



Final Report

# 591 Liverpool Road Traffic Impact Study

*Pickering Harbour Company Ltd*

November 2019



## **HDR TEAM**

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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 Frenchman’s Bay Marina and a public parking lot with 72 parking spaces.

The proposed development consists of 498 condominium units in 2 buildings and 1,900 sm of commercial. The site is proposed to supply 739 parking spaces overall including 200 public parking spaces (which will replace and expand the existing public parking lot) and 539 parking spaces for both residential and commercial components.

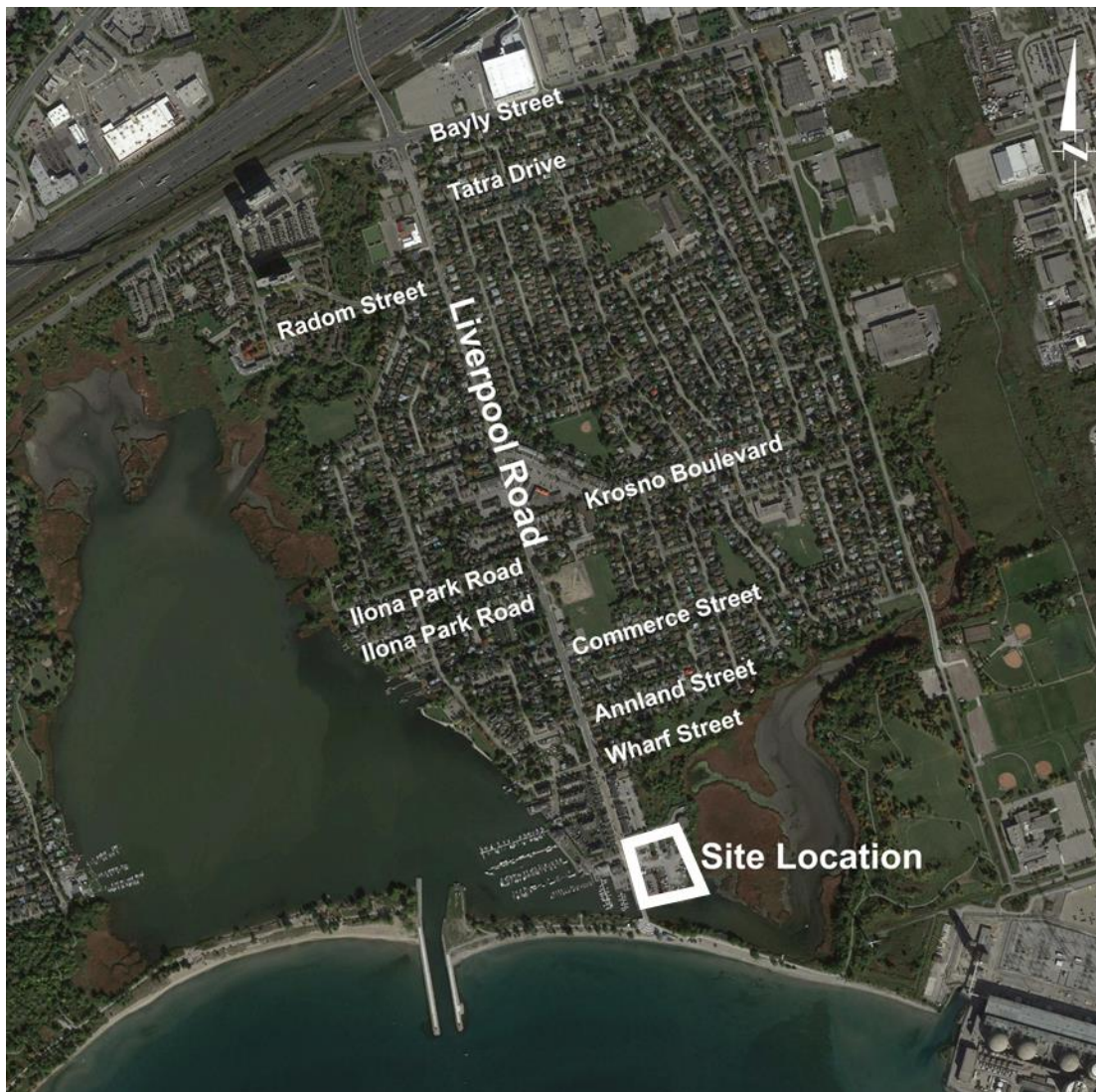


Exhibit 1: Site Location

## 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 existing road network is illustrated in **Exhibit 2**, including existing traffic controls, and 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.

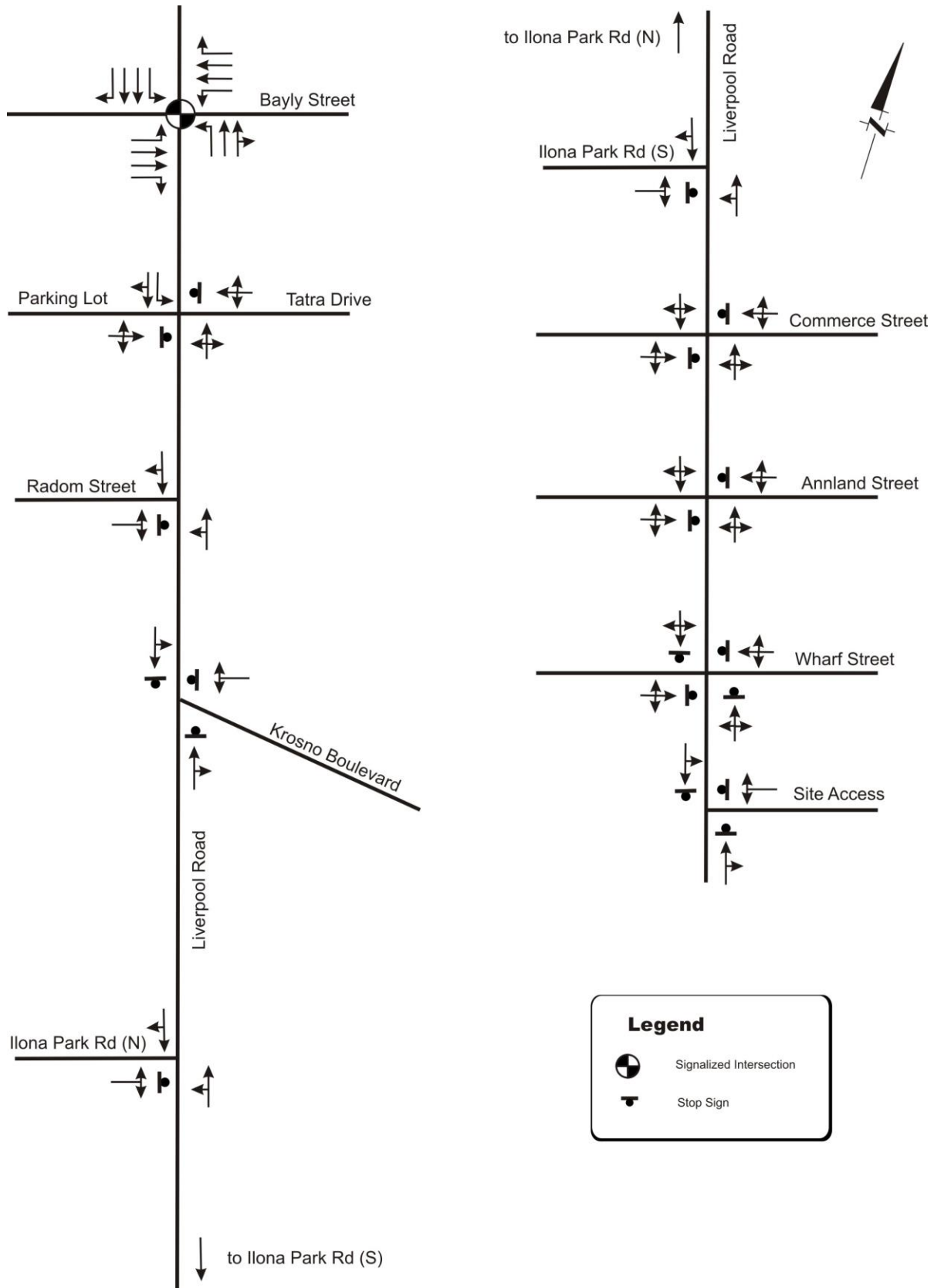


Exhibit 2: Existing Road Network

## 2.2 Transit Service

Durham Region Transit (DRT) currently operates a few transit routes that operate within 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. A summary of DRT services and bus and train services provided at 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 3**. 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 3: 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 4**. Since the traffic counts are still within the 2 year time frame of this report, these counts are representative of existing conditions.

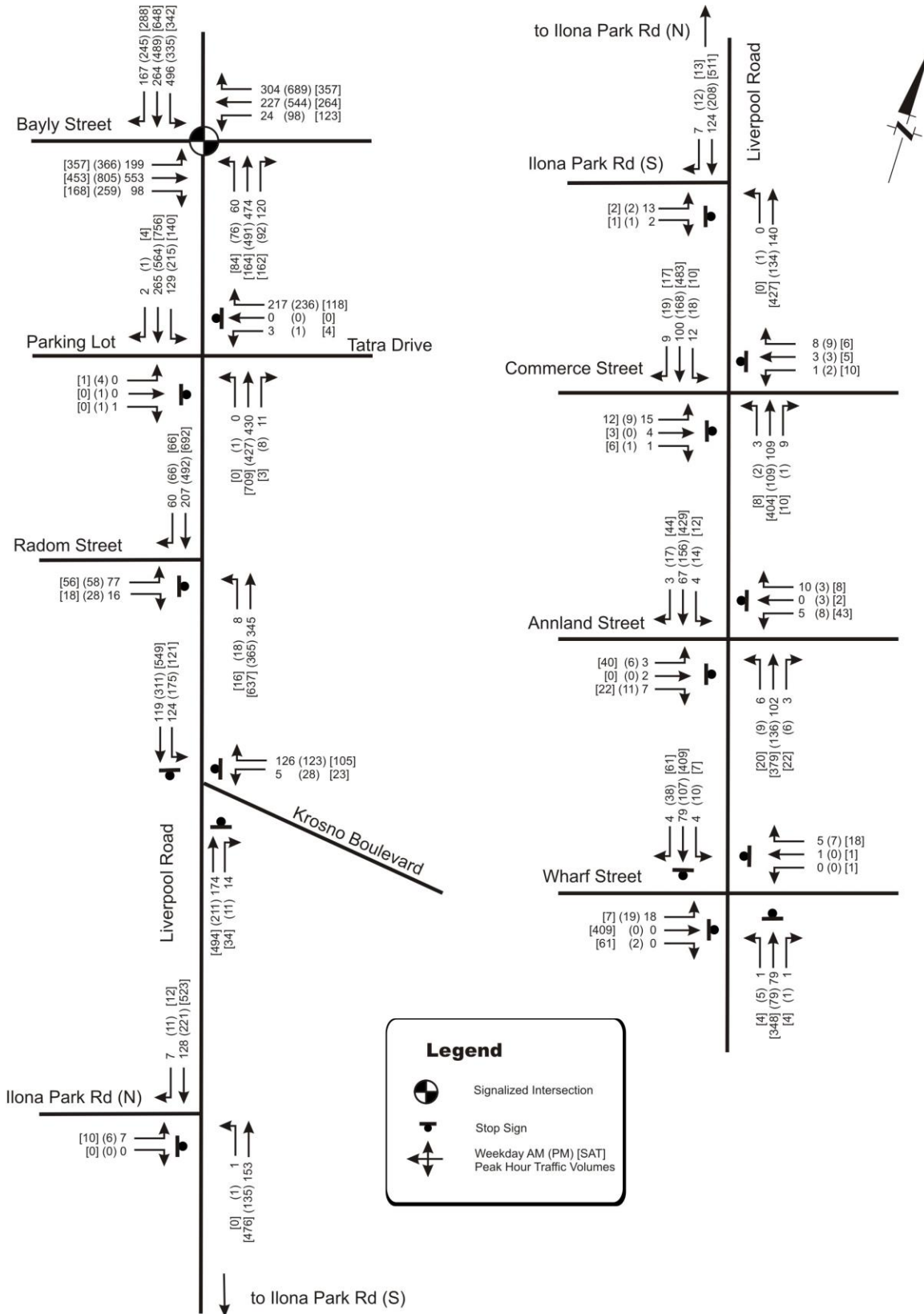


Exhibit 4: Existing Traffic Volumes

## 2.4 Existing Traffic Operations

Based on the existing road configurations illustrated in **Exhibit 2**, existing traffic volumes shown in **Exhibit 4**, 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 4**, 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.

## 2.5 Existing Traffic Queues

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/Annlard 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 Parking

A parking survey was conducted at the existing public parking lot located at the southwest of the site to understand the existing parking demand. As stated in **Section 1**, the existing public parking



lot with 72 parking spaces will be relocated to the northeast of the site and expanded to 200 parking spaces.

HDR conducted a parking survey at the existing parking lot to capture the peak parking demand at the following date and time:

- 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 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.

### 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 is anticipated to be at full build-out by 2020. 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.

The background development traffic volumes are shown in **Exhibit 5**.

### 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.

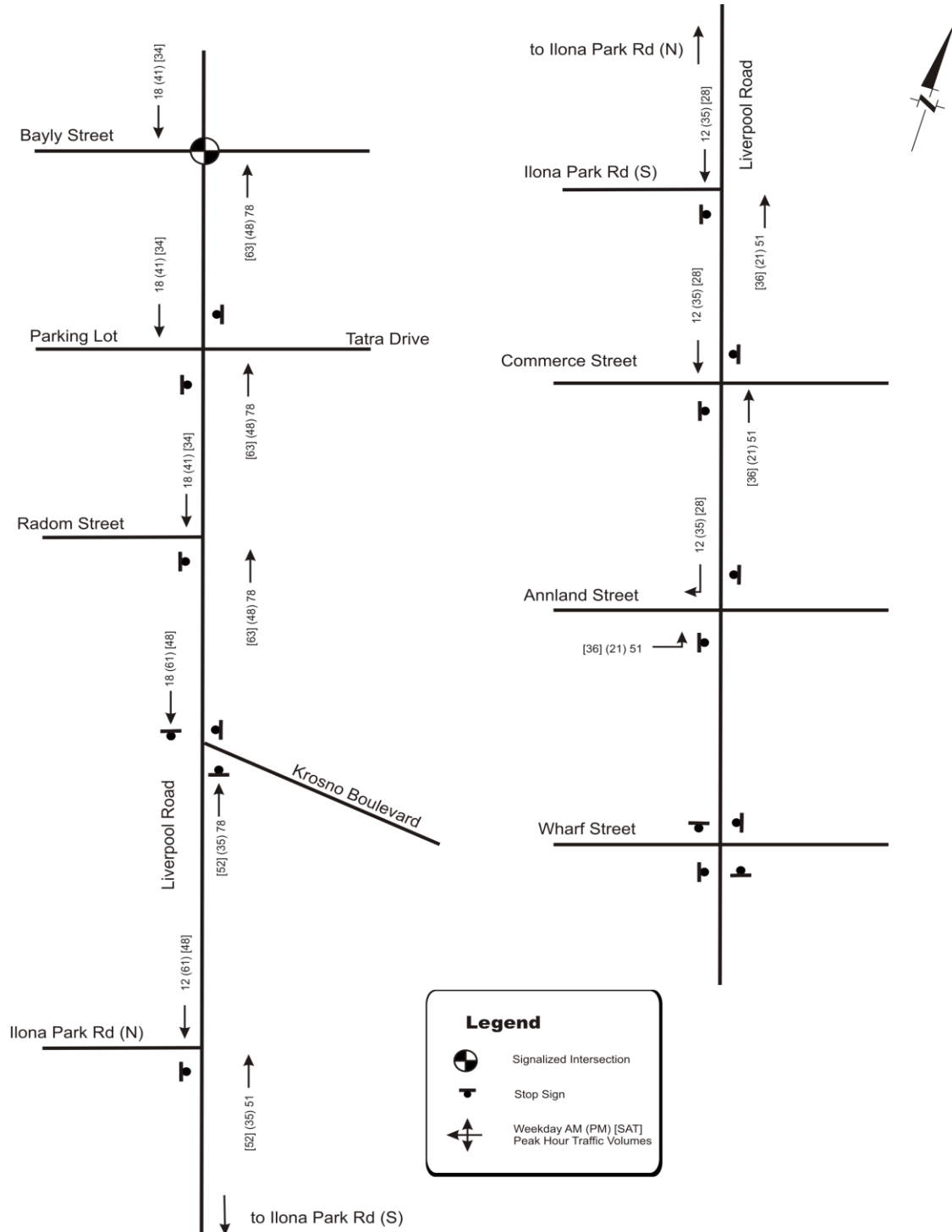


Exhibit 5: Background Development Traffic Volumes

### 3.4 2027 Background Traffic Operations

Background traffic operations were analyzed based on the background traffic volumes shown in **Exhibit 6** and the existing road network shown in **Exhibit 2**. 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.

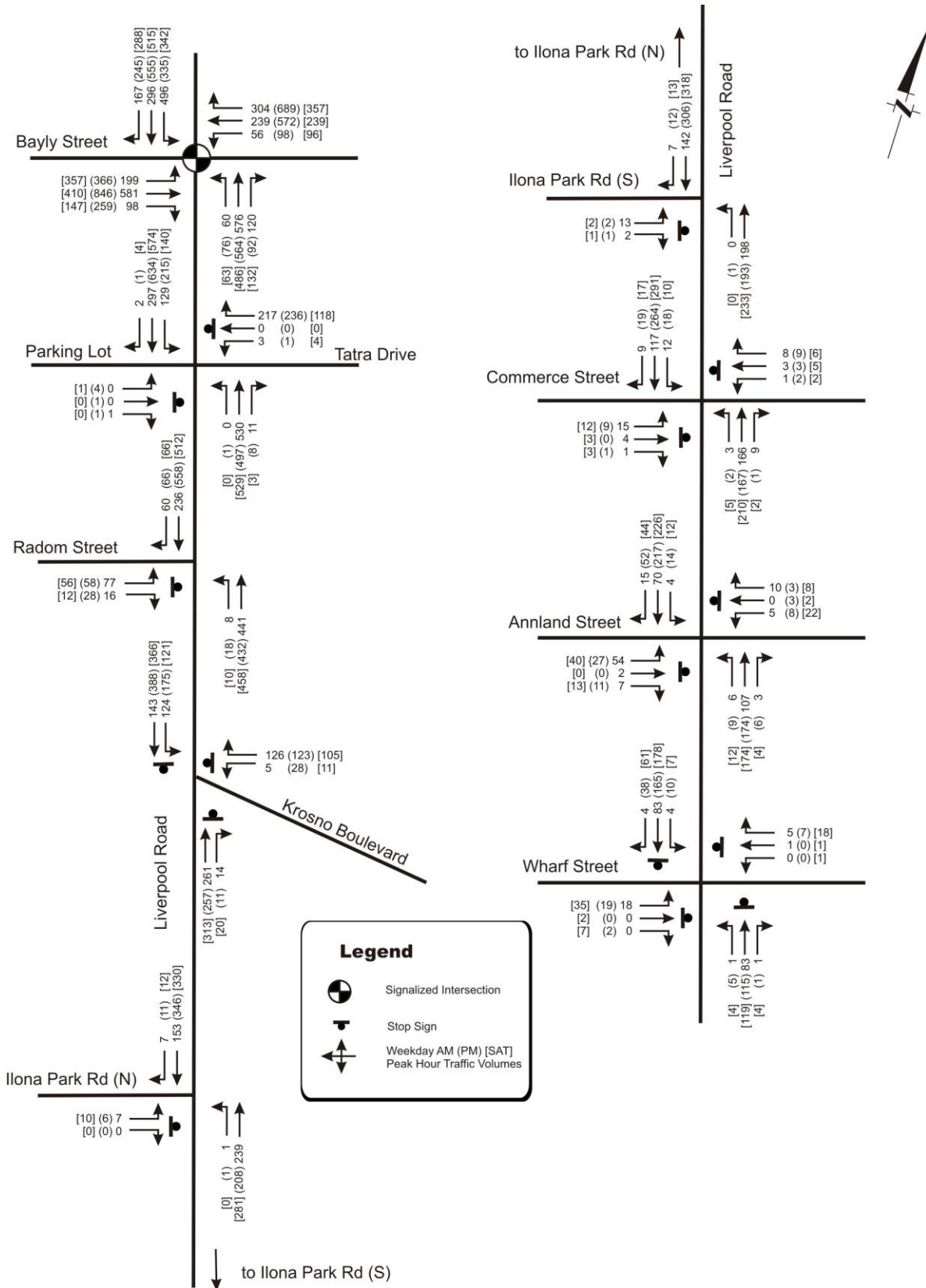


Exhibit 6: 2027 Background Traffic Volumes



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 7** and the existing road network shown in **Exhibit 2**. 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.

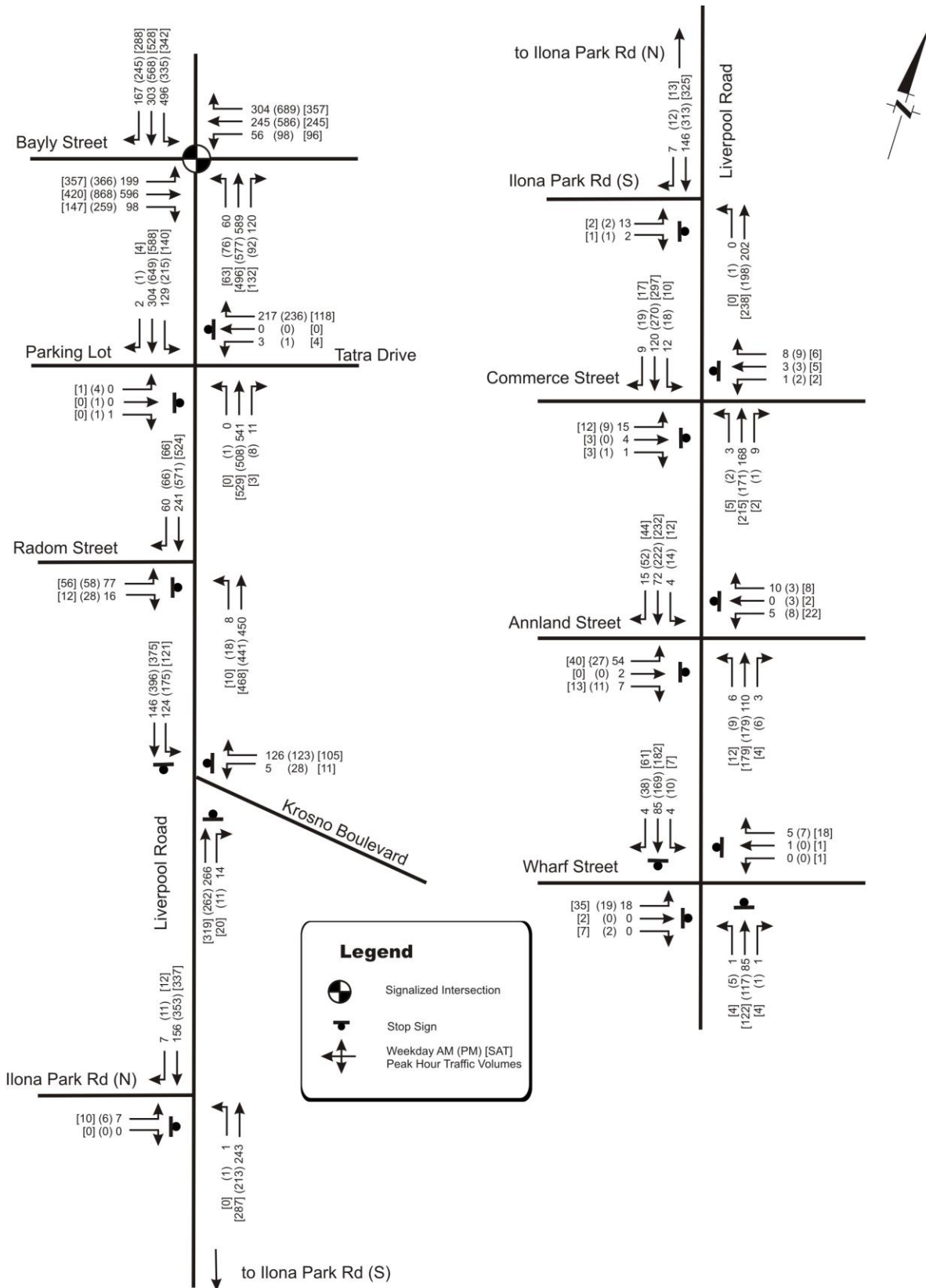


Exhibit 7: 2032 Background Traffic Volumes

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 498 condominium units in 2 buildings and 1,900 sm (20,451 sf) of commercial space. In addition, the site is proposed to supply 739 parking spaces including 200 public parking spaces and 539 parking spaces for both residential and commercial components. Details of the parking rate justification are provided in **Appendix F**. The site concept plan is shown in **Exhibit 8**.

One full movement driveway access is proposed to the site located just south of the pumping station road.

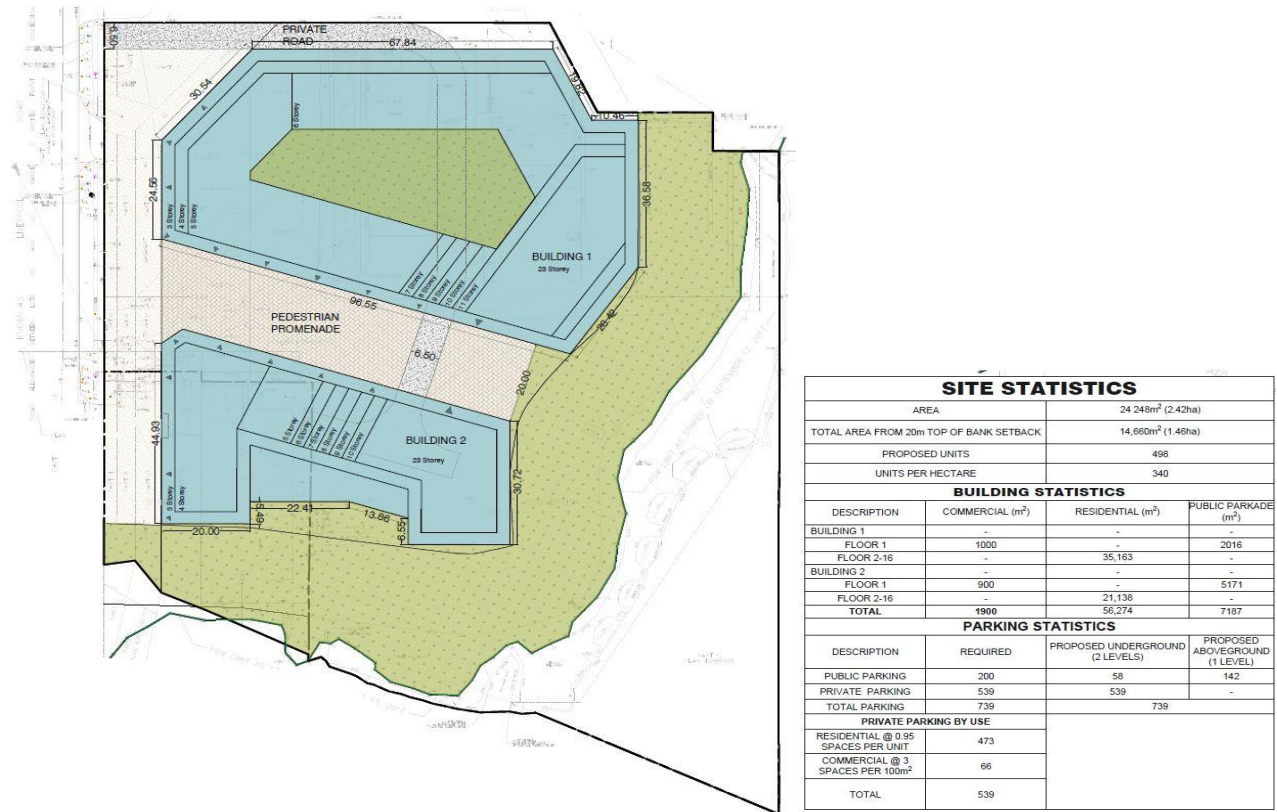


Exhibit 8: Conceptual Site Plan

## 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 20,451 sf 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 37,700 sf)	veh / 1000sf	2.89	10.12	15.24
Trip Rate (average rate)	veh / 1000sf	0.96	3.71	4.82
<b>Land Use (826) Specialty Retail Centre</b>				
Trip rate (equation based on 37,700 sf)	veh / 1000sf	10.56	3.45	No data
Trip rate (average rate)	veh / 1000sf	6.84	2.71	No data

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. This is 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.

Since the proposed development is mixed-use, it is expected that a portion of trips generated by the commercial component will originate from the residential building. In this analysis, 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. 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 outbound vehicles would be reduced if parking spaces were available.

**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 new expanded parking lot of 200 parking spaces (an additional 128 spaces) will be able to accommodate the parking demand of 94 and 138 vehicles during the weekday PM and Saturday peak hours, respectively.

However, it is anticipated that more drivers will be using the new expanded public parking lot when it is available; a conservative trip generation was used to estimate the additional demand. In this report, the peak 15 minutes trip generation rates were used based on the driveway counts. The trip generation rates for the existing public parking lot are summarized in **Table 24**.

**Table 24: Public Parking Lot Vehicular Site Traffic Generation**

		Weekday AM Peak Hour	Weekday PM Peak Hour	Saturday Peak Hour
<b>Public Parking Lot – Existing 72 Spaces (peak 15-minute trip generation)</b>				
Inbound Trip Rate	veh	-	29	44
Outbound Trip Rate	veh	-	25	39
Total Trip Rate	veh	-	54	83
<b>Public Parking Lot – Additional 128 Spaces</b>				
Inbound Trip Rate	veh / space	-	0.40	0.61
Outbound Trip Rate	veh / space	-	0.35	0.54
Total Trip Rate	veh / space	-	0.75	1.15

The resulting vehicular traffic generation is summarized in **Table 25**.

**Table 25: Site Traffic Generation**

		<b>Weekday AM Peak Hour</b>	<b>Weekday PM Peak Hour</b>	<b>Saturday Peak Hour</b>
<b>Land Use (820) Shopping Center – 20,451 sf</b>				
Gross trip rate	veh / 1000 sf	0.96	3.71	4.82
Gross trip generation	veh / h	20	76	99
Gross inbound trips	veh / h	12	36	51
Gross outbound trips	veh / h	8	40	48
<b>Land Use (232) High-Rise Residential Condominium / Townhouse – 498 units</b>				
Gross trip rate	veh / unit	0.35	0.37	0.36
Gross trips	veh / h	173	185	178
Internal percentage		10%	10%	10%
Internal trip	veh / h	17	19	18
Internal inbound trips	veh / h	3	12	8
Internal outbound trips	veh / h	14	7	10
Net trip	veh / h	156	166	160
Inbound trips	veh / h	30	103	69
Outbound trips	veh / h	126	63	91
<b>Public Parking Lot – Additional 128 Spaces</b>				
Gross trip rate	veh / space	-	0.75	1.15
Gross trip generation	veh / h	-	96	148
Gross inbound trips	veh / h	-	52	78
Gross outbound trips	veh / h	-	44	70
<b>Public Parking Lot – Redistribute Existing Demand to Site Driveway</b>				
Gross trip rate	veh / space	-	0.75	1.15
Gross trip generation	veh / h	-	54	83
Gross inbound trips	veh / h	-	29	44
Gross outbound trips	veh / h	-	25	39
<b>Total</b>				
Total net trip generation	veh / h	176	392	490
Total net inbound trips	veh / h	42	220	242
Total net outbound trips	veh / h	134	172	248

### 4.3 Site Generated Transit Demand

To estimate the amount of 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 25** - 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 26** below.

**Table 26: 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	30	19%	2	2	3
OUT	126	81%	7	7	15
TOTAL	156		9	9	18
Weekday PM Peak Hour	84% Auto		7% Bus Transit	6% GO Train	
IN	103	62%	9	7	16
OUT	63	38%	5	5	10
TOTAL	166		14	12	26

Assuming site generated person trips to/from the GO station also uses the DRT buses on Liverpool Road, the total transit trips would be 18 person-trips during the AM peak hour and 26 person-trips during the PM peak hour.

## 4.4 Trip Distribution

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 public parking lot expansion was based on the existing traffic pattern with consideration given to major routes available to access the beach. It is expected that very few



trips will be generated during the AM peak hours for the public parking lot. To be conservative, the forecast AM parking demand was assumed to be 72 spaces, which was derived from the observed parking during the PM peak hour.

The trip distribution for the proposed development is summarized in **Table 27**.

**Table 27: Site Traffic Distribution**

To / From	Via	New Site Trips		
		Residential	Commercial	Public Parking Lot
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, parking lot expansion and the total site trips are shown in **Exhibit 9**, **Exhibit 10**, **Exhibit 11**, and **Exhibit 12**, respectively.

