level of Service	A							
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
26: Liverpool Rd

2027 Total Traffic Conditions  
SAT Peak Hour



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	5	281	0	6	313
Future Volume (Veh/h)	0	5	281	0	6	313
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	5	299	0	6	333
Pedestrians	64		3			3
Lane Width (m)	3.7		3.7			3.7
Walking Speed (m/s)	1.1		1.1			1.1
Percent Blockage	6		0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	711	366			363	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	711	366			363	
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)	374	639			1121	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	5	299	339			
Volume Left	0	0	6			
Volume Right	5	0	0			
cSH	639	1700	1121			
Volume to Capacity	0.01	0.18	0.01			
Queue Length 95th (m)	0.2	0.0	0.1			
Control Delay (s)	10.7	0.0	0.2			
Lane LOS	B		A			
Approach Delay (s)	10.7	0.0	0.2			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			0.2			
Intersection Capacity Utilization			32.2%		ICU Level of Service	A
Analysis Period (min)			15			

Timings  
11: Liverpool Rd & Krosno Blvd

2027 Total Traffic Conditions  
SAT Peak Hour (Krosno Signalized)

Lane Group	WBL	NBT	SBL	SBT
Lane Configurations				
Traffic Volume (vph)	21	447	121	486
Future Volume (vph)	21	447	121	486
Turn Type	Prot	NA	Perm	NA
Protected Phases	8	2		6
Permitted Phases			6	
Detector Phase	8	2	6	6
Switch Phase				
Minimum Initial (s)	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	24.0
Total Split (s)	25.0	65.0	65.0	65.0
Total Split (%)	27.8%	72.2%	72.2%	72.2%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0
Total Lost Time (s)	6.0	6.0		6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	None	Max	Max	Max
Act Effect Green (s)	7.6	65.8		65.8
Actuated g/C Ratio	0.09	0.77		0.77
v/c Ratio	0.54	0.35		0.54
Control Delay	18.5	4.2		6.4
Queue Delay	0.0	0.0		0.0
Total Delay	18.5	4.2		6.4
LOS	B	A		A
Approach Delay	18.5	4.2		6.4
Approach LOS	B	A		A

Intersection Summary

Cycle Length: 90  
 Actuated Cycle Length: 85.5  
 Natural Cycle: 60  
 Control Type: Semi Act-Uncoord  
 Maximum v/c Ratio: 0.54  
 Intersection Signal Delay: 6.8  
 Intersection Capacity Utilization 80.4%  
 Analysis Period (min) 15  
 Intersection LOS: A  
 ICU Level of Service D

Splits and Phases: 11: Liverpool Rd & Krosno Blvd



Queues

11: Liverpool Rd & Krosno Blvd

2027 Total Traffic Conditions

SAT Peak Hour (Krosno Signalized)












Lane Group	WBL	NBT	SBT
Lane Group Flow (vph)	131	498	632
v/c Ratio	0.54	0.35	0.54
Control Delay	18.5	4.2	6.4
Queue Delay	0.0	0.0	0.0
Total Delay	18.5	4.2	6.4
Queue Length 50th (m)	3.3	17.8	28.8
Queue Length 95th (m)	18.0	37.9	65.0
Internal Link Dist (m)	251.2	233.4	388.4
Turn Bay Length (m)			
Base Capacity (vph)	447	1419	1172
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.29	0.35	0.54

Intersection Summary

HCM Signalized Intersection Capacity Analysis  
 11: Liverpool Rd & Krosno Blvd

2027 Total Traffic Conditions  
 SAT Peak Hour (Krosno Signalized)

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	21	105	447	31	121	486
Future Volume (vph)	21	105	447	31	121	486
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0			6.0
Lane Util. Factor	1.00		1.00			1.00
Frpb, ped/bikes	0.95		1.00			1.00
Flpb, ped/bikes	1.00		1.00			1.00
Frt	0.89		0.99			1.00
Flt Protected	0.99		1.00			0.99
Satd. Flow (prot)	1591		1842			1854
Flt Permitted	0.99		1.00			0.81
Satd. Flow (perm)	1591		1842			1523
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	22	109	466	32	126	506
RTOR Reduction (vph)	99	0	2	0	0	0
Lane Group Flow (vph)	32	0	496	0	0	632
Confl. Peds. (#/hr)	3			8	8	
Confl. Bikes (#/hr)		10		3		
Heavy Vehicles (%)	0%	1%	3%	5%	0%	3%
Turn Type	Prot		NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases					6	
Actuated Green, G (s)	7.6		65.8			65.8
Effective Green, g (s)	7.6		65.8			65.8
Actuated g/C Ratio	0.09		0.77			0.77
Clearance Time (s)	6.0		6.0			6.0
Vehicle Extension (s)	3.0		3.0			3.0
Lane Grp Cap (vph)	141		1419			1173
v/s Ratio Prot	c0.02		0.27			
v/s Ratio Perm						c0.42
v/c Ratio	0.22		0.35			0.54
Uniform Delay, d1	36.2		3.1			3.8
Progression Factor	1.00		1.00			1.00
Incremental Delay, d2	0.8		0.7			1.8
Delay (s)	37.0		3.8			5.6
Level of Service	D		A			A
Approach Delay (s)	37.0		3.8			5.6
Approach LOS	D		A			A
<b>Intersection Summary</b>						
HCM 2000 Control Delay			8.1		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.51			
Actuated Cycle Length (s)			85.4		Sum of lost time (s)	12.0
Intersection Capacity Utilization			80.4%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						



Approach	WB	NB	SB
Crosswalk Length (m)	8.51	7.40	7.40
Crosswalk Width (m)	1.20	1.20	1.20
Total Number of Lanes Crossed	2	2	2
Number of Right-Turn Islands	0	0	0
Type of Control	None	None	None
Corresponding Signal Phase	2	6	8
Effective Walk Time (s)	0.0	0.0	0.0
Right Corner Size A (m)	2.74	2.74	2.74
Right Corner Size B (m)	2.74	2.74	2.74
Right Corner Curb Radius (m)	0.00	0.00	0.00
Right Corner Total Area (sq.m)	7.51	7.51	7.51
Ped. Left-Right Flow Rate (p/h)	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0
85th percentile speed (km/h)	40	40	40
Right Corner Area per Ped (sq.m)	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-
Ped. Circulation Area (sq.m)	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-
Pedestrian Delay (s/p)	45.0	45.0	45.0
Pedestrian Compliance Code	Poor	Poor	Poor
Pedestrian Crosswalk Score	1.84	2.14	2.22
Pedestrian Crosswalk LOS	A	B	B

Approach	WB	NB	SB
Bicycle Flow Rate (bike/h)	0	0	0
Total Flow Rate (veh/h)	131	498	632
Effct. Green for Bike (s)	7.6	65.8	65.8
Cross Street Width (m)	7.40	8.51	7.40
Through Lanes Number	1	1	1
Through Lane Width (m)	3.70	3.70	3.70
Bicycle Lane Width (m)	0.00	0.00	0.00
Paved Shoulder Width (m)	0.00	0.00	0.00
Curb Is Present?	No	No	No
On Street Parking?	No	No	No
Bicycle Lane Capacity (bike/h)	169	1462	1462
Bicycle Delay (s/bike)	37.7	3.3	3.3
Bicycle Compliance	Poor	Good	Good
Bicycle LOS Score	2.12	2.78	2.94
Bicycle LOS	B	C	C

Intersection: 11: Liverpool Rd & Krosno Blvd

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (m)	6.2	24.3	64.2
Average Queue (m)	6.1	19.1	42.0
95th Queue (m)	6.2	24.4	64.6
Link Distance (m)	265.9	239.9	406.8
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 23: Liverpool Rd & Wharf St

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	9.3	9.2	16.4	23.9
Average Queue (m)	3.7	5.4	12.0	19.4
95th Queue (m)	11.1	12.6	17.9	25.4
Link Distance (m)	104.6	110.2	179.8	86.5
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Timings  
3: Liverpool Rd & Bayly St

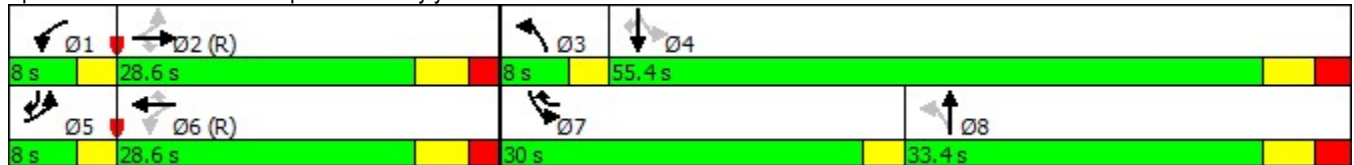
2032 Total Traffic Conditions  
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	
Lane Configurations												
Traffic Volume (vph)	199	596	99	61	245	304	65	649	496	319	167	
Future Volume (vph)	199	596	99	61	245	304	65	649	496	319	167	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	pm+pt	NA	pm+ov	
Protected Phases	5	2		1	6	7	3	8	7	4	5	
Permitted Phases	2		2	6		6	8		4		4	
Detector Phase	5	2	2	1	6	7	3	8	7	4	5	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	8.0	26.4	26.4	8.0	26.4	8.0	8.0	30.7	8.0	30.7	8.0	
Total Split (s)	8.0	28.6	28.6	8.0	28.6	30.0	8.0	33.4	30.0	55.4	8.0	
Total Split (%)	8.0%	28.6%	28.6%	8.0%	28.6%	30.0%	8.0%	33.4%	30.0%	55.4%	8.0%	
Yellow Time (s)	3.0	4.1	4.1	3.0	4.1	3.0	3.0	3.8	3.0	3.8	3.0	
All-Red Time (s)	0.0	2.3	2.3	0.0	2.3	0.0	0.0	2.9	0.0	2.9	0.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7	3.0	6.7	3.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lead	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max	
Act Effct Green (s)	30.6	22.2	22.2	30.6	22.2	52.6	35.4	26.7	60.4	48.7	57.4	
Actuated g/C Ratio	0.31	0.22	0.22	0.31	0.22	0.53	0.35	0.27	0.60	0.49	0.57	
v/c Ratio	0.54	0.76	0.26	0.32	0.33	0.39	0.16	0.86	0.88	0.20	0.18	
Control Delay	32.6	43.4	4.0	27.7	34.2	11.1	12.6	45.0	42.5	14.9	1.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	32.6	43.4	4.0	27.7	34.2	11.1	12.6	45.0	42.5	14.9	1.8	
LOS	C	D	A	C	C	B	B	D	D	B	A	
Approach Delay		36.6			22.0			42.5		26.6		
Approach LOS		D			C			D		C		

Intersection Summary

Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green  
 Natural Cycle: 90  
 Control Type: Pretimed  
 Maximum v/c Ratio: 0.88  
 Intersection Signal Delay: 32.5  
 Intersection LOS: C  
 Intersection Capacity Utilization 95.7%  
 ICU Level of Service F  
 Analysis Period (min) 15

Splits and Phases: 3: Liverpool Rd & Bayly St



Queues  
3: Liverpool Rd & Bayly St

2032 Total Traffic Conditions  
AM Peak Hour


























Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	203	608	101	62	250	310	66	805	506	326	170
v/c Ratio	0.54	0.76	0.26	0.32	0.33	0.39	0.16	0.86	0.88	0.20	0.18
Control Delay	32.6	43.4	4.0	27.7	34.2	11.1	12.6	45.0	42.5	14.9	1.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.6	43.4	4.0	27.7	34.2	11.1	12.6	45.0	42.5	14.9	1.8
Queue Length 50th (m)	29.2	58.3	0.0	8.2	21.5	23.2	4.9	76.1	74.5	18.1	0.0
Queue Length 95th (m)	47.6	77.5	6.4	17.3	32.6	40.7	10.0	#107.3	#132.3	26.3	7.5
Internal Link Dist (m)		177.5			249.4			51.8		146.7	
Turn Bay Length (m)	115.0		100.0	50.0		150.0	75.0		50.0		65.0
Base Capacity (vph)	378	802	391	192	750	786	402	931	572	1661	952
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.76	0.26	0.32	0.33	0.39	0.16	0.86	0.88	0.20	0.18

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
3: Liverpool Rd & Bayly St

2032 Total Traffic Conditions  
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	199	596	99	61	245	304	65	649	140	496	319	167
Future Volume (vph)	199	596	99	61	245	304	65	649	140	496	319	167
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7		3.0	6.7	3.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.98	1.00	0.99		1.00	1.00	0.97
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00	1.00	0.99	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1804	3614	1276	1751	3380	1431	1775	3422		1805	3411	1534
Flt Permitted	0.60	1.00	1.00	0.22	1.00	1.00	0.55	1.00		0.13	1.00	1.00
Satd. Flow (perm)	1133	3614	1276	413	3380	1431	1036	3422		256	3411	1534
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	203	608	101	62	250	310	66	662	143	506	326	170
RTOR Reduction (vph)	0	0	79	0	0	37	0	18	0	0	0	79
Lane Group Flow (vph)	203	608	22	62	250	273	66	787	0	506	326	91
Confl. Peds. (#/hr)	19		23	23		19	19		38	38		19
Confl. Bikes (#/hr)			1			1			3			1
Heavy Vehicles (%)	0%	1%	22%	4%	8%	12%	2%	2%	6%	1%	7%	3%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	5	2		1	6	7	3	8		7	4	5
Permitted Phases	2		2	6		6	8			4		4
Actuated Green, G (s)	27.2	22.2	22.2	27.2	22.2	49.2	31.7	26.7		56.7	48.7	53.7
Effective Green, g (s)	27.2	22.2	22.2	27.2	22.2	49.2	31.7	26.7		56.7	48.7	53.7
Actuated g/C Ratio	0.27	0.22	0.22	0.27	0.22	0.49	0.32	0.27		0.57	0.49	0.54
Clearance Time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7		3.0	6.7	3.0
Lane Grp Cap (vph)	341	802	283	179	750	704	365	913		563	1661	823
v/s Ratio Prot	c0.03	c0.17		0.02	0.07	0.10	0.01	0.23		c0.24	0.10	0.01
v/s Ratio Perm	0.13		0.02	0.08		0.09	0.05			c0.27		0.05
v/c Ratio	0.60	0.76	0.08	0.35	0.33	0.39	0.18	0.86		0.90	0.20	0.11
Uniform Delay, d1	30.4	36.4	30.8	28.1	32.7	15.9	24.2	34.9		25.9	14.5	11.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	7.5	6.6	0.5	5.2	1.2	1.6	1.1	10.5		19.8	0.3	0.3
Delay (s)	37.8	43.0	31.4	33.3	33.9	17.6	25.3	45.4		45.7	14.8	11.7
Level of Service	D	D	C	C	C	B	C	D		D	B	B
Approach Delay (s)		40.6			25.7			43.9			29.9	
Approach LOS		D			C			D			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			35.5			HCM 2000 Level of Service			D			
HCM 2000 Volume to Capacity ratio			0.87									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			19.1			
Intersection Capacity Utilization			95.7%			ICU Level of Service			F			
Analysis Period (min)			15									

c Critical Lane Group

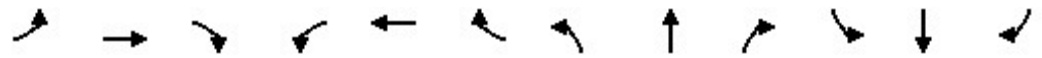
Approach	EB	WB	NB	SB
Crosswalk Length (m)	22.45	22.36	18.57	22.20
Crosswalk Width (m)	1.20	1.20	1.20	1.20
Total Number of Lanes Crossed	6	6	5	6
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	4	8	2	6
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (m)	2.74	2.74	2.74	2.74
Right Corner Size B (m)	2.74	2.74	2.74	2.74
Right Corner Curb Radius (m)	0.00	0.00	0.00	0.00
Right Corner Total Area (sq.m)	7.51	7.51	7.51	7.51
Ped. Left-Right Flow Rate (p/h)	0	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (km/h)	40	40	40	40
Right Corner Area per Ped (sq.m)	0.0	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-	-
Ped. Circulation Area (sq.m)	0.0	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-	-
Pedestrian Delay (s/p)	50.0	50.0	50.0	50.0
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.66	2.72	2.54	2.76
Pedestrian Crosswalk LOS	B	B	B	C



Approach	EB	WB	NB	SB
Bicycle Flow Rate (bike/h)	0	0	0	0
Total Flow Rate (veh/h)	912	622	871	1002
Effct. Green for Bike (s)	22.2	22.2	26.7	48.7
Cross Street Width (m)	18.57	22.20	22.36	22.45
Through Lanes Number	2	2	2	2
Through Lane Width (m)	3.70	3.70	3.70	3.70
Bicycle Lane Width (m)	0.00	0.00	0.00	0.00
Paved Shoulder Width (m)	0.00	0.00	0.00	0.00
Curb Is Present?	No	No	No	No
On Street Parking?	No	No	No	No
Bicycle Lane Capacity (bike/h)	444	444	534	974
Bicycle Delay (s/bike)	30.3	30.3	26.9	13.2
Bicycle Compliance	Poor	Poor	Fair	Fair
Bicycle LOS Score	3.21	3.16	3.37	3.48
Bicycle LOS	C	C	C	C

HCM Unsignalized Intersection Capacity Analysis  
6: Liverpool Rd & Parking Lot/Tatra Dr

2032 Total Traffic Conditions  
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕		↕	↕	
Traffic Volume (veh/h)	0	0	1	3	0	217	0	626	11	129	326	2
Future Volume (Veh/h)	0	0	1	3	0	217	0	626	11	129	326	2
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	0	1	3	0	238	0	688	12	142	358	2
Pedestrians		17			16			6			1	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		2			2			1			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												153
pX, platoon unblocked	0.94	0.94	0.94	0.94	0.94		0.94					
vC, conflicting volume	1593	1376	382	1359	1371	711	377			716		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1599	1368	310	1350	1363	711	305			716		
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	97	100	44	100			84		
cM capacity (veh/h)	30	113	675	101	114	422	1171			871		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>	<b>SB 2</b>							
Volume Total	1	241	700	142	360							
Volume Left	0	3	0	142	0							
Volume Right	1	238	12	0	2							
cSH	675	406	1171	871	1700							
Volume to Capacity	0.00	0.59	0.00	0.16	0.21							
Queue Length 95th (m)	0.0	28.2	0.0	4.4	0.0							
Control Delay (s)	10.3	26.0	0.0	9.9	0.0							
Lane LOS	B	D		A								
Approach Delay (s)	10.3	26.0	0.0	2.8								
Approach LOS	B	D										
<b>Intersection Summary</b>												
Average Delay			5.3									
Intersection Capacity Utilization			77.3%		ICU Level of Service					D		
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
 9: Liverpool Rd & Radom St

2032 Total Traffic Conditions  
 AM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	77	17	9	535	263	60
Future Volume (Veh/h)	77	17	9	535	263	60
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	83	18	10	575	283	65
Pedestrians	9				1	
Lane Width (m)	3.7				3.7	
Walking Speed (m/s)	1.1				1.1	
Percent Blockage	1				0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)					337	
pX, platoon unblocked	0.99	0.99	0.99			
vC, conflicting volume	920	324	357			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	916	315	347			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.4			
p0 queue free %	72	97	99			
cM capacity (veh/h)	297	718	1076			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	101	585	348			
Volume Left	83	10	0			
Volume Right	18	0	65			
cSH	331	1076	1700			
Volume to Capacity	0.30	0.01	0.20			
Queue Length 95th (m)	9.6	0.2	0.0			
Control Delay (s)	20.6	0.3	0.0			
Lane LOS	C	A				
Approach Delay (s)	20.6	0.3	0.0			
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay			2.2			
Intersection Capacity Utilization			47.3%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
 11: Liverpool Rd & Krosno Blvd

2032 Total Traffic Conditions  
 AM Peak Hour



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	8	126	352	25	124	169
Future Volume (vph)	8	126	352	25	124	169
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	10	159	446	32	157	214

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	169	478	371
Volume Left (vph)	10	0	157
Volume Right (vph)	159	32	0
Hadj (s)	-0.52	0.06	0.15
Departure Headway (s)	5.4	5.0	5.2
Degree Utilization, x	0.26	0.66	0.53
Capacity (veh/h)	590	702	674
Control Delay (s)	10.3	17.0	13.9
Approach Delay (s)	10.3	17.0	13.9
Approach LOS	B	C	B

Intersection Summary			
Delay		14.8	
Level of Service		B	
Intersection Capacity Utilization		54.6%	ICU Level of Service
Analysis Period (min)		15	A

HCM Unsignalized Intersection Capacity Analysis  
 13: Liverpool Rd & Ilona Park Rd (N)

2032 Total Traffic Conditions  
 AM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	7	0	1	340	182	7
Future Volume (Veh/h)	7	0	1	340	182	7
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	8	0	1	400	214	8
Pedestrians	21			3	1	
Lane Width (m)	3.7			3.7	3.7	
Walking Speed (m/s)	1.1			1.1	1.1	
Percent Blockage	2			0	0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	642	242	243			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	642	242	243			
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	100	100			
cM capacity (veh/h)	432	783	1308			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	8	401	222			
Volume Left	8	1	0			
Volume Right	0	0	8			
cSH	432	1308	1700			
Volume to Capacity	0.02	0.00	0.13			
Queue Length 95th (m)	0.4	0.0	0.0			
Control Delay (s)	13.5	0.0	0.0			
Lane LOS	B	A				
Approach Delay (s)	13.5	0.0	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			0.2			
Intersection Capacity Utilization			29.6%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
 15: Liverpool Rd & Ilona Park Rd (S)

















2032 Total Traffic Conditions  
 AM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	13	2	0	299	172	7
Future Volume (Veh/h)	13	2	0	299	172	7
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	16	2	0	360	207	8
Pedestrians	22					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	2					
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	593	233	237			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	593	233	237			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	100	100			
cM capacity (veh/h)	461	794	1313			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	18	360	215			
Volume Left	16	0	0			
Volume Right	2	0	8			
cSH	484	1313	1700			
Volume to Capacity	0.04	0.00	0.13			
Queue Length 95th (m)	0.9	0.0	0.0			
Control Delay (s)	12.7	0.0	0.0			
Lane LOS	B					
Approach Delay (s)	12.7	0.0	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			0.4			
Intersection Capacity Utilization			25.7%	ICU Level of Service	A	
Analysis Period (min)			15			

















HCM Unsignalized Intersection Capacity Analysis  
 17: Liverpool Rd & Commerce St

2032 Total Traffic Conditions  
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	4	1	3	3	8	3	265	13	12	146	9
Future Volume (Veh/h)	15	4	1	3	3	8	3	265	13	12	146	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)	18	5	1	4	4	10	4	315	15	14	174	11
Pedestrians		2						14				
Lane Width (m)		3.7						3.7				
Walking Speed (m/s)		1.1						1.1				
Percent Blockage		0						1				
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	552	548	196	556	546	322	187			330		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	552	548	196	556	546	322	187			330		
tC, single (s)	7.1	6.8	6.2	7.1	6.5	6.3	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.2	3.3	3.5	4.0	3.4	2.2			2.2		
p0 queue free %	96	99	100	99	99	99	100			99		
cM capacity (veh/h)	432	407	838	429	441	696	1397			1241		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	24	18	334	199								
Volume Left	18	4	4	14								
Volume Right	1	10	15	11								
cSH	435	549	1397	1241								
Volume to Capacity	0.06	0.03	0.00	0.01								
Queue Length 95th (m)	1.3	0.8	0.1	0.3								
Control Delay (s)	13.8	11.8	0.1	0.7								
Lane LOS	B	B	A	A								
Approach Delay (s)	13.8	11.8	0.1	0.7								
Approach LOS	B	B										
<b>Intersection Summary</b>												
Average Delay			1.2									
Intersection Capacity Utilization			29.7%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
20: Liverpool Rd & Annland St

















2032 Total Traffic Conditions  
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	54	2	8	8	0	10	7	211	7	4	100	15
Future Volume (Veh/h)	54	2	8	8	0	10	7	211	7	4	100	15
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	65	2	10	10	0	12	8	254	8	5	120	18
Pedestrians		6			3			2			1	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		1			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	432	426	137	429	431	262	144			265		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	432	426	137	429	431	262	144			265		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.3	4.3			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.4	2.4			2.2		
p0 queue free %	87	100	99	98	100	98	99			100		
cM capacity (veh/h)	518	514	910	522	511	755	1343			1307		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	77	22	270	143								
Volume Left	65	10	8	5								
Volume Right	10	12	8	18								
cSH	548	628	1343	1307								
Volume to Capacity	0.14	0.04	0.01	0.00								
Queue Length 95th (m)	3.7	0.8	0.1	0.1								
Control Delay (s)	12.6	10.9	0.3	0.3								
Lane LOS	B	B	A	A								
Approach Delay (s)	12.6	10.9	0.3	0.3								
Approach LOS	B	B										
<b>Intersection Summary</b>												
Average Delay			2.6									
Intersection Capacity Utilization			27.9%		ICU Level of Service				A			
Analysis Period (min)			15									