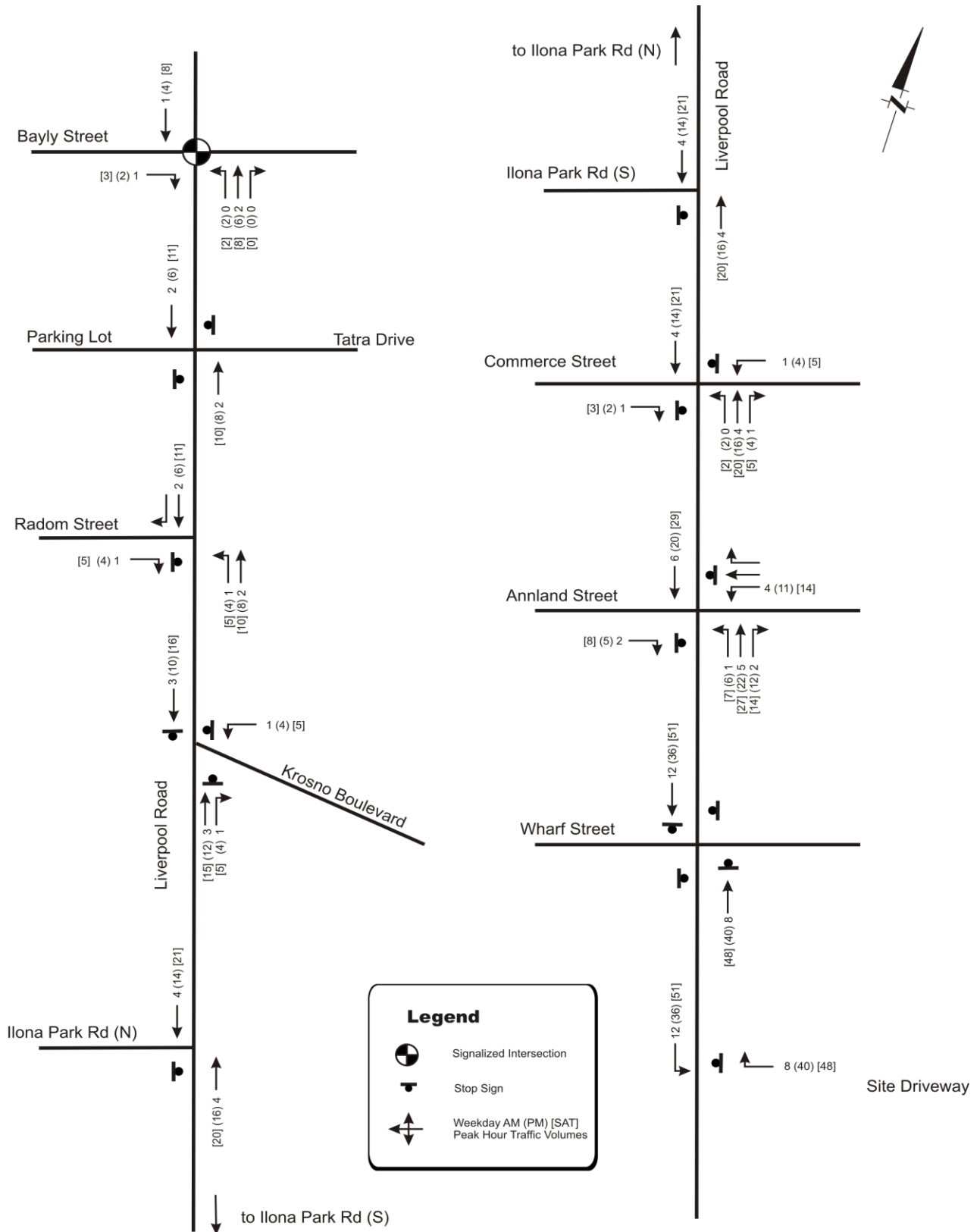


Exhibit 9: Commercial Traffic Volumes

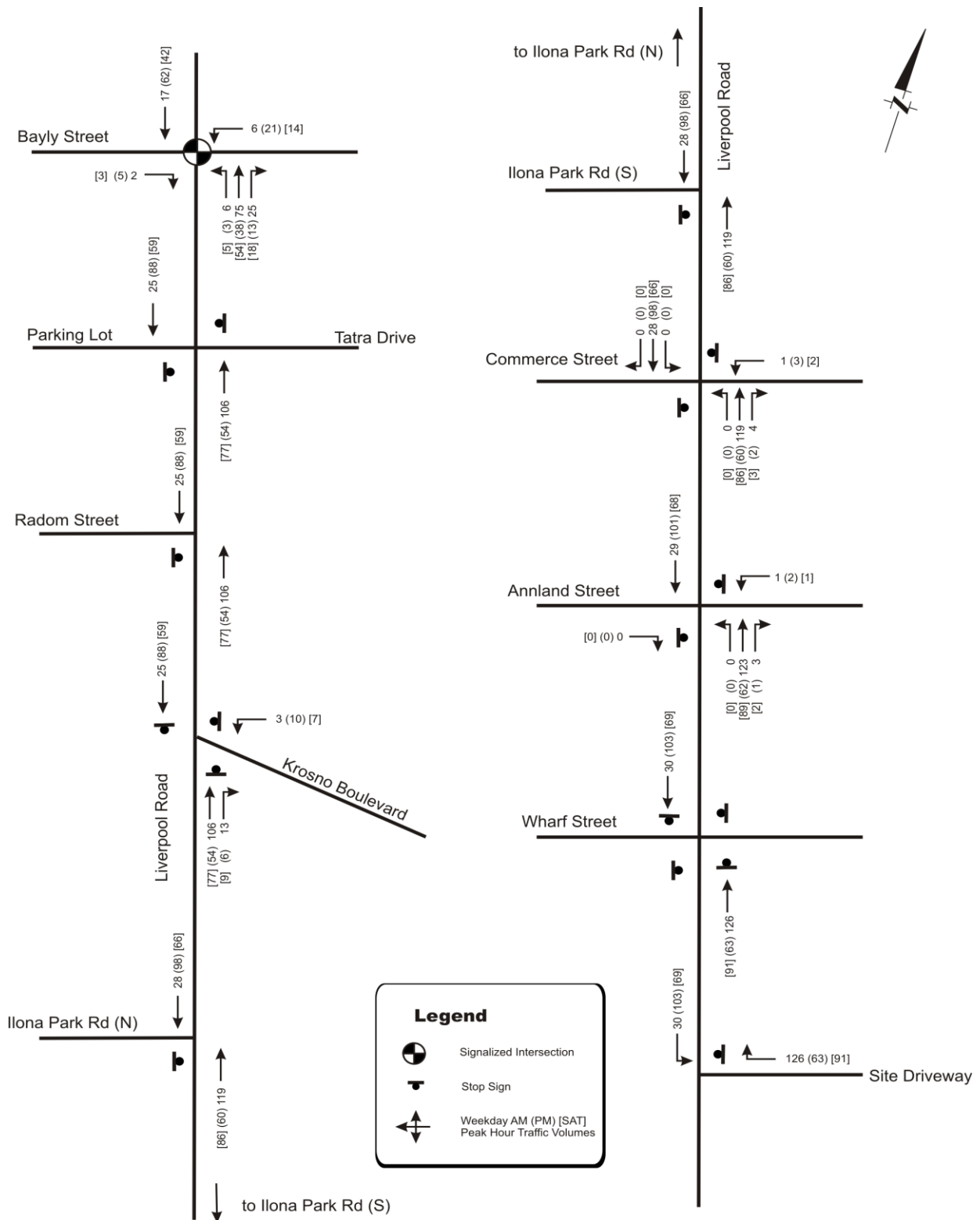


Exhibit 10: Residential Traffic Volumes



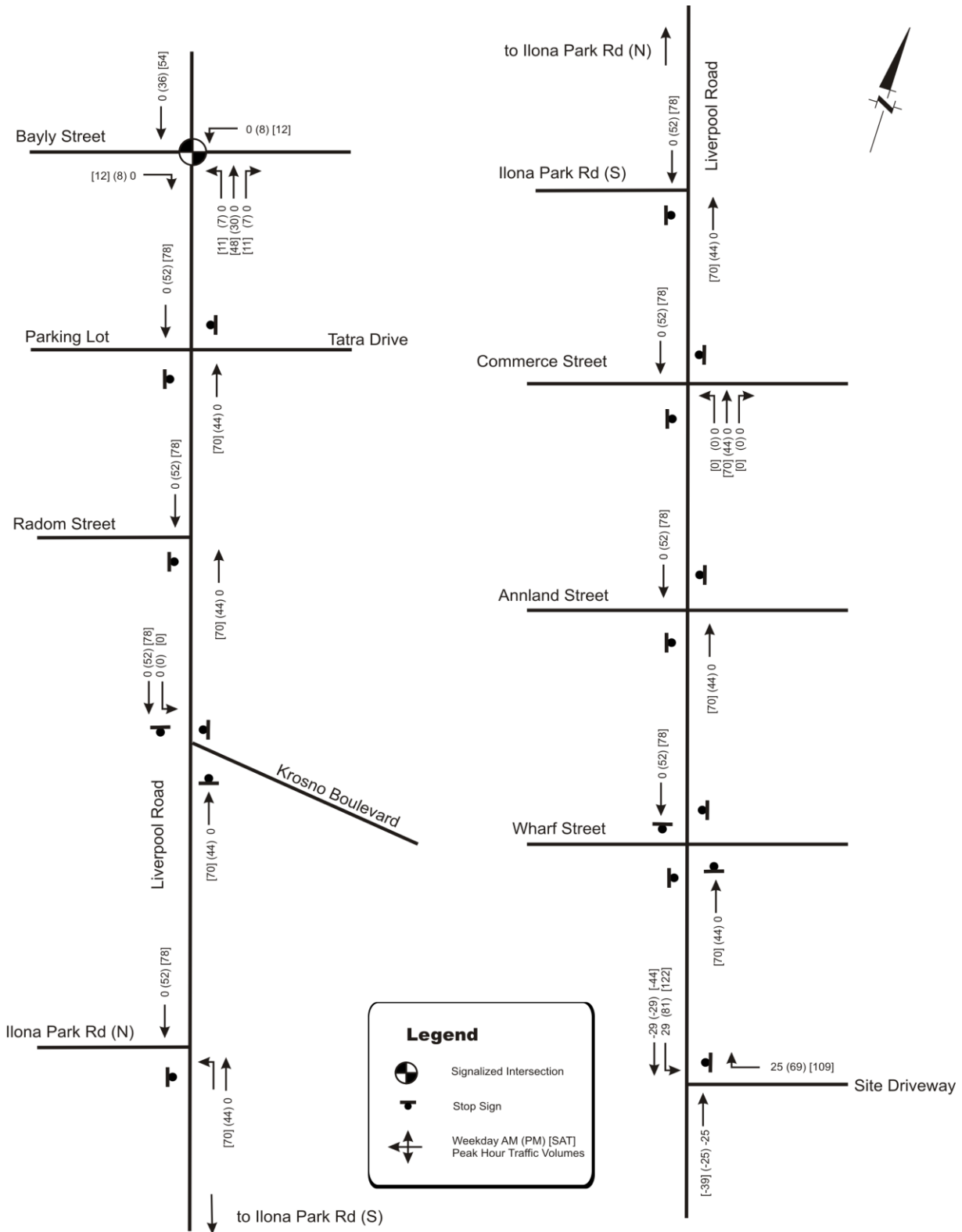


Exhibit 11: Public Parking Lot Expansion Traffic Volumes

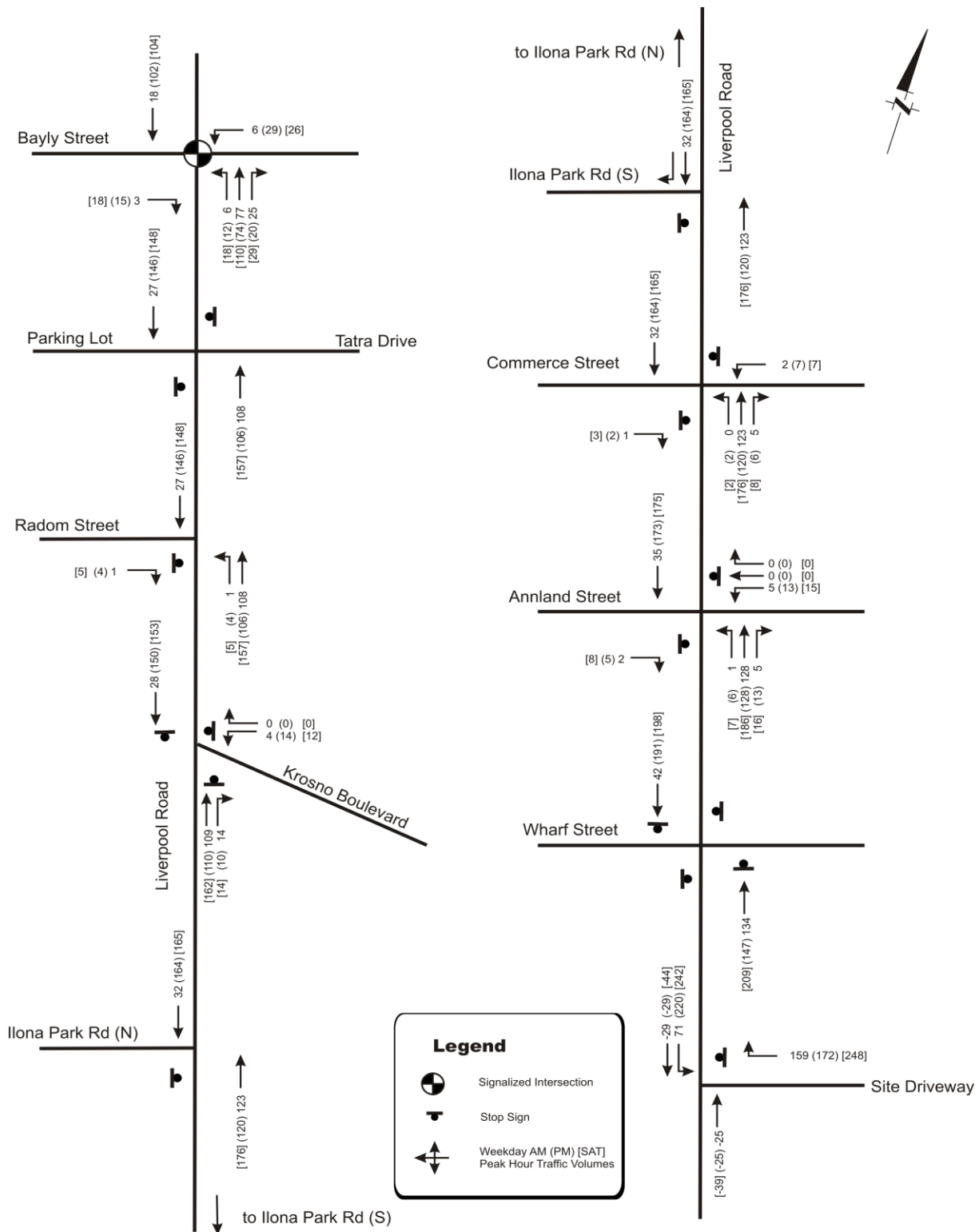


Exhibit 12: Site Traffic Volumes – Total

## 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 13**. The 2027 total signalized and unsignalized intersection operations are summarized in **Table 28** and **Table 29**, respectively. Detailed HCM output sheets generated by Synchro are provided in **Appendix C**.

Table 28: 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>C</b>	<b>0.96</b>	<b>D</b>	<b>0.93</b>	<b>C</b>	<b>0.92</b>
Eastbound Left-turn	C	0.51	D	0.92	C	0.64
Eastbound Through	D	0.70	C	0.70	C	0.36
Eastbound Right-turn	A	0.25	A	0.46	A	0.29
Westbound Left-turn	C	0.30	C	0.57	C	0.36
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	0.18	B	0.30	B	0.27
Northbound Through-Right	E	0.96	D	0.90	D	0.92
Southbound Left-turn	D	0.86	E	0.93	D	0.84
Southbound Through	B	0.20	C	0.54	C	0.45
Southbound Right-turn	A	0.18	A	0.30	A	0.29

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 0.96 or better under optimized signal timings.

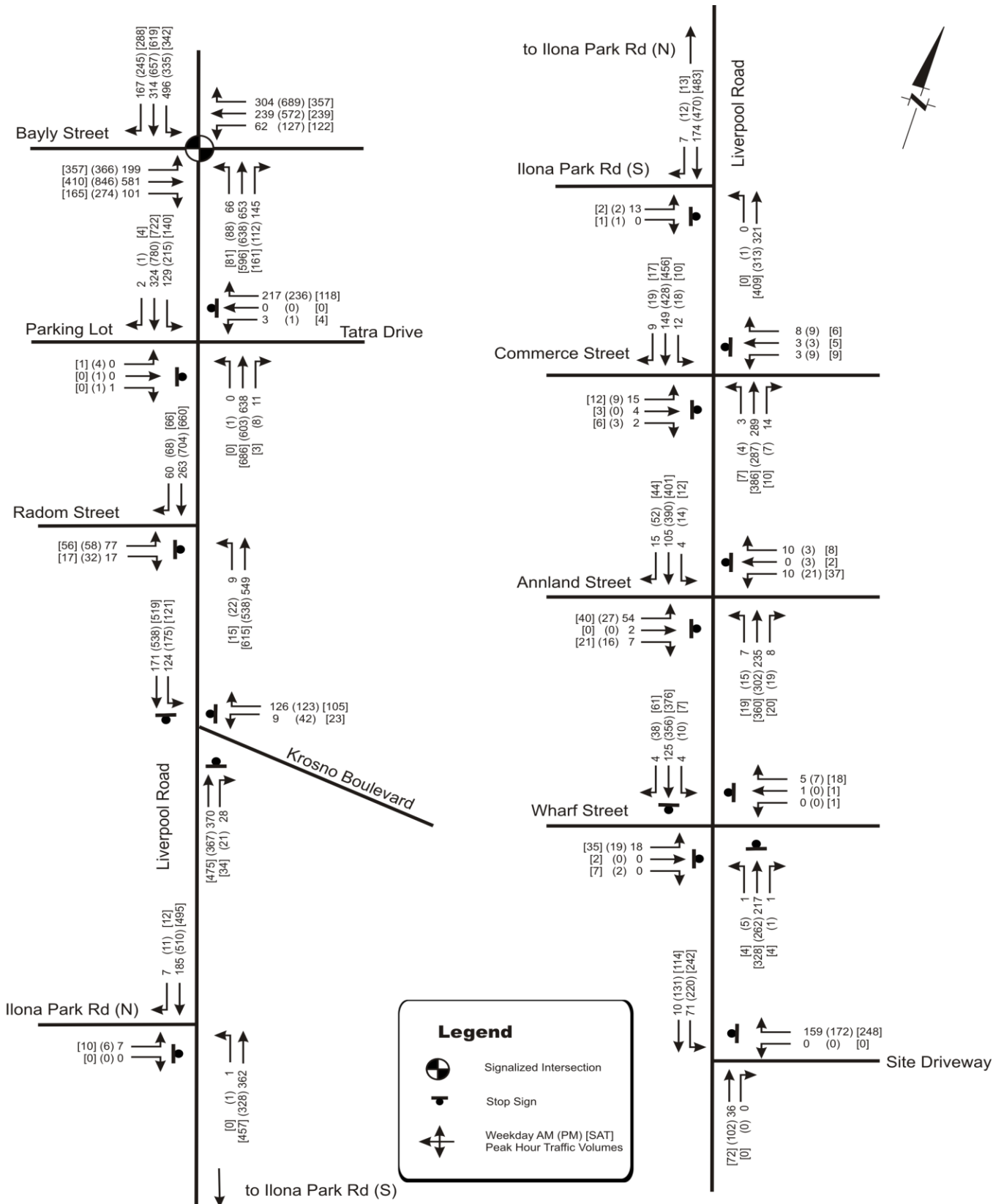


Exhibit 13: 2027 Total Traffic Volumes

Table 29: 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	0.59	F	0.04
Westbound Left-Through-Right	D	0.60	D	0.59	C	0.39
Northbound Left-through-right	-	0.00	A	0.00	A	0.00
Southbound Left-turn	B	0.16	B	0.25	B	0.17
Southbound Through-Right	-	0.21	-	0.48	A	0.44
<b>Liverpool Road/Radom Street</b>						
Eastbound Left-Right	C	0.31	E	0.55	F	0.62
Northbound Left-Through	A	0.01	A	0.03	A	0.02
Southbound Through-Right	-	0.20	-	0.47	-	0.47
<b>Liverpool Road/Krosno Boulevard</b>						
Westbound Left-Right	B	0.26	B	0.32	B	0.23
Northbound Right-turn	C	0.69	C	0.66	C	0.77
Southbound Left-Through	B	0.54	F	<b>1.17</b>	E	0.95
<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	A	0.00
Southbound Through-Right	-	0.13	-	0.36	-	0.33
<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	A	0.00
Southbound Through-Right	-	0.13	-	0.33	-	0.31
<b>Liverpool Road/Commerce Street</b>						
Eastbound Left-Through-Right	B	0.06	C	0.05	C	0.10
Westbound Left-Through-Right	B	0.03	C	0.08	C	0.09
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	0.15	C	0.14	C	0.23
Westbound Left-Through-Right	B	0.04	C	0.10	C	0.20
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	0.30	B	0.40	B	0.47
Southbound Left-Through-Right	A	0.19	B	0.57	B	0.60
<b>Liverpool Road/Site Access</b>						
Westbound Left-Right	A	0.21	B	0.26	B	0.01
Northbound Through-Right	-	0.03	-	0.08	-	0.20
Southbound Left-Through	A	0.06	A	0.20	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 ‘D’ 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 30**.

**Table 30: 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	B	0.59	C	0.62	B	0.55
Northbound Right-turn	A	0.37	A	0.31	A	0.37
Southbound Left-Through	A	0.40	B	0.73	A	0.57

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

As shown in **Table 30**, all movements at Krosno Boulevard will operate at level of service ‘C’ 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 31**.

**Table 31: 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	0.08
Westbound Left-Through-Right	B	0.66
Northbound Left-through-right	A	0.46
Southbound Left-turn	A	0.37
Southbound Through-Right	A	0.59

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 32**. 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 32: 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 33** 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 33: 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	47	90	73
Eastbound Through	-	74	98	46
Eastbound Right-turn	100	<7	30	14
Westbound Left-turn	50	17	25	26
Westbound Through	-	32	70	32
Westbound Right-turn	150	38	133	55
Northbound Left-turn	75	11	18	16
Northbound Through-Right	-	119	108	109
Southbound Left-turn	50	<b>128</b>	100	92
Southbound Through	-	27	72	64
Southbound Right-turn	65	8	24	10
<b>Liverpool Road/Tatra Drive</b>				
Eastbound Left-Through-Right	-	<7	10	<7
Westbound Left-Through-Right	-	29	28	14
Northbound Left-through-right	-	<7	<7	<7
Southbound Left-turn	40	<7	7	<7
<b>Liverpool Road/Radom Street</b>				
Eastbound Left-Right	-	10	22	24
Northbound Left-Through	-	<7	<7	<7
Southbound Through-Right	-	<7	<7	<7
<b>Liverpool Road/Krosno Boulevard</b>				
Westbound Left-Right	-	20	23	<7
Northbound Right-turn	-	33	44	50
Southbound Left-Through	-	23	59	67
<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	-	13	13	11
Westbound Left-Through-Right	-	8	<7	13
Northbound Left-Through-Right	-	9	15	28
Southbound Left-Through-Right	-	24	26	31
<b>Liverpool Road/Site Access</b>				
Westbound Left-Right	-	<7	8	<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 14**. The 2032 total signalized and unsignalized intersection operations are summarized in **Table 34** and **Table 35**, respectively. Detailed HCM output sheets generated by Synchro are provided in **Appendix C**.

Table 34: 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>0.98</b>	<b>D</b>	<b>0.94</b>	<b>C</b>	<b>0.86</b>
Eastbound Left-turn	C	0.52	D	0.94	C	0.70
Eastbound Through	D	0.71	C	0.72	C	0.40
Eastbound Right-turn	A	0.25	A	0.46	A	0.31
Westbound Left-turn	C	0.31	C	0.59	C	0.35
Westbound Through	C	0.31	C	0.61	C	0.30
Westbound Right-turn	A	0.38	D	0.92	B	0.47
Northbound Left-turn	B	0.18	B	0.31	B	0.26
Northbound Through-Right	E	0.98	D	0.91	D	0.86
Southbound Left-turn	D	0.86	E	0.93	D	0.83
Southbound Through	B	0.20	C	0.55	C	0.44
Southbound Right-turn	A	0.18	A	0.30	A	0.29
<b>Liverpool Road/Krosno Boulevard</b>						
Westbound Left-Right	B	0.59	C	0.62	B	0.55
Northbound Through-Right	A	0.37	A	0.31	A	0.38
Southbound Left-turn	A	0.40	B	0.74	A	0.58

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.

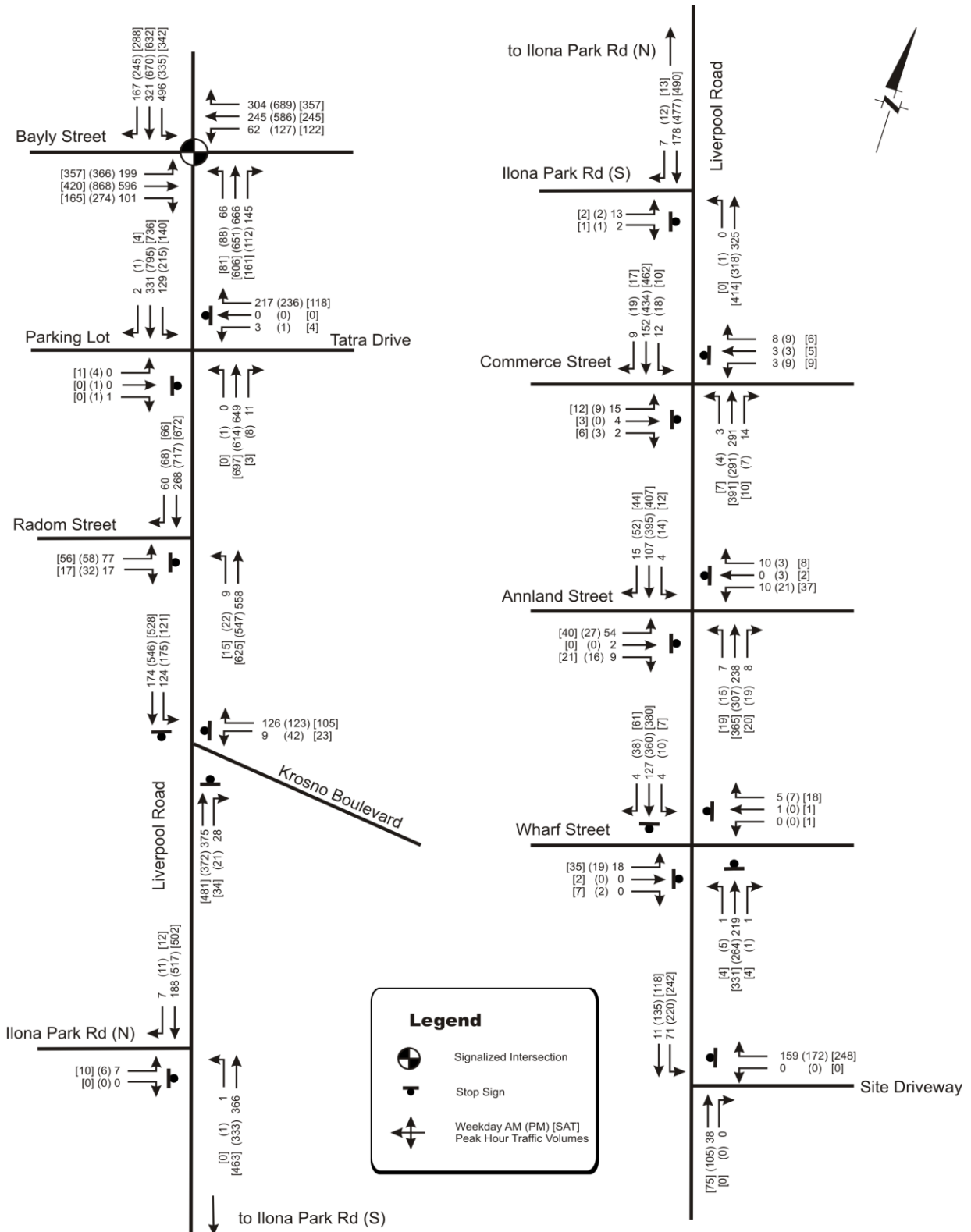


Exhibit 14: 2032 Total Traffic Volumes

**Table 35: 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	0.64	F	0.05
Westbound Left-Through-Right	D	0.61	D	0.60	C	0.40
Northbound Left-through-right	-	0.00	A	0.00	-	0.00
Southbound Left-turn	B	0.17	B	0.25	B	0.17
Southbound Through-Right	-	0.22	-	0.49	-	0.45
<b>Liverpool Road/Radom Street</b>						
Eastbound Left-Right	C	0.32	F	0.57	F	0.65
Northbound Left-Through	A	0.01	A	0.03	A	0.02
Southbound Through-Right	-	0.21	-	0.48	-	0.48
<b>Liverpool Road/Ilona Park Road (N)</b>						
Eastbound Left-Right	B	0.02	C	0.03	C	0.05
Northbound Left-Through	A	0.00	A	0.00	-	0.00
Southbound Through-Right	-	0.13	-	0.37	-	0.33
<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	-	0.33	-	0.32
<b>Liverpool Road/Commerce Street</b>						
Eastbound Left-Through-Right	B	0.06	C	0.05	C	0.10
Westbound Left-Through-Right	B	0.03	C	0.08	C	0.09
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	0.15	C	0.15	C	0.23
Westbound Left-Through-Right	B	0.04	C	0.10	C	0.20
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	0.31	B	0.40	B	0.47
Southbound Left-Through-Right	A	0.19	B	0.58	B	0.60
<b>Liverpool Road/Site Access</b>						
Westbound Left-Right	A	0.21	B	0.26	B	0.01
Northbound Through-Right	-	0.03	-	0.08	-	0.2
Southbound Left-Through	A	0.06	A	0.20	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 36**.

**Table 36: 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	0.08
Westbound Left-Through-Right	B	0.66
Northbound Left-through-right	A	0.46
Southbound Left-turn	A	0.37
Southbound Through-Right	A	0.59

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 37**. Pedestrian and bicycle levels of service will continue to operate at LOS 'D' or better under the 2032 total conditions.

**Table 37: 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	C	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 38 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 38: 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	47	92	77
Eastbound Through	-	76	101	50
Eastbound Right-turn	100	<7	31	15
Westbound Left-turn	50	17	25	27
Westbound Through	-	32	71	33
Westbound Right-turn	150	38	133	54
Northbound Left-turn	75	11	18	15
Northbound Through-Right	-	122	111	96
Southbound Left-turn	50	<b>128</b>	<b>100</b>	<b>91</b>
Southbound Through	-	27	73	62
Southbound Right-turn	65	8	25	10
<b>Liverpool Road/Tatra Drive</b>				
Eastbound Left-Through-Right	-	<7	10	<7
Westbound Left-Through-Right	-	30	29	14
Northbound Left-through-right	-	<7	<7	<7
Southbound Left-turn	40	<7	8	<7
<b>Liverpool Road/Radom Street</b>				
Eastbound Left-Right	-	10	23	30
Northbound Left-Through	-	<7	<7	<7
Southbound Through-Right	-	<7	<7	<7
<b>Liverpool Road/Krosno Boulevard</b>				
Westbound Left-Right	-	13	24	18
Northbound Right-turn	-	33	36	42
Southbound Left-Through	-	29	130	74
<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	-	12	13	8
Westbound Left-Through-Right	-	5	7	13
Northbound Left-Through-Right	-	17	19	26
Southbound Left-Through-Right	-	19	29	37
<b>Liverpool/Site Access</b>				
Westbound Left-Right	-	<7	8	<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. 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.

### 6.1.1 Cycling

Based on the City’s Zoning By-law 7553/17, the minimum number of bicycle parking spaces requirement for apartment dwelling is 0.5 spaces per dwelling unit and 1 space for 1,000 sm of gross leasable floor area of commercial space.

As a result, the proposed development will provide 214 and 4 bicycle parking spaces, respectively, for residents and retail customers to meet the City’s By-law requirement.

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.

### 6.1.2 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.

### 6.1.3 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 following bus routes provide service to the site:

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
<b>Bayly Street</b>	

Bus / Route	Approximate headways during peak periods
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 the **Section 6.1.2**, 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 27 person-trips during the AM peak hour and 24 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 20 seats) is to serve the site to/from the Pickering GO station in future, then it can be assumed that the proposed shuttle bus can also reduce at least 7 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. Hence, as all of the future north-south flows of all intersections will be operating under acceptable LOS and delays



with the Total Traffic Conditions (background plus the subject development), the addition of this shuttle bus will not impact the future road traffic operations.

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.

#### **6.1.4 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.

#### **6.1.5 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.

#### **6.1.6 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 498 condominium units in 2 buildings and 1,900 sm of commercial. The site is proposed to supply overall 739 parking spaces including 200 public parking spaces and 539 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.

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.

We have been in discussions with City of Pickering Staff regarding the opportunity for 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 214 and 4 bicycle parking spaces, respectively, for residents and customers, to meet the City's By-law requirement. 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 does not account for potential increases in transit service and the TDM measures.



# **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	0	0	0	0	0	
	715	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	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	0	1	0	
	830	0	0	0	0	1	0	0	1	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	1	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	0	2	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	0	1	0	0	
1730	0	1	0	0	0	0	0	0	0	0	0	2	0	0	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	0	8	1	1	0
	1215	0	0	0	0	0	0	0	0	0	0	1	0	0	1	2	1	0
	1230	0	0	0	0	0	0	0	1	0	0	3	0	0	7	2	3	0
	1245	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	4	0
	1300	0	0	0	0	0	0	0	1	0	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	0	4	1	0	1
	PM	0	1	0	0	0	0	1	2	0	1	3	1	0	5	3	3	0
	SAT	0	0	0	1	0	0	0	7	0	0	6	1	0	18	11	14	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>																	
TIME BEGINNING	Annland Street			Annland Street			Liverpool Road			Liverpool Road			<b>U-TURNS</b>				
	Eastbound			Westbound			Northbound			Southbound			EB to WB	WB to EB	NB to SB	SB to NB	
	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	
	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**

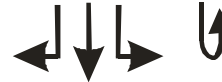
	TIME BEGINNING	Annland Street			Annland Street			Liverpool Road			Liverpool Road			TOTAL VEHICLES	
		Eastbound			Westbound			Northbound			Southbound				
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right		
<b>WEEKDAY</b>	700	0	0	0	0	0	0	0	0	0	0	1	0	1	
	715	0	0	0	0	0	0	0	0	0	0	1	0	1	
	730	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

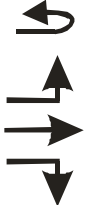
<b>PERIOD</b>	WEEKDAY AM PEAK HOUR
<b>TIME</b>	0730 - 0830

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

<b>U-Turns</b>	0
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<b>Pedestrians</b>	6
<b>Bicyclists</b>	1

<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



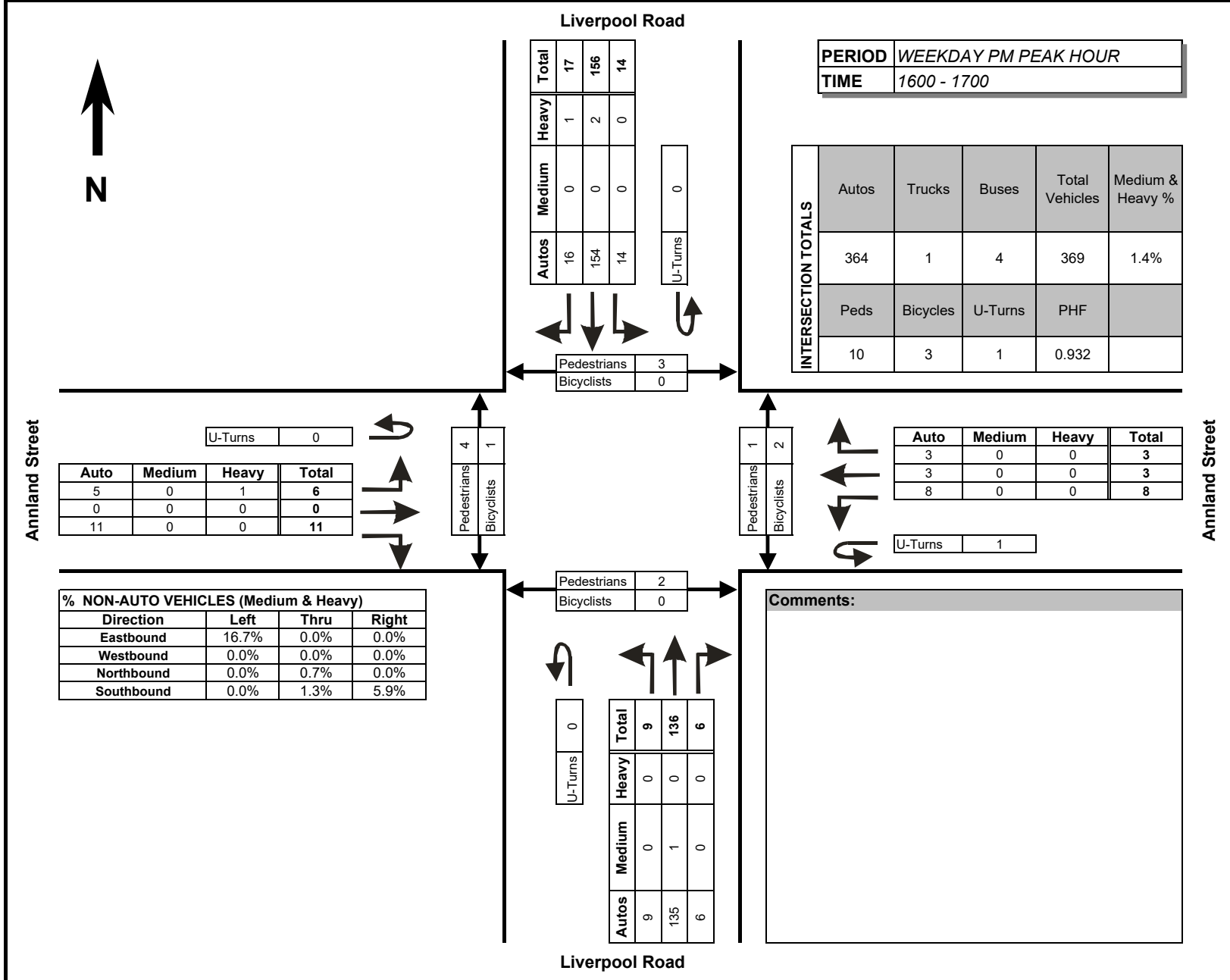
	<b>Total</b>	6	102	3
	<b>Heavy</b>	0	0	0
	<b>Medium</b>	1	2	0
	<b>Autos</b>	5	100	3

**Liverpool Road**

**Comments:**

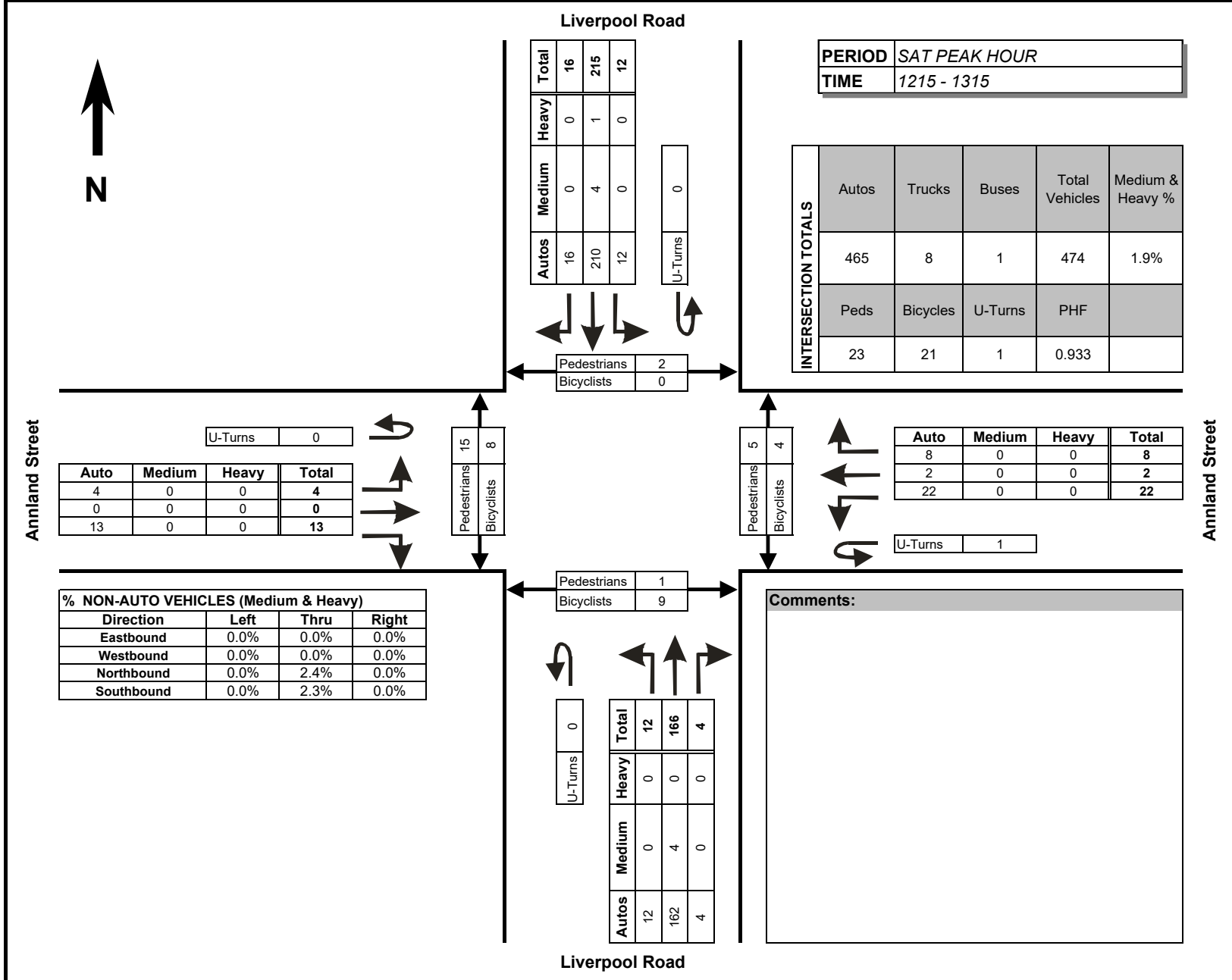
**NORTH-SOUTH ROAD:** Liverpool Road  
**EAST-WEST ROAD:** Annland Street  
**SURVEY DATE:** Thu Jun 1, Sat Jun 3, 2017  
**MUNICIPALITY:** Pickering, Ontario  
**WEATHER:** WKDY-Sunny, SAT - Sunny

**TURNING  
MOVEMENT  
DIAGRAM**



**NORTH-SOUTH ROAD:** Liverpool Road  
**EAST-WEST ROAD:** 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

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**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

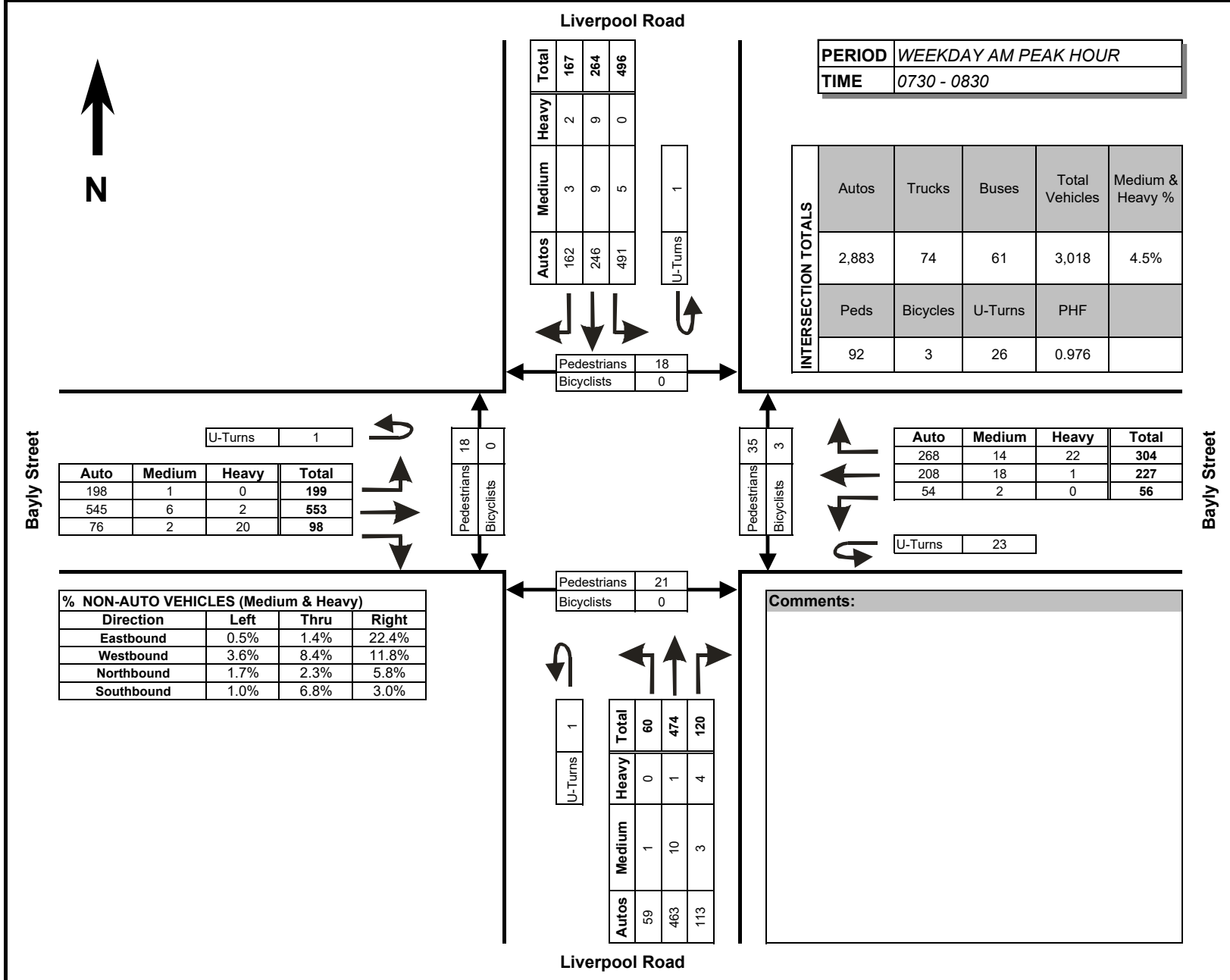
TIG TCS v1.17

**TRAF8 GROUP**

**HOURLY SUMMARY - HEAVY**

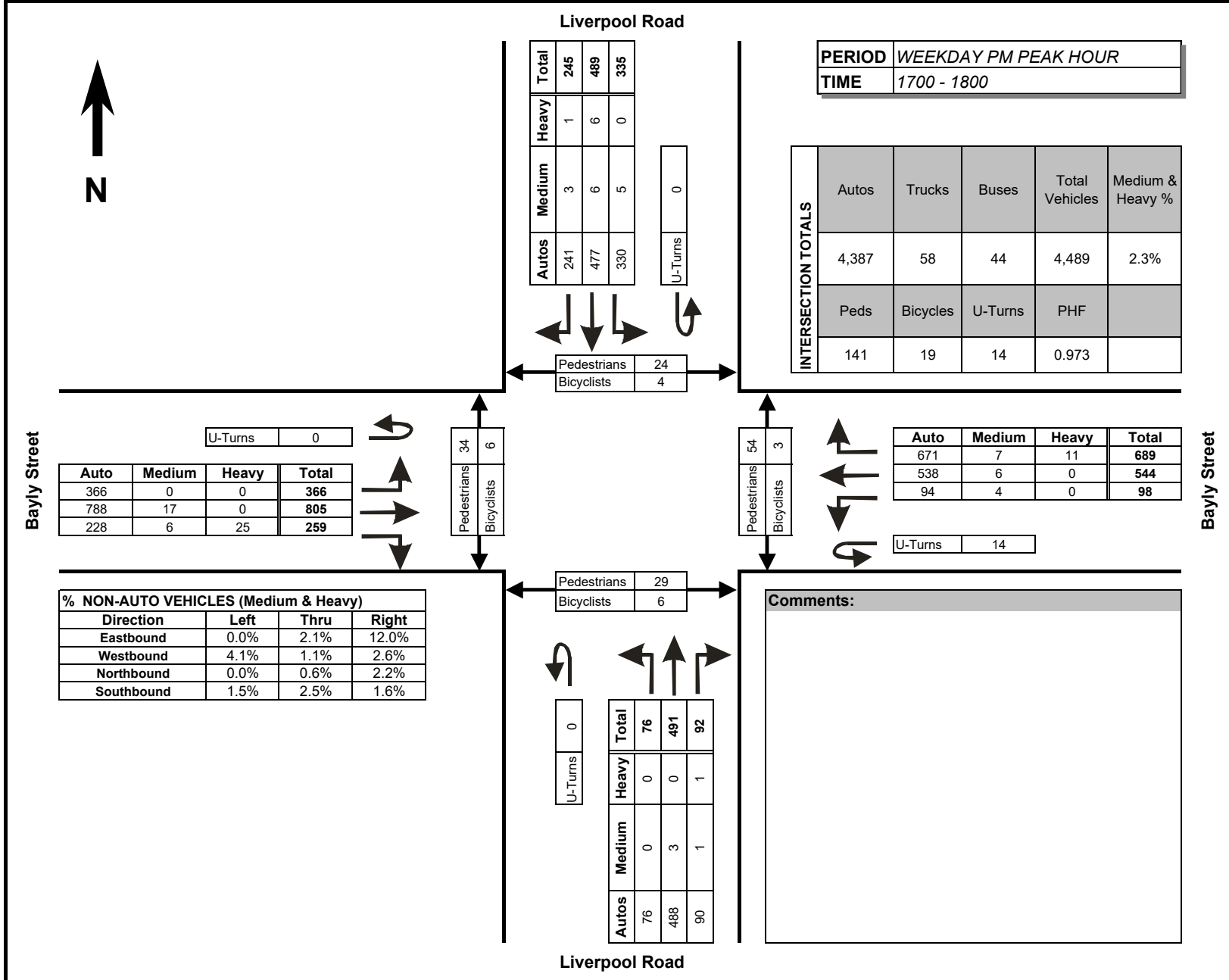
	TIME BEGINNING	Bayly Street			Bayly Street			Liverpool Road			Liverpool Road			TOTAL VEHICLES
		Eastbound			Westbound			Northbound			Southbound			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
<b>WEEKDAY</b>	700	0	3	34	0	3	26	0	2	4	0	7	3	82
	715	0	3	27	0	2	24	0	1	4	0	8	2	71
	730	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

**TURNING  
MOVEMENT  
DIAGRAM**



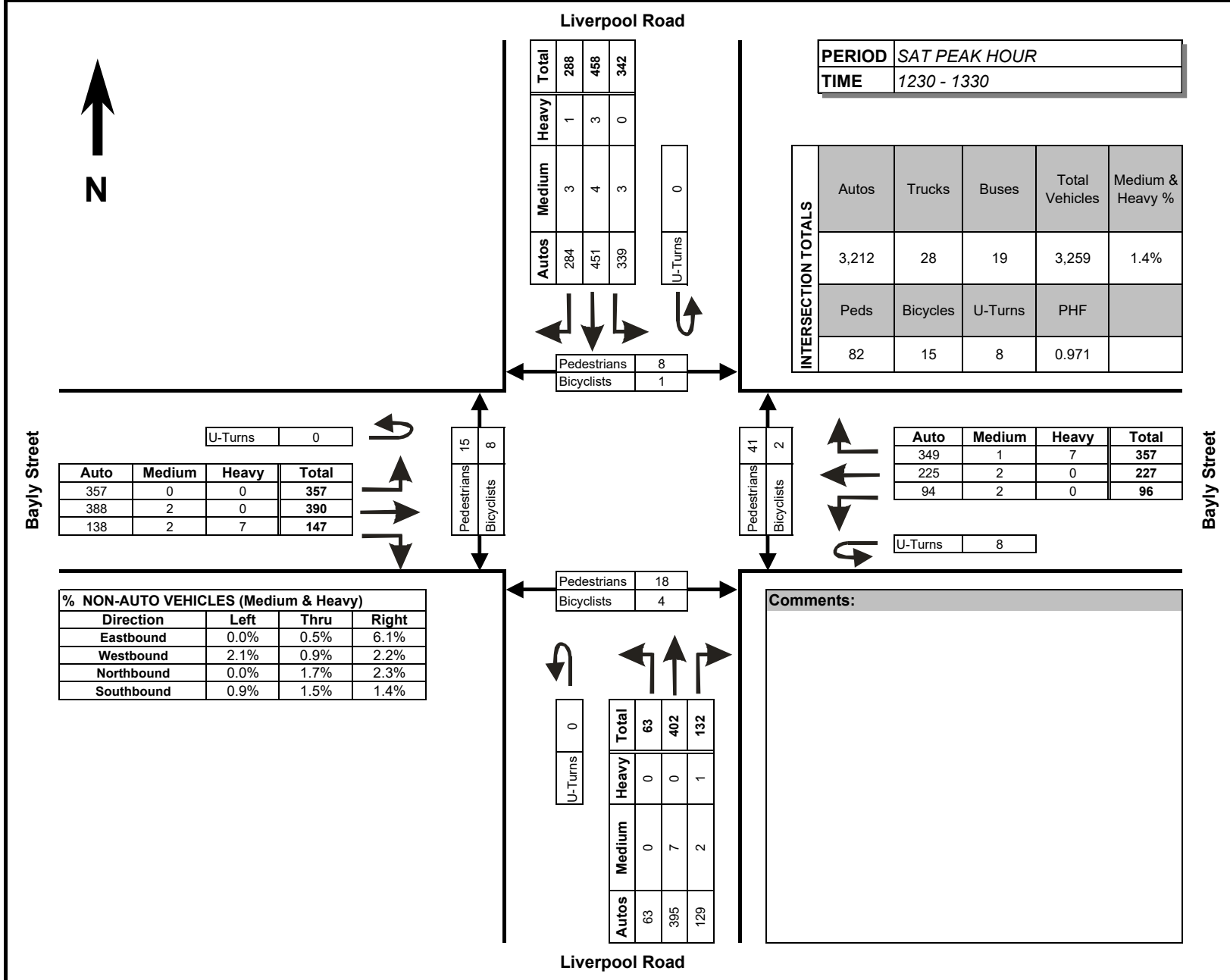
**NORTH-SOUTH ROAD:** Liverpool Road  
**EAST-WEST ROAD:** Bayly Street  
**SURVEY DATE:** Thu Jun 1, Sat Jun 3, 2017  
**MUNICIPALITY:** Pickering, Ontario  
**WEATHER:** WKDY-Sunny, SAT - Sunny

**TURNING  
MOVEMENT  
DIAGRAM**



**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**



# 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  ↑↓ Ped. 25	0.75 0.84 0.85 1% 1% 2% 1 3 11 155 198 470 1023 36	Ped. 22 Trucks % ↑ ↓	Cars Trucks PHF 348 28 7% 0.85 190 20 10% 0.94 62 2 3% 0.80 1142 32 →
← 27 401 → 0.79 1% 2 235 0.85 2% 14 549 0.72 2% 2 87	↑ ↓ ↖ ↗ ↘ ↙	Ped. 20 Trucks % ↑ ↓	PHF Trucks Cars 123 7 5% 0.76 440 6 1% 0.82 56 6 10% 0.82 347 7 →

<b>MD Peak:</b> 12:15 pm  ↑↓ Ped. 9	0.94 0.94 0.95 2% 3% 4% 4 10 12 195 310 293 924 30	Ped. 8 Trucks % ↑ ↓	Cars Trucks PHF 373 21 5% 0.91 156 18 10% 0.82 79 2 2% 0.75 696 40 →
← 23 413 → 0.93 1% 2 228 0.96 6% 20 290 0.82 2% 3 131	↑ ↓ ↖ ↗ ↘ ↙	Ped. 16 Trucks % ↑ ↓	PHF Trucks Cars 113 8 7% 0.82 323 7 2% 0.88 62 1 2% 0.79 520 15 →

<b>PM Peak:</b> 4:45 pm  ↑↓ Ped. 22	0.87 0.89 0.91 0% 0% 5% 1 2 15 304 417 312 1544 17	Ped. 13 Trucks % ↑ ↓	Cars Trucks PHF 729 13 2% 0.94 368 15 4% 0.86 107 0 0% 0.79 1291 45 →
← 17 745 → 0.91 0% 0 370 0.91 3% 28 876 0.84 1% 2 192	↑ ↓ ↖ ↗ ↘ ↙	Ped. 27 Trucks % ↑ ↓	PHF Trucks Cars 103 2 2% 0.77 445 4 1% 0.92 73 1 1% 0.62 716 4 →

<b>Total Count</b> 8 hours  ↑↓ Ped. 138	1% 2% 3% 18 44 91 8542 226	Ped. 94 Trucks % ↑ ↓	Cars Trucks 3489 166 5% 1584 148 9% 604 22 4% 7307 313 →
← 185 3560 → 1% 11 2022 4% 174 3919 2% 18 1086	↑ ↓ ↖ ↗ ↘ ↙	Ped. 123 Trucks % ↑ ↓	PHF Trucks Cars 863 48 5% 3031 49 2% 461 19 4% 3890 84 →

# 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	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	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	264
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	364
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	467
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	493
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	575
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	665
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	743
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	829
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	873
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	675
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	703
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	729
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	597
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	665
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	710
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	683
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	647
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	679
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	613
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	684
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	837
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	905
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	927
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	861
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	936
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	936
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	1074
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	1113
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	1088
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	1196
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	1034
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	1127

**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

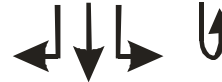
**TURNING  
MOVEMENT  
DIAGRAM**



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

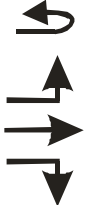
<b>PERIOD</b>	WEEKDAY AM PEAK HOUR
<b>TIME</b>	0745 - 0845

<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
----------------	---

<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)			
Direction	Left	Thru	Right
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

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

**Comments:**

**Liverpool Road**

**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

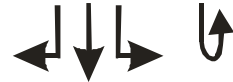
**TURNING  
MOVEMENT  
DIAGRAM**



**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

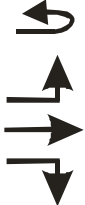
<b>PERIOD</b>	WEEKDAY PM PEAK HOUR
<b>TIME</b>	1630 - 1730

<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



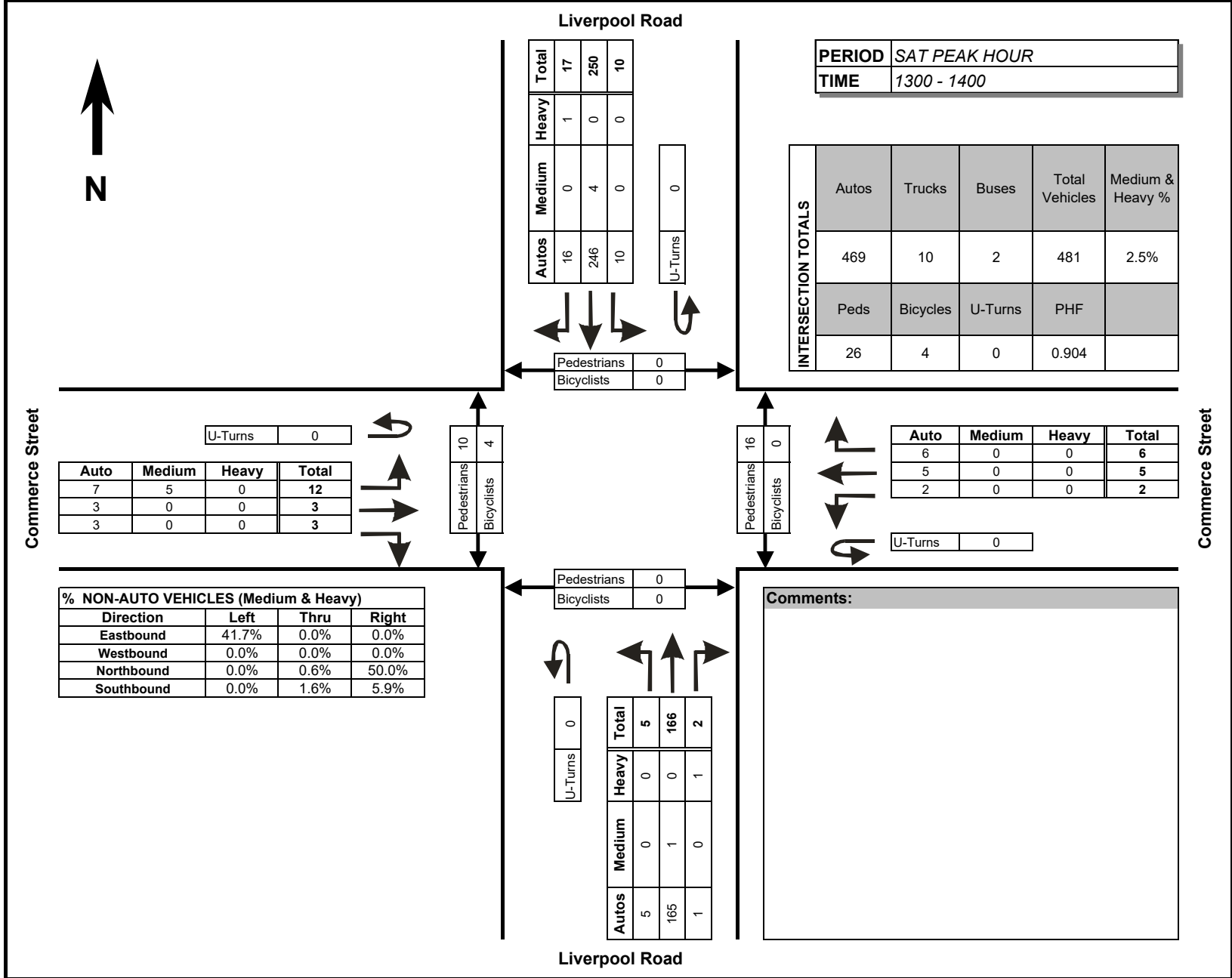
	<b>Total</b>	2	109	1
	<b>Heavy</b>	0	0	0
	<b>Medium</b>	0	0	0
	<b>Autos</b>	2	109	1

**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**



**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>				
	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	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		
<b>SATURDAY</b>	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>			
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				
WEEKDAY	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	0	1	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	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	0	1	1	0
	1600	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
	1615	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
	1630	0	0	0	0	0	0	0	0	0	0	1	0	0	2	3	0
	1645	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	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	
SATURDAY	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	0	1	1	0
	1315	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	0
	1330	0	0	0	0	0	0	0	4	0	0	2	0	0	1	4	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

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TRAF8 GROUP

		<b>HEAVY</b>											<b>U-TURNS</b>				
WEEKDAY	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				
	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	1	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
SATURDAY	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

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**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**

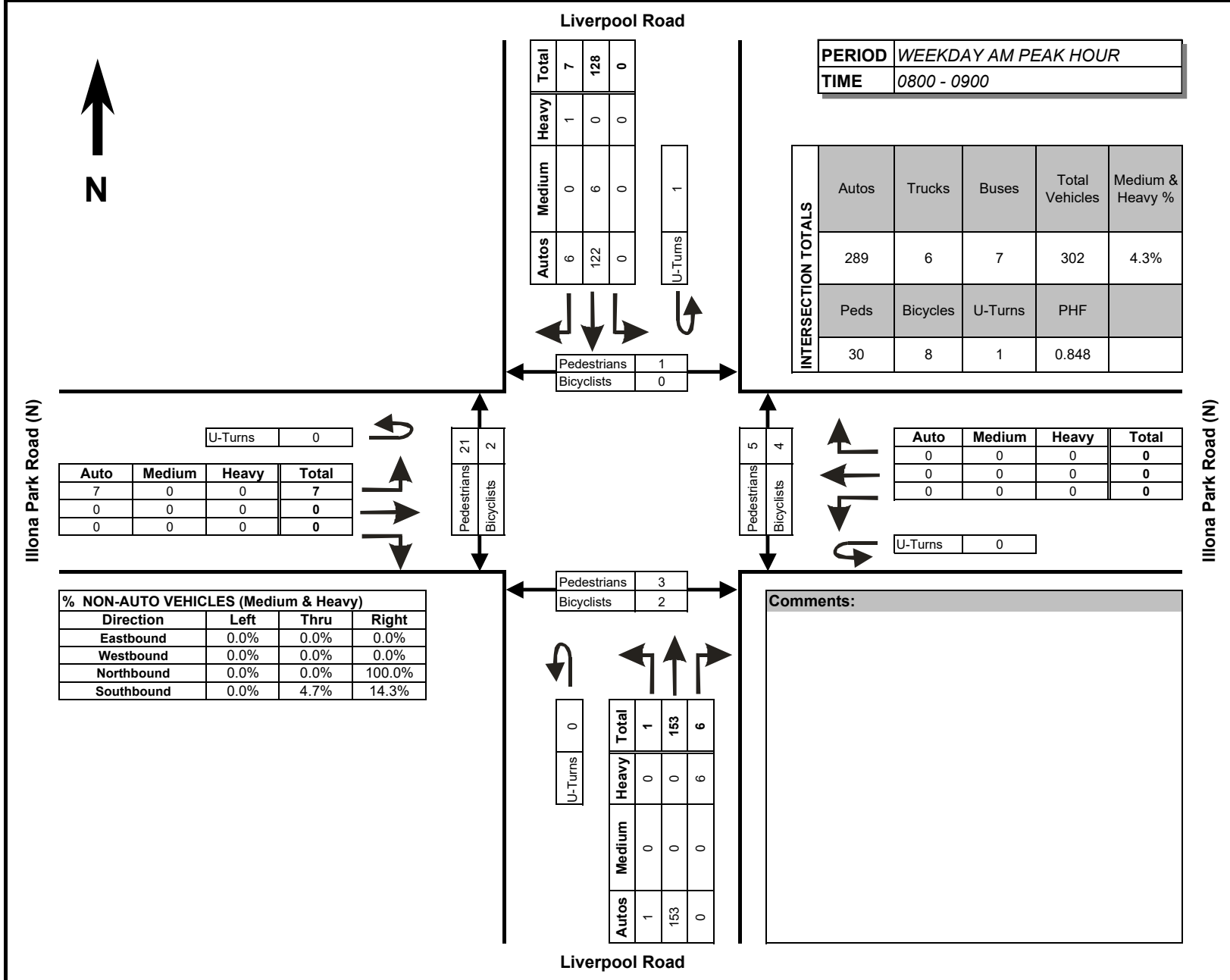
	TIME BEGINNING	Illona Park Road (N)			Illona Park Road (N)			Liverpool Road			Liverpool Road			TOTAL VEHICLES
		Eastbound			Westbound			Northbound			Southbound			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
<b>WEEKDAY</b>	700	0	0	0	0	0	0	0	0	6	0	0	3	9
	715	0	0	0	0	0	0	0	0	5	0	0	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

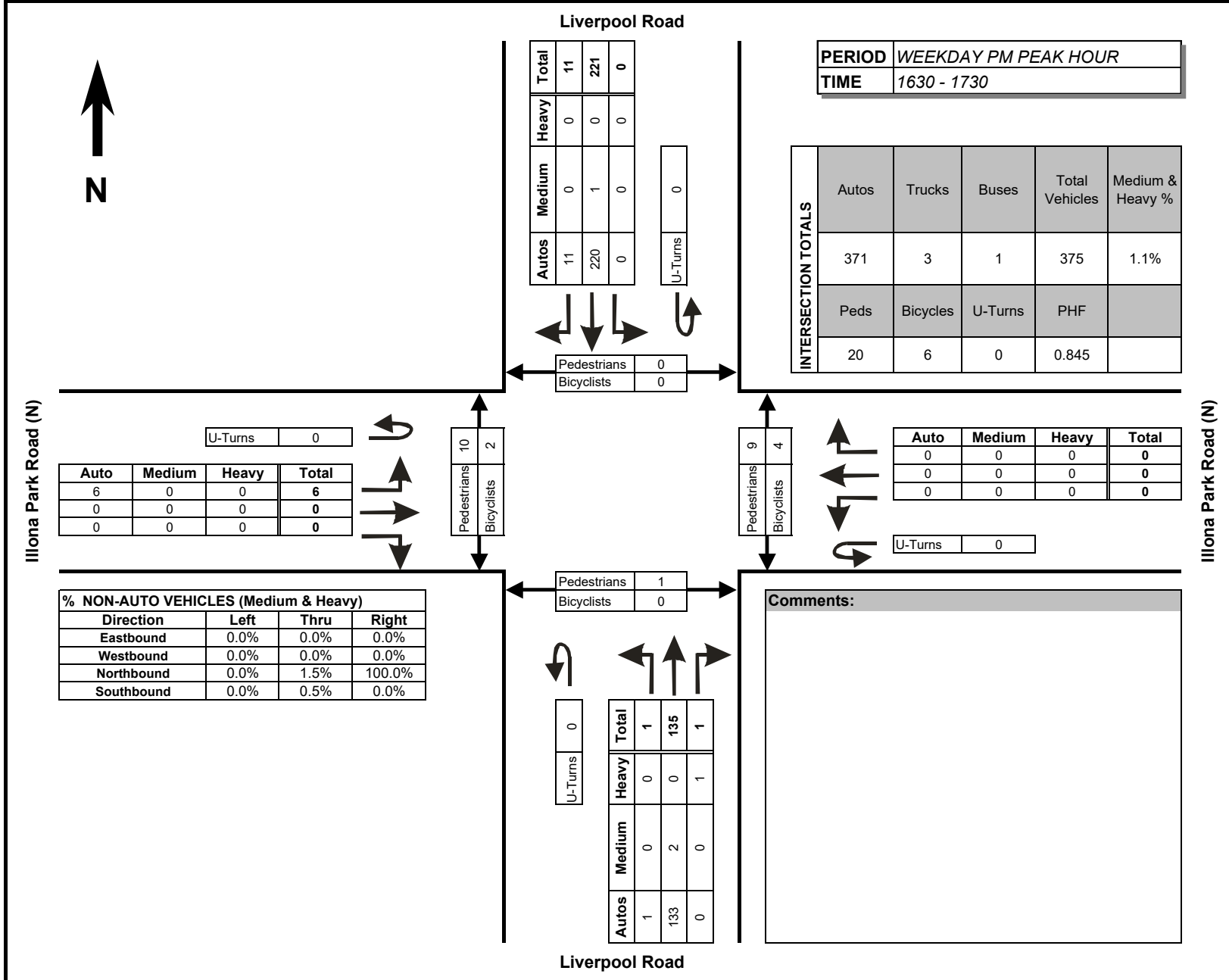
**NORTH-SOUTH ROAD:** Liverpool Road  
**EAST-WEST ROAD:** Illona Park Road (N)  
**SURVEY DATE:** Tue Jun 6, Sat Jun 3, 2017  
**MUNICIPALITY:** Pickering, Ontario  
**WEATHER:** WKDY-Rain/cloud, SAT - Sunny

**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

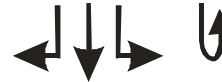
**TURNING  
MOVEMENT  
DIAGRAM**



**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

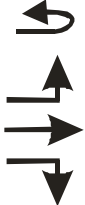
<b>PERIOD</b>	SAT PEAK HOUR
<b>TIME</b>	1215 - 1315

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

Illona Park Road (N)

<b>Auto</b>	10	<b>Medium</b>	0	<b>Heavy</b>	0	<b>Total</b>	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>	0	<b>Medium</b>	0	<b>Heavy</b>	0	<b>Total</b>	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>	0	218	0
	<b>Heavy</b>	0	0	0
	<b>Medium</b>	0	7	0
	<b>Autos</b>	0	211	0

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

**Comments:**

<b>North-South Road: Liverpool Road</b> <b>East-West Road: Illona Park Road (S)</b> <b>Survey Date: Tue Jun 6, Sat Jun 3, 2017</b> <b>Weather: WKDY-Rain/cloud, SAT - Sunny</b>	<b>MUNICIPALITY: Pickering, Ontario</b>	TIG TCS v1.17	TRAF8 GROUP
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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

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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	0	1	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	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	0	2	0	0	0
	1615	0	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**