HCM Unsignalized Intersection Capacity Analysis  
 23: Liverpool Rd & Wharf St

2032 Total Traffic Conditions  
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	18	0	0	0	1	5	1	191	1	4	117	4
Future Volume (vph)	18	0	0	0	1	5	1	191	1	4	117	4
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	22	0	0	0	1	6	1	230	1	5	141	5
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	22	7	232	151								
Volume Left (vph)	22	0	1	5								
Volume Right (vph)	0	6	1	5								
Hadj (s)	0.20	-0.51	0.02	0.02								
Departure Headway (s)	4.9	4.2	4.1	4.2								
Degree Utilization, x	0.03	0.01	0.27	0.18								
Capacity (veh/h)	667	765	852	838								
Control Delay (s)	8.1	7.3	8.6	8.1								
Approach Delay (s)	8.1	7.3	8.6	8.1								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			8.4									
Level of Service			A									
Intersection Capacity Utilization			25.3%	ICU Level of Service	A							
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
26: Liverpool Rd

2032 Total Traffic Conditions  
AM Peak Hour



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	106	63	0	32	40
Future Volume (Veh/h)	0	106	63	0	32	40
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74
Hourly flow rate (vph)	0	143	85	0	43	54
Pedestrians	7					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	1					
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	232	92			92	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	232	92			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 %	100	85			97	
cM capacity (veh/h)	734	964			1505	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	143	85	97			
Volume Left	0	0	43			
Volume Right	143	0	0			
cSH	964	1700	1505			
Volume to Capacity	0.15	0.05	0.03			
Queue Length 95th (m)	4.0	0.0	0.7			
Control Delay (s)	9.4	0.0	3.4			
Lane LOS	A		A			
Approach Delay (s)	9.4	0.0	3.4			
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			5.2			
Intersection Capacity Utilization			23.8%	ICU Level of Service	A	
Analysis Period (min)			15			

Timings  
11: Liverpool Rd & Krosno Blvd

2032 Total Traffic Conditions  
AM Peak Hour (Krosno Signalized)



Lane Group	WBL	NBT	SBL	SBT
Lane Configurations				
Traffic Volume (vph)	8	352	124	169
Future Volume (vph)	8	352	124	169
Turn Type	Prot	NA	Perm	NA
Protected Phases	8	2		6
Permitted Phases			6	
Detector Phase	8	2	6	6
Switch Phase				
Minimum Initial (s)	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	24.0
Total Split (s)	27.0	63.0	63.0	63.0
Total Split (%)	30.0%	70.0%	70.0%	70.0%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0
Total Lost Time (s)	6.0	6.0		6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	None	Max	Max	Max
Act Effct Green (s)	7.4	61.4		61.4
Actuated g/C Ratio	0.09	0.76		0.76
v/c Ratio	0.58	0.35		0.40
Control Delay	15.3	4.3		5.2
Queue Delay	0.0	0.0		0.0
Total Delay	15.3	4.3		5.2
LOS	B	A		A
Approach Delay	15.3	4.3		5.2
Approach LOS	B	A		A

Intersection Summary

Cycle Length: 90	
Actuated Cycle Length: 80.8	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.58	
Intersection Signal Delay: 6.5	Intersection LOS: A
Intersection Capacity Utilization 59.7%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 11: Liverpool Rd & Krosno Blvd



Queues  
11: Liverpool Rd & Krosno Blvd

2032 Total Traffic Conditions  
AM Peak Hour (Krosno Signalized)



Lane Group	WBL	NBT	SBT
Lane Group Flow (vph)	169	478	371
v/c Ratio	0.58	0.35	0.40
Control Delay	15.3	4.3	5.2
Queue Delay	0.0	0.0	0.0
Total Delay	15.3	4.3	5.2
Queue Length 50th (m)	1.4	16.2	13.5
Queue Length 95th (m)	12.3	30.3	27.3
Internal Link Dist (m)	251.2	233.4	388.4
Turn Bay Length (m)			
Base Capacity (vph)	535	1359	937
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.32	0.35	0.40
<b>Intersection Summary</b>			

HCM Signalized Intersection Capacity Analysis  
 11: Liverpool Rd & Krosno Blvd

2032 Total Traffic Conditions  
 AM Peak Hour (Krosno Signalized)



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	8	126	352	25	124	169
Future Volume (vph)	8	126	352	25	124	169
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0			6.0
Lane Util. Factor	1.00		1.00			1.00
Frpb, ped/bikes	0.98		1.00			1.00
Flpb, ped/bikes	1.00		1.00			0.99
Frt	0.87		0.99			1.00
Flt Protected	1.00		1.00			0.98
Satd. Flow (prot)	1604		1788			1799
Flt Permitted	1.00		1.00			0.67
Satd. Flow (perm)	1604		1788			1234
Peak-hour factor, PHF	0.79	0.79	0.79	0.79	0.79	0.79
Adj. Flow (vph)	10	159	446	32	157	214
RTOR Reduction (vph)	144	0	2	0	0	0
Lane Group Flow (vph)	25	0	476	0	0	371
Confl. Peds. (#/hr)	6	2		12	12	
Confl. Bikes (#/hr)				2		
Heavy Vehicles (%)	0%	2%	4%	36%	4%	4%
Turn Type	Prot		NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases					6	
Actuated Green, G (s)	7.4		61.4			61.4
Effective Green, g (s)	7.4		61.4			61.4
Actuated g/C Ratio	0.09		0.76			0.76
Clearance Time (s)	6.0		6.0			6.0
Vehicle Extension (s)	3.0		3.0			3.0
Lane Grp Cap (vph)	146		1358			937
v/s Ratio Prot	c0.02		0.27			
v/s Ratio Perm						c0.30
v/c Ratio	0.17		0.35			0.40
Uniform Delay, d1	33.9		3.2			3.3
Progression Factor	1.00		1.00			1.00
Incremental Delay, d2	0.5		0.7			1.3
Delay (s)	34.4		3.9			4.6
Level of Service	C		A			A
Approach Delay (s)	34.4		3.9			4.6
Approach LOS	C		A			A
<b>Intersection Summary</b>						
HCM 2000 Control Delay			9.2		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.37			
Actuated Cycle Length (s)			80.8		Sum of lost time (s)	12.0
Intersection Capacity Utilization			59.7%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

Approach	WB	NB	SB
Crosswalk Length (m)	8.51	7.40	7.40
Crosswalk Width (m)	1.20	1.20	1.20
Total Number of Lanes Crossed	2	2	2
Number of Right-Turn Islands	0	0	0
Type of Control	None	None	None
Corresponding Signal Phase	2	6	8
Effective Walk Time (s)	0.0	0.0	0.0
Right Corner Size A (m)	2.74	2.74	2.74
Right Corner Size B (m)	2.74	2.74	2.74
Right Corner Curb Radius (m)	0.00	0.00	0.00
Right Corner Total Area (sq.m)	7.51	7.51	7.51
Ped. Left-Right Flow Rate (p/h)	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0
85th percentile speed (km/h)	40	40	40
Right Corner Area per Ped (sq.m)	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-
Ped. Circulation Area (sq.m)	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-
Pedestrian Delay (s/p)	45.0	45.0	45.0
Pedestrian Compliance Code	Poor	Poor	Poor
Pedestrian Crosswalk Score	1.87	2.01	2.12
Pedestrian Crosswalk LOS	A	B	B

Approach	WB	NB	SB
Bicycle Flow Rate (bike/h)	0	0	0
Total Flow Rate (veh/h)	169	478	371
Effct. Green for Bike (s)	7.4	61.4	61.4
Cross Street Width (m)	7.40	8.51	7.40
Through Lanes Number	1	1	1
Through Lane Width (m)	3.70	3.70	3.70
Bicycle Lane Width (m)	0.00	0.00	0.00
Paved Shoulder Width (m)	0.00	0.00	0.00
Curb Is Present?	No	No	No
On Street Parking?	No	No	No
Bicycle Lane Capacity (bike/h)	164	1364	1364
Bicycle Delay (s/bike)	37.9	4.5	4.5
Bicycle Compliance	Poor	Good	Good
Bicycle LOS Score	2.18	2.75	2.51
Bicycle LOS	B	B	B

Intersection: 11: Liverpool Rd & Krosno Blvd

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (m)	20.6	41.6	37.3
Average Queue (m)	9.3	21.0	19.4
95th Queue (m)	16.9	32.1	30.7
Link Distance (m)	265.9	239.9	406.8
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			



Intersection: 23: Liverpool Rd & Wharf St

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	9.3	9.2	27.8	17.0
Average Queue (m)	3.6	1.8	12.4	10.4
95th Queue (m)	10.8	7.6	20.6	16.3
Link Distance (m)	104.6	110.2	179.8	86.5
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Timings  
3: Liverpool Rd & Bayly St

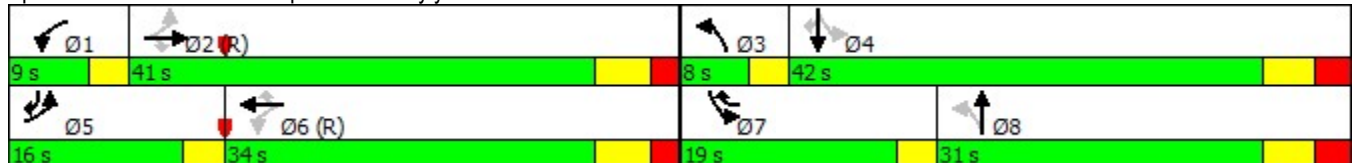
2032 Total Traffic Conditions  
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	
Lane Configurations												
Traffic Volume (vph)	366	868	273	123	586	689	88	657	335	665	245	
Future Volume (vph)	366	868	273	123	586	689	88	657	335	665	245	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	pm+pt	NA	pm+ov	
Protected Phases	5	2		1	6	7	3	8	7	4	5	
Permitted Phases	2		2	6		6	8		4		4	
Detector Phase	5	2	2	1	6	7	3	8	7	4	5	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	8.0	27.0	27.0	8.0	27.0	8.0	8.0	31.0	8.0	31.0	8.0	
Total Split (s)	16.0	41.0	41.0	9.0	34.0	19.0	8.0	31.0	19.0	42.0	16.0	
Total Split (%)	16.0%	41.0%	41.0%	9.0%	34.0%	19.0%	8.0%	31.0%	19.0%	42.0%	16.0%	
Yellow Time (s)	3.0	4.1	4.1	3.0	4.1	3.0	3.0	3.8	3.0	3.8	3.0	
All-Red Time (s)	0.0	2.3	2.3	0.0	2.3	0.0	0.0	2.9	0.0	2.9	0.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7	3.0	6.7	3.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lead	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max	
Act Effct Green (s)	47.0	34.6	34.6	37.0	27.6	47.0	33.0	24.3	47.0	35.3	52.0	
Actuated g/C Ratio	0.47	0.35	0.35	0.37	0.28	0.47	0.33	0.24	0.47	0.35	0.52	
v/c Ratio	0.94	0.72	0.46	0.57	0.61	0.92	0.31	0.92	0.93	0.54	0.30	
Control Delay	53.3	32.6	9.5	27.7	34.5	38.2	19.0	53.3	57.6	27.9	7.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	53.3	32.6	9.5	27.7	34.5	38.2	19.0	53.3	57.6	27.9	7.1	
LOS	D	C	A	C	C	D	B	D	E	C	A	
Approach Delay		33.4			35.7			49.7		31.8		
Approach LOS		C			D			D		C		

Intersection Summary

Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green  
 Natural Cycle: 90  
 Control Type: Pretimed  
 Maximum v/c Ratio: 0.94  
 Intersection Signal Delay: 36.4  
 Intersection LOS: D  
 Intersection Capacity Utilization 99.9%  
 ICU Level of Service F  
 Analysis Period (min) 15

Splits and Phases: 3: Liverpool Rd & Bayly St



Queues  
3: Liverpool Rd & Bayly St

2032 Total Traffic Conditions  
PM Peak Hour



























Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	377	895	281	127	604	710	91	791	345	686	253
v/c Ratio	0.94	0.72	0.46	0.57	0.61	0.92	0.31	0.92	0.93	0.54	0.30
Control Delay	53.3	32.6	9.5	27.7	34.5	38.2	19.0	53.3	57.6	27.9	7.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.3	32.6	9.5	27.7	34.5	38.2	19.0	53.3	57.6	27.9	7.1
Queue Length 50th (m)	47.2	78.7	9.1	13.6	53.5	99.4	9.5	77.3	48.3	55.3	12.0
Queue Length 95th (m)	#92.1	101.0	29.8	24.2	71.2	#133.4	18.3	#112.4	#100.4	72.8	24.8
Internal Link Dist (m)		177.5			249.4			51.8		146.7	
Turn Bay Length (m)	115.0		100.0	50.0		150.0	75.0		50.0		65.0
Base Capacity (vph)	402	1238	612	221	997	775	297	860	370	1263	852
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.94	0.72	0.46	0.57	0.61	0.92	0.31	0.92	0.93	0.54	0.30