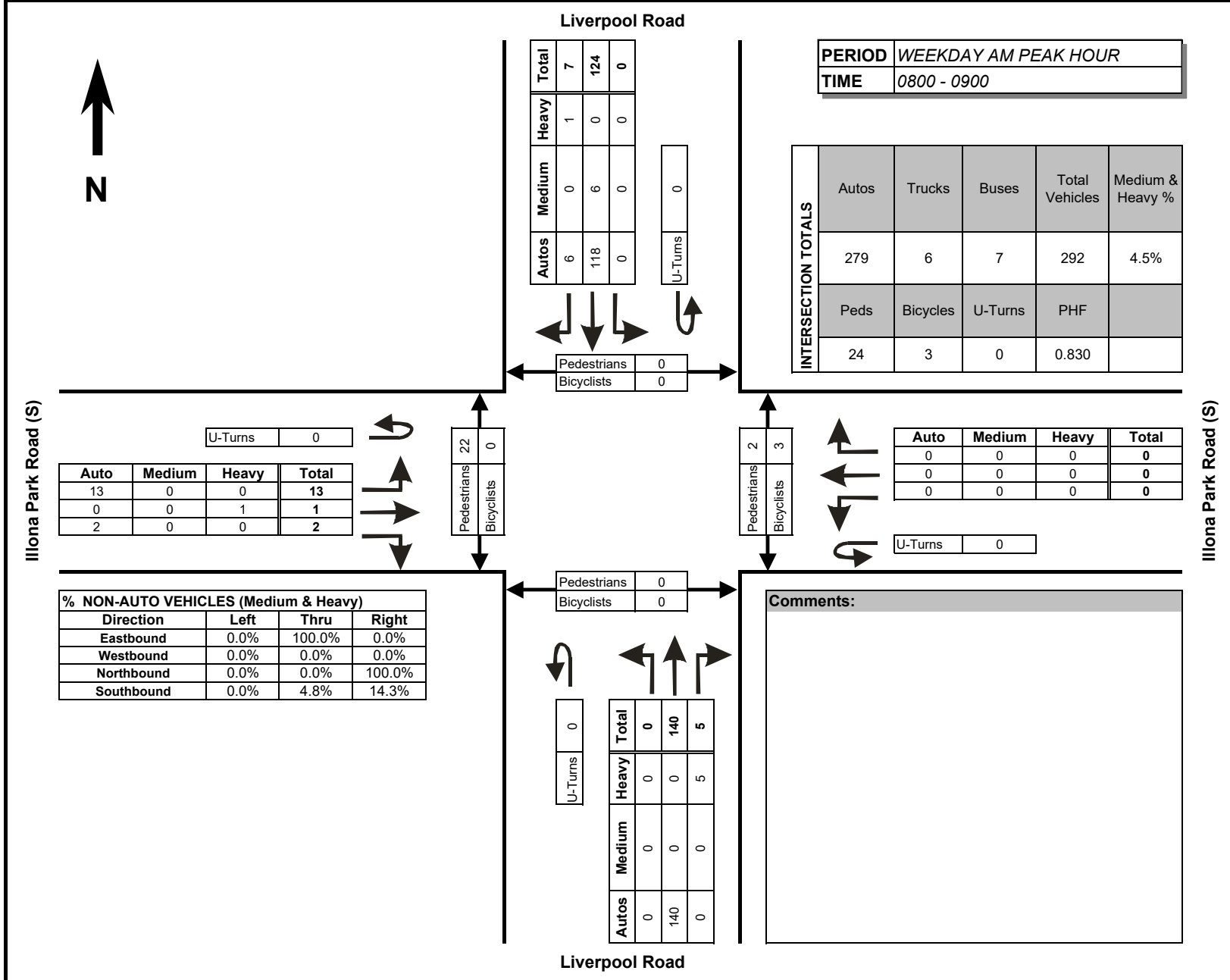
	TIME BEGINNING	Illona Park Road (S)			Illona Park Road (S)			Liverpool Road			Liverpool Road			TOTAL VEHICLES
		Eastbound			Westbound			Northbound			Southbound			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
<b>WEEKDAY</b>	700	0	0	0	0	0	0	0	0	6	0	0	3	9
	715	0	0	0	0	0	0	0	0	5	0	0	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**



**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

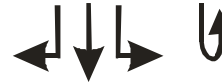
**TURNING  
MOVEMENT  
DIAGRAM**



**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

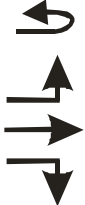
<b>PERIOD</b>	WEEKDAY PM PEAK HOUR
<b>TIME</b>	1630 - 1730

<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)

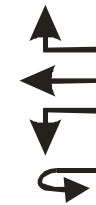
<b>Auto</b>	<b>Medium</b>	<b>Heavy</b>	<b>Total</b>
2	0	0	2
0	0	0	0
1	0	0	1

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

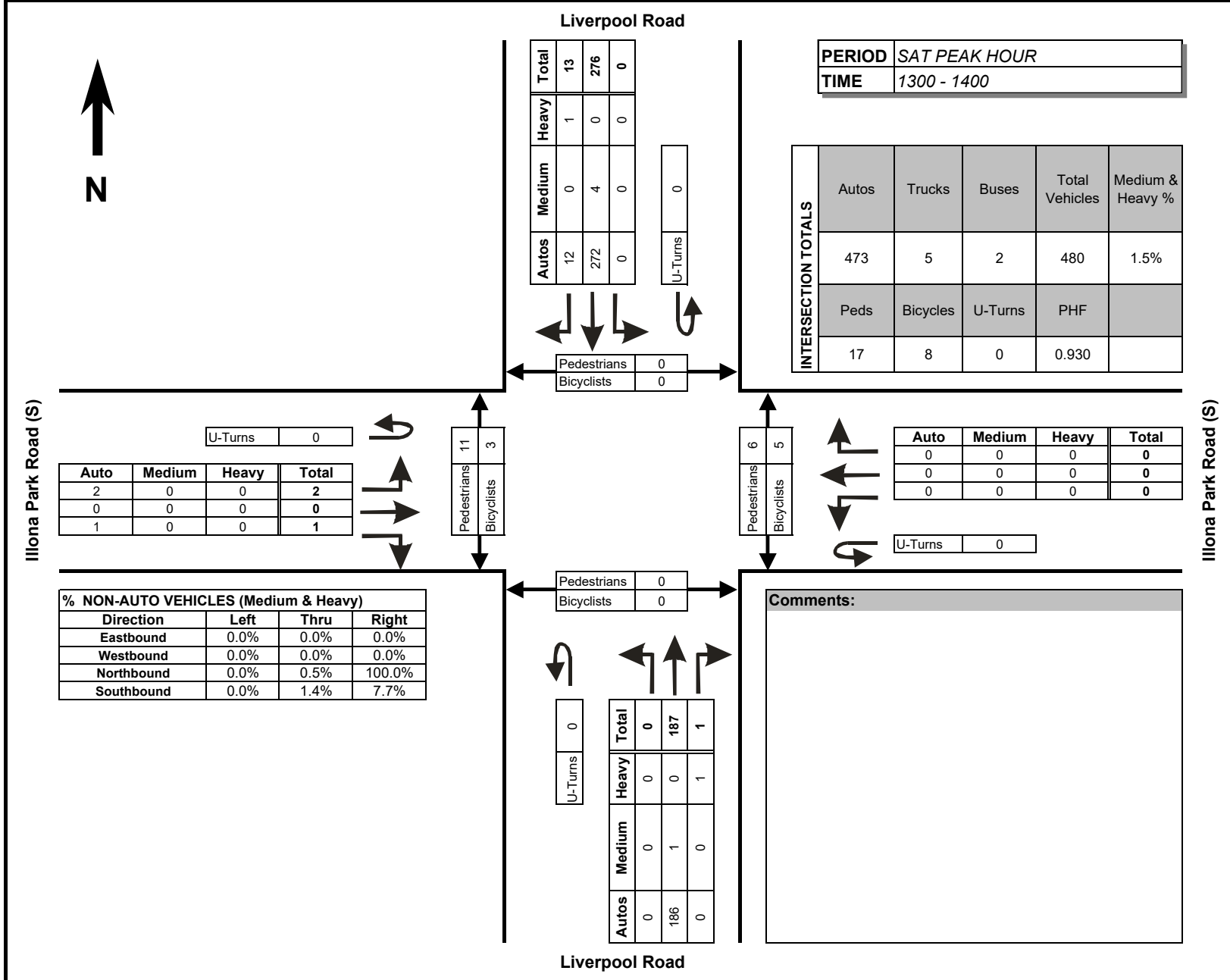
<b>U-Turns</b>	0
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**Liverpool Road**

**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

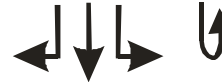
**TURNING  
MOVEMENT  
DIAGRAM**



**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
----------------	---



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

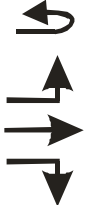
<b>PERIOD</b>	WEEKDAY AM PEAK HOUR
<b>TIME</b>	0800 - 0900

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

Krosno Blvd

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

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

**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

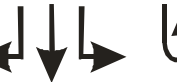
**TURNING  
MOVEMENT  
DIAGRAM**



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

Krosno Blvd

<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
----------------	---



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

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

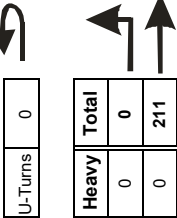
<b>Auto</b>	<b>Medium</b>	<b>Heavy</b>	<b>Total</b>
123	0	0	123
0	0	0	0
28	0	0	28

<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



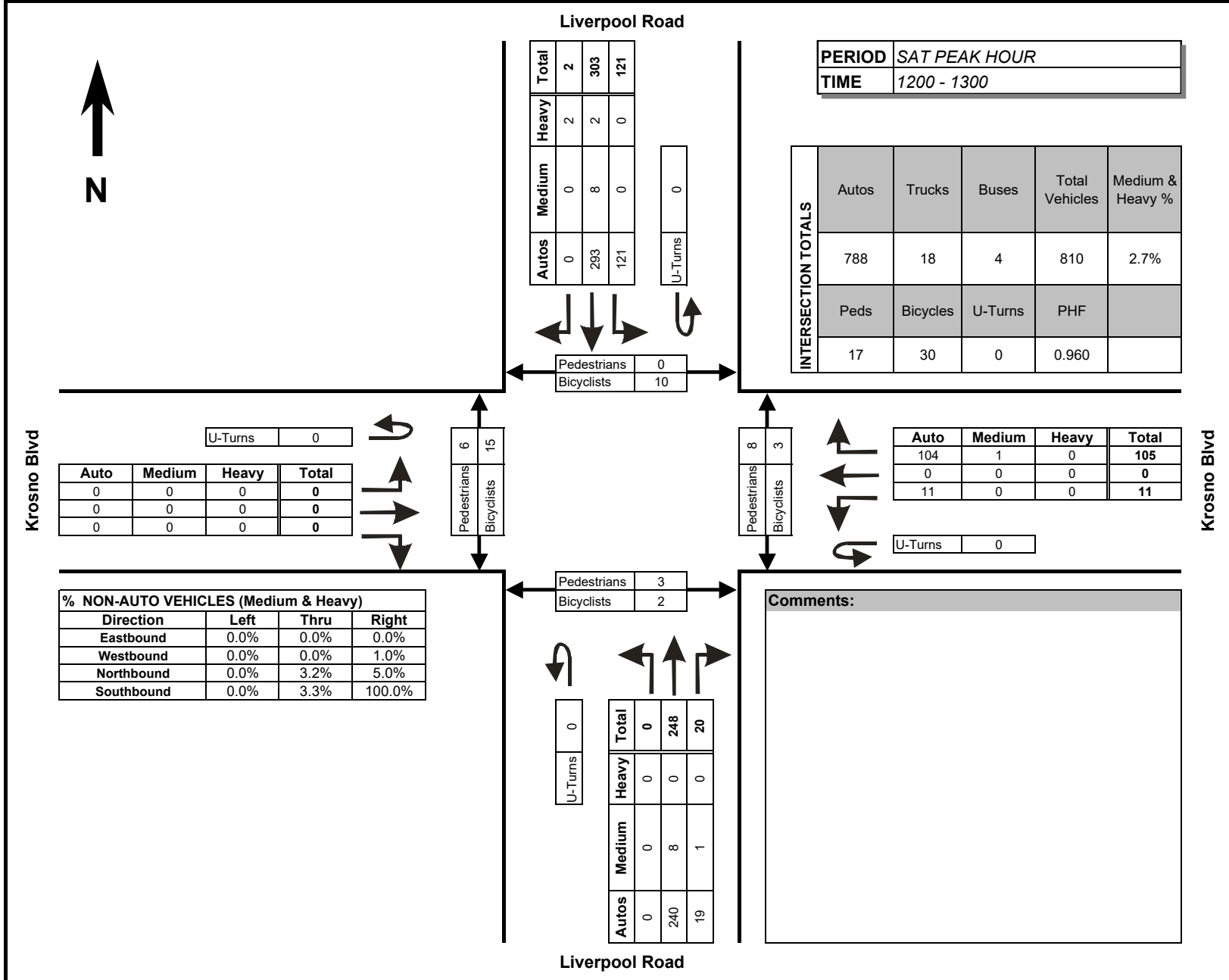
<b>Autos</b>	0	207	11	
<b>Medium</b>	0	4	0	
<b>Heavy</b>	0	0	0	
<b>Total</b>	0	211	11	

**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>			
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	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
SATURDAY	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	32	0	58	
	1300	0	0	0	0	0	2	0	36	0	31	0	71	
	1315	0	0	0	0	0	1	0	28	0	29	0	59	
	1330	0	0	0	0	0	1	0	22	0	41	0	66	
	1345	0	0	0	0	0	1	0	20	0	49	0	71	
<b>TOTALS</b>														
AM	0	0	0	0	0	0	0	83	0	0	63	0	<b>146</b>	
PM	0	0	0	2	0	3	0	170	1	4	203	0	<b>383</b>	
SAT	0	0	0	0	0	7	0	212	0	8	282	0	<b>509</b>	

**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	
WEEKDAY	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
SATURDAY	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

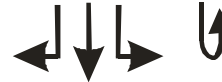
**TURNING  
MOVEMENT  
DIAGRAM**



**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

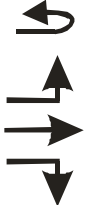
<b>PERIOD</b>	WEEKDAY AM PEAK HOUR
<b>TIME</b>	0730 - 0830

<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

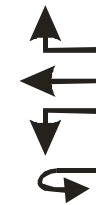
<b>U-Turns</b>	0
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<b>Auto</b>	<b>Medium</b>	<b>Heavy</b>	<b>Total</b>
0	0	0	0
0	0	0	0
0	0	0	0



<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>Total</b>	0	58	0
<b>Heavy</b>	0	0	0
<b>Medium</b>	0	0	0
<b>Autos</b>	0	58	0

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

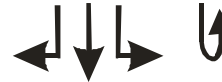
**TURNING  
MOVEMENT  
DIAGRAM**



**Liverpool Road**

	<b>Total</b>	0	101	2
	<b>Heavy</b>	0	0	0
	<b>Medium</b>	0	0	0
	<b>Autos</b>	0	101	2

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

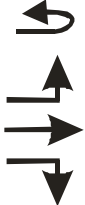
<b>PERIOD</b>	WEEKDAY PM PEAK HOUR
<b>TIME</b>	1600 - 1700

<b>INTERSECTION TOTALS</b>	<b>Autos</b>	<b>Trucks</b>	<b>Buses</b>	<b>Total Vehicles</b>	<b>Medium &amp; Heavy %</b>
	196	0	1	197	0.5%
	<b>Peds</b>	<b>Bicycles</b>	<b>U-Turns</b>	<b>PHF</b>	
	107	6	0	0.782	

Pumping Station

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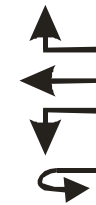
<b>Auto</b>	<b>Medium</b>	<b>Heavy</b>	<b>Total</b>
0	0	0	0
0	0	0	0
0	0	0	0



<b>Pedestrians</b>	61
<b>Bicyclists</b>	3

<b>Pedestrians</b>	33
<b>Bicyclists</b>	3

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



<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	100.0%	0.0%	0.0%
Northbound	0.0%	0.0%	0.0%
Southbound	0.0%	0.0%	0.0%

<b>Pedestrians</b>	4
<b>Bicyclists</b>	0



	<b>Total</b>	0	91	0
	<b>Heavy</b>	0	0	0
	<b>Medium</b>	0	0	0
	<b>Autos</b>	0	91	0

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

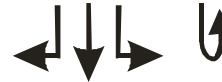
**TURNING  
MOVEMENT  
DIAGRAM**



**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

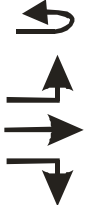
<b>PERIOD</b>	SAT PEAK HOUR
<b>TIME</b>	1300 - 1400

<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	73	0	0	25	5	122	
	715	18	0	3	0	0	0	2	78	1	0	7	133	
	730	21	0	1	0	0	0	1	83	2	0	2	145	
	745	25	0	7	0	0	0	3	101	2	0	12	193	
	800	22	0	0	0	0	0	1	79	0	0	17	165	
	815	15	0	3	0	0	0	1	68	2	0	14	169	
	830	15	0	6	0	0	0	3	97	3	0	17	193	
	845	19	0	6	0	0	0	4	80	0	0	11	184	
	1600	10	0	8	0	0	0	6	103	2	0	26	259	
	1615	20	0	6	0	0	0	1	84	1	0	23	246	
	1630	15	0	3	0	0	0	4	97	0	0	18	238	
	1645	16	0	8	0	0	0	2	83	0	0	18	247	
	1700	13	0	7	0	0	0	3	94	0	0	13	254	
1715	19	0	9	0	0	0	7	88	0	0	18	260		
1730	17	0	4	0	0	0	4	88	1	0	16	250		
1745	9	0	8	0	0	0	4	95	0	0	21	266		
<b>SATURDAY</b>	1200	16	0	3	0	0	0	5	102	3	0	17	268	
	1215	15	0	3	0	0	0	0	104	1	0	14	245	
	1230	15	0	3	0	0	0	3	84	0	0	22	244	
	1245	10	0	3	0	0	0	2	86	0	0	13	222	
	1300	13	0	7	0	0	0	3	98	0	0	20	238	
	1315	17	0	3	0	0	0	1	97	0	0	11	239	
	1330	17	0	3	0	0	0	1	85	0	0	12	231	
	1345	11	0	6	0	0	0	3	82	0	0	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

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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

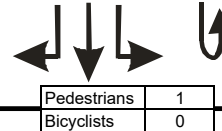
**TURNING  
MOVEMENT  
DIAGRAM**



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

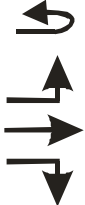
<b>PERIOD</b>	WEEKDAY AM PEAK HOUR
<b>TIME</b>	0745 - 0845

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

Radom Street

<b>U-Turns</b>	1
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<b>Auto</b>	77	<b>Medium</b>	0	<b>Heavy</b>	0	<b>Total</b>	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>	0	<b>Medium</b>	0	<b>Heavy</b>	0	<b>Total</b>	0
	0		0		0		0
	0		0		0		0

<b>U-Turns</b>	0
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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

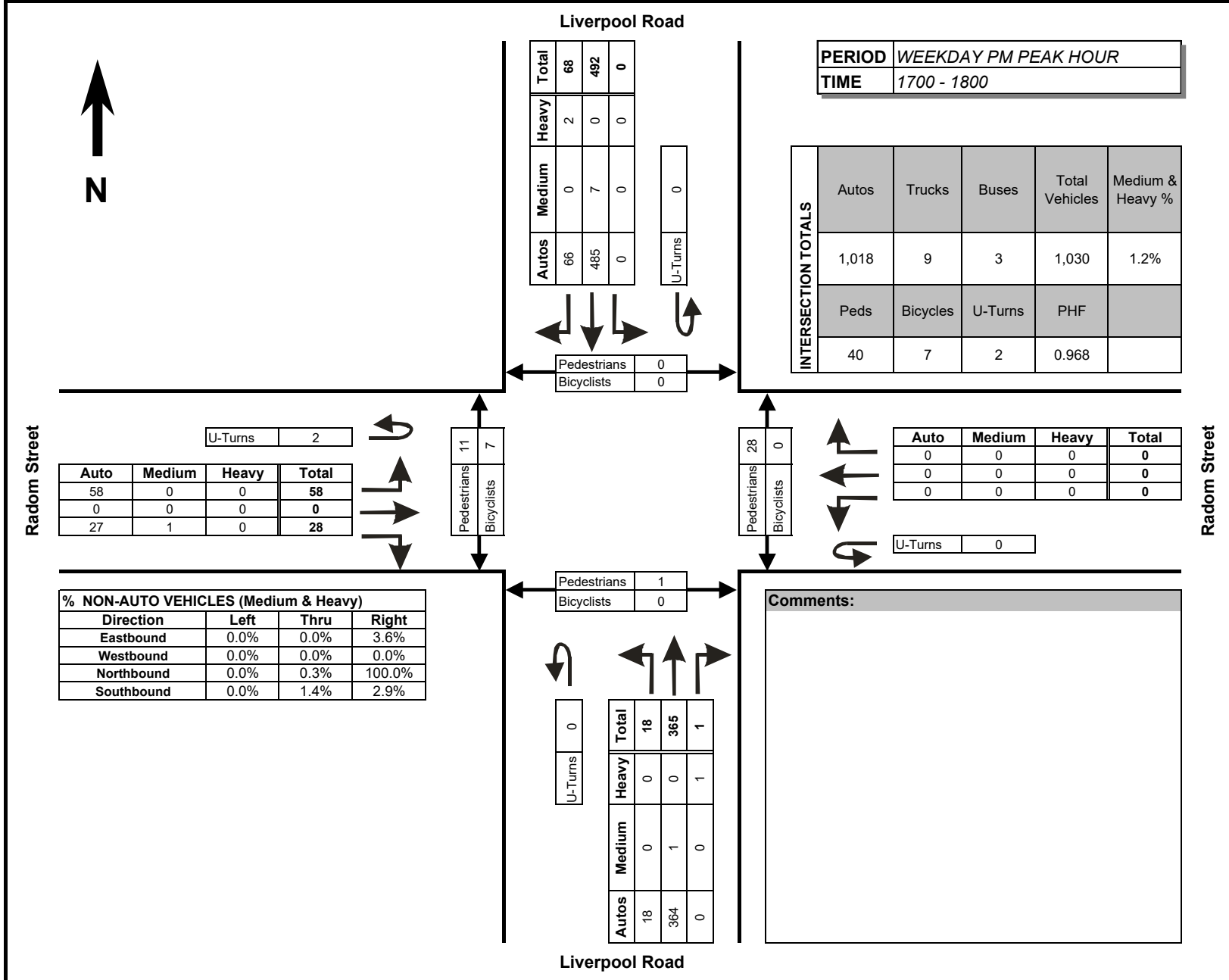
<b>U-Turns</b>	0
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**Comments:**

**Liverpool Road**

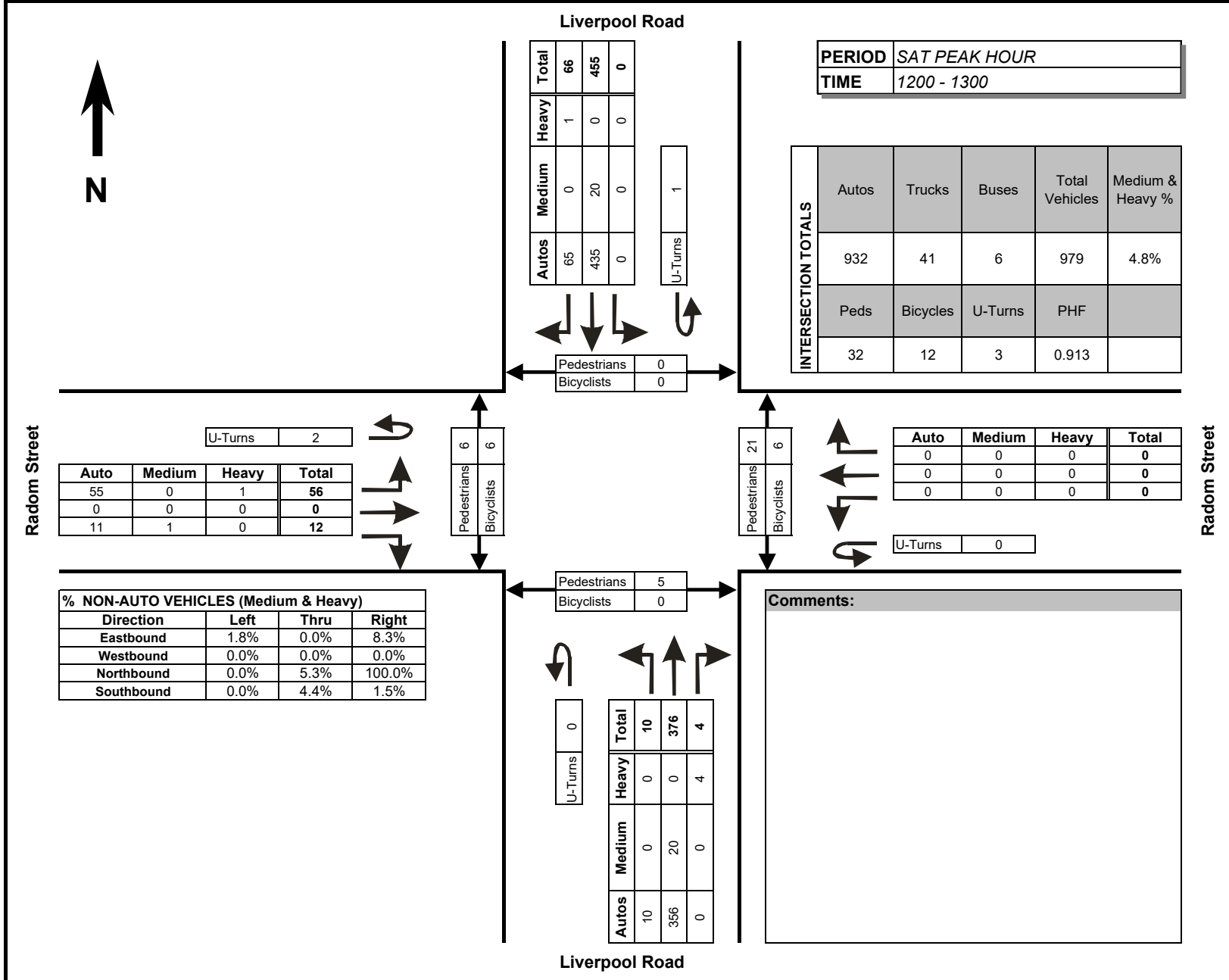
**NORTH-SOUTH ROAD:** Liverpool Road  
**EAST-WEST ROAD:** Radom Street  
**SURVEY DATE:** Thu Jun 1, Sat Jun 3, 2017  
**MUNICIPALITY:** Pickering, Ontario  
**WEATHER:** WKDY-Sunny, SAT - Sunny

**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>														
WEEKDAY	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	
	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
SATURDAY	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

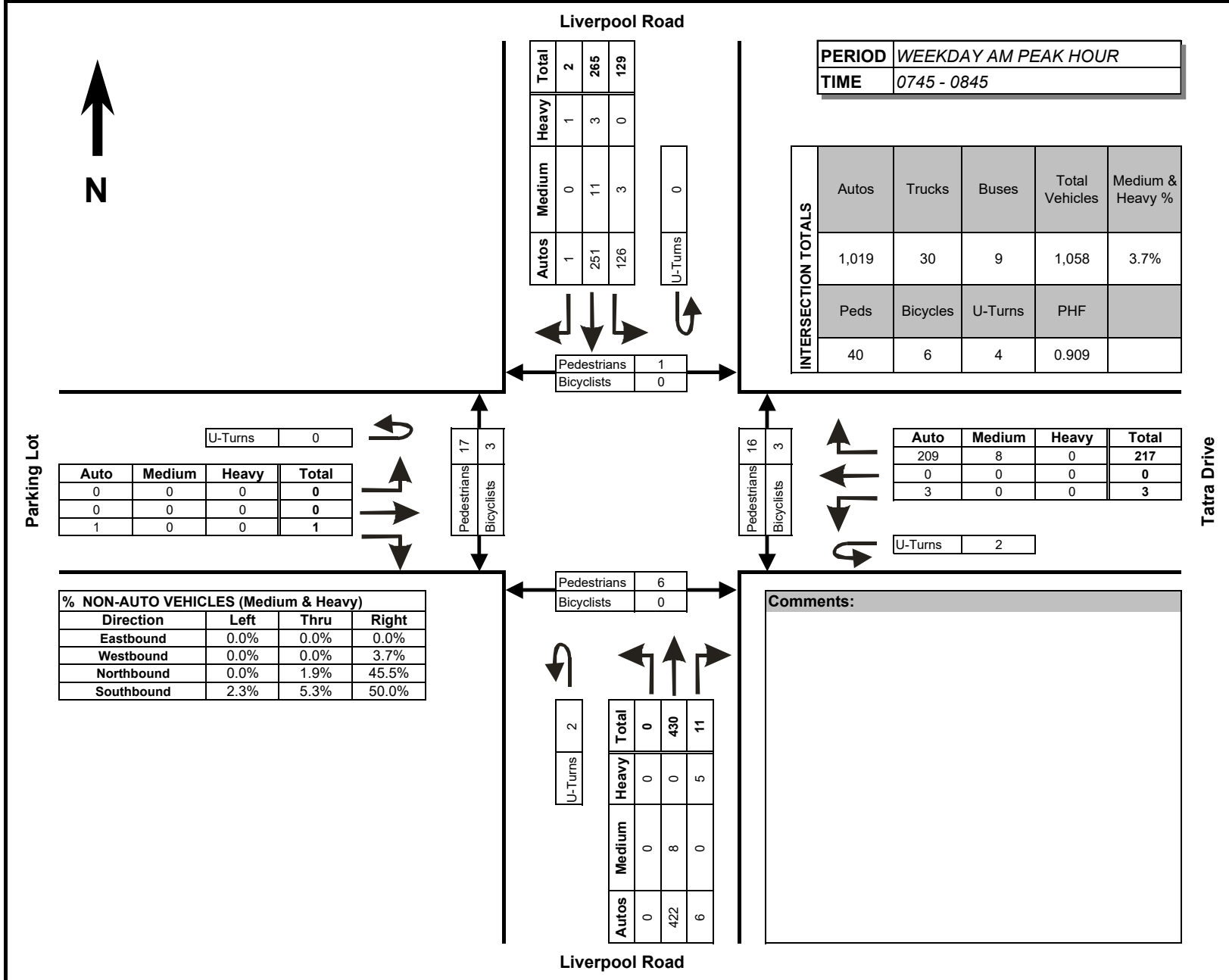
**TRAF8 GROUP**

**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

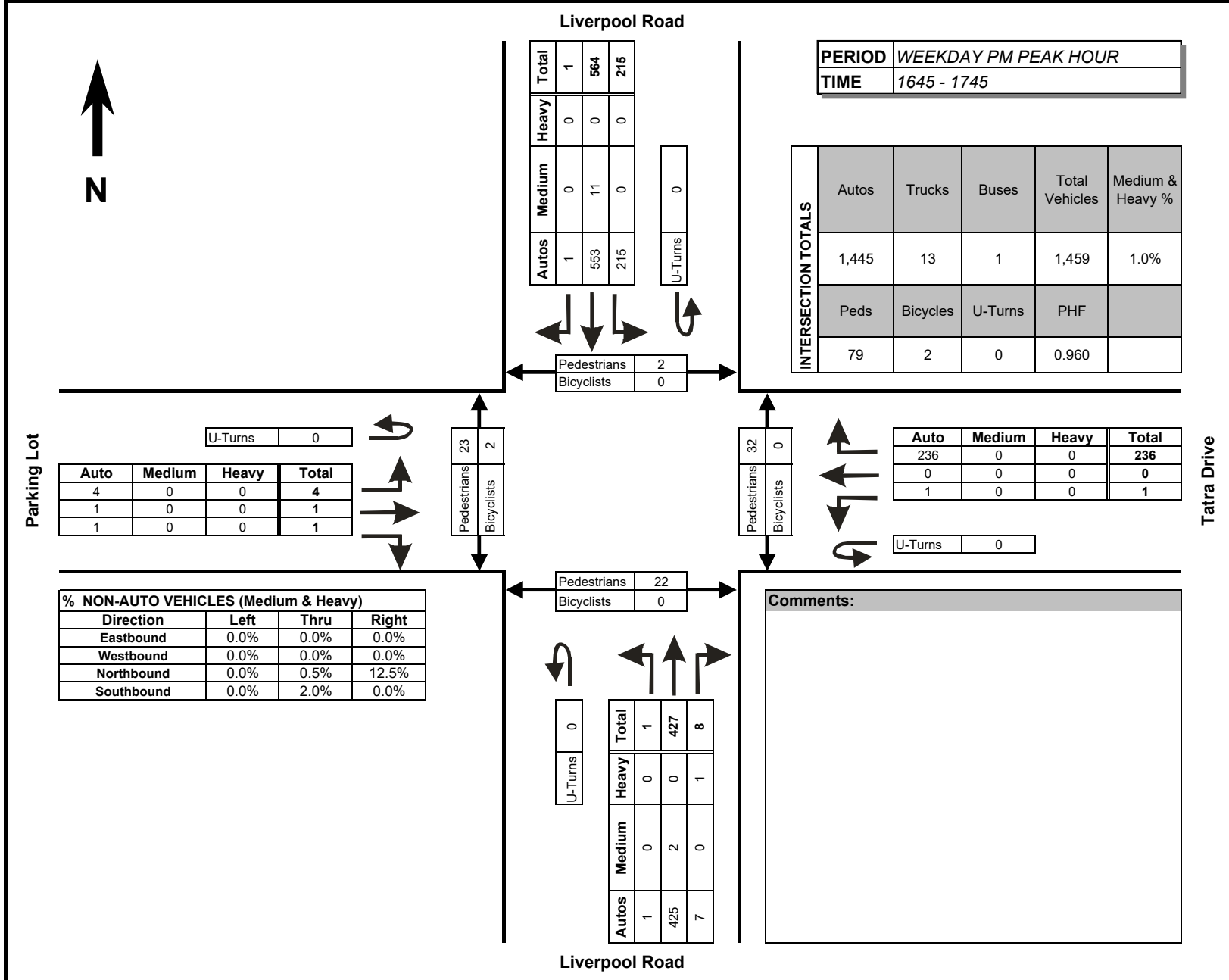
**TURNING  
MOVEMENT  
DIAGRAM**





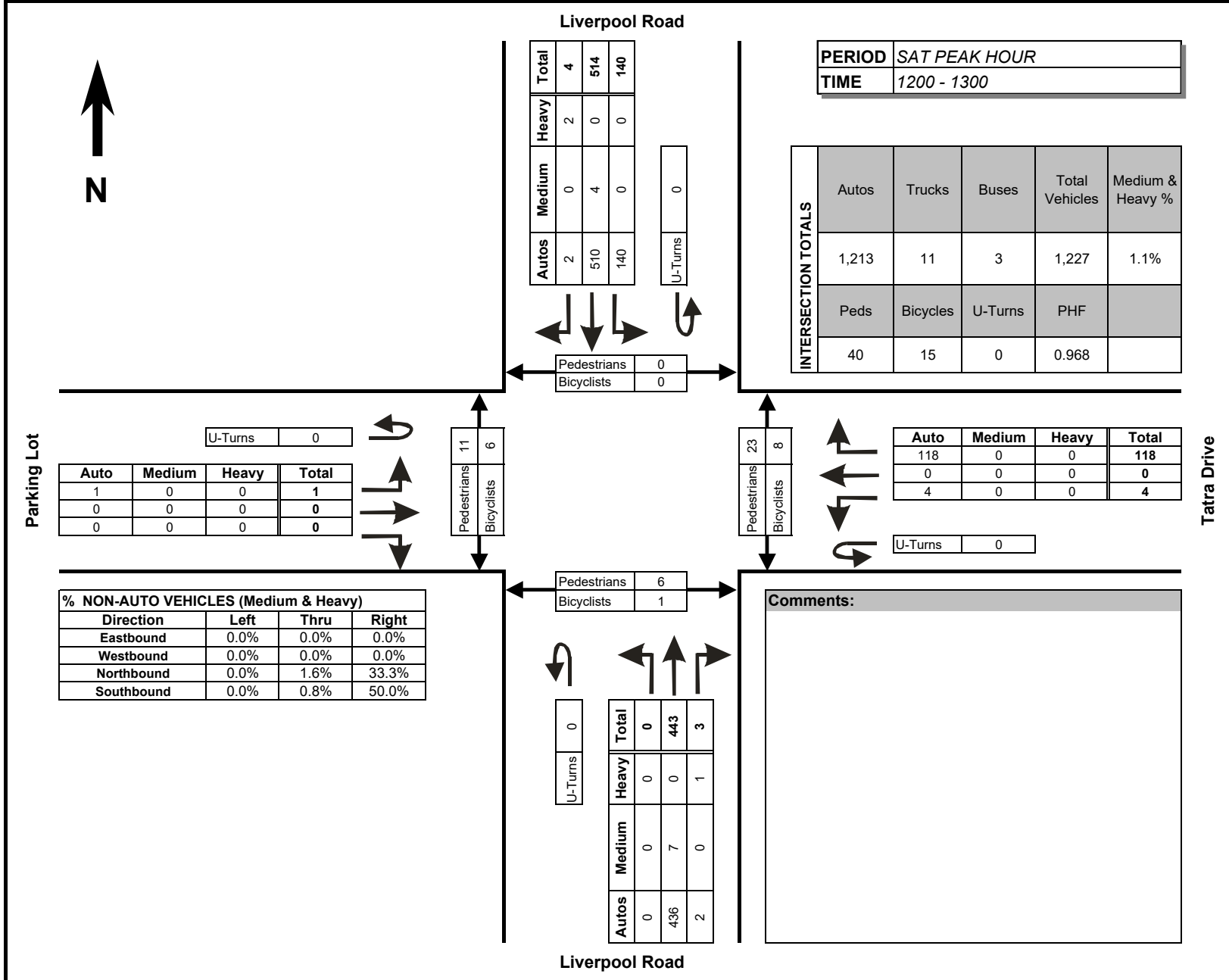
**NORTH-SOUTH ROAD:** Liverpool Road  
**EAST-WEST ROAD:** Tatra Drive & Parking Lot  
**SURVEY DATE:** Thu Jun 1, Sat Jun 3, 2017  
**MUNICIPALITY:** Pickering, Ontario  
**WEATHER:** WKDY-Sunny, SAT - Sunny