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
3: Liverpool Rd & Bayly St

2032 Total Traffic Conditions  
PM Peak Hour

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	366	868	273	123	586	689	88	657	111	335	665	245	
Future Volume (vph)	366	868	273	123	586	689	88	657	111	335	665	245	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7		3.0	6.7	3.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00	
Frpb, ped/bikes	1.00	1.00	0.94	1.00	1.00	0.97	1.00	0.99		1.00	1.00	0.96	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00		1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	1820	3579	1369	1752	3614	1533	1813	3487		1787	3579	1531	
Flt Permitted	0.26	1.00	1.00	0.21	1.00	1.00	0.39	1.00		0.15	1.00	1.00	
Satd. Flow (perm)	490	3579	1369	379	3614	1533	746	3487		276	3579	1531	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	
Adj. Flow (vph)	377	895	281	127	604	710	91	677	114	345	686	253	
RTOR Reduction (vph)	0	0	139	0	0	60	0	14	0	0	0	62	
Lane Group Flow (vph)	377	895	142	127	604	650	91	777	0	345	686	191	
Confl. Peds. (#/hr)	26		31	31		26	37		58	58		37	
Confl. Bikes (#/hr)			6			4			3			6	
Heavy Vehicles (%)	0%	2%	12%	4%	1%	3%	0%	1%	2%	2%	2%	2%	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	pm+ov	
Protected Phases	5	2		1	6	7	3	8		7	4	5	
Permitted Phases	2		2	6		6	8			4		4	
Actuated Green, G (s)	43.6	34.6	34.6	33.6	27.6	43.6	29.3	24.3		43.3	35.3	48.3	
Effective Green, g (s)	43.6	34.6	34.6	33.6	27.6	43.6	29.3	24.3		43.3	35.3	48.3	
Actuated g/C Ratio	0.44	0.35	0.35	0.34	0.28	0.44	0.29	0.24		0.43	0.35	0.48	
Clearance Time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7		3.0	6.7	3.0	
Lane Grp Cap (vph)	386	1238	473	209	997	668	271	847		361	1263	739	
v/s Ratio Prot	c0.13	0.25		0.04	0.17	c0.16	0.02	0.22		0.15	0.19	0.03	
v/s Ratio Perm	c0.30		0.10	0.17		0.27	0.08			c0.26		0.09	
v/c Ratio	0.98	0.72	0.30	0.61	0.61	0.97	0.34	0.92		0.96	0.54	0.26	
Uniform Delay, d1	23.1	28.5	23.9	24.4	31.5	27.6	26.3	36.9		26.6	25.9	15.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Incremental Delay, d2	40.3	3.7	1.6	12.5	2.7	28.9	3.3	16.4		37.4	1.7	0.8	
Delay (s)	63.4	32.2	25.5	36.8	34.2	56.5	29.6	53.3		64.0	27.6	16.1	
Level of Service	E	C	C	D	C	E	C	D		E	C	B	
Approach Delay (s)		38.6			45.4			50.9			35.1		
Approach LOS		D			D			D			D		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			41.7									HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio			1.03										
Actuated Cycle Length (s)			100.0									Sum of lost time (s)	19.1
Intersection Capacity Utilization			99.9%									ICU Level of Service	F
Analysis Period (min)			15										

c Critical Lane Group

Approach	EB	WB	NB	SB
Crosswalk Length (m)	22.45	22.36	18.57	22.20
Crosswalk Width (m)	1.20	1.20	1.20	1.20
Total Number of Lanes Crossed	6	6	5	6
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	4	8	2	6
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (m)	2.74	2.74	2.74	2.74
Right Corner Size B (m)	2.74	2.74	2.74	2.74
Right Corner Curb Radius (m)	0.00	0.00	0.00	0.00
Right Corner Total Area (sq.m)	7.51	7.51	7.51	7.51
Ped. Left-Right Flow Rate (p/h)	0	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (km/h)	40	40	40	40
Right Corner Area per Ped (sq.m)	0.0	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-	-
Ped. Circulation Area (sq.m)	0.0	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-	-
Pedestrian Delay (s/p)	50.0	50.0	50.0	50.0
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.81	2.85	2.64	2.88
Pedestrian Crosswalk LOS	C	C	B	C

Approach	EB	WB	NB	SB
Bicycle Flow Rate (bike/h)	0	0	0	0
Total Flow Rate (veh/h)	1553	1441	882	1284
Effct. Green for Bike (s)	34.6	27.6	24.3	35.3
Cross Street Width (m)	18.57	22.20	22.36	22.45
Through Lanes Number	2	2	2	2
Through Lane Width (m)	3.70	3.70	3.70	3.70
Bicycle Lane Width (m)	0.00	0.00	0.00	0.00
Paved Shoulder Width (m)	0.00	0.00	0.00	0.00
Curb Is Present?	No	No	No	No
On Street Parking?	No	No	No	No
Bicycle Lane Capacity (bike/h)	692	552	486	706
Bicycle Delay (s/bike)	21.4	26.2	28.7	20.9
Bicycle Compliance	Fair	Fair	Fair	Fair
Bicycle LOS Score	3.74	3.83	3.38	3.72
Bicycle LOS	D	D	C	D

HCM Unsignalized Intersection Capacity Analysis  
6: Liverpool Rd & Parking Lot/Tatra Dr

2032 Total Traffic Conditions  
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕		↕	↕	
Traffic Volume (veh/h)	4	1	1	1	0	236	1	619	8	215	785	1
Future Volume (Veh/h)	4	1	1	1	0	236	1	619	8	215	785	1
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)	4	1	1	1	0	246	1	645	8	224	818	1
Pedestrians		23			32			22			2	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		2			3			2			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)											153	
pX, platoon unblocked	0.81	0.81	0.81	0.81	0.81		0.81					
vC, conflicting volume	2188	1976	864	1972	1973	683	842			685		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2349	2088	715	2083	2084	683	688			685		
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 %	41	97	100	96	100	44	100			75		
cM capacity (veh/h)	7	31	337	23	31	438	725			889		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>	<b>SB 2</b>							
Volume Total	6	247	654	224	819							
Volume Left	4	1	1	224	0							
Volume Right	1	246	8	0	1							
cSH	10	408	725	889	1700							
Volume to Capacity	0.62	0.61	0.00	0.25	0.48							
Queue Length 95th (m)	9.8	29.4	0.0	7.6	0.0							
Control Delay (s)	628.4	26.5	0.0	10.4	0.0							
Lane LOS	F	D	A	B								
Approach Delay (s)	628.4	26.5	0.0	2.2								
Approach LOS	F	D										
<b>Intersection Summary</b>												
Average Delay			6.5									
Intersection Capacity Utilization			99.4%		ICU Level of Service				F			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
 9: Liverpool Rd & Radom St

2032 Total Traffic Conditions  
 PM Peak Hour












Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	58	31	21	552	707	68
Future Volume (Veh/h)	58	31	21	552	707	68
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	60	32	22	569	729	70
Pedestrians	11			1		
Lane Width (m)	3.7			3.7		
Walking Speed (m/s)	1.1			1.1		
Percent Blockage	1			0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)					337	
pX, platoon unblocked	0.79	0.79	0.79			
vC, conflicting volume	1388	776	810			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1359	587	629			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	52	92	97			
cM capacity (veh/h)	126	396	755			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	92	591	799			
Volume Left	60	22	0			
Volume Right	32	0	70			
cSH	165	755	1700			
Volume to Capacity	0.56	0.03	0.47			
Queue Length 95th (m)	21.8	0.7	0.0			
Control Delay (s)	51.2	0.8	0.0			
Lane LOS	F	A				
Approach Delay (s)	51.2	0.8	0.0			
Approach LOS	F					
<b>Intersection Summary</b>						
Average Delay			3.5			
Intersection Capacity Utilization			58.1%	ICU Level of Service	B	
Analysis Period (min)			15			



HCM Unsignalized Intersection Capacity Analysis  
 11: Liverpool Rd & Krosno Blvd

2032 Total Traffic Conditions  
 PM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	39	123	376	19	175	535
Future Volume (vph)	39	123	376	19	175	535
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	44	138	422	21	197	601
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total (vph)	182	443	798			
Volume Left (vph)	44	0	197			
Volume Right (vph)	138	21	0			
Hadj (s)	-0.41	0.00	0.10			
Departure Headway (s)	6.2	5.4	5.3			
Degree Utilization, x	0.31	0.67	1.16			
Capacity (veh/h)	558	648	681			
Control Delay (s)	12.0	18.5	109.4			
Approach Delay (s)	12.0	18.5	109.4			
Approach LOS	B	C	F			
Intersection Summary						
Delay			68.6			
Level of Service			F			
Intersection Capacity Utilization			78.6%	ICU Level of Service	D	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
 13: Liverpool Rd & Ilona Park Rd (N)

2032 Total Traffic Conditions  
 PM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	6	0	1	335	503	11
Future Volume (Veh/h)	6	0	1	335	503	11
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	7	0	1	399	599	13
Pedestrians	10			1		
Lane Width (m)	3.7			3.7		
Walking Speed (m/s)	1.1			1.1		
Percent Blockage	1			0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1016	616	622			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1016	616	622			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	100	100			
cM capacity (veh/h)	263	489	959			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	7	400	612			
Volume Left	7	1	0			
Volume Right	0	0	13			
cSH	263	959	1700			
Volume to Capacity	0.03	0.00	0.36			
Queue Length 95th (m)	0.6	0.0	0.0			
Control Delay (s)	19.1	0.0	0.0			
Lane LOS	C	A				
Approach Delay (s)	19.1	0.0	0.0			
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay			0.1			
Intersection Capacity Utilization			37.5%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
 15: Liverpool Rd & Ilona Park Rd (S)

















2032 Total Traffic Conditions  
 PM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	2	1	1	320	463	12
Future Volume (Veh/h)	2	1	1	320	463	12
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)	2	1	1	372	538	14
Pedestrians	9			3		
Lane Width (m)	3.7			3.7		
Walking Speed (m/s)	1.1			1.1		
Percent Blockage	1			0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	931	554	561			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	931	554	561			
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	100	100			
cM capacity (veh/h)	295	531	1011			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	3	373	552			
Volume Left	2	1	0			
Volume Right	1	0	14			
cSH	346	1011	1700			
Volume to Capacity	0.01	0.00	0.32			
Queue Length 95th (m)	0.2	0.0	0.0			
Control Delay (s)	15.5	0.0	0.0			
Lane LOS	C	A				
Approach Delay (s)	15.5	0.0	0.0			
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay			0.1			
Intersection Capacity Utilization			35.1%	ICU Level of Service	A	
Analysis Period (min)			15			

















HCM Unsignalized Intersection Capacity Analysis  
 17: Liverpool Rd & Commerce St

2032 Total Traffic Conditions  
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	0	2	7	3	9	3	293	5	18	420	19
Future Volume (Veh/h)	9	0	2	7	3	9	3	293	5	18	420	19
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	0	2	8	3	10	3	337	6	21	483	22
Pedestrians		9			12			2			1	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		1			1			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	904	906	505	898	914	353	514			355		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	904	906	505	898	914	353	514			355		
tC, single (s)	7.3	6.5	6.2	7.6	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.7	4.0	3.3	4.0	4.0	3.3	2.2			2.2		
p0 queue free %	96	100	100	96	99	99	100			98		
cM capacity (veh/h)	223	267	565	205	264	686	1053			1201		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	12	21	346	526								
Volume Left	10	8	3	21								
Volume Right	2	10	6	22								
cSH	248	323	1053	1201								
Volume to Capacity	0.05	0.06	0.00	0.02								
Queue Length 95th (m)	1.2	1.6	0.1	0.4								
Control Delay (s)	20.2	16.9	0.1	0.5								
Lane LOS	C	C	A	A								
Approach Delay (s)	20.2	16.9	0.1	0.5								
Approach LOS	C	C										
<b>Intersection Summary</b>												
Average Delay			1.0									
Intersection Capacity Utilization			45.4%		ICU Level of Service				A			
Analysis Period (min)			15									

















HCM Unsignalized Intersection Capacity Analysis  
20: Liverpool Rd & Annland St

2032 Total Traffic Conditions  
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	0	15	18	3	3	13	306	16	14	378	52
Future Volume (Veh/h)	27	0	15	18	3	3	13	306	16	14	378	52
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	29	0	16	19	3	3	14	329	17	15	406	56
Pedestrians		4			1			2			3	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	841	843	440	848	862	342	466			347		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	841	843	440	848	862	342	466			347		
tC, single (s)	7.3	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.7	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	89	100	97	93	99	100	99			99		
cM capacity (veh/h)	257	294	618	269	286	703	1102			1222		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	45	25	360	477								
Volume Left	29	19	14	15								
Volume Right	16	3	17	56								
cSH	324	293	1102	1222								
Volume to Capacity	0.14	0.09	0.01	0.01								
Queue Length 95th (m)	3.6	2.1	0.3	0.3								
Control Delay (s)	17.9	18.4	0.5	0.4								
Lane LOS	C	C	A	A								
Approach Delay (s)	17.9	18.4	0.5	0.4								
Approach LOS	C	C										
<b>Intersection Summary</b>												
Average Delay			1.8									
Intersection Capacity Utilization			39.5%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
 23: Liverpool Rd & Wharf St

2032 Total Traffic Conditions  
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	19	0	2	0	0	7	5	258	1	10	339	38
Future Volume (vph)	19	0	2	0	0	7	5	258	1	10	339	38
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)	23	0	2	0	0	8	6	307	1	12	404	45
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	25	8	314	461								
Volume Left (vph)	23	0	6	12								
Volume Right (vph)	2	8	1	45								
Hadj (s)	0.21	-0.60	0.00	-0.05								
Departure Headway (s)	5.8	5.0	4.5	4.3								
Degree Utilization, x	0.04	0.01	0.39	0.55								
Capacity (veh/h)	541	607	786	825								
Control Delay (s)	9.0	8.1	10.3	12.3								
Approach Delay (s)	9.0	8.1	10.3	12.3								
Approach LOS	A	A	B	B								
Intersection Summary												
Delay			11.4									
Level of Service			B									
Intersection Capacity Utilization			40.4%	ICU Level of Service	A							
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
26: Liverpool Rd

2032 Total Traffic Conditions  
PM Peak Hour



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	141	130	0	170	164
Future Volume (Veh/h)	0	141	130	0	170	164
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.78	0.78	0.78	0.78	0.78	0.78
Hourly flow rate (vph)	0	181	167	0	218	210
Pedestrians	33		4			9
Lane Width (m)	3.7		3.7			3.7
Walking Speed (m/s)	1.1		1.1			1.1
Percent Blockage	3		0			1
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	850	209			200	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	850	209			200	
tC, single (s)	7.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	4.4	3.3			2.2	
p0 queue free %	100	77			84	
cM capacity (veh/h)	185	802			1340	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	181	167	428			
Volume Left	0	0	218			
Volume Right	181	0	0			
cSH	802	1700	1340			
Volume to Capacity	0.23	0.10	0.16			
Queue Length 95th (m)	6.6	0.0	4.4			
Control Delay (s)	10.8	0.0	4.9			
Lane LOS	B		A			
Approach Delay (s)	10.8	0.0	4.9			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			5.2			
Intersection Capacity Utilization			49.8%		ICU Level of Service	A
Analysis Period (min)			15			

Timings  
11: Liverpool Rd & Krosno Blvd

2032 Total Traffic Conditions  
PM Peak Hour (Krosno Signalized)



Lane Group	WBL	NBT	SBL	SBT
Lane Configurations	W	T		T
Traffic Volume (vph)	39	376	175	535
Future Volume (vph)	39	376	175	535
Turn Type	Prot	NA	Perm	NA
Protected Phases	8	2		6
Permitted Phases			6	
Detector Phase	8	2	6	6
Switch Phase				
Minimum Initial (s)	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	24.0
Total Split (s)	24.0	66.0	66.0	66.0
Total Split (%)	26.7%	73.3%	73.3%	73.3%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0
Total Lost Time (s)	6.0	6.0		6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	None	Max	Max	Max
Act Effect Green (s)	8.4	63.8		63.8
Actuated g/C Ratio	0.10	0.76		0.76
v/c Ratio	0.62	0.31		0.73
Control Delay	20.1	4.3		11.6
Queue Delay	0.0	0.0		0.0
Total Delay	20.1	4.3		11.6
LOS	C	A		B
Approach Delay	20.1	4.3		11.6
Approach LOS	C	A		B

Intersection Summary

Cycle Length: 90  
 Actuated Cycle Length: 84.3  
 Natural Cycle: 80  
 Control Type: Semi Act-Uncoord  
 Maximum v/c Ratio: 0.73  
 Intersection Signal Delay: 10.4  
 Intersection Capacity Utilization 83.6%  
 Analysis Period (min) 15  
 Intersection LOS: B  
 ICU Level of Service E

Splits and Phases: 11: Liverpool Rd & Krosno Blvd





Queues  
11: Liverpool Rd & Krosno Blvd










2032 Total Traffic Conditions  
PM Peak Hour (Krosno Signalized)



Lane Group	WBL	NBT	SBT
Lane Group Flow (vph)	182	443	798
v/c Ratio	0.62	0.31	0.73
Control Delay	20.1	4.3	11.6
Queue Delay	0.0	0.0	0.0
Total Delay	20.1	4.3	11.6
Queue Length 50th (m)	6.3	16.5	51.3
Queue Length 95th (m)	23.4	35.4	124.9
Internal Link Dist (m)	251.2	233.4	388.4
Turn Bay Length (m)			
Base Capacity (vph)	473	1416	1095
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.38	0.31	0.73
<b>Intersection Summary</b>			

HCM Signalized Intersection Capacity Analysis  
 11: Liverpool Rd & Krosno Blvd

2032 Total Traffic Conditions  
 PM Peak Hour (Krosno Signalized)

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	39	123	376	19	175	535
Future Volume (vph)	39	123	376	19	175	535
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0			6.0
Lane Util. Factor	1.00		1.00			1.00
Frpb, ped/bikes	1.00		1.00			1.00
Flpb, ped/bikes	1.00		1.00			0.99
Frt	0.90		0.99			1.00
Flt Protected	0.99		1.00			0.99
Satd. Flow (prot)	1704		1868			1837
Flt Permitted	0.99		1.00			0.78
Satd. Flow (perm)	1704		1868			1447
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	44	138	422	21	197	601
RTOR Reduction (vph)	124	0	1	0	0	0
Lane Group Flow (vph)	58	0	442	0	0	798
Confl. Peds. (#/hr)	6			18	18	
Confl. Bikes (#/hr)				1		
Heavy Vehicles (%)	0%	0%	2%	0%	2%	3%
Turn Type	Prot		NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases					6	
Actuated Green, G (s)	8.4		63.9			63.9
Effective Green, g (s)	8.4		63.9			63.9
Actuated g/C Ratio	0.10		0.76			0.76
Clearance Time (s)	6.0		6.0			6.0
Vehicle Extension (s)	3.0		3.0			3.0
Lane Grp Cap (vph)	169		1415			1096
v/s Ratio Prot	c0.03		0.24			
v/s Ratio Perm						c0.55
v/c Ratio	0.34		0.31			0.73
Uniform Delay, d1	35.4		3.2			5.5
Progression Factor	1.00		1.00			1.00
Incremental Delay, d2	1.2		0.6			4.3
Delay (s)	36.6		3.8			9.8
Level of Service	D		A			A
Approach Delay (s)	36.6		3.8			9.8
Approach LOS	D		A			A
<b>Intersection Summary</b>						
HCM 2000 Control Delay			11.3		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.68			
Actuated Cycle Length (s)			84.3		Sum of lost time (s)	12.0
Intersection Capacity Utilization			83.6%		ICU Level of Service	E
Analysis Period (min)			15			
c Critical Lane Group						

Approach	WB	NB	SB
Crosswalk Length (m)	8.51	7.40	7.40
Crosswalk Width (m)	1.20	1.20	1.20
Total Number of Lanes Crossed	2	2	2
Number of Right-Turn Islands	0	0	0
Type of Control	None	None	None
Corresponding Signal Phase	2	6	8
Effective Walk Time (s)	0.0	0.0	0.0
Right Corner Size A (m)	2.74	2.74	2.74
Right Corner Size B (m)	2.74	2.74	2.74
Right Corner Curb Radius (m)	0.00	0.00	0.00
Right Corner Total Area (sq.m)	7.51	7.51	7.51
Ped. Left-Right Flow Rate (p/h)	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0
85th percentile speed (km/h)	40	40	40
Right Corner Area per Ped (sq.m)	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-
Ped. Circulation Area (sq.m)	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-
Pedestrian Delay (s/p)	45.0	45.0	45.0
Pedestrian Compliance Code	Poor	Poor	Poor
Pedestrian Crosswalk Score	1.89	2.17	2.28
Pedestrian Crosswalk LOS	A	B	B

Approach	WB	NB	SB
Bicycle Flow Rate (bike/h)	0	0	0
Total Flow Rate (veh/h)	182	443	798
Effct. Green for Bike (s)	8.4	63.8	63.8
Cross Street Width (m)	7.40	8.51	7.40
Through Lanes Number	1	1	1
Through Lane Width (m)	3.70	3.70	3.70
Bicycle Lane Width (m)	0.00	0.00	0.00
Paved Shoulder Width (m)	0.00	0.00	0.00
Curb Is Present?	No	No	No
On Street Parking?	No	No	No
Bicycle Lane Capacity (bike/h)	187	1418	1418
Bicycle Delay (s/bike)	37.0	3.8	3.8
Bicycle Compliance	Poor	Good	Good
Bicycle LOS Score	2.20	2.69	3.22
Bicycle LOS	B	B	C

Timings  
6: Liverpool Rd & Parking Lot/Tatra Dr

2032 Total Traffic Conditions  
PM Peak Hour (Tatra Signalized)



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↕		↕		↕	↕	↕
Traffic Volume (vph)	4	1	1	0	1	619	215	785
Future Volume (vph)	4	1	1	0	1	619	215	785
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	25.5	25.5	25.5	25.5	22.5	22.5	22.5	22.5
Total Split (s)	26.0	26.0	26.0	26.0	64.0	64.0	64.0	64.0
Total Split (%)	28.9%	28.9%	28.9%	28.9%	71.1%	71.1%	71.1%	71.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)		0.0		0.0		0.0		0.0
Total Lost Time (s)		7.0		7.0		7.0		7.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
Act Effect Green (s)		7.9		7.9		57.1		57.1
Actuated g/C Ratio		0.10		0.10		0.72		0.72
v/c Ratio		0.08		0.64		0.47		0.60
Control Delay		31.2		13.1		6.5		7.1
Queue Delay		0.0		0.0		0.0		1.4
Total Delay		31.2		13.1		6.5		7.1
LOS		C		B		A		A
Approach Delay		31.2		13.1		6.5		9.1
Approach LOS		C		B		A		A

Intersection Summary

Cycle Length: 90	
Actuated Cycle Length: 79	
Natural Cycle: 65	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.64	
Intersection Signal Delay: 8.8	Intersection LOS: A
Intersection Capacity Utilization 106.9%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 6: Liverpool Rd & Parking Lot/Tatra Dr



Queues  
6: Liverpool Rd & Parking Lot/Tatra Dr

2032 Total Traffic Conditions  
PM Peak Hour (Tatra Signalized)



Lane Group	EBT	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	6	247	654	224	819
v/c Ratio	0.08	0.64	0.47	0.38	0.60
Control Delay	31.2	13.1	6.5	7.1	8.3
Queue Delay	0.0	0.0	0.0	0.0	1.4
Total Delay	31.2	13.1	6.5	7.1	9.7
Queue Length 50th (m)	0.7	0.1	28.8	8.9	41.9
Queue Length 95th (m)	4.0	18.9	71.6	28.9	106.3
Internal Link Dist (m)	73.5	201.1	160.3		52.8
Turn Bay Length (m)				45.0	
Base Capacity (vph)	188	581	1381	594	1361
Starvation Cap Reductn	0	0	0	0	329
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.03	0.43	0.47	0.38	0.79

Intersection Summary

HCM Signalized Intersection Capacity Analysis  
6: Liverpool Rd & Parking Lot/Tatra Dr

2032 Total Traffic Conditions  
PM Peak Hour (Tatra Signalized)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕		↗	↘	
Traffic Volume (vph)	4	1	1	1	0	236	1	619	8	215	785	1
Future Volume (vph)	4	1	1	1	0	236	1	619	8	215	785	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.0			7.0			7.0		7.0	7.0	
Lane Util. Factor		1.00			1.00			1.00		1.00	1.00	
Frbp, ped/bikes		0.99			0.98			1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00			1.00		0.99	1.00	
Frt		0.98			0.87			1.00		1.00	1.00	
Flt Protected		0.97			1.00			1.00		0.95	1.00	
Satd. Flow (prot)		1792			1637			1914		1809	1883	
Flt Permitted		0.42			1.00			1.00		0.43	1.00	
Satd. Flow (perm)		781			1635			1913		823	1883	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	4	1	1	1	0	246	1	645	8	224	818	1
RTOR Reduction (vph)	0	1	0	0	221	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	5	0	0	26	0	0	654	0	224	819	0
Confl. Peds. (#/hr)	2		22	22		2	23		32	32		23
Confl. Bikes (#/hr)												2
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	12%	0%	2%	0%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		7.9			7.9			57.1		57.1	57.1	
Effective Green, g (s)		7.9			7.9			57.1		57.1	57.1	
Actuated g/C Ratio		0.10			0.10			0.72		0.72	0.72	
Clearance Time (s)		7.0			7.0			7.0		7.0	7.0	
Vehicle Extension (s)		3.0			3.0			3.0		3.0	3.0	
Lane Grp Cap (vph)		78			163			1382		594	1361	
v/s Ratio Prot											c0.43	
v/s Ratio Perm		0.01			c0.02			0.34		0.27		
v/c Ratio		0.07			0.16			0.47		0.38	0.60	
Uniform Delay, d1		32.2			32.5			4.6		4.2	5.4	
Progression Factor		1.00			1.00			1.00		1.00	1.00	
Incremental Delay, d2		0.4			0.5			1.2		1.8	2.0	
Delay (s)		32.6			33.0			5.8		6.0	7.3	
Level of Service		C			C			A		A	A	
Approach Delay (s)		32.6			33.0			5.8			7.1	
Approach LOS		C			C			A			A	