**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	3	2	29	0	3	29	12	82	
	1215	12	0	0	0	4	1	39	1	6	38	9	110	
	1230	4	0	1	0	4	2	32	0	7	46	11	107	
	1245	7	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	2	0	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

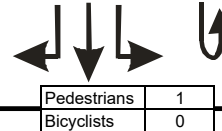
**TURNING  
MOVEMENT  
DIAGRAM**



**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

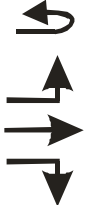
<b>PERIOD</b>	WEEKDAY AM PEAK HOUR
<b>TIME</b>	0730 - 0830

<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
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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%	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:**

**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

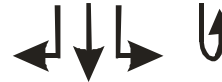
**TURNING  
MOVEMENT  
DIAGRAM**



**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

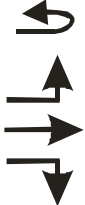
<b>PERIOD</b>	WEEKDAY PM PEAK HOUR
<b>TIME</b>	1615 - 1715

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

Wharf Street

<b>U-Turns</b>	0
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<b>Auto</b>	18	<b>Medium</b>	1	<b>Heavy</b>	0	<b>Total</b>	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>	7	<b>Medium</b>	0	<b>Heavy</b>	0	<b>Total</b>	7
	0		0		0		0
	0		0		0		0

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

% NON-AUTO VEHICLES (Medium & Heavy)			
<b>Direction</b>	<b>Left</b>	<b>Thru</b>	<b>Right</b>
Eastbound	5.3%	0.0%	0.0%
Westbound	0.0%	0.0%	0.0%
Northbound	0.0%	0.0%	0.0%
Southbound	0.0%	0.0%	2.6%

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



<b>U-Turns</b>	0						
<b>Autos</b>	5	<b>Medium</b>	0	<b>Heavy</b>	0	<b>Total</b>	5
	79		0		0		79
	1		0		0		1

**Comments:**

**Liverpool Road**

**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

<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>
	422	0	0	422	0.0%
	<b>Peds</b>	<b>Bicycles</b>	<b>U-Turns</b>	<b>PHF</b>	
	48	24	0	0.925	

Wharf Street

<b>U-Turns</b>	0
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<b>Auto</b>	<b>Medium</b>	<b>Heavy</b>	<b>Total</b>
35	0	0	35
2	0	0	2
7	0	0	7

<b>Pedestrians</b>	31
<b>Bicyclists</b>	12

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

<b>U-Turns</b>	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%

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

<b>U-Turns</b>	0
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**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	<h2 style="margin: 0;">PARKING SURVEY</h2>

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**

---

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

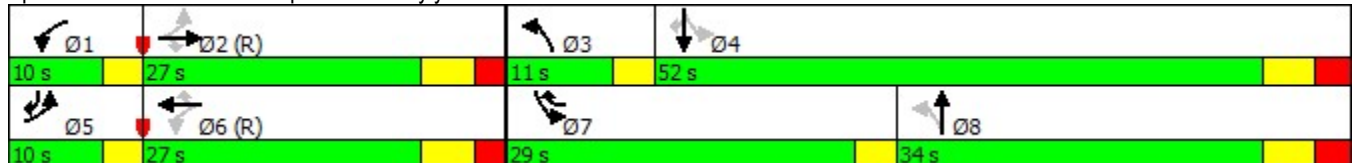
Timing Plan: AM Peak Hour  
Existing Traffic Conditions

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 A
Analysis Period (min)		15	

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

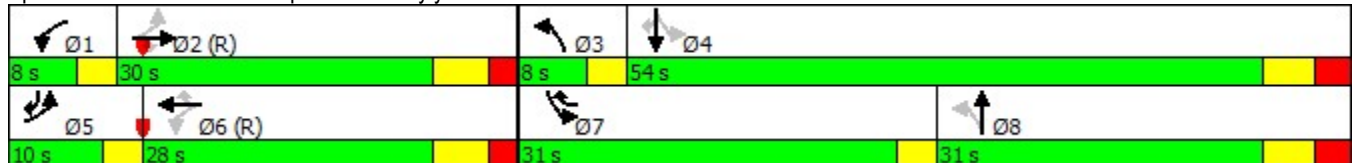
Timing Plan: AM Peak Hour  
Existing Traffic Conditions - Bayly Optimized

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



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

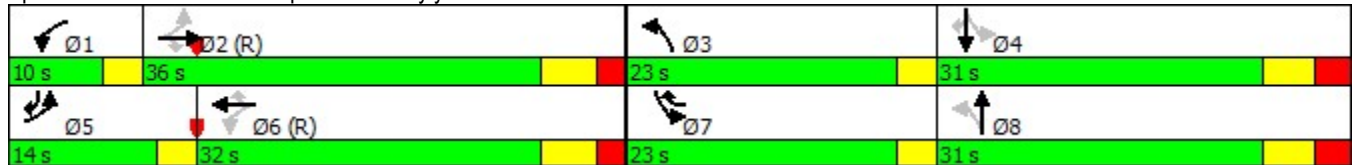
Timing Plan: PM Peak Hour  
Existing Traffic Conditions

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

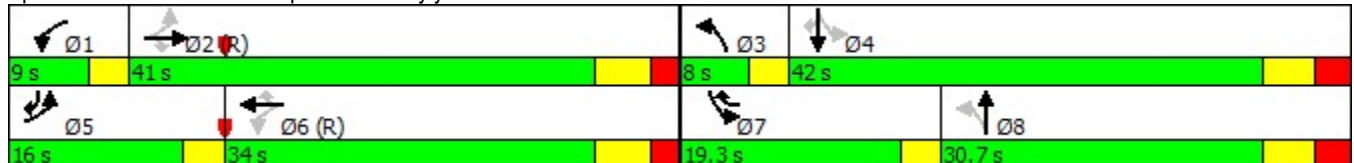
Timing Plan: PM Peak Hour  
Existing Volumes - Bayly Optimized

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

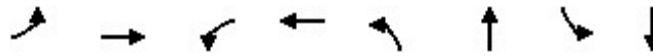
Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 14 (14%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green  
 Natural Cycle: 90  
 Control Type: Pretimed  
 Maximum v/c Ratio: 0.91  
 Intersection Signal Delay: 30.9  
 Intersection LOS: C  
 Intersection Capacity Utilization 97.4%  
 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

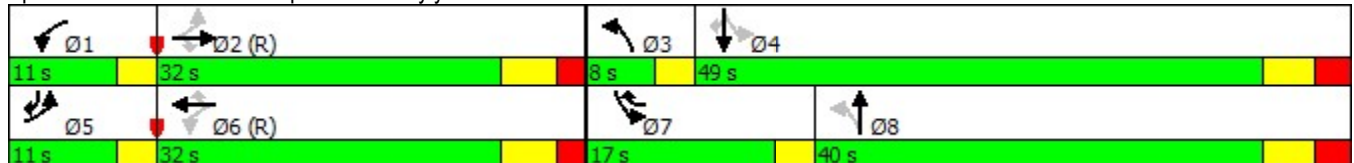
Timing Plan: Sat Peak Hour  
Existing Traffic Conditions

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						
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

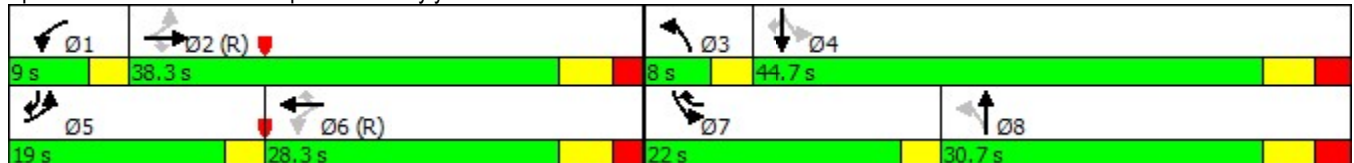
Timing Plan: Sat Peak Hour  
Existing Traffic Conditions - Bayly Optimized

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

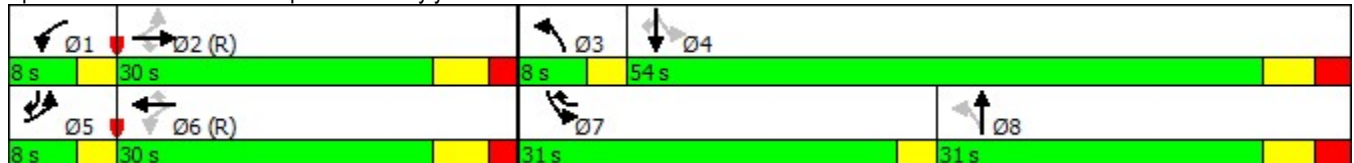
Timing Plan: AM Peak Hour  
2027 Background Traffic Conditions

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	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
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					
<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: 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	

### Intersection Summary

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

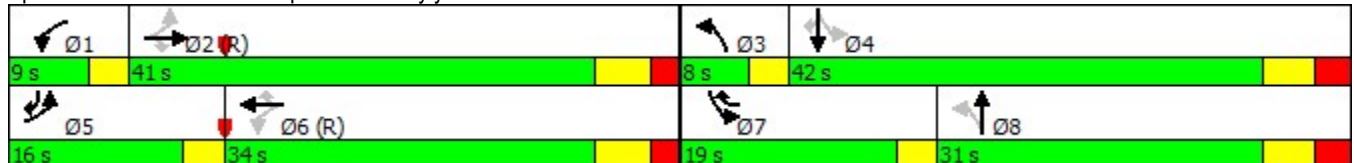
Timing Plan: PM Peak Hour  
2027 Background Traffic Conditions

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

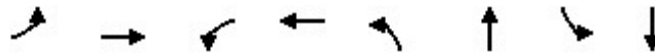
Timing Plan: PM Peak Hour  
2027 Background Traffic Conditions



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

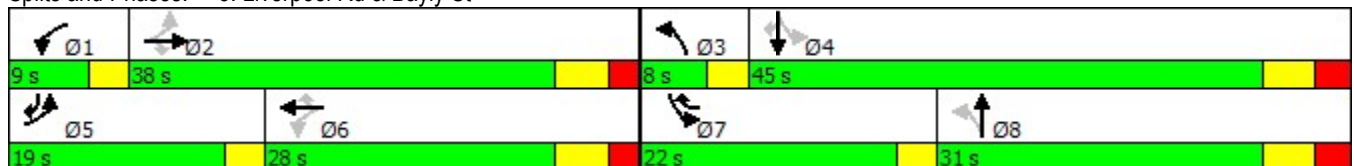


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	357	410	147	96	239	357	63	486	342	515	288
Future Volume (vph)	357	410	147	96	239	357	63	486	342	515	288
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	pm+pt	NA	pm+ov
Protected Phases	5	2		1	6	7	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	2	1	0	2	2	1
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

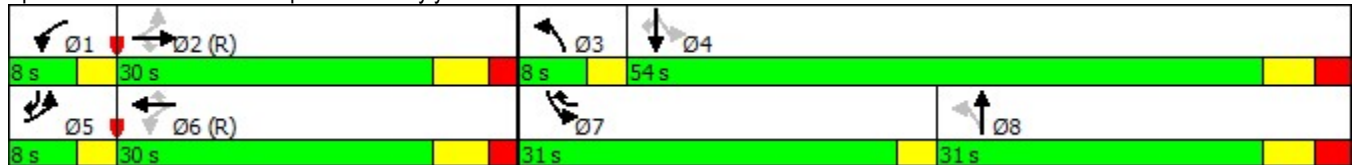
Timing Plan: AM Peak Hour  
2032 Background Traffic Conditions

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 LOS: C  
 Intersection Capacity Utilization 93.4%  
 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: 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		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2							
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										
Intersection Summary												
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	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
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					
<b>Intersection Summary</b>						
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

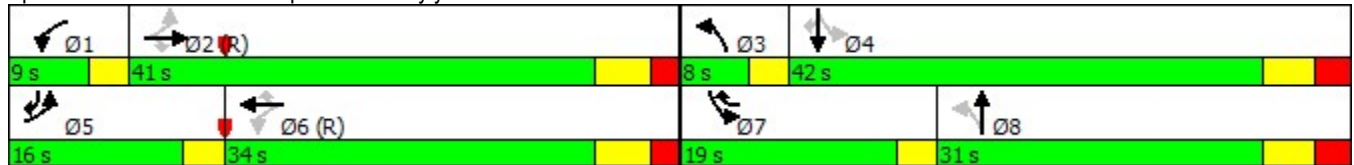
Timing Plan: PM Peak Hour  
2032 Background Traffic Conditions

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		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2							
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										
Intersection Summary												
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	W			T	T	
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

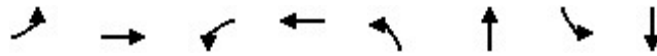
Timing Plan: PM Peak Hour  
2032 Background Traffic Conditions



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

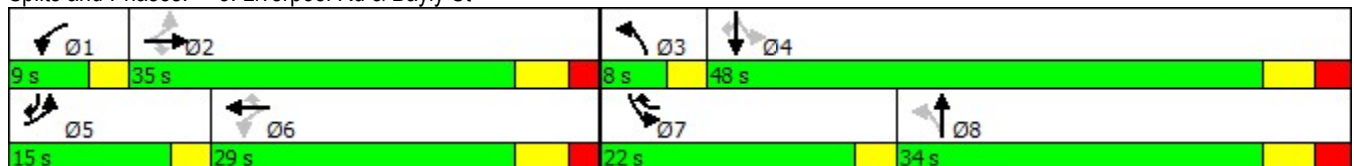
Timing Plan: Sat Peak Hour  
2032 Background Traffic Condition

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
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





















## **Appendix C.3**

### Synchro Reports – 2027 and 2032 Total Traffic Intersection Operations



HCM Signalized Intersection Capacity Analysis  
3: Liverpool Rd & Bayly St

Timing Plan: AM Peak Hour  
2027 Total Traffic Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	199	581	101	62	239	304	66	653	145	496	314	167
Future Volume (vph)	199	581	101	62	239	304	66	653	145	496	314	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	1775	3419		1805	3411	1534
Flt Permitted	0.60	1.00	1.00	0.25	1.00	1.00	0.56	1.00		0.15	1.00	1.00
Satd. Flow (perm)	1140	3614	1278	467	3380	1431	1042	3419		278	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	103	63	244	310	67	666	148	506	320	170
RTOR Reduction (vph)	0	0	79	0	0	35	0	19	0	0	0	81
Lane Group Flow (vph)	203	593	24	63	244	275	67	795	0	506	320	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	341	830		581	1613	802
v/s Ratio Prot	c0.03	c0.16		0.02	0.07	0.10	0.01	0.23		c0.24	0.09	0.01
v/s Ratio Perm	0.13		0.02	0.08		0.09	0.05			c0.24		0.05
v/c Ratio	0.57	0.70	0.08	0.32	0.31	0.37	0.20	0.96		0.87	0.20	0.11
Uniform Delay, d1	29.2	34.9	29.8	26.9	31.5	14.5	26.0	37.3		25.0	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	6.3	4.7	0.5	4.2	1.0	1.4	1.3	22.5		16.3	0.3	0.3
Delay (s)	35.5	39.6	30.3	31.2	32.5	15.9	27.3	59.9		41.3	15.6	12.4
Level of Service	D	D	C	C	C	B	C	E		D	B	B
Approach Delay (s)		37.6			24.0			57.4			28.1	
Approach LOS		D			C			E			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			37.5			HCM 2000 Level of Service			D			
HCM 2000 Volume to Capacity ratio			0.83									
Actuated Cycle Length (s)			100.0	Sum of lost time (s)			19.1					
Intersection Capacity Utilization			96.0%	ICU Level of Service			F					
Analysis Period (min)			15									
c Critical Lane Group												

Timings  
3: Liverpool Rd & Bayly St

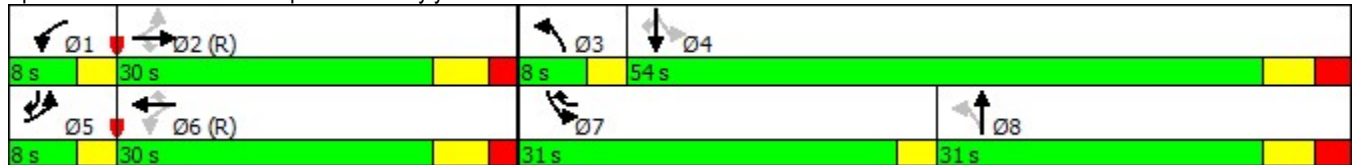
Timing Plan: AM Peak Hour  
2027 Total Traffic Condition

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	
Lane Configurations												
Traffic Volume (vph)	199	581	101	62	239	304	66	653	496	314	167	
Future Volume (vph)	199	581	101	62	239	304	66	653	496	314	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	0.30	0.31	0.38	0.18	0.96	0.86	0.20	0.18	
Control Delay	30.7	40.0	4.0	25.9	32.7	9.9	13.6	59.4	38.1	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	30.7	40.0	4.0	25.9	32.7	9.9	13.6	59.4	38.1	15.7	1.9	
LOS	C	D	A	C	C	A	B	E	D	B	A	
Approach Delay		33.7			20.6			56.0		24.8		
Approach LOS		C			C			E		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: 0.96  
 Intersection Signal Delay: 34.5  
 Intersection LOS: C  
 Intersection Capacity Utilization 96.0%  
 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 Total Traffic Condition



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	203	593	103	63	244	310	67	814	506	320	170
v/c Ratio	0.51	0.70	0.25	0.30	0.31	0.38	0.18	0.96	0.86	0.20	0.18
Control Delay	30.7	40.0	4.0	25.9	32.7	9.9	13.6	59.4	38.1	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	30.7	40.0	4.0	25.9	32.7	9.9	13.6	59.4	38.1	15.7	1.9
Queue Length 50th (m)	28.5	55.4	0.0	8.2	20.5	21.7	5.1	80.0	72.8	18.3	0.0
Queue Length 95th (m)	46.6	74.1	6.8	17.1	31.3	38.1	10.6	#118.2	#128.0	26.6	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		
Base Capacity (vph)	396	852	407	212	797	818	379	849	591	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	0.30	0.31	0.38	0.18	0.96	0.86	0.20	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	2.54	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)	899	617	881	996
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	3.38	3.48
Bicycle LOS	C	C	C	C

# HCM Unsignalized Intersection Capacity Analysis

## 6: Liverpool Rd & Parking Lot/Tatra Dr

Timing Plan: AM Peak Hour  
2027 Total Traffic Condition



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	638	11	129	324	2
Future Volume (Veh/h)	0	0	1	3	0	217	0	638	11	129	324	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	701	12	142	356	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	1604	1387	380	1370	1382	724	375			729		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1611	1380	307	1362	1374	724	302			729		
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	43	100			84		
cM capacity (veh/h)	29	111	677	99	111	415	1173			861		
<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	713	142	358							
Volume Left	0	3	0	142	0							
Volume Right	1	238	12	0	2							
cSH	677	399	1173	861	1700							
Volume to Capacity	0.00	0.60	0.00	0.16	0.21							
Queue Length 95th (m)	0.0	29.1	0.0	4.5	0.0							
Control Delay (s)	10.3	26.8	0.0	10.0	0.0							
Lane LOS	B	D		B								
Approach Delay (s)	10.3	26.8	0.0	2.8								
Approach LOS	B	D										
<b>Intersection Summary</b>												
Average Delay			5.4									
Intersection Capacity Utilization			77.8%		ICU Level of Service					D		
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
 9: Liverpool Rd & Radom St










Timing Plan: AM Peak Hour  
 2027 Total Traffic Condition



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	77	17	9	549	263	60
Future Volume (Veh/h)	77	17	9	549	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	590	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	936	324	357			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	930	313	345			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.4			
p0 queue free %	71	97	99			
cM capacity (veh/h)	291	719	1076			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	101	600	348			
Volume Left	83	10	0			
Volume Right	18	0	65			
cSH	325	1076	1700			
Volume to Capacity	0.31	0.01	0.20			
Queue Length 95th (m)	9.8	0.2	0.0			
Control Delay (s)	21.0	0.3	0.0			
Lane LOS	C	A				
Approach Delay (s)	21.0	0.3	0.0			
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay			2.2			
Intersection Capacity Utilization			48.1%	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 Total Traffic Condition

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	9	126	370	28	124	171
Future Volume (vph)	9	126	370	28	124	171
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	11	159	468	35	157	216
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total (vph)	170	503	373			
Volume Left (vph)	11	0	157			
Volume Right (vph)	159	35	0			
Hadj (s)	-0.52	0.06	0.15			
Departure Headway (s)	5.5	5.0	5.2			
Degree Utilization, x	0.26	0.70	0.54			
Capacity (veh/h)	582	702	668			
Control Delay (s)	10.4	18.5	14.2			
Approach Delay (s)	10.4	18.5	14.2			
Approach LOS	B	C	B			
Intersection Summary						
Delay			15.7			
Level of Service			C			
Intersection Capacity Utilization			55.9%	ICU Level of Service	B	
Analysis Period (min)			15			



Intersection	
Intersection Delay, s/veh	15.5
Intersection LOS	C

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	9	126	370	28	124	171
Future Vol, veh/h	9	126	370	28	124	171
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	11	159	468	35	157	216
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	10.4	18.3	14.1
HCM LOS	B	C	B

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	7%	42%
Vol Thru, %	93%	0%	58%
Vol Right, %	7%	93%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	398	135	295
LT Vol	0	9	124
Through Vol	370	0	171
RT Vol	28	126	0
Lane Flow Rate	504	171	373
Geometry Grp	1	1	1
Degree of Util (X)	0.692	0.259	0.538
Departure Headway (Hd)	4.944	5.451	5.188
Convergence, Y/N	Yes	Yes	Yes
Cap	736	658	695
Service Time	2.944	3.491	3.217
HCM Lane V/C Ratio	0.685	0.26	0.537
HCM Control Delay	18.3	10.4	14.1
HCM Lane LOS	C	B	B
HCM 95th-tile Q	5.6	1	3.2

HCM Unsignalized Intersection Capacity Analysis  
 13: Liverpool Rd & Ilona Park Rd (N)

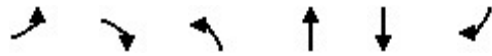
Timing Plan: AM Peak Hour  
 2027 Total Traffic Condition



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	7	0	1	362	185	7
Future Volume (Veh/h)	7	0	1	362	185	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	426	218	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	672	246	247			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	672	246	247			
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)	415	779	1303			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	8	427	226			
Volume Left	8	1	0			
Volume Right	0	0	8			
cSH	415	1303	1700			
Volume to Capacity	0.02	0.00	0.13			
Queue Length 95th (m)	0.4	0.0	0.0			
Control Delay (s)	13.9	0.0	0.0			
Lane LOS	B	A				
Approach Delay (s)	13.9	0.0	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			0.2			
Intersection Capacity Utilization			30.8%	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 Total Traffic Condition



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	13	0	0	321	174	7
Future Volume (Veh/h)	13	0	0	321	174	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	387	210	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	623	236	240			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	623	236	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 %	96	100	100			
cM capacity (veh/h)	443	791	1310			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	16	387	218			
Volume Left	16	0	0			
Volume Right	0	0	8			
cSH	443	1310	1700			
Volume to Capacity	0.04	0.00	0.13			
Queue Length 95th (m)	0.9	0.0	0.0			
Control Delay (s)	13.4	0.0	0.0			
Lane LOS	B					
Approach Delay (s)	13.4	0.0	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			0.3			
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: AM Peak Hour  
 2027 Total Traffic Condition

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	4	2	3	3	8	3	289	14	12	149	9
Future Volume (Veh/h)	15	4	2	3	3	8	3	289	14	12	149	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	2	4	4	10	4	344	17	14	177	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	585	582	198	590	578	352	190			361		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	585	582	198	590	578	352	190			361		
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)	410	389	834	407	422	669	1393			1209		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	25	18	365	202								
Volume Left	18	4	4	14								
Volume Right	2	10	17	11								
cSH	423	525	1393	1209								
Volume to Capacity	0.06	0.03	0.00	0.01								
Queue Length 95th (m)	1.4	0.8	0.1	0.3								
Control Delay (s)	14.1	12.1	0.1	0.7								
Lane LOS	B	B	A	A								
Approach Delay (s)	14.1	12.1	0.1	0.7								
Approach LOS	B	B										
<b>Intersection Summary</b>												
Average Delay			1.2									
Intersection Capacity Utilization			30.6%		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 Total Traffic Condition

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	54	2	9	10	0	10	7	235	8	4	105	15
Future Volume (Veh/h)	54	2	9	10	0	10	7	235	8	4	105	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	11	12	0	12	8	283	10	5	127	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	469	464	144	467	468	292	151			296		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	469	464	144	467	468	292	151			296		
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)	489	489	902	492	487	726	1335			1273		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	78	24	301	150								
Volume Left	65	12	8	5								
Volume Right	11	12	10	18								
cSH	523	587	1335	1273								
Volume to Capacity	0.15	0.04	0.01	0.00								
Queue Length 95th (m)	4.0	1.0	0.1	0.1								
Control Delay (s)	13.1	11.4	0.3	0.3								
Lane LOS	B	B	A	A								
Approach Delay (s)	13.1	11.4	0.3	0.3								
Approach LOS	B	B										
<b>Intersection Summary</b>												
Average Delay			2.6									
Intersection Capacity Utilization			28.8%		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 Total 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)	18	0	0	0	1	5	1	217	1	4	125	4
Future Volume (vph)	18	0	0	0	1	5	1	217	1	4	125	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	261	1	5	151	5
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	22	7	263	161								
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)	5.0	4.3	4.2	4.2								
Degree Utilization, x	0.03	0.01	0.30	0.19								
Capacity (veh/h)	652	744	850	831								
Control Delay (s)	8.2	7.4	8.9	8.2								
Approach Delay (s)	8.2	7.4	8.9	8.2								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			8.6									
Level of Service			A									
Intersection Capacity Utilization			26.6%	ICU Level of Service	A							
Analysis Period (min)			15									

Intersection	
Intersection Delay, s/veh	8.6
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	217	1	4	125	4
Future Vol, veh/h	18	0	0	0	1	5	1	217	1	4	125	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	261	1	5	151	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	8.2	7.4	8.9	8.2
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	100%	0%	3%
Vol Thru, %	99%	0%	17%	94%
Vol Right, %	0%	0%	83%	3%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	219	18	6	133
LT Vol	1	18	0	4
Through Vol	217	0	1	125
RT Vol	1	0	5	4
Lane Flow Rate	264	22	7	160
Geometry Grp	1	1	1	1
Degree of Util (X)	0.298	0.03	0.009	0.184
Departure Headway (Hd)	4.067	5.017	4.334	4.135
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	876	718	831	856
Service Time	2.131	3.018	2.335	2.217
HCM Lane V/C Ratio	0.301	0.031	0.008	0.187
HCM Control Delay	8.9	8.2	7.4	8.2
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	1.3	0.1	0	0.7

HCM Unsignalized Intersection Capacity Analysis  
 26: Liverpool Rd & Site Access

Timing Plan: AM Peak Hour  
 2027 Total Traffic Condition


























Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	159	36	0	71	10
Future Volume (Veh/h)	0	159	36	0	71	10
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	215	49	0	96	14
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	262	56			56	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	262	56			56	
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	79			94	
cM capacity (veh/h)	681	1009			1551	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	215	49	110			
Volume Left	0	0	96			
Volume Right	215	0	0			
cSH	1009	1700	1551			
Volume to Capacity	0.21	0.03	0.06			
Queue Length 95th (m)	6.1	0.0	1.5			
Control Delay (s)	9.5	0.0	6.6			
Lane LOS	A		A			
Approach Delay (s)	9.5	0.0	6.6			
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			7.4			
Intersection Capacity Utilization			27.6%		ICU Level of Service	A
Analysis Period (min)			15			



HCM Signalized Intersection Capacity Analysis  
 3: Liverpool Rd & Bayly St

Timing Plan: AM Peak Hour  
 2027 Total Traffic Conditions - Krosno Signalized

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	199	581	101	62	239	304	66	653	145	496	314	167
Future Volume (vph)	199	581	101	62	239	304	66	653	145	496	314	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	1775	3419		1805	3411	1534
Flt Permitted	0.60	1.00	1.00	0.25	1.00	1.00	0.56	1.00		0.15	1.00	1.00
Satd. Flow (perm)	1140	3614	1278	467	3380	1431	1042	3419		278	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	103	63	244	310	67	666	148	506	320	170
RTOR Reduction (vph)	0	0	79	0	0	35	0	19	0	0	0	81
Lane Group Flow (vph)	203	593	24	63	244	275	67	795	0	506	320	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	341	830		581	1613	802
v/s Ratio Prot	c0.03	c0.16		0.02	0.07	0.10	0.01	0.23		c0.24	0.09	0.01
v/s Ratio Perm	0.13		0.02	0.08		0.09	0.05			c0.24		0.05
v/c Ratio	0.57	0.70	0.08	0.32	0.31	0.37	0.20	0.96		0.87	0.20	0.11
Uniform Delay, d1	29.2	34.9	29.8	26.9	31.5	14.5	26.0	37.3		25.0	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	6.3	4.7	0.5	4.2	1.0	1.4	1.3	22.5		16.3	0.3	0.3
Delay (s)	35.5	39.6	30.3	31.2	32.5	15.9	27.3	59.9		41.3	15.6	12.4
Level of Service	D	D	C	C	C	B	C	E		D	B	B
Approach Delay (s)		37.6			24.0			57.4			28.1	
Approach LOS		D			C			E			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			37.5			HCM 2000 Level of Service			D			
HCM 2000 Volume to Capacity ratio			0.83									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			19.1			
Intersection Capacity Utilization			96.0%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 11: Liverpool Rd & Krosno Blvd

Timing Plan: AM Peak Hour  
 2027 Total Traffic Conditions - Krosno Signalized



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	9	126	370	28	124	171
Future Volume (vph)	9	126	370	28	124	171
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)	1605		1786			1799
Flt Permitted	1.00		1.00			0.66
Satd. Flow (perm)	1605		1786			1219
Peak-hour factor, PHF	0.79	0.79	0.79	0.79	0.79	0.79
Adj. Flow (vph)	11	159	468	35	157	216
RTOR Reduction (vph)	144	0	2	0	0	0
Lane Group Flow (vph)	26	0	501	0	0	373
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)	7.5		62.3			62.3
Effective Green, g (s)	7.5		62.3			62.3
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)	147		1360			928
v/s Ratio Prot	c0.02		0.28			
v/s Ratio Perm						c0.31
v/c Ratio	0.17		0.37			0.40
Uniform Delay, d1	34.3		3.2			3.3
Progression Factor	1.00		1.00			1.00
Incremental Delay, d2	0.6		0.8			1.3
Delay (s)	34.9		4.0			4.6
Level of Service	C		A			A
Approach Delay (s)	34.9		4.0			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			0.38			
Actuated Cycle Length (s)			81.8		Sum of lost time (s)	12.0
Intersection Capacity Utilization			61.0%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

Timings  
11: Liverpool Rd & Krosno Blvd

Timing Plan: AM Peak Hour  
2027 Total Traffic Condition - Krosno Signalized

Lane Group	WBL	NBT	SBL	SBT
Lane Configurations				
Traffic Volume (vph)	9	370	124	171
Future Volume (vph)	9	370	124	171
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)	7.5	62.3		62.3
Actuated g/C Ratio	0.09	0.76		0.76
v/c Ratio	0.59	0.37		0.40
Control Delay	15.6	4.4		5.3
Queue Delay	0.0	0.0		0.0
Total Delay	15.6	4.4		5.3
LOS	B	A		A
Approach Delay	15.6	4.4		5.3
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: 0.59  
 Intersection Signal Delay: 6.5  
 Intersection Capacity Utilization 61.0%  
 Analysis Period (min) 15  
 Intersection LOS: A  
 ICU Level of Service B

Splits and Phases: 11: Liverpool Rd & Krosno Blvd



HCM Signalized Intersection Capacity Analysis  
3: Liverpool Rd & Bayly St

Timing Plan: AM Peak Hour  
2032 Total Traffic Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	199	596	101	62	245	304	66	666	145	496	321	167
Future Volume (vph)	199	596	101	62	245	304	66	666	145	496	321	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	3421		1805	3411	1534
Flt Permitted	0.60	1.00	1.00	0.24	1.00	1.00	0.55	1.00		0.15	1.00	1.00
Satd. Flow (perm)	1133	3614	1276	444	3380	1431	1034	3421		278	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	103	63	250	310	67	680	148	506	328	170
RTOR Reduction (vph)	0	0	79	0	0	35	0	18	0	0	0	81
Lane Group Flow (vph)	203	608	24	63	250	275	67	810	0	506	328	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	340	831		581	1613	802
v/s Ratio Prot	c0.03	c0.17		0.02	0.07	0.10	0.01	c0.24		c0.24	0.10	0.01
v/s Ratio Perm	0.13		0.02	0.08		0.09	0.05			0.24		0.05
v/c Ratio	0.57	0.71	0.08	0.33	0.31	0.37	0.20	0.97		0.87	0.20	0.11
Uniform Delay, d1	29.2	35.1	29.8	27.0	31.5	14.5	26.0	37.5		25.0	15.4	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	4.5	1.0	1.4	1.3	25.6		16.3	0.3	0.3
Delay (s)	35.6	40.2	30.3	31.5	32.5	15.9	27.3	63.2		41.3	15.6	12.4
Level of Service	D	D	C	C	C	B	C	E		D	B	B
Approach Delay (s)		38.0			24.2			60.5			28.0	
Approach LOS		D			C			E			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			38.4			HCM 2000 Level of Service			D			
HCM 2000 Volume to Capacity ratio			0.84									
Actuated Cycle Length (s)			100.0	Sum of lost time (s)					19.1			
Intersection Capacity Utilization			96.4%	ICU Level of Service			F					
Analysis Period (min)			15									
c Critical Lane Group												

Timings  
3: Liverpool Rd & Bayly St

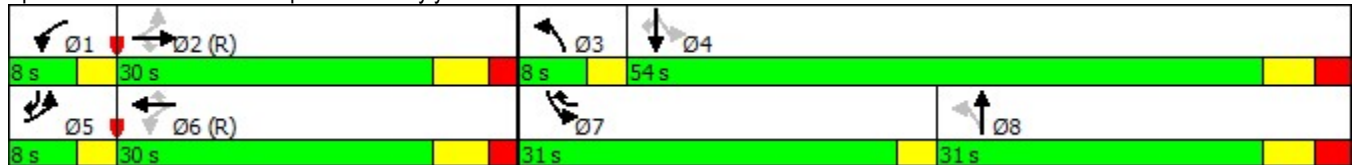
Timing Plan: AM Peak Hour  
2032 Total Traffic Cond