Intersection Summary

HCM 2000 Control Delay	10.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	79.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	106.9%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Approach	EB	WB	NB	SB
Crosswalk Length (m)	7.40	8.26	10.99	14.80
Crosswalk Width (m)	1.20	1.20	1.20	1.20
Total Number of Lanes Crossed	2	2	2	4
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	6	2	4	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (m)	2.74	2.74	2.74	2.74
Right Corner Size B (m)	2.74	2.74	2.74	2.74
Right Corner Curb Radius (m)	0.00	0.00	0.00	0.00
Right Corner Total Area (sq.m)	7.51	7.51	7.51	7.51
Ped. Left-Right Flow Rate (p/h)	0	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (km/h)	40	40	40	40
Right Corner Area per Ped (sq.m)	0.0	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-	-
Ped. Circulation Area (sq.m)	0.0	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-	-
Pedestrian Delay (s/p)	45.0	45.0	45.0	45.0
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	1.73	1.92	2.32	2.53
Pedestrian Crosswalk LOS	A	A	B	B



Approach	EB	WB	NB	SB
Bicycle Flow Rate (bike/h)	0	0	0	0
Total Flow Rate (veh/h)	6	247	654	1043
Effct. Green for Bike (s)	7.9	7.9	57.1	57.1
Cross Street Width (m)	10.99	14.80	8.26	7.40
Through Lanes Number	1	1	1	1
Through Lane Width (m)	3.70	3.70	3.70	3.70
Bicycle Lane Width (m)	0.00	0.00	0.00	0.00
Paved Shoulder Width (m)	0.00	0.00	0.00	0.00
Curb Is Present?	No	No	No	No
On Street Parking?	No	No	No	No
Bicycle Lane Capacity (bike/h)	176	176	1269	1269
Bicycle Delay (s/bike)	37.4	37.4	6.0	6.0
Bicycle Compliance	Poor	Poor	Good	Good
Bicycle LOS Score	2.09	2.68	3.02	3.62
Bicycle LOS	B	B	C	D

Intersection: 11: Liverpool Rd & Krosno Blvd

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (m)	19.0	54.3	58.8
Average Queue (m)	9.8	25.6	40.1
95th Queue (m)	18.2	51.9	56.0
Link Distance (m)	265.9	239.9	406.8
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 23: Liverpool Rd & Wharf St

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	9.2	9.1	21.2	28.3
Average Queue (m)	5.5	5.3	12.9	20.0
95th Queue (m)	12.9	12.5	21.1	28.4
Link Distance (m)	104.6	110.2	179.8	86.5
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Timings  
3: Liverpool Rd & Bayly St

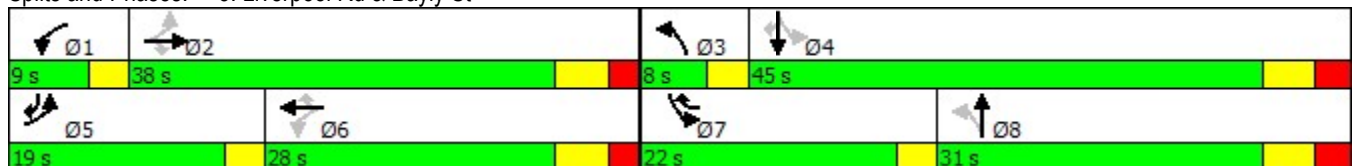
2032 Total Traffic Conditions  
SAT Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	
Lane Configurations												
Traffic Volume (vph)	357	420	161	116	245	357	78	587	342	610	288	
Future Volume (vph)	357	420	161	116	245	357	78	587	342	610	288	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	pm+pt	NA	pm+ov	
Protected Phases	5	2		1	6	7	3	8	7	4	5	
Permitted Phases	2		2	6		6	8		4		4	
Detector Phase	5	2	2	1	6	7	3	8	7	4	5	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	8.0	26.4	26.4	8.0	26.4	8.0	8.0	30.7	8.0	30.7	8.0	
Total Split (s)	19.0	38.0	38.0	9.0	28.0	22.0	8.0	31.0	22.0	45.0	19.0	
Total Split (%)	19.0%	38.0%	38.0%	9.0%	28.0%	22.0%	8.0%	31.0%	22.0%	45.0%	19.0%	
Yellow Time (s)	3.0	4.1	4.1	3.0	4.1	3.0	3.0	3.8	3.0	3.8	3.0	
All-Red Time (s)	0.0	2.3	2.3	0.0	2.3	0.0	0.0	2.9	0.0	2.9	0.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7	3.0	6.7	3.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lead	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	Max	Max	None	Max	None	None	None	None	None	None	
Act Effct Green (s)	44.0	31.6	31.6	31.9	22.5	44.3	32.3	23.6	48.8	38.7	57.6	
Actuated g/C Ratio	0.45	0.32	0.32	0.32	0.23	0.45	0.33	0.24	0.49	0.39	0.58	
v/c Ratio	0.64	0.37	0.28	0.34	0.31	0.48	0.26	0.91	0.84	0.45	0.29	
Control Delay	25.5	27.3	5.4	21.1	33.7	14.7	17.0	51.4	40.8	23.8	2.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	25.5	27.3	5.4	21.1	33.7	14.7	17.0	51.4	40.8	23.8	2.0	
LOS	C	C	A	C	C	B	B	D	D	C	A	
Approach Delay		22.9			22.2			48.1		23.4		
Approach LOS		C			C			D		C		

Intersection Summary

Cycle Length: 100  
 Actuated Cycle Length: 98.8  
 Natural Cycle: 80  
 Control Type: Semi Act-Uncoord  
 Maximum v/c Ratio: 0.91  
 Intersection Signal Delay: 28.5  
 Intersection Capacity Utilization 94.9%  
 Analysis Period (min) 15  
 Intersection LOS: C  
 ICU Level of Service F

Splits and Phases: 3: Liverpool Rd & Bayly St



Queues  
3: Liverpool Rd & Bayly St

2032 Total Traffic Conditions  
SAT Peak Hour



























Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	368	433	166	120	253	368	80	766	353	629	297
v/c Ratio	0.64	0.37	0.28	0.34	0.31	0.48	0.26	0.91	0.84	0.45	0.29
Control Delay	25.5	27.3	5.4	21.1	33.7	14.7	17.0	51.4	40.8	23.8	2.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.5	27.3	5.4	21.1	33.7	14.7	17.0	51.4	40.8	23.8	2.0
Queue Length 50th (m)	48.7	34.1	0.0	13.6	21.8	32.0	7.8	73.0	47.0	47.2	0.9
Queue Length 95th (m)	72.9	47.2	13.8	24.5	33.0	55.2	15.3	#106.1	#91.7	62.6	10.4
Internal Link Dist (m)		177.5			249.4			51.8		146.7	
Turn Bay Length (m)	115.0		100.0	50.0		150.0	75.0		50.0		65.0
Base Capacity (vph)	579	1168	584	351	821	774	310	864	430	1403	1048
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.64	0.37	0.28	0.34	0.31	0.48	0.26	0.89	0.82	0.45	0.28

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis  
3: Liverpool Rd & Bayly St

2032 Total Traffic Conditions  
SAT Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	357	420	161	116	245	357	78	587	156	342	610	288
Future Volume (vph)	357	420	161	116	245	357	78	587	156	342	610	288
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7		3.0	6.7	3.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00	0.99	1.00	0.99		1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1817	3650	1475	1776	3614	1578	1819	3417		1805	3579	1576
Flt Permitted	0.53	1.00	1.00	0.50	1.00	1.00	0.41	1.00		0.15	1.00	1.00
Satd. Flow (perm)	1004	3650	1475	935	3614	1578	791	3417		278	3579	1576
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	368	433	166	120	253	368	80	605	161	353	629	297
RTOR Reduction (vph)	0	0	113	0	0	62	0	24	0	0	0	130
Lane Group Flow (vph)	368	433	53	120	253	306	80	742	0	353	629	167
Confl. Peds. (#/hr)	9		19	19		9	16		44	44		16
Confl. Bikes (#/hr)			4			1			2			9
Heavy Vehicles (%)	0%	0%	6%	2%	1%	2%	0%	2%	2%	1%	2%	1%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	5	2		1	6	7	3	8		7	4	5
Permitted Phases	2		2	6		6	8			4		4
Actuated Green, G (s)	40.7	31.7	31.7	28.5	22.5	40.9	28.3	24.3		45.7	38.7	53.9
Effective Green, g (s)	40.7	31.7	31.7	28.5	22.5	40.9	28.3	24.3		45.7	38.7	53.9
Actuated g/C Ratio	0.41	0.32	0.32	0.29	0.23	0.41	0.28	0.24		0.46	0.39	0.54
Clearance Time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7		3.0	6.7	3.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	534	1162	469	318	817	648	266	834		410	1392	853
v/s Ratio Prot	c0.11	0.12		0.02	0.07	0.09	0.01	0.22		c0.16	0.18	0.03
v/s Ratio Perm	c0.18		0.04	0.09		0.11	0.07			c0.24		0.08
v/c Ratio	0.69	0.37	0.11	0.38	0.31	0.47	0.30	0.89		0.86	0.45	0.20
Uniform Delay, d1	21.9	26.2	24.0	27.2	32.0	21.4	26.6	36.3		24.7	22.5	11.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	3.7	0.9	0.5	0.8	1.0	0.5	0.6	11.4		16.7	0.2	0.1
Delay (s)	25.6	27.1	24.4	27.9	33.0	21.9	27.3	47.7		41.4	22.8	11.8
Level of Service	C	C	C	C	C	C	C	D		D	C	B
Approach Delay (s)		26.1			26.7			45.8			25.4	
Approach LOS		C			C			D			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			30.3			HCM 2000 Level of Service		C				
HCM 2000 Volume to Capacity ratio			0.83									
Actuated Cycle Length (s)			99.5			Sum of lost time (s)		19.1				
Intersection Capacity Utilization			94.9%			ICU Level of Service		F				
Analysis Period (min)			15									
c Critical Lane Group												

Approach	EB	WB	NB	SB
Crosswalk Length (m)	22.45	22.36	18.57	22.20
Crosswalk Width (m)	1.20	1.20	1.20	1.20
Total Number of Lanes Crossed	6	6	5	6
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	4	8	2	6
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (m)	2.74	2.74	2.74	2.74
Right Corner Size B (m)	2.74	2.74	2.74	2.74
Right Corner Curb Radius (m)	0.00	0.00	0.00	0.00
Right Corner Total Area (sq.m)	7.51	7.51	7.51	7.51
Ped. Left-Right Flow Rate (p/h)	0	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (km/h)	40	40	40	40
Right Corner Area per Ped (sq.m)	0.0	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-	-
Ped. Circulation Area (sq.m)	0.0	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-	-
Pedestrian Delay (s/p)	50.0	50.0	50.0	50.0
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.68	2.70	2.60	2.82
Pedestrian Crosswalk LOS	B	B	B	C

Approach	EB	WB	NB	SB
Bicycle Flow Rate (bike/h)	0	0	0	0
Total Flow Rate (veh/h)	967	741	846	1279
Effct. Green for Bike (s)	31.6	22.5	23.6	38.7
Cross Street Width (m)	18.57	22.20	22.36	22.45
Through Lanes Number	2	2	2	2
Through Lane Width (m)	3.70	3.70	3.70	3.70
Bicycle Lane Width (m)	0.00	0.00	0.00	0.00
Paved Shoulder Width (m)	0.00	0.00	0.00	0.00
Curb Is Present?	No	No	No	No
On Street Parking?	No	No	No	No
Bicycle Lane Capacity (bike/h)	632	450	472	774
Bicycle Delay (s/bike)	23.4	30.0	29.2	18.8
Bicycle Compliance	Fair	Poor	Fair	Fair
Bicycle LOS Score	3.26	3.26	3.35	3.71
Bicycle LOS	C	C	C	D



HCM Unsignalized Intersection Capacity Analysis  
6: Liverpool Rd & Parking Lot/Tatra Dr

2032 Total Traffic Conditions  
SAT Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕		↕	↕	↕
Traffic Volume (veh/h)	1	0	0	4	0	118	0	670	3	140	704	4
Future Volume (Veh/h)	1	0	0	4	0	118	0	670	3	140	704	4
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	1	0	0	4	0	122	0	691	3	144	726	4
Pedestrians		11			23			6				
Lane Width (m)		3.7			3.7			3.7				
Walking Speed (m/s)		1.1			1.1			1.1				
Percent Blockage		1			2			1				
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												153
pX, platoon unblocked	0.83	0.83	0.83	0.83	0.83		0.83					
vC, conflicting volume	1842	1744	745	1736	1744	716	741			717		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1914	1795	586	1785	1796	716	581			717		
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 %	96	100	100	91	100	71	100			84		
cM capacity (veh/h)	26	54	418	44	54	424	819			873		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>	<b>SB 2</b>							
Volume Total	1	126	694	144	730							
Volume Left	1	4	0	144	0							
Volume Right	0	122	3	0	4							
cSH	26	332	819	873	1700							
Volume to Capacity	0.04	0.38	0.00	0.16	0.43							
Queue Length 95th (m)	0.9	13.0	0.0	4.5	0.0							
Control Delay (s)	150.1	22.3	0.0	9.9	0.0							
Lane LOS	F	C		A								
Approach Delay (s)	150.1	22.3	0.0	1.6								
Approach LOS	F	C										
<b>Intersection Summary</b>												
Average Delay			2.6									
Intersection Capacity Utilization			90.2%		ICU Level of Service				E			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
 9: Liverpool Rd & Radom St

2032 Total Traffic Conditions  
 SAT Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	56	16	14	598	640	66
Future Volume (Veh/h)	56	16	14	598	640	66
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	62	18	15	657	703	73
Pedestrians	6			5		
Lane Width (m)	3.7			3.7		
Walking Speed (m/s)	1.1			1.1		
Percent Blockage	1			0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)					337	
pX, platoon unblocked	0.81	0.81	0.81			
vC, conflicting volume	1432	750	782			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1416	570	609			
tC, single (s)	6.4	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.4	2.2			
p0 queue free %	48	96	98			
cM capacity (veh/h)	119	406	785			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	80	672	776			
Volume Left	62	15	0			
Volume Right	18	0	73			
cSH	141	785	1700			
Volume to Capacity	0.57	0.02	0.46			
Queue Length 95th (m)	21.7	0.4	0.0			
Control Delay (s)	59.4	0.5	0.0			
Lane LOS	F	A				
Approach Delay (s)	59.4	0.5	0.0			
Approach LOS	F					
<b>Intersection Summary</b>						
Average Delay			3.3			
Intersection Capacity Utilization			55.0%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
 11: Liverpool Rd & Krosno Blvd

2032 Total Traffic Conditions  
 SAT Peak Hour



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	21	105	453	31	121	495
Future Volume (vph)	21	105	453	31	121	495
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	22	109	472	32	126	516

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	131	504	642
Volume Left (vph)	22	0	126
Volume Right (vph)	109	32	0
Hadj (s)	-0.45	0.02	0.08
Departure Headway (s)	6.2	5.2	5.1
Degree Utilization, x	0.22	0.73	0.91
Capacity (veh/h)	549	676	696
Control Delay (s)	10.9	20.7	37.2
Approach Delay (s)	10.9	20.7	37.2
Approach LOS	B	C	E

Intersection Summary			
Delay		28.0	
Level of Service		D	
Intersection Capacity Utilization		76.2%	ICU Level of Service
Analysis Period (min)		15	D

HCM Unsignalized Intersection Capacity Analysis  
 13: Liverpool Rd & Ilona Park Rd (N)

2032 Total Traffic Conditions  
 SAT Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	0	0	432	467	12
Future Volume (Veh/h)	10	0	0	432	467	12
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	11	0	0	475	513	13
Pedestrians	9			1		
Lane Width (m)	3.7			3.7		
Walking Speed (m/s)	1.1			1.1		
Percent Blockage	1			0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	1004	530	535			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1004	530	535			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	96	100	100			
cM capacity (veh/h)	268	548	1034			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	11	475	526			
Volume Left	11	0	0			
Volume Right	0	0	13			
cSH	268	1034	1700			
Volume to Capacity	0.04	0.00	0.31			
Queue Length 95th (m)	1.0	0.0	0.0			
Control Delay (s)	19.0	0.0	0.0			
Lane LOS	C					
Approach Delay (s)	19.0	0.0	0.0			
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay	0.2					
Intersection Capacity Utilization	35.7%			ICU Level of Service	A	
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis  
 15: Liverpool Rd & Ilona Park Rd (S)

















2032 Total Traffic Conditions  
 SAT Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	2	1	0	383	455	13
Future Volume (Veh/h)	2	1	0	383	455	13
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	2	1	0	412	489	14
Pedestrians	11					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	1					
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	919	507	514			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	919	507	514			
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	100	100			
cM capacity (veh/h)	300	563	1050			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	3	412	503			
Volume Left	2	0	0			
Volume Right	1	0	14			
cSH	356	1050	1700			
Volume to Capacity	0.01	0.00	0.30			
Queue Length 95th (m)	0.2	0.0	0.0			
Control Delay (s)	15.2	0.0	0.0			
Lane LOS	C					
Approach Delay (s)	15.2	0.0	0.0			
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay	0.0					
Intersection Capacity Utilization	34.8%			ICU Level of Service	A	
Analysis Period (min)	15					

















HCM Unsignalized Intersection Capacity Analysis  
17: Liverpool Rd & Commerce St

2032 Total Traffic Conditions  
SAT Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	3	5	8	5	6	7	360	8	10	427	17
Future Volume (Veh/h)	12	3	5	8	5	6	7	360	8	10	427	17
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	13	3	6	9	6	7	8	400	9	11	474	19
Pedestrians		10			16							
Lane Width (m)		3.7			3.7							
Walking Speed (m/s)		1.1			1.1							
Percent Blockage		1			2							
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	946	956	494	950	962	420	503			425		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	946	956	494	950	962	420	503			425		
tC, single (s)	7.5	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.9	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	93	99	99	96	98	99	99			99		
cM capacity (veh/h)	191	249	574	226	247	627	1061			1127		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	22	22	417	504								
Volume Left	13	9	8	11								
Volume Right	6	7	9	19								
cSH	243	293	1061	1127								
Volume to Capacity	0.09	0.08	0.01	0.01								
Queue Length 95th (m)	2.2	1.8	0.2	0.2								
Control Delay (s)	21.3	18.3	0.2	0.3								
Lane LOS	C	C	A	A								
Approach Delay (s)	21.3	18.3	0.2	0.3								
Approach LOS	C	C										
<b>Intersection Summary</b>												
Average Delay			1.2									
Intersection Capacity Utilization			38.8%		ICU Level of Service				A			
Analysis Period (min)			15									

















HCM Unsignalized Intersection Capacity Analysis  
20: Liverpool Rd & Annland St

2032 Total Traffic Conditions  
SAT Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	0	19	33	2	8	17	332	16	12	370	44
Future Volume (Veh/h)	40	0	19	33	2	8	17	332	16	12	370	44
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	43	0	20	35	2	9	18	357	17	13	398	47
Pedestrians		15			5			1			2	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		1			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	876	878	438	875	892	372	460			379		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	876	878	438	875	892	372	460			379		
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 %	83	100	97	86	99	99	98			99		
cM capacity (veh/h)	253	276	614	252	270	673	1095			1185		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	63	46	392	458								
Volume Left	43	35	18	13								
Volume Right	20	9	17	47								
cSH	311	288	1095	1185								
Volume to Capacity	0.20	0.16	0.02	0.01								
Queue Length 95th (m)	5.7	4.2	0.4	0.3								
Control Delay (s)	19.5	19.8	0.6	0.3								
Lane LOS	C	C	A	A								
Approach Delay (s)	19.5	19.8	0.6	0.3								
Approach LOS	C	C										
<b>Intersection Summary</b>												
Average Delay			2.6									
Intersection Capacity Utilization			37.1%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
 23: Liverpool Rd & Wharf St

2032 Total Traffic Conditions  
 SAT Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	35	2	7	1	1	18	4	292	4	7	337	61
Future Volume (vph)	35	2	7	1	1	18	4	292	4	7	337	61
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)	38	2	8	1	1	20	4	317	4	8	366	66
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	48	22	325	440								
Volume Left (vph)	38	1	4	8								
Volume Right (vph)	8	20	4	66								
Hadj (s)	0.06	-0.54	0.00	-0.09								
Departure Headway (s)	5.7	5.1	4.6	4.4								
Degree Utilization, x	0.08	0.03	0.41	0.53								
Capacity (veh/h)	552	591	766	802								
Control Delay (s)	9.1	8.3	10.7	12.3								
Approach Delay (s)	9.1	8.3	10.7	12.3								
Approach LOS	A	A	B	B								
Intersection Summary												
Delay			11.4									
Level of Service			B									
Intersection Capacity Utilization			42.2%	ICU Level of Service	A							
Analysis Period (min)			15									



HCM Unsignalized Intersection Capacity Analysis  
26: Liverpool Rd

2032 Total Traffic Conditions  
SAT Peak Hour



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	5	284	0	6	317
Future Volume (Veh/h)	0	5	284	0	6	317
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	5	302	0	6	337
Pedestrians	64		3			3
Lane Width (m)	3.7		3.7			3.7
Walking Speed (m/s)	1.1		1.1			1.1
Percent Blockage	6		0			0
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	718	369			366	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	718	369			366	
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)	371	637			1118	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	5	302	343			
Volume Left	0	0	6			
Volume Right	5	0	0			
cSH	637	1700	1118			
Volume to Capacity	0.01	0.18	0.01			
Queue Length 95th (m)	0.2	0.0	0.1			
Control Delay (s)	10.7	0.0	0.2			
Lane LOS	B		A			
Approach Delay (s)	10.7	0.0	0.2			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			0.2			
Intersection Capacity Utilization			32.4%		ICU Level of Service	A
Analysis Period (min)			15			

Timings  
11: Liverpool Rd & Krosno Blvd

2032 Total Traffic Conditions  
SAT Peak Hour (Krosno Signalized)



Lane Group	WBL	NBT	SBL	SBT
Lane Configurations	W	T		T
Traffic Volume (vph)	21	453	121	495
Future Volume (vph)	21	453	121	495
Turn Type	Prot	NA	Perm	NA
Protected Phases	8	2		6
Permitted Phases			6	
Detector Phase	8	2	6	6
Switch Phase				
Minimum Initial (s)	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	24.0
Total Split (s)	24.0	66.0	66.0	66.0
Total Split (%)	26.7%	73.3%	73.3%	73.3%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0
Total Lost Time (s)	6.0	6.0		6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	None	Max	Max	Max
Act Effect Green (s)	7.7	66.8		66.8
Actuated g/C Ratio	0.09	0.77		0.77
v/c Ratio	0.54	0.35		0.55
Control Delay	18.7	4.1		6.4
Queue Delay	0.0	0.0		0.0
Total Delay	18.7	4.1		6.4
LOS	B	A		A
Approach Delay	18.7	4.1		6.4
Approach LOS	B	A		A

Intersection Summary

Cycle Length: 90  
 Actuated Cycle Length: 86.5  
 Natural Cycle: 65  
 Control Type: Semi Act-Uncoord  
 Maximum v/c Ratio: 0.55  
 Intersection Signal Delay: 6.8  
 Intersection Capacity Utilization 81.2%  
 Analysis Period (min) 15  
 Intersection LOS: A  
 ICU Level of Service D

Splits and Phases: 11: Liverpool Rd & Krosno Blvd



Queues  
11: Liverpool Rd & Krosno Blvd

2032 Total Traffic Conditions  
SAT Peak Hour (Krosno Signalized)



Lane Group	WBL	NBT	SBT
Lane Group Flow (vph)	131	504	642
v/c Ratio	0.54	0.35	0.55
Control Delay	18.7	4.1	6.4
Queue Delay	0.0	0.0	0.0
Total Delay	18.7	4.1	6.4
Queue Length 50th (m)	3.4	18.1	29.6
Queue Length 95th (m)	18.2	38.6	66.9
Internal Link Dist (m)	251.2	233.4	388.4
Turn Bay Length (m)			
Base Capacity (vph)	425	1423	1176
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.31	0.35	0.55
<b>Intersection Summary</b>			