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	199	596	101	62	245	304	66	666	496	321	167
Future Volume (vph)	199	596	101	62	245	304	66	666	496	321	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	0.31	0.31	0.38	0.18	0.98	0.86	0.20	0.18
Control Delay	30.8	40.5	4.0	26.1	32.8	9.9	13.6	62.8	38.1	15.8	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	4.0	26.1	32.8	9.9	13.6	62.8	38.1	15.8	1.9
LOS	C	D	A	C	C	A	B	E	D	B	A
Approach Delay		34.2			20.8			59.1		24.7	
Approach LOS		C			C			E		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: 0.98  
 Intersection Signal Delay: 35.5  
 Intersection LOS: D  
 Intersection Capacity Utilization 96.4%  
 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: AM Peak Hour  
2032 Total Traffic Cond



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	203	608	103	63	250	310	67	828	506	328	170
v/c Ratio	0.52	0.71	0.25	0.31	0.31	0.38	0.18	0.98	0.86	0.20	0.18
Control Delay	30.8	40.5	4.0	26.1	32.8	9.9	13.6	62.8	38.1	15.8	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	4.0	26.1	32.8	9.9	13.6	62.8	38.1	15.8	1.9
Queue Length 50th (m)	28.5	57.2	0.0	8.2	21.1	21.7	5.1	81.9	72.8	18.8	0.0
Queue Length 95th (m)	46.6	76.0	6.8	17.1	32.0	38.1	10.6	#121.6	#128.0	27.3	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)	394	852	407	206	797	818	377	849	591	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	0.31	0.31	0.38	0.18	0.98	0.86	0.20	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	2.54	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)	914	623	895	1004
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	3.22	3.16	3.39	3.48
Bicycle LOS	C	C	C	C



HCM Unsignalized Intersection Capacity Analysis  
6: Liverpool Rd & Parking Lot/Tatra Dr

Timing Plan: AM Peak Hour  
2032 Total Traffic Cond



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	649	11	129	331	2
Future Volume (Veh/h)	0	0	1	3	0	217	0	649	11	129	331	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	713	12	142	364	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	1624	1407	388	1390	1402	736	383			741		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1632	1401	312	1383	1395	736	307			741		
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	42	100			83		
cM capacity (veh/h)	27	107	671	95	108	409	1165			852		
<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	725	142	366							
Volume Left	0	3	0	142	0							
Volume Right	1	238	12	0	2							
cSH	671	393	1165	852	1700							
Volume to Capacity	0.00	0.61	0.00	0.17	0.22							
Queue Length 95th (m)	0.0	30.0	0.0	4.5	0.0							
Control Delay (s)	10.4	27.7	0.0	10.1	0.0							
Lane LOS	B	D		B								
Approach Delay (s)	10.4	27.7	0.0	2.8								
Approach LOS	B	D										
<b>Intersection Summary</b>												
Average Delay			5.5									
Intersection Capacity Utilization			78.7%		ICU Level of Service					D		
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
 9: Liverpool Rd & Radom St

Timing Plan: AM Peak Hour  
 2032 Total Traffic Cond



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	77	17	9	558	268	60
Future Volume (Veh/h)	77	17	9	558	268	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	600	288	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	950	330	362			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	943	313	346			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.4			
p0 queue free %	71	97	99			
cM capacity (veh/h)	284	715	1071			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	101	610	353			
Volume Left	83	10	0			
Volume Right	18	0	65			
cSH	319	1071	1700			
Volume to Capacity	0.32	0.01	0.21			
Queue Length 95th (m)	10.1	0.2	0.0			
Control Delay (s)	21.5	0.3	0.0			
Lane LOS	C	A				
Approach Delay (s)	21.5	0.3	0.0			
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay			2.2			
Intersection Capacity Utilization			48.5%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
 11: Liverpool Rd & Krosno Blvd

Timing Plan: AM Peak Hour  
 2032 Total Traffic Cond






Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	9	126	375	28	124	174
Future Volume (vph)	9	126	375	28	124	174
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	11	159	475	35	157	220

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	170	510	377
Volume Left (vph)	11	0	157
Volume Right (vph)	159	35	0
Hadj (s)	-0.52	0.06	0.15
Departure Headway (s)	5.5	5.0	5.2
Degree Utilization, x	0.26	0.71	0.55
Capacity (veh/h)	579	702	667
Control Delay (s)	10.5	19.1	14.4
Approach Delay (s)	10.5	19.1	14.4
Approach LOS	B	C	B

Intersection Summary			
Delay		16.0	
Level of Service		C	
Intersection Capacity Utilization		56.3%	ICU Level of Service B
Analysis Period (min)		15	

Intersection	
Intersection Delay, s/veh	15.8
Intersection LOS	C

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	9	126	375	28	124	174
Future Vol, veh/h	9	126	375	28	124	174
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	11	159	475	35	157	220
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	10.4	18.8	14.3
HCM LOS	B	C	B

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	7%	42%
Vol Thru, %	93%	0%	58%
Vol Right, %	7%	93%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	403	135	298
LT Vol	0	9	124
Through Vol	375	0	174
RT Vol	28	126	0
Lane Flow Rate	510	171	377
Geometry Grp	1	1	1
Degree of Util (X)	0.702	0.26	0.545
Departure Headway (Hd)	4.954	5.475	5.199
Convergence, Y/N	Yes	Yes	Yes
Cap	735	654	694
Service Time	2.954	3.517	3.228
HCM Lane V/C Ratio	0.694	0.261	0.543
HCM Control Delay	18.8	10.4	14.3
HCM Lane LOS	C	B	B
HCM 95th-tile Q	5.8	1	3.3

HCM Unsignalized Intersection Capacity Analysis  
 13: Liverpool Rd & Ilona Park Rd (N)

Timing Plan: AM Peak Hour  
 2032 Total Traffic Cond



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	7	0	1	366	188	7
Future Volume (Veh/h)	7	0	1	366	188	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	431	221	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	680	249	250			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	680	249	250			
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)	410	776	1300			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	8	432	229			
Volume Left	8	1	0			
Volume Right	0	0	8			
cSH	410	1300	1700			
Volume to Capacity	0.02	0.00	0.13			
Queue Length 95th (m)	0.5	0.0	0.0			
Control Delay (s)	13.9	0.0	0.0			
Lane LOS	B	A				
Approach Delay (s)	13.9	0.0	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			0.2			
Intersection Capacity Utilization			31.0%	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 Total Traffic Cond



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	13	2	0	325	178	7
Future Volume (Veh/h)	13	2	0	325	178	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	392	214	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	632	240	244			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	632	240	244			
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)	438	787	1305			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	18	392	222			
Volume Left	16	0	0			
Volume Right	2	0	8			
cSH	461	1305	1700			
Volume to Capacity	0.04	0.00	0.13			
Queue Length 95th (m)	0.9	0.0	0.0			
Control Delay (s)	13.1	0.0	0.0			
Lane LOS	B					
Approach Delay (s)	13.1	0.0	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			0.4			
Intersection Capacity Utilization			27.1%	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 Total Traffic Cond

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	4	2	3	3	8	3	291	14	12	152	9
Future Volume (Veh/h)	15	4	2	3	3	8	3	291	14	12	152	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	2	4	4	10	4	346	17	14	181	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	591	588	202	596	584	354	194			363		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	591	588	202	596	584	354	194			363		
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)	406	386	830	403	419	667	1389			1207		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	25	18	367	206								
Volume Left	18	4	4	14								
Volume Right	2	10	17	11								
cSH	419	522	1389	1207								
Volume to Capacity	0.06	0.03	0.00	0.01								
Queue Length 95th (m)	1.4	0.8	0.1	0.3								
Control Delay (s)	14.1	12.1	0.1	0.6								
Lane LOS	B	B	A	A								
Approach Delay (s)	14.1	12.1	0.1	0.6								
Approach LOS	B	B										
<b>Intersection Summary</b>												
Average Delay			1.2									
Intersection Capacity Utilization			30.7%		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 Total Traffic Cond

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	54	2	9	10	0	10	7	238	8	4	107	15
Future Volume (Veh/h)	54	2	9	10	0	10	7	238	8	4	107	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	11	12	0	12	8	287	10	5	129	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	475	470	146	473	474	296	153			300		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	475	470	146	473	474	296	153			300		
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)	485	485	899	488	483	722	1333			1269		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	78	24	305	152								
Volume Left	65	12	8	5								
Volume Right	11	12	10	18								
cSH	518	582	1333	1269								
Volume to Capacity	0.15	0.04	0.01	0.00								
Queue Length 95th (m)	4.0	1.0	0.1	0.1								
Control Delay (s)	13.2	11.5	0.3	0.3								
Lane LOS	B	B	A	A								
Approach Delay (s)	13.2	11.5	0.3	0.3								
Approach LOS	B	B										
<b>Intersection Summary</b>												
Average Delay			2.5									
Intersection Capacity Utilization			28.9%		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 Total Traffic Cond

												
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	219	1	4	127	4
Future Volume (vph)	18	0	0	0	1	5	1	219	1	4	127	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	264	1	5	153	5
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	22	7	266	163								
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)	5.0	4.3	4.2	4.3								
Degree Utilization, x	0.03	0.01	0.31	0.19								
Capacity (veh/h)	650	742	850	830								
Control Delay (s)	8.2	7.4	9.0	8.3								
Approach Delay (s)	8.2	7.4	9.0	8.3								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			8.7									
Level of Service			A									
Intersection Capacity Utilization			26.7%	ICU Level of Service	A							
Analysis Period (min)			15									

Intersection	
Intersection Delay, s/veh	8.6
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	219	1	4	127	4
Future Vol, veh/h	18	0	0	0	1	5	1	219	1	4	127	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	264	1	5	153	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	8.2	7.4	8.9	8.2
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	100%	0%	3%
Vol Thru, %	99%	0%	17%	94%
Vol Right, %	0%	0%	83%	3%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	221	18	6	135
LT Vol	1	18	0	4
Through Vol	219	0	1	127
RT Vol	1	0	5	4
Lane Flow Rate	266	22	7	163
Geometry Grp	1	1	1	1
Degree of Util (X)	0.301	0.03	0.009	0.187
Departure Headway (Hd)	4.069	5.028	4.345	4.137
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	876	716	828	856
Service Time	2.133	3.029	2.346	2.22
HCM Lane V/C Ratio	0.304	0.031	0.008	0.19
HCM Control Delay	8.9	8.2	7.4	8.2
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	1.3	0.1	0	0.7

HCM Unsignalized Intersection Capacity Analysis  
 26: Liverpool Rd

























Timing Plan: AM Peak Hour  
 2032 Total Traffic Cond



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	159	38	0	71	11
Future Volume (Veh/h)	0	159	38	0	71	11
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	215	51	0	96	15
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	265	58			58	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	265	58			58	
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	79			94	
cM capacity (veh/h)	679	1007			1548	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	215	51	111			
Volume Left	0	0	96			
Volume Right	215	0	0			
cSH	1007	1700	1548			
Volume to Capacity	0.21	0.03	0.06			
Queue Length 95th (m)	6.1	0.0	1.5			
Control Delay (s)	9.5	0.0	6.5			
Lane LOS	A		A			
Approach Delay (s)	9.5	0.0	6.5			
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			7.4			
Intersection Capacity Utilization			27.7%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis  
3: Liverpool Rd & Bayly St

Timing Plan: AM Peak Hour  
2032 Total Traffic Conditions - Krosno Signalized

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	199	596	101	62	245	304	66	666	145	496	321	167
Future Volume (vph)	199	596	101	62	245	304	66	666	145	496	321	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	3421		1805	3411	1534
Flt Permitted	0.60	1.00	1.00	0.24	1.00	1.00	0.55	1.00		0.15	1.00	1.00
Satd. Flow (perm)	1133	3614	1276	444	3380	1431	1034	3421		278	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	103	63	250	310	67	680	148	506	328	170
RTOR Reduction (vph)	0	0	79	0	0	35	0	18	0	0	0	81
Lane Group Flow (vph)	203	608	24	63	250	275	67	810	0	506	328	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	340	831		581	1613	802
v/s Ratio Prot	c0.03	c0.17		0.02	0.07	0.10	0.01	c0.24		c0.24	0.10	0.01
v/s Ratio Perm	0.13		0.02	0.08		0.09	0.05			0.24		0.05
v/c Ratio	0.57	0.71	0.08	0.33	0.31	0.37	0.20	0.97		0.87	0.20	0.11
Uniform Delay, d1	29.2	35.1	29.8	27.0	31.5	14.5	26.0	37.5		25.0	15.4	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	4.5	1.0	1.4	1.3	25.6		16.3	0.3	0.3
Delay (s)	35.6	40.2	30.3	31.5	32.5	15.9	27.3	63.2		41.3	15.6	12.4
Level of Service	D	D	C	C	C	B	C	E		D	B	B
Approach Delay (s)		38.0			24.2			60.5			28.0	
Approach LOS		D			C			E			C	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			38.4			HCM 2000 Level of Service			D			
HCM 2000 Volume to Capacity ratio			0.84									
Actuated Cycle Length (s)			100.0			Sum of lost time (s)			19.1			
Intersection Capacity Utilization			96.4%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 11: Liverpool Rd & Krosno Blvd

Timing Plan: AM Peak Hour  
 2032 Total Traffic Conditions - Krosno Signalized



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	9	126	375	28	124	174
Future Volume (vph)	9	126	375	28	124	174
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)	1605		1786			1800
Flt Permitted	1.00		1.00			0.66
Satd. Flow (perm)	1605		1786			1218
Peak-hour factor, PHF	0.79	0.79	0.79	0.79	0.79	0.79
Adj. Flow (vph)	11	159	475	35	157	220
RTOR Reduction (vph)	145	0	2	0	0	0
Lane Group Flow (vph)	25	0	508	0	0	377
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)	7.5		63.3			63.3
Effective Green, g (s)	7.5		63.3			63.3
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		1365			931
v/s Ratio Prot	c0.02		0.28			
v/s Ratio Perm						c0.31
v/c Ratio	0.18		0.37			0.40
Uniform Delay, d1	34.8		3.2			3.3
Progression Factor	1.00		1.00			1.00
Incremental Delay, d2	0.6		0.8			1.3
Delay (s)	35.4		4.0			4.6
Level of Service	D		A			A
Approach Delay (s)	35.4		4.0			4.6
Approach LOS	D		A			A
<b>Intersection Summary</b>						
HCM 2000 Control Delay			9.3		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.38			
Actuated Cycle Length (s)			82.8		Sum of lost time (s)	12.0
Intersection Capacity Utilization			61.4%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

Timings  
11: Liverpool Rd & Krosno Blvd

Timing Plan: AM Peak Hour  
2032 Total Traffic Condition - Krosno Signalized



Lane Group	WBL	NBT	SBL	SBT
Lane Configurations	W	T		T
Traffic Volume (vph)	9	375	124	174
Future Volume (vph)	9	375	124	174
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)	7.5	63.4		63.4
Actuated g/C Ratio	0.09	0.76		0.76
v/c Ratio	0.59	0.37		0.40
Control Delay	15.8	4.4		5.3
Queue Delay	0.0	0.0		0.0
Total Delay	15.8	4.4		5.3
LOS	B	A		A
Approach Delay	15.8	4.4		5.3
Approach LOS	B	A		A

Intersection Summary

Cycle Length: 90  
 Actuated Cycle Length: 82.9  
 Natural Cycle: 60  
 Control Type: Semi Act-Uncoord  
 Maximum v/c Ratio: 0.59  
 Intersection Signal Delay: 6.5  
 Intersection Capacity Utilization 61.4%  
 Analysis Period (min) 15  
 Intersection LOS: A  
 ICU Level of Service B

Splits and Phases: 11: Liverpool Rd & Krosno Blvd



Queues  
11: Liverpool Rd & Krosno Blvd

Timing Plan: AM Peak Hour  
2032 Total Traffic Condition - Krosno Signalized



Lane Group	WBL	NBT	SBT
Lane Group Flow (vph)	170	510	377
v/c Ratio	0.59	0.37	0.40
Control Delay	15.8	4.4	5.3
Queue Delay	0.0	0.0	0.0
Total Delay	15.8	4.4	5.3
Queue Length 50th (m)	1.6	17.7	13.8
Queue Length 95th (m)	12.6	33.1	28.4
Internal Link Dist (m)	251.2	233.4	388.4
Turn Bay Length (m)			
Base Capacity (vph)	491	1367	931
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.35	0.37	0.40
<b>Intersection Summary</b>			

# HCM Signalized Intersection Capacity Analysis

## 3: Liverpool Rd & Bayly St

PM Peak Hour  
2027 Total Traffic Conditions



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	366	846	274	127	572	689	88	638	112	335	657	245
Future Volume (vph)	366	846	274	127	572	689	88	638	112	335	657	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	3484		1787	3579	1532
Flt Permitted	0.27	1.00	1.00	0.22	1.00	1.00	0.39	1.00		0.15	1.00	1.00
Satd. Flow (perm)	508	3579	1371	405	3614	1535	753	3484		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	282	131	590	710	91	658	115	345	677	253
RTOR Reduction (vph)	0	0	141	0	0	60	0	14	0	0	0	64
Lane Group Flow (vph)	377	872	141	131	590	650	91	759	0	345	677	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	273	846		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	0.17		0.27	0.08			c0.26		0.09
v/c Ratio	0.96	0.70	0.30	0.61	0.59	0.97	0.33	0.90		0.96	0.54	0.26
Uniform Delay, d1	22.9	28.3	23.8	24.3	31.3	27.6	26.3	36.6		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	12.0	2.6	28.6	3.3	14.2		37.4	1.6	0.8
Delay (s)	59.7	31.7	25.5	36.4	33.9	56.2	29.6	50.8		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			45.2			48.6			35.1	
Approach LOS		D			D			D			D	

### Intersection Summary

HCM 2000 Control Delay	40.9	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	99.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Timings  
3: Liverpool Rd & Bayly St

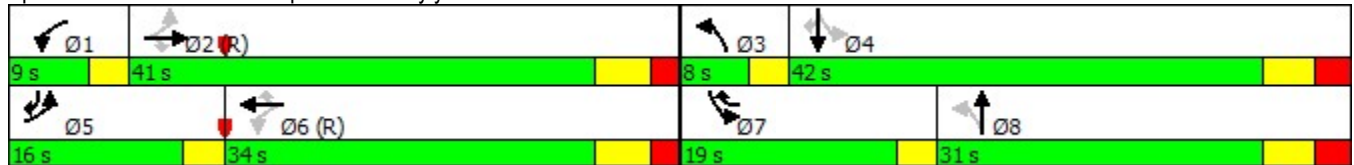
Timing Plan: PM Peak Hour  
2027 Total Traffic Condition

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	
Lane Configurations												
Traffic Volume (vph)	366	846	276	129	572	689	90	648	335	669	245	
Future Volume (vph)	366	846	276	129	572	689	90	648	335	669	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	0.58	0.59	0.91	0.31	0.91	0.93	0.55	0.30	
Control Delay	50.4	32.0	9.8	27.8	34.2	38.0	19.2	52.5	57.6	27.9	7.0	
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	50.4	32.0	9.8	27.8	34.2	38.0	19.2	52.5	57.6	27.9	7.0	
LOS	D	C	A	C	C	D	B	D	E	C	A	
Approach Delay		32.4			35.5			48.9		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: 0.93  
 Intersection Signal Delay: 35.9  
 Intersection LOS: D  
 Intersection Capacity Utilization 99.7%  
 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: PM Peak Hour  
2027 Total Traffic Condition



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	377	872	285	133	590	710	93	786	345	690	253
v/c Ratio	0.92	0.70	0.46	0.58	0.59	0.91	0.31	0.91	0.93	0.55	0.30
Control Delay	50.4	32.0	9.8	27.8	34.2	38.0	19.2	52.5	57.6	27.9	7.0
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	50.4	32.0	9.8	27.8	34.2	38.0	19.2	52.5	57.6	27.9	7.0
Queue Length 50th (m)	47.2	76.1	9.7	14.3	52.0	99.4	9.7	76.6	48.3	55.7	11.9
Queue Length 95th (m)	#89.6	97.6	31.0	25.3	69.5	#133.3	18.5	#111.2	#100.4	73.1	24.6
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)	408	1238	613	229	997	776	296	860	370	1263	853
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	0.58	0.59	0.91	0.31	0.91	0.93	0.55	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	2.80	2.84	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)	1534	1433	879	1288
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	3.83	3.38	3.72
Bicycle LOS	D	D	C	D

HCM Unsignalized Intersection Capacity Analysis  
6: Liverpool Rd & Parking Lot/Tatra Dr

Timing Plan: PM Peak Hour  
2027 Total Traffic Condition



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	617	8	215	796	1
Future Volume (Veh/h)	4	1	1	1	0	236	1	617	8	215	796	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	643	8	224	829	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	0.80	0.80	0.80	0.80	0.80		0.80					
vC, conflicting volume	2198	1986	874	1982	1982	681	853			683		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2370	2106	720	2101	2101	681	693			683		
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 %	39	97	100	95	100	44	100			75		
cM capacity (veh/h)	7	30	331	22	30	439	714			891		
<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	652	224	830							
Volume Left	4	1	1	224	0							
Volume Right	1	246	8	0	1							
cSH	9	407	714	891	1700							
Volume to Capacity	0.65	0.61	0.00	0.25	0.49							
Queue Length 95th (m)	10.0	29.4	0.0	7.6	0.0							
Control Delay (s)	661.6	26.5	0.0	10.4	0.0							
Lane LOS	F	D	A	B								
Approach Delay (s)	661.6	26.5	0.0	2.2								
Approach LOS	F	D										
<b>Intersection Summary</b>												
Average Delay			6.6									
Intersection Capacity Utilization			99.9%		ICU Level of Service				F			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
 9: Liverpool Rd & Radom St

Timing Plan: PM Peak Hour  
 2027 Total Traffic Condition



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	58	32	22	552	720	68
Future Volume (Veh/h)	58	32	22	552	720	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	33	23	569	742	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	0.78	0.78	0.78			
vC, conflicting volume	1403	789	823			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1376	589	633			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	50	92	97			
cM capacity (veh/h)	121	389	741			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	93	592	812			
Volume Left	60	23	0			
Volume Right	33	0	70			
cSH	160	741	1700			
Volume to Capacity	0.58	0.03	0.48			
Queue Length 95th (m)	23.2	0.7	0.0			
Control Delay (s)	54.7	0.8	0.0			
Lane LOS	F	A				
Approach Delay (s)	54.7	0.8	0.0			
Approach LOS	F					
<b>Intersection Summary</b>						
Average Delay			3.7			
Intersection Capacity Utilization			59.0%	ICU Level of Service	B	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
 11: Liverpool Rd & Krosno Blvd

Timing Plan: PM Peak Hour  
 2027 Total Traffic Condition






Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	42	123	381	21	175	554
Future Volume (vph)	42	123	381	21	175	554
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	47	138	428	24	197	622

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	185	452	819
Volume Left (vph)	47	0	197
Volume Right (vph)	138	24	0
Hadj (s)	-0.40	0.00	0.10
Departure Headway (s)	6.2	5.4	5.3
Degree Utilization, x	0.32	0.68	1.20
Capacity (veh/h)	555	647	686
Control Delay (s)	12.1	19.2	123.6
Approach Delay (s)	12.1	19.2	123.6
Approach LOS	B	C	F

Intersection Summary			
Delay		77.0	
Level of Service		F	
Intersection Capacity Utilization		80.2%	ICU Level of Service
Analysis Period (min)		15	D

Intersection	
Intersection Delay, s/veh	75.9
Intersection LOS	F

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	42	123	381	21	175	554
Future Vol, veh/h	42	123	381	21	175	554
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	47	138	428	24	197	622
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	12.6	19.5	121.4
HCM LOS	B	C	F

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	25%	24%
Vol Thru, %	95%	0%	76%
Vol Right, %	5%	75%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	402	165	729
LT Vol	0	42	175
Through Vol	381	0	554
RT Vol	21	123	0
Lane Flow Rate	452	185	819
Geometry Grp	1	1	1
Degree of Util (X)	0.672	0.316	1.196
Departure Headway (Hd)	5.683	6.591	5.256
Convergence, Y/N	Yes	Yes	Yes
Cap	641	549	696
Service Time	3.683	4.591	3.256
HCM Lane V/C Ratio	0.705	0.337	1.177
HCM Control Delay	19.5	12.6	121.4
HCM Lane LOS	C	B	F
HCM 95th-tile Q	5.1	1.3	27.8



HCM Unsignalized Intersection Capacity Analysis  
 13: Liverpool Rd & Ilona Park Rd (N)

Timing Plan: PM Peak Hour  
 2027 Total Traffic Condition



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	6	0	1	342	526	11
Future Volume (Veh/h)	6	0	1	342	526	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	407	626	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	1052	644	649			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1052	644	649			
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)	251	472	937			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	7	408	639			
Volume Left	7	1	0			
Volume Right	0	0	13			
cSH	251	937	1700			
Volume to Capacity	0.03	0.00	0.38			
Queue Length 95th (m)	0.7	0.0	0.0			
Control Delay (s)	19.8	0.0	0.0			
Lane LOS	C	A				
Approach Delay (s)	19.8	0.0	0.0			
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay			0.1			
Intersection Capacity Utilization			38.7%	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 Total Traffic Condition



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	2	1	1	327	486	12
Future Volume (Veh/h)	2	1	1	327	486	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	380	565	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	966	581	588			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	966	581	588			
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)	281	513	988			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	3	381	579			
Volume Left	2	1	0			
Volume Right	1	0	14			
cSH	331	988	1700			
Volume to Capacity	0.01	0.00	0.34			
Queue Length 95th (m)	0.2	0.0	0.0			
Control Delay (s)	16.0	0.0	0.0			
Lane LOS	C	A				
Approach Delay (s)	16.0	0.0	0.0			
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay			0.1			
Intersection Capacity Utilization			36.3%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
 17: Liverpool Rd & Commerce St

Timing Plan: PM Peak Hour  
 2027 Total Traffic Condition

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	0	3	9	3	9	4	301	7	18	444	19
Future Volume (Veh/h)	9	0	3	9	3	9	4	301	7	18	444	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	3	10	3	10	5	346	8	21	510	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	944	948	532	940	955	363	541			366		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	944	948	532	940	955	363	541			366		
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 %	95	100	99	95	99	99	100			98		
cM capacity (veh/h)	208	252	545	191	249	678	1029			1190		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	13	23	359	553								
Volume Left	10	10	5	21								
Volume Right	3	10	8	22								
cSH	243	290	1029	1190								
Volume to Capacity	0.05	0.08	0.00	0.02								
Queue Length 95th (m)	1.3	1.9	0.1	0.4								
Control Delay (s)	20.6	18.5	0.2	0.5								
Lane LOS	C	C	A	A								
Approach Delay (s)	20.6	18.5	0.2	0.5								
Approach LOS	C	C										
<b>Intersection Summary</b>												
Average Delay			1.1									
Intersection Capacity Utilization			45.9%		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 Total Traffic Condition



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	27	0	16	21	3	3	15	316	19	14	406	52
Future Volume (Veh/h)	27	0	16	21	3	3	15	316	19	14	406	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	17	23	3	3	16	340	20	15	437	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	888	892	471	897	910	354	497			361		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	888	892	471	897	910	354	497			361		
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 %	88	100	97	91	99	100	99			99		
cM capacity (veh/h)	238	274	593	248	268	692	1073			1208		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	46	29	376	508								
Volume Left	29	23	16	15								
Volume Right	17	3	20	56								
cSH	305	268	1073	1208								
Volume to Capacity	0.15	0.11	0.01	0.01								
Queue Length 95th (m)	4.0	2.7	0.3	0.3								
Control Delay (s)	18.9	20.0	0.5	0.4								
Lane LOS	C	C	A	A								
Approach Delay (s)	18.9	20.0	0.5	0.4								
Approach LOS	C	C										
<b>Intersection Summary</b>												
Average Delay			1.9									
Intersection Capacity Utilization			40.6%		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 Total 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)	19	0	2	0	0	7	5	276	1	10	372	38
Future Volume (vph)	19	0	2	0	0	7	5	276	1	10	372	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	329	1	12	443	45
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	25	8	336	500								
Volume Left (vph)	23	0	6	12								
Volume Right (vph)	2	8	1	45								
Hadj (s)	0.21	-0.60	0.00	-0.04								
Departure Headway (s)	5.9	5.2	4.5	4.3								
Degree Utilization, x	0.04	0.01	0.42	0.60								
Capacity (veh/h)	526	586	779	820								
Control Delay (s)	9.2	8.2	10.7	13.5								
Approach Delay (s)	9.2	8.2	10.7	13.5								
Approach LOS	A	A	B	B								
Intersection Summary												
Delay			12.3									
Level of Service			B									
Intersection Capacity Utilization			42.3%	ICU Level of Service	A							
Analysis Period (min)			15									

Intersection	
Intersection Delay, s/veh	12.2
Intersection LOS	B

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	276	1	10	372	38
Future Vol, veh/h	19	0	2	0	0	7	5	276	1	10	372	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	329	1	12	443	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	9.2	8.2	10.7	13.5
HCM LOS	A	A	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	2%	90%	0%	2%
Vol Thru, %	98%	0%	0%	89%
Vol Right, %	0%	10%	100%	9%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	282	21	7	420
LT Vol	5	19	0	10
Through Vol	276	0	0	372
RT Vol	1	2	7	38
Lane Flow Rate	336	25	8	500
Geometry Grp	1	1	1	1
Degree of Util (X)	0.419	0.041	0.012	0.596
Departure Headway (Hd)	4.491	5.892	5.11	4.291
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	802	606	697	840
Service Time	2.515	3.948	3.169	2.312
HCM Lane V/C Ratio	0.419	0.041	0.011	0.595
HCM Control Delay	10.7	9.2	8.2	13.5
HCM Lane LOS	B	A	A	B
HCM 95th-tile Q	2.1	0.1	0	4

HCM Unsignalized Intersection Capacity Analysis  
 26: Liverpool Rd & Site Access




























Timing Plan: PM Peak Hour  
 2027 Total Traffic Condition



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	186	102	0	236	131
Future Volume (Veh/h)	0	186	102	0	236	131
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	238	131	0	303	168
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	942	173			164	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	942	173			164	
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	72			78	
cM capacity (veh/h)	149	840			1381	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	238	131	471			
Volume Left	0	0	303			
Volume Right	238	0	0			
cSH	840	1700	1381			
Volume to Capacity	0.28	0.08	0.22			
Queue Length 95th (m)	8.9	0.0	6.4			
Control Delay (s)	11.0	0.0	6.1			
Lane LOS	B		A			
Approach Delay (s)	11.0	0.0	6.1			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			6.5			
Intersection Capacity Utilization			46.0%		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 Total Traffic Conditions - Krosno Signalized

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		 			 			 			 		
Traffic Volume (vph)	366	846	274	127	572	689	88	638	112	335	657	245	
Future Volume (vph)	366	846	274	127	572	689	88	638	112	335	657	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	3484		1787	3579	1533	
Flt Permitted	0.27	1.00	1.00	0.22	1.00	1.00	0.39	1.00		0.15	1.00	1.00	
Satd. Flow (perm)	508	3579	1371	405	3614	1535	753	3484		276	3579	1533	
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	282	131	590	710	91	658	115	345	677	253	
RTOR Reduction (vph)	0	0	154	0	0	60	0	14	0	0	0	73	
Lane Group Flow (vph)	377	872	128	131	590	650	91	759	0	345	677	180	
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	30.3	24.3		43.3	34.3	47.3	
Effective Green, g (s)	43.6	34.6	34.6	33.6	27.6	43.6	30.3	24.3		43.3	34.3	47.3	
Actuated g/C Ratio	0.44	0.35	0.35	0.34	0.28	0.44	0.30	0.24		0.43	0.34	0.47	
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	291	846		361	1227	725	
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		0.09	0.17		0.27	0.08			c0.26		0.09	
v/c Ratio	0.96	0.70	0.27	0.61	0.59	0.97	0.31	0.90		0.96	0.55	0.25	
Uniform Delay, d1	22.9	28.3	23.6	24.3	31.3	27.6	25.6	36.6		26.6	26.6	15.7	
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	36.8	3.4	1.4	12.0	2.6	28.6	2.8	14.2		37.4	1.8	0.8	
Delay (s)	59.7	31.7	25.0	36.4	33.9	56.2	28.4	50.8		64.0	28.4	16.5	
Level of Service	E	C	C	D	C	E	C	D		E	C	B	
Approach Delay (s)		37.3			45.2			48.4			35.7		
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			99.4%									ICU Level of Service	F
Analysis Period (min)			15										
c Critical Lane Group													



# HCM Signalized Intersection Capacity Analysis

## 6: Liverpool Rd & Parking Lot/Tatra Dr

Timing Plan: PM Peak Hour  
2027 Total Traffic Conditions - Krosno 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	603	8	215	780	1
Future Volume (vph)	4	1	1	1	0	236	1	603	8	215	780	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		1775	1883	
Flt Permitted		0.44			1.00			1.00		0.44	1.00	
Satd. Flow (perm)		824			1636			1912		824	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	628	8	224	812	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	637	0	224	814	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			58.9		58.9	58.9	
Effective Green, g (s)		7.5			7.5			58.9		58.9	58.9	
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)		76			152			1400		603	1379	
v/s Ratio Prot												c0.43
v/s Ratio Perm		0.01			c0.01			0.33		0.27		
v/c Ratio		0.07			0.16			0.45		0.37	0.59	
Uniform Delay, d1		33.3			33.5			4.3		3.9	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	1.9	
Delay (s)		33.6			34.0			5.4		5.7	6.9	
Level of Service		C			C			A		A	A	
Approach Delay (s)		33.6			34.0			5.4		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)	80.4	Sum of lost time (s)	14.0
Intersection Capacity Utilization	105.8%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis  
 11: Liverpool Rd & Krosno Blvd

Timing Plan: PM Peak Hour  
 2027 Total Traffic Conditions - Krosno Signalized

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	42	123	367	21	175	538
Future Volume (vph)	42	123	367	21	175	538
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)	1706		1865			1837
Flt Permitted	0.99		1.00			0.78
Satd. Flow (perm)	1706		1865			1452
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	47	138	412	24	197	604
RTOR Reduction (vph)	124	0	2	0	0	0
Lane Group Flow (vph)	61	0	434	0	0	801
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)	8.6		63.8			63.8
Effective Green, g (s)	8.6		63.8			63.8
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)	173		1409			1097
v/s Ratio Prot	c0.04		0.23			
v/s Ratio Perm						c0.55
v/c Ratio	0.35		0.31			0.73
Uniform Delay, d1	35.3		3.3			5.6
Progression Factor	1.00		1.00			1.00
Incremental Delay, d2	1.2		0.6			4.3
Delay (s)	36.6		3.8			9.9
Level of Service	D		A			A
Approach Delay (s)	36.6		3.8			9.9
Approach LOS	D		A			A
<b>Intersection Summary</b>						
HCM 2000 Control Delay			11.5		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.68			
Actuated Cycle Length (s)			84.4		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						

Timings  
11: Liverpool Rd & Krosno Blvd

Timing Plan: PM Peak Hour  
2027 Total Traffic Conditions - Tatra & Krosno Signalized



Lane Group	WBL	NBT	SBL	SBT
Lane Configurations	W	T		R
Traffic Volume (vph)	42	381	175	554
Future Volume (vph)	42	381	175	554
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)	8.6	63.8		63.8
Actuated g/C Ratio	0.10	0.76		0.76
v/c Ratio	0.62	0.32		0.75
Control Delay	20.4	4.4		12.6
Queue Delay	0.0	0.0		0.0
Total Delay	20.4	4.4		12.6
LOS	C	A		B
Approach Delay	20.4	4.4		12.6
Approach LOS	C	A		B

Intersection Summary

Cycle Length: 90  
 Actuated Cycle Length: 84.4  
 Natural Cycle: 90  
 Control Type: Semi Act-Uncoord  
 Maximum v/c Ratio: 0.75  
 Intersection Signal Delay: 11.0  
 Intersection Capacity Utilization 85.2%  
 Analysis Period (min) 15  
 Intersection LOS: B  
 ICU Level of Service E

Splits and Phases: 11: Liverpool Rd & Krosno Blvd



Timings  
6: Liverpool Rd & Parking Lot/Tatra Dr

Timing Plan: PM Peak Hour  
2027 Total Traffic Conditions - Tatra & Krosno Signalized



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↕		↕		↕	↗	↘
Traffic Volume (vph)	4	1	1	0	1	617	215	796
Future Volume (vph)	4	1	1	0	1	617	215	796
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)	25.0	25.0	25.0	25.0	65.0	65.0	65.0	65.0
Total Split (%)	27.8%	27.8%	27.8%	27.8%	72.2%	72.2%	72.2%	72.2%
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	0.0
Total Lost Time (s)		7.0		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		58.8	58.8	58.8
Actuated g/C Ratio		0.09		0.09		0.73	0.73	0.73
v/c Ratio		0.08		0.66		0.47	0.38	0.60
Control Delay		32.0		13.9		6.1	6.7	8.0
Queue Delay		0.0		0.0		0.0	0.0	1.4
Total Delay		32.0		13.9		6.1	6.7	9.4
LOS		C		B		A	A	A
Approach Delay		32.0		13.9		6.1		8.8
Approach LOS		C		B		A		A

Intersection Summary




























Cycle Length: 90	
Actuated Cycle Length: 80.4	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.66	
Intersection Signal Delay: 8.6	Intersection LOS: A
Intersection Capacity Utilization 107.4%	ICU Level of Service G
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: PM Peak Hour  
2032 Total Traffic Conditions

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		 			 			 			 		
Traffic Volume (vph)	366	868	276	129	586	689	90	661	114	335	682	245	
Future Volume (vph)	366	868	276	129	586	689	90	661	114	335	682	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	1814	3484		1787	3579	1531	
Flt Permitted	0.26	1.00	1.00	0.21	1.00	1.00	0.38	1.00		0.15	1.00	1.00	
Satd. Flow (perm)	490	3579	1369	379	3614	1533	734	3484		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	285	133	604	710	93	681	118	345	703	253	
RTOR Reduction (vph)	0	0	135	0	0	60	0	14	0	0	0	61	
Lane Group Flow (vph)	377	895	150	133	604	650	93	785	0	345	703	192	
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	269	846		361	1263	739	
v/s Ratio Prot	c0.13	0.25		0.04	0.17	c0.16	0.02	0.23		0.15	0.20	0.03	
v/s Ratio Perm	c0.30		0.11	0.18		0.27	0.08			c0.26		0.09	
v/c Ratio	0.98	0.72	0.32	0.64	0.61	0.97	0.35	0.93		0.96	0.56	0.26	
Uniform Delay, d1	23.1	28.5	24.0	24.5	31.5	27.6	26.3	37.0		26.7	26.0	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	1.8	13.9	2.7	28.9	3.5	17.7		37.4	1.8	0.9	
Delay (s)	63.4	32.2	25.8	38.4	34.2	56.5	29.8	54.6		64.1	27.8	16.1	
Level of Service	E	C	C	D	C	E	C	D		E	C	B	
Approach Delay (s)		38.6			45.5			52.1			35.2		
Approach LOS		D			D			D			D		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			42.0									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			100.1%									ICU Level of Service	G
Analysis Period (min)			15										
c Critical Lane Group													

Timings  
3: Liverpool Rd & Bayly St

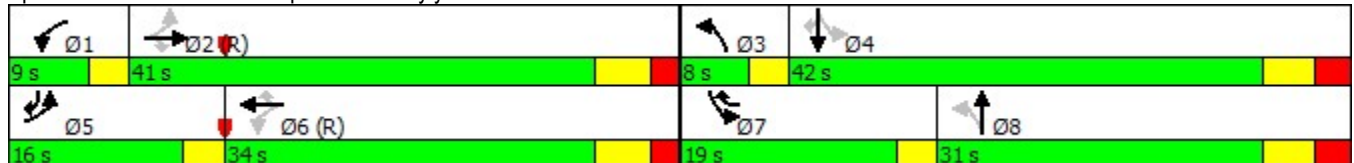
Timing Plan: PM Peak Hour  
2032 Total Traffic Condition

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	366	868	276	129	586	689	90	661	335	682	245
Future Volume (vph)	366	868	276	129	586	689	90	661	335	682	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	0.47	0.60	0.61	0.92	0.32	0.93	0.93	0.56	0.30
Control Delay	53.3	32.6	10.2	29.2	34.5	38.2	19.2	54.4	57.6	28.1	7.2
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	10.2	29.2	34.5	38.2	19.2	54.4	57.6	28.1	7.2
LOS	D	C	B	C	C	D	B	D	E	C	A
Approach Delay		33.5			35.8			50.7		31.9	
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: 36.7  
 Intersection LOS: D  
 Intersection Capacity Utilization 100.1%  
 ICU Level of Service G  
 Analysis Period (min) 15

Splits and Phases: 3: Liverpool Rd & Bayly St



Queues  
3: Liverpool Rd & Bayly St

Timing Plan: PM Peak Hour  
2032 Total Traffic Condition



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	377	895	285	133	604	710	93	799	345	703	253
v/c Ratio	0.94	0.72	0.47	0.60	0.61	0.92	0.32	0.93	0.93	0.56	0.30
Control Delay	53.3	32.6	10.2	29.2	34.5	38.2	19.2	54.4	57.6	28.1	7.2
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	10.2	29.2	34.5	38.2	19.2	54.4	57.6	28.1	7.2
Queue Length 50th (m)	47.2	78.7	10.4	14.3	53.5	99.4	9.7	78.1	48.3	57.0	12.2
Queue Length 95th (m)	#92.1	101.0	32.0	#25.3	71.2	#133.4	18.5	#114.0	#100.4	74.8	24.9
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	609	221	997	775	294	861	370	1263	851
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	0.47	0.60	0.61	0.92	0.32	0.93	0.93	0.56	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	2.81	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)	1557	1447	892	1301
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	3.75	3.84	3.39	3.73
Bicycle LOS	D	D	C	D

HCM Unsignalized Intersection Capacity Analysis  
6: Liverpool Rd & Parking Lot/Tatra Dr

Timing Plan: PM Peak Hour  
2032 Total Traffic Condition



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	628	8	215	811	1
Future Volume (Veh/h)	4	1	1	1	0	236	1	628	8	215	811	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	654	8	224	845	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	0.80	0.80	0.80	0.80	0.80		0.80					
vC, conflicting volume	2224	2012	890	2008	2009	692	869			694		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2410	2144	735	2138	2139	692	708			694		
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 %	33	96	100	95	100	43	100			75		
cM capacity (veh/h)	6	28	322	20	28	433	701			882		
<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	663	224	846							
Volume Left	4	1	1	224	0							
Volume Right	1	246	8	0	1							
cSH	8	400	701	882	1700							
Volume to Capacity	0.71	0.62	0.00	0.25	0.50							
Queue Length 95th (m)	10.3	30.5	0.0	7.7	0.0							
Control Delay (s)	742.1	27.5	0.0	10.5	0.0							
Lane LOS	F	D	A	B								
Approach Delay (s)	742.1	27.5	0.0	2.2								
Approach LOS	F	D										
<b>Intersection Summary</b>												
Average Delay			6.9									
Intersection Capacity Utilization			101.2%		ICU Level of Service				G			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
 9: Liverpool Rd & Radom St










Timing Plan: PM Peak Hour  
 2032 Total Traffic Condition






Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	58	32	22	561	733	68
Future Volume (Veh/h)	58	32	22	561	733	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	33	23	578	756	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	0.77	0.77	0.77			
vC, conflicting volume	1426	803	837			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1404	599	643			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	48	91	97			
cM capacity (veh/h)	115	381	728			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	93	601	826			
Volume Left	60	23	0			
Volume Right	33	0	70			
cSH	153	728	1700			
Volume to Capacity	0.61	0.03	0.49			
Queue Length 95th (m)	24.7	0.7	0.0			
Control Delay (s)	59.6	0.9	0.0			
Lane LOS	F	A				
Approach Delay (s)	59.6	0.9	0.0			
Approach LOS	F					
<b>Intersection Summary</b>						
Average Delay			4.0			
Intersection Capacity Utilization			59.5%	ICU Level of Service	B	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
 11: Liverpool Rd & Krosno Blvd

Timing Plan: PM Peak Hour  
 2032 Total Traffic Condition

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	42	123	386	21	175	562
Future Volume (vph)	42	123	386	21	175	562
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	47	138	434	24	197	631
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total (vph)	185	458	828			
Volume Left (vph)	47	0	197			
Volume Right (vph)	138	24	0			
Hadj (s)	-0.40	0.00	0.09			
Departure Headway (s)	6.2	5.4	5.3			
Degree Utilization, x	0.32	0.69	1.22			
Capacity (veh/h)	554	647	688			
Control Delay (s)	12.1	19.6	129.7			
Approach Delay (s)	12.1	19.6	129.7			
Approach LOS	B	C	F			
Intersection Summary						
Delay			80.6			
Level of Service			F			
Intersection Capacity Utilization			80.8%	ICU Level of Service	D	
Analysis Period (min)			15			

Intersection	
Intersection Delay, s/veh	79.5
Intersection LOS	F

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	42	123	386	21	175	562
Future Vol, veh/h	42	123	386	21	175	562
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	47	138	434	24	197	631
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	12.7	19.9	127.3
HCM LOS	B	C	F

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	25%	24%
Vol Thru, %	95%	0%	76%
Vol Right, %	5%	75%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	407	165	737
LT Vol	0	42	175
Through Vol	386	0	562
RT Vol	21	123	0
Lane Flow Rate	457	185	828
Geometry Grp	1	1	1
Degree of Util (X)	0.68	0.317	1.211
Departure Headway (Hd)	5.7	6.622	5.266
Convergence, Y/N	Yes	Yes	Yes
Cap	640	547	696
Service Time	3.7	4.622	3.266
HCM Lane V/C Ratio	0.714	0.338	1.19
HCM Control Delay	19.9	12.7	127.3
HCM Lane LOS	C	B	F
HCM 95th-tile Q	5.3	1.4	28.8

HCM Unsignalized Intersection Capacity Analysis  
 13: Liverpool Rd & Ilona Park Rd (N)

Timing Plan: PM Peak Hour  
 2032 Total Traffic Condition



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	6	0	1	347	533	11
Future Volume (Veh/h)	6	0	1	347	533	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	413	635	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	1066	652	658			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1066	652	658			
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)	245	466	930			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	7	414	648			
Volume Left	7	1	0			
Volume Right	0	0	13			
cSH	245	930	1700			
Volume to Capacity	0.03	0.00	0.38			
Queue Length 95th (m)	0.7	0.0	0.0			
Control Delay (s)	20.1	0.0	0.0			
Lane LOS	C	A				
Approach Delay (s)	20.1	0.0	0.0			
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay			0.1			
Intersection Capacity Utilization			39.1%	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 Total Traffic Condition



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	2	1	1	332	493	12
Future Volume (Veh/h)	2	1	1	332	493	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	386	573	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	980	589	596			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	980	589	596			
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)	276	507	982			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	3	387	587			
Volume Left	2	1	0			
Volume Right	1	0	14			
cSH	325	982	1700			
Volume to Capacity	0.01	0.00	0.35			
Queue Length 95th (m)	0.2	0.0	0.0			
Control Delay (s)	16.2	0.0	0.0			
Lane LOS	C	A				
Approach Delay (s)	16.2	0.0	0.0			
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay			0.1			
Intersection Capacity Utilization			36.7%	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 Total Traffic Condition

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	0	3	9	3	9	4	305	7	18	450	19
Future Volume (Veh/h)	9	0	3	9	3	9	4	305	7	18	450	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	3	10	3	10	5	351	8	21	517	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	956	960	539	952	967	368	548			371		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	956	960	539	952	967	368	548			371		
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 %	95	100	99	95	99	99	100			98		
cM capacity (veh/h)	204	248	541	187	245	673	1023			1185		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	13	23	364	560								
Volume Left	10	10	5	21								
Volume Right	3	10	8	22								
cSH	239	285	1023	1185								
Volume to Capacity	0.05	0.08	0.00	0.02								
Queue Length 95th (m)	1.3	2.0	0.1	0.4								
Control Delay (s)	20.9	18.7	0.2	0.5								
Lane LOS	C	C	A	A								
Approach Delay (s)	20.9	18.7	0.2	0.5								
Approach LOS	C	C										
<b>Intersection Summary</b>												
Average Delay			1.1									
Intersection Capacity Utilization			46.3%		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 Total Traffic Condition



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	27	0	16	21	3	3	15	321	19	14	411	52
Future Volume (Veh/h)	27	0	16	21	3	3	15	321	19	14	411	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	17	23	3	3	16	345	20	15	442	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	898	902	476	907	920	359	502			366		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	898	902	476	907	920	359	502			366		
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 %	88	100	97	91	99	100	99			99		
cM capacity (veh/h)	234	271	590	244	264	687	1069			1203		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	46	29	381	513								
Volume Left	29	23	16	15								
Volume Right	17	3	20	56								
cSH	301	264	1069	1203								
Volume to Capacity	0.15	0.11	0.01	0.01								
Queue Length 95th (m)	4.0	2.8	0.3	0.3								
Control Delay (s)	19.1	20.3	0.5	0.4								
Lane LOS	C	C	A	A								
Approach Delay (s)	19.1	20.3	0.5	0.4								
Approach LOS	C	C										
<b>Intersection Summary</b>												
Average Delay			1.9									
Intersection Capacity Utilization			40.9%		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 Total 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)	19	0	2	0	0	7	5	278	1	10	376	38
Future Volume (vph)	19	0	2	0	0	7	5	278	1	10	376	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	331	1	12	448	45
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	25	8	338	505								
Volume Left (vph)	23	0	6	12								
Volume Right (vph)	2	8	1	45								
Hadj (s)	0.21	-0.60	0.00	-0.04								
Departure Headway (s)	6.0	5.2	4.5	4.3								
Degree Utilization, x	0.04	0.01	0.42	0.61								
Capacity (veh/h)	524	584	778	819								
Control Delay (s)	9.2	8.2	10.8	13.7								
Approach Delay (s)	9.2	8.2	10.8	13.7								
Approach LOS	A	A	B	B								
Intersection Summary												
Delay			12.4									
Level of Service			B									
Intersection Capacity Utilization			42.5%	ICU Level of Service	A							
Analysis Period (min)			15									

Intersection	
Intersection Delay, s/veh	12.3
Intersection LOS	B

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	278	1	10	376	38
Future Vol, veh/h	19	0	2	0	0	7	5	278	1	10	376	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	331	1	12	448	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	9.2	8.2	10.8	13.6
HCM LOS	A	A	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	2%	90%	0%	2%
Vol Thru, %	98%	0%	0%	89%
Vol Right, %	0%	10%	100%	9%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	284	21	7	424
LT Vol	5	19	0	10
Through Vol	278	0	0	376
RT Vol	1	2	7	38
Lane Flow Rate	338	25	8	505
Geometry Grp	1	1	1	1
Degree of Util (X)	0.422	0.041	0.012	0.602
Departure Headway (Hd)	4.496	5.907	5.125	4.294
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	801	604	695	843
Service Time	2.52	3.962	3.183	2.315
HCM Lane V/C Ratio	0.422	0.041	0.012	0.599
HCM Control Delay	10.8	9.2	8.2	13.6
HCM Lane LOS	B	A	A	B
HCM 95th-tile Q	2.1	0.1	0	4.1

HCM Unsignalized Intersection Capacity Analysis  
26: Liverpool Rd

Timing Plan: PM Peak Hour  
2032 Total Traffic Condition



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	186	105	0	236	135
Future Volume (Veh/h)	0	186	105	0	236	135
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	238	135	0	303	173
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	951	177			168	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	951	177			168	
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	72			78	
cM capacity (veh/h)	147	836			1376	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	238	135	476			
Volume Left	0	0	303			
Volume Right	238	0	0			
cSH	836	1700	1376			
Volume to Capacity	0.28	0.08	0.22			
Queue Length 95th (m)	8.9	0.0	6.4			
Control Delay (s)	11.0	0.0	6.1			
Lane LOS	B		A			
Approach Delay (s)	11.0	0.0	6.1			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			6.5			
Intersection Capacity Utilization			46.2%		ICU Level of Service	A
Analysis Period (min)			15			

# HCM Signalized Intersection Capacity Analysis

## 3: Liverpool Rd & Bayly St

Timing Plan: PM Peak Hour  
2032 Total Traffic Conditions - Krosno Signalized



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	366	868	274	127	586	689	88	651	112	335	670	245
Future Volume (vph)	366	868	274	127	586	689	88	651	112	335	670	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	1814	3485		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	742	3485		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	282	131	604	710	91	671	115	345	691	253
RTOR Reduction (vph)	0	0	137	0	0	60	0	14	0	0	0	62
Lane Group Flow (vph)	377	895	145	131	604	650	91	772	0	345	691	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	846		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		0.11	0.17		0.27	0.08			c0.26		0.09
v/c Ratio	0.98	0.72	0.31	0.63	0.61	0.97	0.34	0.91		0.96	0.55	0.26
Uniform Delay, d1	23.1	28.5	23.9	24.4	31.5	27.6	26.3	36.8		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	1.7	13.4	2.7	28.9	3.3	15.9		37.4	1.7	0.8
Delay (s)	63.4	32.2	25.6	37.8	34.2	56.5	29.6	52.7		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			45.5			50.3			35.1	
Approach LOS		D			D			D			D	

### Intersection Summary

HCM 2000 Control Delay	41.6	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	99.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 11: Liverpool Rd & Krosno Blvd

Timing Plan: PM Peak Hour  
 2032 Total Traffic Conditions - Krosno Signalized



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	42	123	372	21	175	546
Future Volume (vph)	42	123	372	21	175	546
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)	1706		1865			1837
Flt Permitted	0.99		1.00			0.78
Satd. Flow (perm)	1706		1865			1452
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	47	138	418	24	197	613
RTOR Reduction (vph)	124	0	2	0	0	0
Lane Group Flow (vph)	61	0	440	0	0	810
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)	8.6		63.8			63.8
Effective Green, g (s)	8.6		63.8			63.8
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)	173		1409			1097
v/s Ratio Prot	c0.04		0.24			
v/s Ratio Perm						c0.56
v/c Ratio	0.35		0.31			0.74
Uniform Delay, d1	35.3		3.3			5.7
Progression Factor	1.00		1.00			1.00
Incremental Delay, d2	1.2		0.6			4.5
Delay (s)	36.6		3.9			10.2
Level of Service	D		A			B
Approach Delay (s)	36.6		3.9			10.2
Approach LOS	D		A			B
<b>Intersection Summary</b>						
HCM 2000 Control Delay			11.6		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.69			
Actuated Cycle Length (s)			84.4		Sum of lost time (s)	12.0
Intersection Capacity Utilization			84.3%		ICU Level of Service	E
Analysis Period (min)			15			
c Critical Lane Group						

Timings  
11: Liverpool Rd & Krosno Blvd

Timing Plan: PM Peak Hour  
2032 Total Traffic Cond. - Tatra & Krosno Signalized



Lane Group	WBL	NBT	SBL	SBT
Lane Configurations	W	T		T
Traffic Volume (vph)	42	386	175	562
Future Volume (vph)	42	386	175	562
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)	8.6	63.8		63.8
Actuated g/C Ratio	0.10	0.76		0.76
v/c Ratio	0.62	0.32		0.76
Control Delay	20.4	4.4		13.0
Queue Delay	0.0	0.0		0.0
Total Delay	20.4	4.4		13.0
LOS	C	A		B
Approach Delay	20.4	4.4		13.0
Approach LOS	C	A		B

Intersection Summary

Cycle Length: 90  
 Actuated Cycle Length: 84.4  
 Natural Cycle: 90  
 Control Type: Semi Act-Uncoord  
 Maximum v/c Ratio: 0.76  
 Intersection Signal Delay: 11.3  
 Intersection Capacity Utilization 85.8%  
 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

Timing Plan: PM Peak Hour  
2032 Total Traffic Cond. - Tatra & Krosno Signalized



Lane Group	WBL	NBT	SBT
Lane Group Flow (vph)	185	458	828
v/c Ratio	0.62	0.32	0.76
Control Delay	20.4	4.4	13.0
Queue Delay	0.0	0.0	0.0
Total Delay	20.4	4.4	13.0
Queue Length 50th (m)	6.8	17.4	56.7
Queue Length 95th (m)	24.2	37.2	140.2
Internal Link Dist (m)	251.2	233.4	388.4
Turn Bay Length (m)			
Base Capacity (vph)	473	1411	1090
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.39	0.32	0.76
<b>Intersection Summary</b>			



Timings  
6: Liverpool Rd & Parking Lot/Tatra Dr

Timing Plan: PM Peak Hour  
2032 Total Traffic Cond. - Tatra & Krosno Signalized



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↕		↕		↕	↗	↘
Traffic Volume (vph)	4	1	1	0	1	628	215	811
Future Volume (vph)	4	1	1	0	1	628	215	811
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	0.0
Total Lost Time (s)		7.0		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		0.48	0.38	0.62
Control Delay		31.2		13.1		6.6	7.1	8.7
Queue Delay		0.0		0.0		0.0	0.0	1.5
Total Delay		31.2		13.1		6.6	7.1	10.2
LOS		C		B		A	A	B
Approach Delay		31.2		13.1		6.6		9.6
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: 9.1	Intersection LOS: A
Intersection Capacity Utilization 108.7%	ICU Level of Service G
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 Total Traffic Conditions - Krosno Signalized

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	357	410	165	122	239	357	81	596	161	342	619	288	
Future Volume (vph)	357	410	165	122	239	357	81	596	161	342	619	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	1475	1776	3614	1580	1819	3416		1805	3579	1576	
Flt Permitted	0.53	1.00	1.00	0.51	1.00	1.00	0.41	1.00		0.15	1.00	1.00	
Satd. Flow (perm)	1011	3650	1475	944	3614	1580	784	3416		276	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	423	170	126	246	368	84	614	166	353	638	297	
RTOR Reduction (vph)	0	0	116	0	0	63	0	24	0	0	0	132	
Lane Group Flow (vph)	368	423	54	126	246	305	84	756	0	353	638	165	
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	31.6	31.6	28.4	22.4	40.8	28.5	24.5		45.9	38.9	54.1	
Effective Green, g (s)	40.6	31.6	31.6	28.4	22.4	40.8	28.5	24.5		45.9	38.9	54.1	
Actuated g/C Ratio	0.41	0.32	0.32	0.29	0.22	0.41	0.29	0.25		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)	535	1158	467	319	812	647	265	840		409	1397	856	
v/s Ratio Prot	c0.10	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	0.08			c0.24		0.08	
v/c Ratio	0.69	0.37	0.12	0.39	0.30	0.47	0.32	0.90		0.86	0.46	0.19	
Uniform Delay, d1	22.0	26.3	24.1	27.4	32.1	21.5	26.6	36.4		24.9	22.5	11.6	
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	3.7	0.9	0.5	0.8	1.0	0.5	0.7	12.4		16.9	0.2	0.1	
Delay (s)	25.6	27.1	24.6	28.2	33.1	22.1	27.3	48.8		41.8	22.7	11.7	
Level of Service	C	C	C	C	C	C	C	D		D	C	B	
Approach Delay (s)		26.1			26.8			46.7			25.4		
Approach LOS		C			C			D			C		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			30.6									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.83										
Actuated Cycle Length (s)			99.6									Sum of lost time (s)	19.1
Intersection Capacity Utilization			95.3%									ICU Level of Service	F
Analysis Period (min)			15										
c	Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 11: Liverpool Rd & Krosno Blvd

Timing Plan: Sat Peak Hour  
 2027 Total Traffic Conditions - Krosno Signalized



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	23	105	475	34	121	519
Future Volume (vph)	23	105	475	34	121	519
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)	1595		1841			1855
Flt Permitted	0.99		1.00			0.81
Satd. Flow (perm)	1595		1841			1522
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	24	109	495	35	126	541
RTOR Reduction (vph)	99	0	2	0	0	0
Lane Group Flow (vph)	34	0	528	0	0	667
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		66.6			66.6
Effective Green, g (s)	7.7		66.6			66.6
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)	142		1420			1174
v/s Ratio Prot	c0.02		0.29			
v/s Ratio Perm						c0.44
v/c Ratio	0.24		0.37			0.57
Uniform Delay, d1	36.6		3.2			4.0
Progression Factor	1.00		1.00			1.00
Incremental Delay, d2	0.9		0.7			2.0
Delay (s)	37.4		3.9			6.0
Level of Service	D		A			A
Approach Delay (s)	37.4		3.9			6.0
Approach LOS	D		A			A
<b>Intersection Summary</b>						
HCM 2000 Control Delay			8.3		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.53			
Actuated Cycle Length (s)			86.3		Sum of lost time (s)	12.0
Intersection Capacity Utilization			83.9%		ICU Level of Service	E
Analysis Period (min)			15			
c Critical Lane Group						

Timings  
11: Liverpool Rd & Krosno Blvd

Timing Plan: Sat Peak Hour  
2027 Total Traffic Condition - Krosno Signalized



Lane Group	WBL	NBT	SBL	SBT
Lane Configurations				
Traffic Volume (vph)	23	496	121	544
Future Volume (vph)	23	496	121	544
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 Effct Green (s)	7.7	66.6		66.6
Actuated g/C Ratio	0.09	0.77		0.77
v/c Ratio	0.55	0.39		0.59
Control Delay	19.1	4.4		7.2
Queue Delay	0.0	0.0		0.0
Total Delay	19.1	4.4		7.2
LOS	B	A		A
Approach Delay	19.1	4.4		7.2
Approach LOS	B	A		A

Intersection Summary
























Cycle Length: 90  
 Actuated Cycle Length: 86.4  
 Natural Cycle: 70  
 Control Type: Semi Act-Uncoord  
 Maximum v/c Ratio: 0.59  
 Intersection Signal Delay: 7.2  
 Intersection Capacity Utilization 86.3%  
 Analysis Period (min) 15  
 Intersection LOS: A  
 ICU Level of Service E

Splits and Phases: 11: Liverpool Rd & Krosno Blvd



HCM Signalized Intersection Capacity Analysis  
3: Liverpool Rd & Bayly St

Saturday Peak Hour  
2027 Total Traffic Conditions

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	357	410	165	122	239	357	81	596	161	342	619	288	
Future Volume (vph)	357	410	165	122	239	357	81	596	161	342	619	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	1475	1776	3614	1580	1819	3416		1805	3579	1576	
Flt Permitted	0.53	1.00	1.00	0.51	1.00	1.00	0.41	1.00		0.15	1.00	1.00	
Satd. Flow (perm)	1011	3650	1475	944	3614	1580	784	3416		276	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	423	170	126	246	368	84	614	166	353	638	297	
RTOR Reduction (vph)	0	0	116	0	0	63	0	24	0	0	0	132	
Lane Group Flow (vph)	368	423	54	126	246	305	84	756	0	353	638	165	
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	31.6	31.6	28.4	22.4	40.8	28.5	24.5		45.9	38.9	54.1	
Effective Green, g (s)	40.6	31.6	31.6	28.4	22.4	40.8	28.5	24.5		45.9	38.9	54.1	
Actuated g/C Ratio	0.41	0.32	0.32	0.29	0.22	0.41	0.29	0.25		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)	535	1158	467	319	812	647	265	840		409	1397	856	
v/s Ratio Prot	c0.10	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	0.08			c0.24		0.08	
v/c Ratio	0.69	0.37	0.12	0.39	0.30	0.47	0.32	0.90		0.86	0.46	0.19	
Uniform Delay, d1	22.0	26.3	24.1	27.4	32.1	21.5	26.6	36.4		24.9	22.5	11.6	
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	3.7	0.9	0.5	0.8	1.0	0.5	0.7	12.4		16.9	0.2	0.1	
Delay (s)	25.6	27.1	24.6	28.2	33.1	22.1	27.3	48.8		41.8	22.7	11.7	
Level of Service	C	C	C	C	C	C	C	D		D	C	B	
Approach Delay (s)		26.1			26.8			46.7			25.4		
Approach LOS		C			C			D			C		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			30.6									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.83										
Actuated Cycle Length (s)			99.6									Sum of lost time (s)	19.1
Intersection Capacity Utilization			95.3%									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 Total Traffic Condition

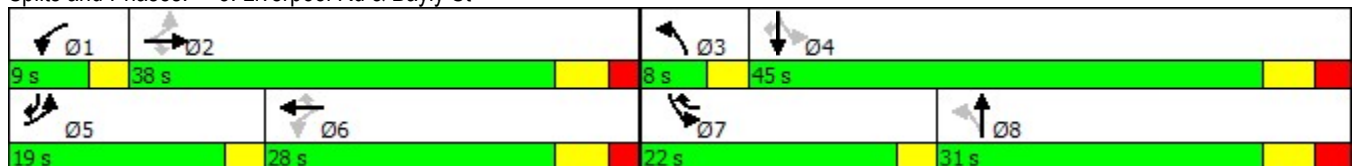


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑	↗	↘	↑↑	↘	↑↑	↗
Traffic Volume (vph)	357	410	168	125	239	357	84	611	342	638	288
Future Volume (vph)	357	410	168	125	239	357	84	611	342	638	288
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	pm+pt	NA	pm+ov
Protected 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	31.8	22.4	44.2	32.7	24.0	49.2	39.1	58.1
Actuated g/C Ratio	0.44	0.32	0.32	0.32	0.23	0.45	0.33	0.24	0.50	0.39	0.59
v/c Ratio	0.64	0.36	0.29	0.37	0.30	0.48	0.28	0.94	0.84	0.47	0.29
Control Delay	25.6	27.3	5.4	21.8	33.7	14.8	17.4	55.3	41.3	24.0	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	25.6	27.3	5.4	21.8	33.7	14.8	17.4	55.3	41.3	24.0	1.9
LOS	C	C	A	C	C	B	B	E	D	C	A
Approach Delay		22.7			22.3			51.6		23.7	
Approach LOS		C			C			D		C	

Intersection Summary

Cycle Length: 100  
 Actuated Cycle Length: 99.2  
 Natural Cycle: 80  
 Control Type: Semi Act-Uncoord  
 Maximum v/c Ratio: 0.94  
 Intersection Signal Delay: 29.5  
 Intersection LOS: C  
 Intersection Capacity Utilization 95.9%  
 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 Total Traffic Condition



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	368	423	173	129	246	368	87	799	353	658	297
v/c Ratio	0.64	0.36	0.29	0.37	0.30	0.48	0.28	0.94	0.84	0.47	0.29
Control Delay	25.6	27.3	5.4	21.8	33.7	14.8	17.4	55.3	41.3	24.0	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	25.6	27.3	5.4	21.8	33.7	14.8	17.4	55.3	41.3	24.0	1.9
Queue Length 50th (m)	48.7	33.1	0.0	14.7	21.2	32.0	8.5	77.2	47.4	49.8	0.7
Queue Length 95th (m)	72.9	46.1	14.1	26.1	32.2	55.2	16.4	#113.7	#92.4	65.8	10.1
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)	578	1163	587	351	814	771	306	861	428	1411	1051
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	0.36	0.29	0.37	0.30	0.48	0.28	0.93	0.82	0.47	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	2.70	2.61	2.83
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)	964	743	886	1308
Effct. Green for Bike (s)	31.6	22.4	24.0	39.1
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	448	480	782
Bicycle Delay (s/bike)	23.4	30.1	28.9	18.5
Bicycle Compliance	Fair	Poor	Fair	Fair
Bicycle LOS Score	3.26	3.26	3.38	3.74
Bicycle LOS	C	C	C	D

HCM Unsignalized Intersection Capacity Analysis  
6: Liverpool Rd & Parking Lot/Tatra Dr

Timing Plan: Sat Peak Hour  
2027 Total 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	707	3	140	747	4
Future Volume (Veh/h)	1	0	0	4	0	118	0	707	3	140	747	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	729	3	144	770	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	0.80	0.80	0.80	0.80	0.80		0.80					
vC, conflicting volume	1924	1826	789	1818	1826	754	785			755		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2028	1907	613	1896	1907	754	608			755		
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 %	95	100	100	89	100	70	100			83		
cM capacity (veh/h)	20	45	391	35	45	403	777			845		
<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	732	144	774							
Volume Left	1	4	0	144	0							
Volume Right	0	122	3	0	4							
cSH	20	303	777	845	1700							
Volume to Capacity	0.05	0.42	0.00	0.17	0.46							
Queue Length 95th (m)	1.1	14.9	0.0	4.7	0.0							
Control Delay (s)	192.1	25.1	0.0	10.1	0.0							
Lane LOS	F	D		B								
Approach Delay (s)	192.1	25.1	0.0	1.6								
Approach LOS	F	D										
<b>Intersection Summary</b>												
Average Delay			2.7									
Intersection Capacity Utilization			94.4%		ICU Level of Service		F					
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
 9: Liverpool Rd & Radom St

Timing Plan: Sat Peak Hour  
 2027 Total Traffic Condition



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	56	17	15	636	685	66
Future Volume (Veh/h)	56	17	15	636	685	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	19	16	699	753	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	0.78	0.78	0.78			
vC, conflicting volume	1526	800	832			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1534	609	649			
tC, single (s)	6.4	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.4	2.2			
p0 queue free %	37	95	98			
cM capacity (veh/h)	98	376	739			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	81	715	826			
Volume Left	62	16	0			
Volume Right	19	0	73			
cSH	118	739	1700			
Volume to Capacity	0.68	0.02	0.49			
Queue Length 95th (m)	27.7	0.5	0.0			
Control Delay (s)	84.4	0.6	0.0			
Lane LOS	F	A				
Approach Delay (s)	84.4	0.6	0.0			
Approach LOS	F					
<b>Intersection Summary</b>						
Average Delay			4.5			
Intersection Capacity Utilization			57.8%	ICU Level of Service	B	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
 11: Liverpool Rd & Krosno Blvd

Timing Plan: Sat Peak Hour  
 2027 Total Traffic Condition



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	23	105	496	34	121	544
Future Volume (vph)	23	105	496	34	121	544
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	24	109	517	35	126	567

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	133	552	693
Volume Left (vph)	24	0	126
Volume Right (vph)	109	35	0
Hadj (s)	-0.44	0.02	0.08
Departure Headway (s)	6.4	5.3	5.2
Degree Utilization, x	0.24	0.81	1.00
Capacity (veh/h)	544	675	690
Control Delay (s)	11.4	27.1	56.2
Approach Delay (s)	11.4	27.1	56.2
Approach LOS	B	D	F

Intersection Summary			
Delay		40.2	
Level of Service		E	
Intersection Capacity Utilization		81.3%	ICU Level of Service
Analysis Period (min)		15	D

Intersection	
Intersection Delay, s/veh	38
Intersection LOS	E

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	23	105	496	34	121	544
Future Vol, veh/h	23	105	496	34	121	544
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	24	109	517	35	126	567
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	11.3	26.4	52.4
HCM LOS	B	D	F

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	18%	18%
Vol Thru, %	94%	0%	82%
Vol Right, %	6%	82%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	530	128	665
LT Vol	0	23	121
Through Vol	496	0	544
RT Vol	34	105	0
Lane Flow Rate	552	133	693
Geometry Grp	1	1	1
Degree of Util (X)	0.805	0.234	0.984
Departure Headway (Hd)	5.252	6.324	5.114
Convergence, Y/N	Yes	Yes	Yes
Cap	690	565	707
Service Time	3.292	4.384	3.149
HCM Lane V/C Ratio	0.8	0.235	0.98
HCM Control Delay	26.4	11.3	52.4
HCM Lane LOS	D	B	F
HCM 95th-tile Q	8.3	0.9	15.4

HCM Unsignalized Intersection Capacity Analysis  
 13: Liverpool Rd & Ilona Park Rd (N)