HCM Signalized Intersection Capacity Analysis  
 11: Liverpool Rd & Krosno Blvd

2032 Total Traffic Conditions  
 SAT Peak Hour (Krosno Signalized)



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	21	105	453	31	121	495
Future Volume (vph)	21	105	453	31	121	495
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0			6.0
Lane Util. Factor	1.00		1.00			1.00
Frbp, ped/bikes	0.95		1.00			1.00
Flpb, ped/bikes	1.00		1.00			1.00
Frt	0.89		0.99			1.00
Flt Protected	0.99		1.00			0.99
Satd. Flow (prot)	1591		1842			1854
Flt Permitted	0.99		1.00			0.81
Satd. Flow (perm)	1591		1842			1524
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	22	109	472	32	126	516
RTOR Reduction (vph)	99	0	2	0	0	0
Lane Group Flow (vph)	32	0	502	0	0	642
Confl. Peds. (#/hr)	3			8	8	
Confl. Bikes (#/hr)		10		3		
Heavy Vehicles (%)	0%	1%	3%	5%	0%	3%
Turn Type	Prot		NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases					6	
Actuated Green, G (s)	7.7		66.8			66.8
Effective Green, g (s)	7.7		66.8			66.8
Actuated g/C Ratio	0.09		0.77			0.77
Clearance Time (s)	6.0		6.0			6.0
Vehicle Extension (s)	3.0		3.0			3.0
Lane Grp Cap (vph)	141		1422			1176
v/s Ratio Prot	c0.02		0.27			
v/s Ratio Perm						c0.42
v/c Ratio	0.22		0.35			0.55
Uniform Delay, d1	36.6		3.1			3.9
Progression Factor	1.00		1.00			1.00
Incremental Delay, d2	0.8		0.7			1.8
Delay (s)	37.4		3.8			5.7
Level of Service	D		A			A
Approach Delay (s)	37.4		3.8			5.7
Approach LOS	D		A			A

Intersection Summary

HCM 2000 Control Delay	8.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	86.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	81.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Approach	WB	NB	SB
Crosswalk Length (m)	8.51	7.40	7.40
Crosswalk Width (m)	1.20	1.20	1.20
Total Number of Lanes Crossed	2	2	2
Number of Right-Turn Islands	0	0	0
Type of Control	None	None	None
Corresponding Signal Phase	2	6	8
Effective Walk Time (s)	0.0	0.0	0.0
Right Corner Size A (m)	2.74	2.74	2.74
Right Corner Size B (m)	2.74	2.74	2.74
Right Corner Curb Radius (m)	0.00	0.00	0.00
Right Corner Total Area (sq.m)	7.51	7.51	7.51
Ped. Left-Right Flow Rate (p/h)	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0
85th percentile speed (km/h)	40	40	40
Right Corner Area per Ped (sq.m)	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-
Ped. Circulation Area (sq.m)	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-
Pedestrian Delay (s/p)	45.0	45.0	45.0
Pedestrian Compliance Code	Poor	Poor	Poor
Pedestrian Crosswalk Score	1.84	2.15	2.22
Pedestrian Crosswalk LOS	A	B	B

Approach	WB	NB	SB
Bicycle Flow Rate (bike/h)	0	0	0
Total Flow Rate (veh/h)	131	504	642
Effct. Green for Bike (s)	7.7	66.8	66.8
Cross Street Width (m)	7.40	8.51	7.40
Through Lanes Number	1	1	1
Through Lane Width (m)	3.70	3.70	3.70
Bicycle Lane Width (m)	0.00	0.00	0.00
Paved Shoulder Width (m)	0.00	0.00	0.00
Curb Is Present?	No	No	No
On Street Parking?	No	No	No
Bicycle Lane Capacity (bike/h)	171	1484	1484
Bicycle Delay (s/bike)	37.6	3.0	3.0
Bicycle Compliance	Poor	Good	Good
Bicycle LOS Score	2.12	2.79	2.96
Bicycle LOS	B	C	C

Intersection: 11: Liverpool Rd & Krosno Blvd

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (m)	12.2	29.3	57.7
Average Queue (m)	7.3	25.2	44.3
95th Queue (m)	14.7	30.7	61.5
Link Distance (m)	265.9	239.9	406.8
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 23: Liverpool Rd & Wharf St

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	9.3	9.2	22.3	53.7
Average Queue (m)	5.5	7.3	16.0	25.4
95th Queue (m)	13.0	13.3	23.0	49.2
Link Distance (m)	104.6	110.2	179.8	86.5
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				





# **Appendix D**

## **Development Site Traffic**



**Reference: Proposed Residential Development, 747 Liverpool Road, Pickering, Ontario, Transportation Brief**

- For the remainder of the afternoon peak period (up to 5:30 p.m.), traffic activity on Liverpool Road was light to moderate with no congested conditions or traffic operational issues in the vicinity of the subject site.

**3. PROPOSED DEVELOPMENT TRAFFIC CHARACTERISTICS**

**3.1 Site Traffic**

In **Table 1**, an estimate of the a.m. and p.m. peak hour vehicular traffic that could be generated by the proposed development (10 single family units and 57 townhouse units) is compared to that associated an elementary school with approximately 400 students. The trip estimates are based on industry standard trip rates (9<sup>th</sup> Edition of "Trip Generation" published by the Institute of Transportation Engineers or ITE) and represent the number of trips generated during the street peak hour.

Table 1 Trip Generation							
Land Use	Independent Variable	Vehicle Trips					
		AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Proposed Residential Development	57 Townhouses <sup>1</sup>	4	21	25	20	10	30
	10 Single Family Units <sup>2</sup>	2	6	8	6	4	10
	Total	6	27	33	26	14	40
Existing Elementary School	409 Students <sup>3</sup>	101	83	184	30	31	61

<sup>1</sup>ITE Land Use Code 230; <sup>2</sup>ITE Land Use Code 210; <sup>3</sup>ITE Land Use Code 520

As shown above, the proposed development is a relatively low traffic generator with the higher peak hour traffic volumes representing less than one trip per minute on average. The actual trip generation for this site may be less than shown above since the ITE trip rates were developed from studies of auto-oriented development. The 2011 Transportation Tomorrow Survey data indicates that 87% of the a.m. peak period trips generated by this area of Pickering were by auto with 13% by other modes. Therefore, the estimated trips could be reduced by approximately 10% to account for the local travel characteristics, which would include the use of Durham Regional Transit (Route 101 along Liverpool Road), GO Transit (Pickering GO Station approximately 1.5 km from the subject site), and cycling or walking.

The potential peak hour trip generation by an elementary school is shown to be much higher than the proposed land use. However, the estimated trips for the school do not match with the observed conditions where the combination of walk-in students as well as those arriving by school bus is estimated to reduce the potential number of school-related vehicular trips by approximately half. Even with reduced numbers of trips, the school generally represents a more intense form of land use from a transportation perspective with more noticeable impacts on the street system, including higher volumes of pedestrian crossing traffic.



**Reference: Proposed Residential Development, 747 Liverpool Road, Pickering, Ontario, Transportation Brief**

The proposed residential development a.m. and p.m. peak hour traffic was assigned to the single driveway access on Liverpool Road, which would replace the existing four school driveways. With the site's proximity to Lake Ontario to the south, it was reasoned that 100% of the peak hour site traffic would enter the site from the north via a southbound left turn and exit the site to the north via a westbound right turn. Traffic was also estimated for the Ilona Park Road (south leg) leg of the intersection based on the residential development that it serves (estimated from aerial photography to be 27 single family units and 18 townhouse units). These traffic volumes were combined with the north-south through traffic determined from the Liverpool Road/Commerce Street traffic count, and the resultant intersection volumes are summarized in **Table 2**.

Table 2 Peak Hour Traffic Volumes – Proposed Site Access Intersection							
Intersection	Approach	Vehicle Trips					
		AM Peak Hour			PM Peak Hour		
		Left	Through	Right	Left	Through	Right
Liverpool Road/ Ilona Park Road (S)- Proposed Site Access	Southbound	6	78	9	26	215	27
	Westbound	-	-	27	-	-	14
	Northbound	-	105	-	-	186	-
	Eastbound	31	-	-	15	-	-

### 3.2 Traffic Operations

The intersection traffic operations for the peak hour traffic conditions at the Liverpool Road/Ilona Park Road (S)-Proposed Site Access intersection was analyzed with the minor street approaches under stop control. The following parameters were utilized within the Synchro analysis software:

- Unsignalized intersection, single lane approaches;
- Default peak hour factor (PHF) of 0.92;
- 40 km/h posted speed limit; and
- Synchro defaults for all remaining inputs.

The analysis results are presented in **Table 3**.

Table 3 Peak Hour Operational Analysis Proposed Site Access Intersection										
Intersection	Approach/Movement		AM Peak Hour				PM Peak Hour			
			LOS	Delay	v/c	Q (m)	LOS	Delay	v/c	Q (m)
Liverpool Road/ Ilona Park Road (S)- Proposed Site Access	EB	Left/Thru/Right	B	11	0.05	1	B	13	0.04	1
	WB	Left/Thru/Right	A	9	0.03	1	A	9	0.02	< 1
	NB	Left/Thru/Right	<sup>1</sup> -	-	-	-	<sup>1</sup> -	-	-	-
	SB	Left/Thru/Right	A	1	0.01	< 1	A	1	0.02	1

<sup>1</sup> No Left Turn Volume/Unopposed Movement



Map data © 2015 Google





# **Appendix E**

## **Signal Warrant Analysis**

## Signal Warrant Calculation for Forecasted Volumes (OTM Book 12 - Justification 7)

Horizon Year: **2027**  
 City: **City of Pickering**  
 Major Street: **Liverpool Road** North/South? **Y**  
 Minor Street: **Krosno Road**  
 No. of Approach Lanes (Major): **1**  
 Tee Intersection? **Y**  
 Restricted Urban Flow Condition? **Y**  
 PM Forecast Only? **Y**  
 One Road or Both Roads are in Future? **Y**

Table 21 - Justification 7 Projected Volumes (OTM Book 12 - 2007 Version)

Justification	Description	Minimum Requirements			
		1 Lane Highways		2 Lane Highways	
		Free Flow (Rural)	Restricted (Urban)	Free Flow (Rural)	Restricted (Urban)
1. Minimum Vehicular Volume	A. Vehicle Volume, All Approaches (Average Hour)	480	720	600	900
	B. Vehicle Volume, Along Minor Streets (Average Hour)	120	170	120	170
2. Delay to Cross Traffic	A. Vehicle Volume, Major Street (Average Hour)	480	720	600	900
	B. Combined Vehicle and Pedestrian Volume Crossing Artery from Minor Streets (Average Hour)	50	75	120	170

Table 22 - Future Dev. Volume Expansion Required to Meet Justification

Roadway Condition	Threshold for AHV
Both intersecting roads exist; Development is Future	120%
One Road or Both intersecting roads are Future; Development is Future	150%

Time Period	Major Street						Minor Street					
	Liverpool Road						Krosno Road					
	Northbound			Southbound			Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
AM												
PM	0	365	19	175	518	0	0	0	0	39	0	123

	Volume	Average Hourly Volumes			Compliance (%)	Individual Justification Met?
		AM	PM	AHV		
Warrant 1	1A - All Approaches (Intersection)		1239	1239	172%	Yes
	1B - Minor St (Major Direction)		162	162	95%	No
Warrant 2	2A - Major St (Both Directions)		1077	1077	150%	Yes
	2B - Combined Crossing (Veh plus Peds)		39	39	52%	No

## Signal Warrant Calculation for Forecasted Volumes (OTM Book 12 - Justification 7)

Horizon Year: **2032**  
 City: **City of Pickering**  
 Major Street: **Liverpool Road** North/South? **Y**  
 Minor Street: **Krosno Road**  
 No. of Approach Lanes (Major): **1**  
 Tee Intersection? **Y**  
 Restricted Urban Flow Condition? **Y**  
 PM Forecast Only? **Y**  
 One Road or Both Roads are in Future? **Y**

**Table 21 - Justification 7 Projected Volumes (OTM Book 12 - 2007 Version)**

Justification	Description	Minimum Requirements			
		1 Lane Highways		2 Lane Highways	
		Free Flow (Rural)	Restricted (Urban)	Free Flow (Rural)	Restricted (Urban)
1. Minimum Vehicular Volume	A. Vehicle Volume, All Approaches (Average Hour)	480	720	600	900
	B. Vehicle Volume, Along Minor Streets (Average Hour)	120	170	120	170
2. Delay to Cross Traffic	A. Vehicle Volume, Major Street (Average Hour)	480	720	600	900
	B. Combined Vehicle and Pedestrian Volume Crossing Artery from Minor Streets (Average Hour)	50	75	120	170

**Table 22 - Future Dev. Volume Expansion Required to Meet Justification**

Roadway Condition	Threshold for AHV
Both intersecting roads exist; Development is Future	120%
One Road or Both intersecting roads are Future; Development is Future	150%

Time Period	Major Street						Minor Street					
	Liverpool Road						Krosno Road					
	Northbound			Southbound			Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
AM												
PM	0	370	19	175	526	0	0	0	0	39	0	123

	Volume	Average Hourly Volumes			Compliance (%)	Individual Justification Met?
		AM	PM	AHV		
<b>Warrant 1</b>	1A - All Approaches (Intersection)		1252	1252	174%	Yes
	1B - Minor St (Major Direction)		162	162	95%	No
<b>Warrant 2</b>	2A - Major St (Both Directions)		1090	1090	151%	Yes
	2B - Combined Crossing (Veh plus Peds)		39	39	52%	No

100 York Boulevard, Suite 300  
Richmond Hill , ON, CA L4B 1J8

[hdrinc.com](http://hdrinc.com)