Timing Plan: Sat Peak Hour  
 2027 Total Traffic Condition



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	0	0	478	520	12
Future Volume (Veh/h)	10	0	0	478	520	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	525	571	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	1112	588	593			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1112	588	593			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	100	100			
cM capacity (veh/h)	231	508	984			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	11	525	584			
Volume Left	11	0	0			
Volume Right	0	0	13			
cSH	231	984	1700			
Volume to Capacity	0.05	0.00	0.34			
Queue Length 95th (m)	1.1	0.0	0.0			
Control Delay (s)	21.3	0.0	0.0			
Lane LOS	C					
Approach Delay (s)	21.3	0.0	0.0			
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay	0.2					
Intersection Capacity Utilization	38.4%			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 Total Traffic Condition



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	2	1	0	430	508	13
Future Volume (Veh/h)	2	1	0	430	508	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	462	546	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	1026	564	571			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1026	564	571			
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)	259	523	1001			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	3	462	560			
Volume Left	2	0	0			
Volume Right	1	0	14			
cSH	312	1001	1700			
Volume to Capacity	0.01	0.00	0.33			
Queue Length 95th (m)	0.2	0.0	0.0			
Control Delay (s)	16.7	0.0	0.0			
Lane LOS	C					
Approach Delay (s)	16.7	0.0	0.0			
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay	0.0					
Intersection Capacity Utilization	37.6%			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 Total Traffic Condition

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	3	6	9	5	6	7	407	10	10	481	17
Future Volume (Veh/h)	12	3	6	9	5	6	7	407	10	10	481	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	7	10	6	7	8	452	11	11	534	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	1059	1070	554	1064	1074	474	563			479		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1059	1070	554	1064	1074	474	563			479		
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 %	92	99	99	95	97	99	99			99		
cM capacity (veh/h)	158	213	531	188	212	586	1009			1077		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	23	23	471	564								
Volume Left	13	10	8	11								
Volume Right	7	7	11	19								
cSH	210	246	1009	1077								
Volume to Capacity	0.11	0.09	0.01	0.01								
Queue Length 95th (m)	2.8	2.3	0.2	0.2								
Control Delay (s)	24.3	21.1	0.2	0.3								
Lane LOS	C	C	A	A								
Approach Delay (s)	24.3	21.1	0.2	0.3								
Approach LOS	C	C										
<b>Intersection Summary</b>												
Average Delay			1.2									
Intersection Capacity Utilization			41.8%		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 Total Traffic Condition

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	0	21	37	2	8	19	381	20	12	426	44
Future Volume (Veh/h)	40	0	21	37	2	8	19	381	20	12	426	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	23	40	2	9	20	410	22	13	458	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	996	1000	498	998	1012	428	520			437		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	996	1000	498	998	1012	428	520			437		
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 %	79	100	96	81	99	99	98			99		
cM capacity (veh/h)	209	233	568	206	229	627	1041			1128		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	66	51	452	518								
Volume Left	43	40	20	13								
Volume Right	23	9	22	47								
cSH	268	235	1041	1128								
Volume to Capacity	0.25	0.22	0.02	0.01								
Queue Length 95th (m)	7.2	6.1	0.4	0.3								
Control Delay (s)	22.8	24.5	0.6	0.3								
Lane LOS	C	C	A	A								
Approach Delay (s)	22.8	24.5	0.6	0.3								
Approach LOS	C	C										
<b>Intersection Summary</b>												
Average Delay			2.9									
Intersection Capacity Utilization			41.0%		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 Total 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	349	4	7	401	61
Future Volume (vph)	35	2	7	1	1	18	4	349	4	7	401	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	379	4	8	436	66
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	48	22	387	510								
Volume Left (vph)	38	1	4	8								
Volume Right (vph)	8	20	4	66								
Hadj (s)	0.06	-0.54	0.00	-0.07								
Departure Headway (s)	6.0	5.5	4.7	4.5								
Degree Utilization, x	0.08	0.03	0.50	0.63								
Capacity (veh/h)	516	545	752	787								
Control Delay (s)	9.5	8.6	12.2	14.9								
Approach Delay (s)	9.5	8.6	12.2	14.9								
Approach LOS	A	A	B	B								
Intersection Summary												
Delay			13.4									
Level of Service			B									
Intersection Capacity Utilization			45.7%	ICU Level of Service	A							
Analysis Period (min)			15									

Intersection	
Intersection Delay, s/veh	13.3
Intersection LOS	B










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	349	4	7	401	61
Future Vol, veh/h	35	2	7	1	1	18	4	349	4	7	401	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	379	4	8	436	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	9.5	8.7	12.2	14.7
HCM LOS	A	A	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	1%	80%	5%	1%
Vol Thru, %	98%	5%	5%	86%
Vol Right, %	1%	16%	90%	13%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	357	44	20	469
LT Vol	4	35	1	7
Through Vol	349	2	1	401
RT Vol	4	7	18	61
Lane Flow Rate	388	48	22	510
Geometry Grp	1	1	1	1
Degree of Util (X)	0.498	0.079	0.033	0.628
Departure Headway (Hd)	4.62	5.922	5.385	4.438
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	776	600	657	811
Service Time	2.668	4.01	3.479	2.482
HCM Lane V/C Ratio	0.5	0.08	0.033	0.629
HCM Control Delay	12.2	9.5	8.7	14.7
HCM Lane LOS	B	A	A	B
HCM 95th-tile Q	2.8	0.3	0.1	4.5
























HCM Unsignalized Intersection Capacity Analysis  
26: Liverpool Rd

Timing Plan: Sat Peak Hour  
2027 Total Traffic Condition

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	5	341	0	6	381
Future Volume (Veh/h)	0	5	341	0	6	381
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	363	0	6	405
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	847	430			427	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	847	430			427	
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)	311	588			1061	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	5	363	411			
Volume Left	0	0	6			
Volume Right	5	0	0			
cSH	588	1700	1061			
Volume to Capacity	0.01	0.21	0.01			
Queue Length 95th (m)	0.2	0.0	0.1			
Control Delay (s)	11.2	0.0	0.2			
Lane LOS	B		A			
Approach Delay (s)	11.2	0.0	0.2			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			0.2			
Intersection Capacity Utilization			35.8%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis  
3: Liverpool Rd & Bayly St

Timing Plan: Sat Peak Hour  
2032 Total Traffic Conditions

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	357	420	168	125	245	357	84	621	164	342	651	288	
Future Volume (vph)	357	420	168	125	245	357	84	621	164	342	651	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	1820	3418		1805	3579	1573	
Flt Permitted	0.53	1.00	1.00	0.50	1.00	1.00	0.40	1.00		0.13	1.00	1.00	
Satd. Flow (perm)	1005	3650	1475	935	3614	1578	760	3418		256	3579	1573	
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	173	129	253	368	87	640	169	353	671	297	
RTOR Reduction (vph)	0	0	123	0	0	62	0	24	0	0	0	135	
Lane Group Flow (vph)	368	433	50	129	253	306	87	785	0	353	671	162	
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)	37.6	28.6	28.6	28.6	22.6	41.0	30.6	26.7		48.1	41.2	53.2	
Effective Green, g (s)	37.6	28.6	28.6	28.6	22.6	41.0	30.6	26.7		48.1	41.2	53.2	
Actuated g/C Ratio	0.38	0.29	0.29	0.29	0.23	0.41	0.31	0.27		0.49	0.42	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)	481	1056	426	321	826	654	277	923		413	1492	847	
v/s Ratio Prot	c0.09	0.12		0.02	0.07	0.09	0.01	0.23		c0.16	0.19	0.02	
v/s Ratio Perm	c0.20		0.03	0.09		0.11	0.08			c0.26		0.08	
v/c Ratio	0.77	0.41	0.12	0.40	0.31	0.47	0.31	0.85		0.85	0.45	0.19	
Uniform Delay, d1	24.7	28.3	25.8	26.9	31.6	21.0	24.7	34.2		24.7	20.7	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	7.1	1.2	0.6	0.8	1.0	0.5	0.7	7.6		15.7	0.2	0.1	
Delay (s)	31.8	29.5	26.4	27.7	32.6	21.5	25.4	41.7		40.4	20.9	11.8	
Level of Service	C	C	C	C	C	C	C	D		D	C	B	
Approach Delay (s)		29.8			26.3			40.1			24.1		
Approach LOS		C			C			D			C		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			29.6									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.87										
Actuated Cycle Length (s)			98.8									Sum of lost time (s)	19.1
Intersection Capacity Utilization			96.1%									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 Total Traffic Condition

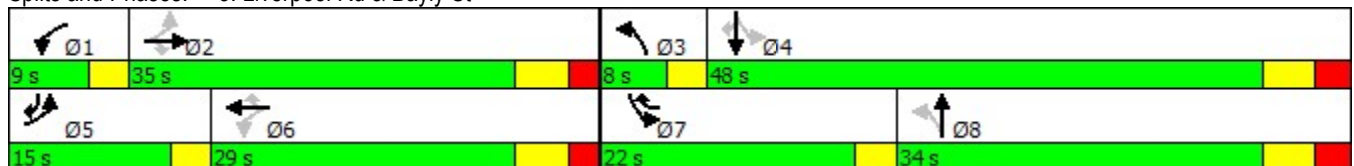


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	357	420	168	125	245	357	84	621	342	651	288
Future Volume (vph)	357	420	168	125	245	357	84	621	342	651	288
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	pm+pt	NA	pm+ov
Protected Phases	5	2		1	6	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)	41.0	28.6	28.6	32.0	22.6	44.4	34.8	26.1	51.2	41.2	56.9
Actuated g/C Ratio	0.42	0.29	0.29	0.33	0.23	0.45	0.35	0.27	0.52	0.42	0.58
v/c Ratio	0.71	0.41	0.31	0.36	0.30	0.48	0.27	0.87	0.84	0.45	0.29
Control Delay	30.9	29.8	6.0	22.9	33.0	14.2	15.6	44.2	40.6	21.9	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	30.9	29.8	6.0	22.9	33.0	14.2	15.6	44.2	40.6	21.9	1.9
LOS	C	C	A	C	C	B	B	D	D	C	A
Approach Delay		26.0			22.1			41.4		22.4	
Approach LOS		C			C			D		C	

Intersection Summary

Cycle Length: 100  
 Actuated Cycle Length: 98.2  
 Natural Cycle: 80  
 Control Type: Semi Act-Uncoord  
 Maximum v/c Ratio: 0.87  
 Intersection Signal Delay: 27.6  
 Intersection LOS: C  
 Intersection Capacity Utilization 96.1%  
 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: Sat Peak Hour  
2032 Total Traffic Condition



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	368	433	173	129	253	368	87	809	353	671	297
v/c Ratio	0.71	0.41	0.31	0.36	0.30	0.48	0.27	0.87	0.84	0.45	0.29
Control Delay	30.9	29.8	6.0	22.9	33.0	14.2	15.6	44.2	40.6	21.9	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	30.9	29.8	6.0	22.9	33.0	14.2	15.6	44.2	40.6	21.9	1.9
Queue Length 50th (m)	51.6	35.7	0.0	15.5	21.6	31.3	7.9	75.1	46.9	48.3	0.4
Queue Length 95th (m)	77.4	49.5	14.8	27.7	32.6	53.9	15.3	#104.6	#91.4	63.7	10.0
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)	519	1063	552	355	832	781	322	975	432	1506	1033
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	0.71	0.41	0.31	0.36	0.30	0.47	0.27	0.83	0.82	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	2.69	2.70	2.62	2.83
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)	974	750	896	1321
Effct. Green for Bike (s)	28.6	22.6	26.1	41.2
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)	572	452	522	824
Bicycle Delay (s/bike)	25.5	30.0	27.3	17.3
Bicycle Compliance	Fair	Fair	Fair	Fair
Bicycle LOS Score	3.27	3.26	3.39	3.75
Bicycle LOS	C	C	C	D

HCM Unsignalized Intersection Capacity Analysis  
6: Liverpool Rd & Parking Lot/Tatra Dr

Timing Plan: Sat Peak Hour  
2032 Total 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	718	3	140	761	4
Future Volume (Veh/h)	1	0	0	4	0	118	0	718	3	140	761	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	740	3	144	785	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	0.80	0.80	0.80	0.80	0.80		0.80					
vC, conflicting volume	1950	1852	804	1844	1852	764	800			766		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2060	1939	633	1928	1939	764	628			766		
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 %	95	100	100	88	100	69	100			83		
cM capacity (veh/h)	19	43	382	34	42	398	765			837		
<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	743	144	789							
Volume Left	1	4	0	144	0							
Volume Right	0	122	3	0	4							
cSH	19	296	765	837	1700							
Volume to Capacity	0.05	0.43	0.00	0.17	0.46							
Queue Length 95th (m)	1.2	15.4	0.0	4.7	0.0							
Control Delay (s)	203.9	25.9	0.0	10.2	0.0							
Lane LOS	F	D		B								
Approach Delay (s)	203.9	25.9	0.0	1.6								
Approach LOS	F	D										
<b>Intersection Summary</b>												
Average Delay			2.7									
Intersection Capacity Utilization			95.7%		ICU Level of Service		F					
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis  
 9: Liverpool Rd & Radom St

Timing Plan: Sat Peak Hour  
 2032 Total Traffic Condition



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	56	17	15	646	697	66
Future Volume (Veh/h)	56	17	15	646	697	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	19	16	710	766	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	0.79	0.79	0.79			
vC, conflicting volume	1550	814	845			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1564	626	666			
tC, single (s)	6.4	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.4	2.2			
p0 queue free %	34	95	98			
cM capacity (veh/h)	94	368	728			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	81	726	839			
Volume Left	62	16	0			
Volume Right	19	0	73			
cSH	114	728	1700			
Volume to Capacity	0.71	0.02	0.49			
Queue Length 95th (m)	29.2	0.5	0.0			
Control Delay (s)	92.0	0.6	0.0			
Lane LOS	F	A				
Approach Delay (s)	92.0	0.6	0.0			
Approach LOS	F					
<b>Intersection Summary</b>						
Average Delay			4.8			
Intersection Capacity Utilization			58.4%	ICU Level of Service	B	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis  
 11: Liverpool Rd & Krosno Blvd

Timing Plan: Sat Peak Hour  
 2032 Total Traffic Condition



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	23	105	502	34	121	553
Future Volume (vph)	23	105	502	34	121	553
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	24	109	523	35	126	576

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	133	558	702
Volume Left (vph)	24	0	126
Volume Right (vph)	109	35	0
Hadj (s)	-0.44	0.02	0.08
Departure Headway (s)	6.3	5.2	5.2
Degree Utilization, x	0.23	0.81	1.01
Capacity (veh/h)	544	677	690
Control Delay (s)	11.3	27.0	60.3
Approach Delay (s)	11.3	27.0	60.3
Approach LOS	B	D	F

Intersection Summary			
Delay		42.3	
Level of Service		E	
Intersection Capacity Utilization		82.1%	ICU Level of Service
Analysis Period (min)		15	E

Intersection	
Intersection Delay, s/veh	40.4
Intersection LOS	E

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	23	105	502	34	121	553
Future Vol, veh/h	23	105	502	34	121	553
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	24	109	523	35	126	576
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	11.3	27.3	56.4
HCM LOS	B	D	F

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	18%	18%
Vol Thru, %	94%	0%	82%
Vol Right, %	6%	82%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	536	128	674
LT Vol	0	23	121
Through Vol	502	0	553
RT Vol	34	105	0
Lane Flow Rate	558	133	702
Geometry Grp	1	1	1
Degree of Util (X)	0.817	0.236	1
Departure Headway (Hd)	5.269	6.359	5.126
Convergence, Y/N	Yes	Yes	Yes
Cap	692	572	709
Service Time	3.253	4.323	3.164
HCM Lane V/C Ratio	0.806	0.233	0.99
HCM Control Delay	27.3	11.3	56.4
HCM Lane LOS	D	B	F
HCM 95th-tile Q	8.6	0.9	16.2

HCM Unsignalized Intersection Capacity Analysis  
 13: Liverpool Rd & Ilona Park Rd (N)

Timing Plan: Sat Peak Hour  
 2032 Total Traffic Condition



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	0	0	484	527	12
Future Volume (Veh/h)	10	0	0	484	527	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	532	579	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	1126	596	601			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1126	596	601			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	100	100			
cM capacity (veh/h)	226	503	977			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	11	532	592			
Volume Left	11	0	0			
Volume Right	0	0	13			
cSH	226	977	1700			
Volume to Capacity	0.05	0.00	0.35			
Queue Length 95th (m)	1.2	0.0	0.0			
Control Delay (s)	21.7	0.0	0.0			
Lane LOS	C					
Approach Delay (s)	21.7	0.0	0.0			
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay	0.2					
Intersection Capacity Utilization	38.8%			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 Total Traffic Condition



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	2	1	0	435	515	13
Future Volume (Veh/h)	2	1	0	435	515	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	468	554	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	1040	572	579			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1040	572	579			
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)	255	518	994			
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	3	468	568			
Volume Left	2	0	0			
Volume Right	1	0	14			
cSH	306	994	1700			
Volume to Capacity	0.01	0.00	0.33			
Queue Length 95th (m)	0.2	0.0	0.0			
Control Delay (s)	16.9	0.0	0.0			
Lane LOS	C					
Approach Delay (s)	16.9	0.0	0.0			
Approach LOS	C					
<b>Intersection Summary</b>						
Average Delay	0.0					
Intersection Capacity Utilization	37.9%			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 Total Traffic Condition

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	3	6	9	5	6	7	412	10	10	487	17
Future Volume (Veh/h)	12	3	6	9	5	6	7	412	10	10	487	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	7	10	6	7	8	458	11	11	541	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	1072	1084	560	1076	1088	480	570			485		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1072	1084	560	1076	1088	480	570			485		
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 %	92	99	99	95	97	99	99			99		
cM capacity (veh/h)	154	209	526	184	208	581	1003			1071		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	23	23	477	571								
Volume Left	13	10	8	11								
Volume Right	7	7	11	19								
cSH	206	242	1003	1071								
Volume to Capacity	0.11	0.10	0.01	0.01								
Queue Length 95th (m)	2.8	2.4	0.2	0.2								
Control Delay (s)	24.7	21.4	0.2	0.3								
Lane LOS	C	C	A	A								
Approach Delay (s)	24.7	21.4	0.2	0.3								
Approach LOS	C	C										
<b>Intersection Summary</b>												
Average Delay			1.2									
Intersection Capacity Utilization			42.1%		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 Total Traffic Condition

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	0	21	37	2	8	19	386	20	12	432	44
Future Volume (Veh/h)	40	0	21	37	2	8	19	386	20	12	432	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	23	40	2	9	20	415	22	13	465	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	1008	1012	504	1010	1024	433	527			442		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1008	1012	504	1010	1024	433	527			442		
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 %	79	100	96	80	99	99	98			99		
cM capacity (veh/h)	205	229	563	202	225	623	1035			1123		
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>								
Volume Total	66	51	457	525								
Volume Left	43	40	20	13								
Volume Right	23	9	22	47								
cSH	263	231	1035	1123								
Volume to Capacity	0.25	0.22	0.02	0.01								
Queue Length 95th (m)	7.3	6.2	0.4	0.3								
Control Delay (s)	23.2	25.0	0.6	0.3								
Lane LOS	C	C	A	A								
Approach Delay (s)	23.2	25.0	0.6	0.3								
Approach LOS	C	C										
<b>Intersection Summary</b>												
Average Delay			3.0									
Intersection Capacity Utilization			41.4%		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 Total 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	352	4	7	405	61
Future Volume (vph)	35	2	7	1	1	18	4	352	4	7	405	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	383	4	8	440	66
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	48	22	391	514								
Volume Left (vph)	38	1	4	8								
Volume Right (vph)	8	20	4	66								
Hadj (s)	0.06	-0.54	0.00	-0.07								
Departure Headway (s)	6.0	5.5	4.7	4.5								
Degree Utilization, x	0.08	0.03	0.51	0.64								
Capacity (veh/h)	514	552	751	786								
Control Delay (s)	9.5	8.7	12.4	15.1								
Approach Delay (s)	9.5	8.7	12.4	15.1								
Approach LOS	A	A	B	C								
Intersection Summary												
Delay			13.6									
Level of Service			B									
Intersection Capacity Utilization			45.9%	ICU Level of Service	A							
Analysis Period (min)			15									

Intersection	
Intersection Delay, s/veh	13.5
Intersection LOS	B

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	352	4	7	405	61
Future Vol, veh/h	35	2	7	1	1	18	4	352	4	7	405	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	383	4	8	440	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	9.5	8.7	12.3	15
HCM LOS	A	A	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	1%	80%	5%	1%
Vol Thru, %	98%	5%	5%	86%
Vol Right, %	1%	16%	90%	13%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	360	44	20	473
LT Vol	4	35	1	7
Through Vol	352	2	1	405
RT Vol	4	7	18	61
Lane Flow Rate	391	48	22	514
Geometry Grp	1	1	1	1
Degree of Util (X)	0.503	0.079	0.033	0.635
Departure Headway (Hd)	4.629	5.939	5.402	4.447
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	775	598	655	812
Service Time	2.674	4.029	3.499	2.487
HCM Lane V/C Ratio	0.505	0.08	0.034	0.633
HCM Control Delay	12.3	9.5	8.7	15
HCM Lane LOS	B	A	A	B
HCM 95th-tile Q	2.9	0.3	0.1	4.6

HCM Unsignalized Intersection Capacity Analysis  
26: Liverpool Rd
























Timing Plan: Sat Peak Hour  
2032 Total Traffic Condition



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	5	344	0	6	385
Future Volume (Veh/h)	0	5	344	0	6	385
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	366	0	6	410
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	855	433			430	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	855	433			430	
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)	308	586			1059	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	5	366	416			
Volume Left	0	0	6			
Volume Right	5	0	0			
cSH	586	1700	1059			
Volume to Capacity	0.01	0.22	0.01			
Queue Length 95th (m)	0.2	0.0	0.1			
Control Delay (s)	11.2	0.0	0.2			
Lane LOS	B		A			
Approach Delay (s)	11.2	0.0	0.2			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			0.2			
Intersection Capacity Utilization			36.0%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis  
3: Liverpool Rd & Bayly St

Timing Plan: Saturday Peak Hour  
2032 Total Traffic Conditions - Krosno Signalized

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	357	420	165	122	245	357	81	606	161	342	632	288	
Future Volume (vph)	357	420	165	122	245	357	81	606	161	342	632	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	1820	3418		1805	3579	1573	
Flt Permitted	0.53	1.00	1.00	0.50	1.00	1.00	0.40	1.00		0.14	1.00	1.00	
Satd. Flow (perm)	1005	3650	1475	935	3614	1578	774	3418		261	3579	1573	
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	170	126	253	368	84	625	166	353	652	297	
RTOR Reduction (vph)	0	0	120	0	0	62	0	24	0	0	0	137	
Lane Group Flow (vph)	368	433	50	126	253	306	84	767	0	353	652	160	
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)	37.7	28.7	28.7	28.7	22.7	41.0	30.0	26.1		47.4	40.5	52.5	
Effective Green, g (s)	37.7	28.7	28.7	28.7	22.7	41.0	30.0	26.1		47.4	40.5	52.5	
Actuated g/C Ratio	0.38	0.29	0.29	0.29	0.23	0.42	0.31	0.27		0.48	0.41	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)	485	1066	431	324	835	658	277	908		413	1476	840	
v/s Ratio Prot	c0.09	0.12		0.02	0.07	0.09	0.01	0.22		c0.16	0.18	0.02	
v/s Ratio Perm	c0.20		0.03	0.09		0.11	0.08			c0.25		0.08	
v/c Ratio	0.76	0.41	0.12	0.39	0.30	0.47	0.30	0.84		0.85	0.44	0.19	
Uniform Delay, d1	24.2	27.9	25.5	26.5	31.2	20.7	24.8	34.1		24.4	20.7	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	6.7	1.2	0.5	0.8	0.9	0.5	0.6	7.3		15.7	0.2	0.1	
Delay (s)	30.9	29.1	26.0	27.2	32.1	21.2	25.4	41.4		40.1	20.9	11.9	
Level of Service	C	C	C	C	C	C	C	D		D	C	B	
Approach Delay (s)		29.2			25.9			39.9			24.1		
Approach LOS		C			C			D			C		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			29.3									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.87										
Actuated Cycle Length (s)			98.2									Sum of lost time (s)	19.1
Intersection Capacity Utilization			95.6%									ICU Level of Service	F
Analysis Period (min)			15										
c	Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
 11: Liverpool Rd & Krosno Blvd

Timing Plan: Saturday Peak Hour  
 2032 Total Traffic Conditions - Krosno Signalized



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	23	105	481	34	121	528
Future Volume (vph)	23	105	481	34	121	528
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)	1595		1842			1855
Flt Permitted	0.99		1.00			0.81
Satd. Flow (perm)	1595		1842			1523
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	24	109	501	35	126	550
RTOR Reduction (vph)	99	0	2	0	0	0
Lane Group Flow (vph)	34	0	534	0	0	676
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		66.6			66.6
Effective Green, g (s)	7.7		66.6			66.6
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)	142		1421			1175
v/s Ratio Prot	c0.02		0.29			
v/s Ratio Perm						c0.44
v/c Ratio	0.24		0.38			0.58
Uniform Delay, d1	36.6		3.2			4.0
Progression Factor	1.00		1.00			1.00
Incremental Delay, d2	0.9		0.8			2.1
Delay (s)	37.4		3.9			6.1
Level of Service	D		A			A
Approach Delay (s)	37.4		3.9			6.1
Approach LOS	D		A			A
<b>Intersection Summary</b>						
HCM 2000 Control Delay			8.3		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.54			
Actuated Cycle Length (s)			86.3		Sum of lost time (s)	12.0
Intersection Capacity Utilization			84.7%		ICU Level of Service	E
Analysis Period (min)			15			
c Critical Lane Group						

Timings  
11: Liverpool Rd & Krosno Blvd

Timing Plan: Sat Peak Hour  
2032 Total Traffic Cond. - Krosno Signalized



Lane Group	WBL	NBT	SBL	SBT
Lane Configurations				
Traffic Volume (vph)	23	502	121	553
Future Volume (vph)	23	502	121	553
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	66.6		66.6
Actuated g/C Ratio	0.09	0.77		0.77
v/c Ratio	0.55	0.39		0.60
Control Delay	19.1	4.5		7.3
Queue Delay	0.0	0.0		0.0
Total Delay	19.1	4.5		7.3
LOS	B	A		A
Approach Delay	19.1	4.5		7.3
Approach LOS	B	A		A

Intersection Summary

Cycle Length: 90  
 Actuated Cycle Length: 86.4  
 Natural Cycle: 70  
 Control Type: Semi Act-Uncoord  
 Maximum v/c Ratio: 0.60  
 Intersection Signal Delay: 7.3  
 Intersection Capacity Utilization 87.1%  
 Analysis Period (min) 15  
 Intersection LOS: A  
 ICU Level of Service E

Splits and Phases: 11: Liverpool Rd & Krosno Blvd



Queues  
11: Liverpool Rd & Krosno Blvd

Timing Plan: Sat Peak Hour  
2032 Total Traffic Cond. - Krosno Signalized



Lane Group	WBL	NBT	SBT
Lane Group Flow (vph)	133	558	702
v/c Ratio	0.55	0.39	0.60
Control Delay	19.1	4.5	7.3
Queue Delay	0.0	0.0	0.0
Total Delay	19.1	4.5	7.3
Queue Length 50th (m)	3.7	21.1	35.1
Queue Length 95th (m)	18.4	44.8	80.1
Internal Link Dist (m)	251.2	233.4	388.4
Turn Bay Length (m)			
Base Capacity (vph)	426	1423	1174
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.31	0.39	0.60
<b>Intersection Summary</b>			



Intersection: 11: Liverpool Rd & Krosno Blvd

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (m)	20.0	58.1	42.4
Average Queue (m)	8.4	26.8	21.1
95th Queue (m)	14.8	44.1	35.6
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	16.9	16.5
Average Queue (m)	4.5	1.8	10.8	12.3
95th Queue (m)	11.9	7.6	15.6	18.1
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)				

Intersection: 23: Liverpool Rd & Wharf St

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	15.0	9.3	16.6	31.9
Average Queue (m)	4.5	2.1	11.7	17.6
95th Queue (m)	12.6	8.4	17.3	24.8
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)				

Intersection: 11: Liverpool Rd & Krosno Blvd

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (m)	18.8	69.5	97.0
Average Queue (m)	8.4	27.7	42.8
95th Queue (m)	14.5	45.0	70.4
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)	16.5	9.3	33.1	35.4
Average Queue (m)	7.6	4.2	18.1	19.6
95th Queue (m)	14.2	11.6	28.2	27.8
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)				

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)	4.5	0.9	11.0	13.0
95th Queue (m)	12.0	5.4	16.5	18.9
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)				

Intersection: 23: Liverpool Rd & Wharf St

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	15.0	9.2	17.0	24.3
Average Queue (m)	4.9	2.1	12.9	17.7
95th Queue (m)	13.4	8.4	18.8	23.0
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)				

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Intersection: 23: Liverpool Rd & Wharf St

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Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	16.5	15.6	37.0	40.4
Average Queue (m)	8.2	5.7	17.3	20.4
95th Queue (m)	15.1	13.5	24.9	30.2
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





# **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 Liverpool Road						Minor Street Krosno Road					
	Northbound			Southbound			Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
AM	0	370	28	124	171	0	0	0	0	9	0	126
PM	0	381	21	175	554	25	8	0	8	42	0	123

Volume	Average Hourly Volumes			Compliance (%)	Individual Justification Met?
	AM	PM	AHV		
Warrant 1	1A - All Approaches (Intersection)	1337	1337	186%	Yes
	1B - Minor St (Major Direction)	165	165	97%	No
Warrant 2	2A - Major St (Both Directions)	1156	1156	161%	Yes
	2B - Combined Crossing (Veh plus Peds)	42	42	56%	No



# **Appendix F**

## **Parking Rate Justification**



November 21, 2019

Project #10055457

Cristina Celebre, MCIP, RPP  
Principal Planner, Development Review  
City of Pickering  
One The Esplanade  
Pickering, ON L1V 6K7

Dear Christina:

**Re: City Centre Zoning By-Law Parking Rate Justification Update  
591 Liverpool Road, Pickering**

HDR Corporation has prepared this letter in response to the request for justification on the use of the City Centre Zoning By-Law parking rates for the proposed mixed-use development at 591 Liverpool Road.

The proposed development will be a mixed-use development comprising 498 condominium apartment units and 1,900 sm (20,451 sf) of commercial space. The proposed parking supply is 739 parking spaces including 200 public parking spaces and 539 parking spaces for residential, visitor and commercial components.

The rationale for proposed parking supply for 591 Liverpool Road is based on the aggregate of the following considerations:

- comparison to other By-Laws,
- proximity to the Pickering GO station
- transit mode split comparison with the City Centre,
- planned and proposed transit improvements in the area,
- proposed travel demand management measures for the development
- proposed unit types by number of bedrooms
- shared parking between visitor and commercial uses
- available public parking lot for visitor and commercial parking demand

From the assessment of the above factors, the proposed parking rate for this development is appropriate.

The proposed parking supply is based on Pickering's City Centre Zoning By-Law 7553/17. Other developments outside of the City Centre have also proposed using the City Centre rate such as the "Brock Road and Dersan Street Residential Development (2017)"<sup>1</sup>.

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<sup>1</sup> <https://www.pickering.ca/en/city-hall/resources/devapp/A1217/Traffic-Impact-Study.pdf>



For comparison, the City's Comprehensive Zoning By-Law 3037 would require a total of 1057 parking spaces comprising 985 spaces for the residential, visitor and retail commercial components plus the replacement of the existing 72 public parking spaces, which current exists on the site today.

The proposed application of the City Centre rates to the subject site would result in a reduction of 445 spaces (540 spaces based on the City Centre By-Law compared to the 985 spaces from the By-Law 3037) or approximately 45% reduction from By-Law 3037.

Land Use	Quantity	By-Law 3037		City Centre Rates	
		Rate	Spaces	Rate	Spaces
Residential	498 units	1.50 per unit	747	0.8 per unit	398
Visitor		0.25 per unit	125	0.15 per unit	75
Commercial	1900 sm	5.5 per 93 sm	113	3.5 per 100 sm	67
<b>Total Spaces:</b>		-	<b>985</b>	-	<b>540</b>

However, the proposed development will be providing an additional 128 spaces to the existing public parking lot to provide a total of 200 public parking spaces. These public parking spaces could be used by visitors and retail commercial patrons.

Justifications for the proposed reduction in parking rates are highlighted below:

- Pickering By-Law Comparison:** Pickering's Zoning By-Law 7444/15 at Zents Dr / Brock Rd only requires a rate of 1 and 0.2 spaces per unit for residential and visitor parking, respectively. This location is located twice as far from the City Centre and Pickering GO station than the proposed development and although the local transit service is currently more frequent at Zents Dr / Brock Rd than the local transit at Liverpool Rd, the service along Brock Rd is still just an hourly service.

The proposed City Centre rates would result in an approximate 20% reduction from By-Law 7444/15 and is appropriate based on the proximity to the Pickering GO station, that parking rates should be lower than the Zents Dr / Brock Rd development, and the potential for transit service improvements on Liverpool Road.

Source	Residential		Visitor		Total Spaces	Diff. from Parking Supply (473)
	Rate	Spaces	Rate	Spaces		
Pickering By-Law 3037	1.50	<b>747</b>	0.25	<b>125</b>	<b>872</b>	<b>-399</b>
Pickering By-Law 7364/14	1.25	<b>623</b>	0.25	<b>125</b>	<b>748</b>	<b>-275</b>
Pickering By-Law 7444/15	1	<b>498</b>	0.2	<b>100</b>	<b>598</b>	<b>-125</b>
Pickering City Centre 7553/17	0.8	<b>399</b>	0.15	<b>75</b>	<b>474</b>	<b>-1</b>

- Proximity to Pickering GO Station:** The site is less than 2 km from the Pickering GO Station and about 2.5km from Pickering Town Centre, which will help to support higher non-auto modes (i.e. transit, cycling, micromobility, etc) and carpooling. There is also an opportunity to improve transit service/shuttle service to provide first/last mile connection

along Liverpool Road for the proposed 498 units to better connect residents to Pickering GO Station, Pickering Town Centre and DRT 900 (frequent service with dedicated bus lane), resulting in lower parking demands for the proposed development.

- **Transit Mode Split:** A review of the 2016 Transportation Tomorrow Survey (TTS) shows there is a trend of an increasing transit mode split for apartment residents in Pickering.

Pickering Apartments	2006	2011	2016
Transit Mode Split – all day	7%	8%	13%

The transit mode split between the City Centre traffic zone and the traffic zone capturing Pickering Harbour and 591 Liverpool Road is also similar as shown below, although the City Centre has significantly more apartment units.

TTS 2016	Mode Split – All Day				
Zone	Driver	Passenger	Transit	Walk	Bike
591 Liverpool Rd – Zone 1052	74%	15%	7%	3%	1%
City Centre – Zone 1042, 1043	72%	9%	10%	2%	0%
<b>Difference</b>	<b>2%</b>	<b>6%</b>	<b>-3%</b>	<b>1%</b>	<b>1%</b>

Based on the above comparison, Zone 1052 (591 Liverpool Rd) has only a 2% difference for non-auto modes compared with the City Centre zones. While Zone 1052 has slightly less transit trips, it more than makes up for this based on the higher auto passengers indicating that the combination of carpooling, transit service improvements, and other travel demand management measures would be effective in maintaining a lower vehicle ownership and parking demand for the proposed development. The Zone 1052 also has a higher Walk and Cycling mode split compared to the Pickering City Centre.

- **Existing/Planned Transit Improvements:** The trend of an increasing transit mode split is expected to continue in this area with the following recently completed and planned transit improvements in the area and this will also affect the mode split for the proposed development.
  - Bus only lanes along Highway 2 from 900m west of Liverpool Road to Glenanna Road<sup>2</sup>.
  - Bus service every 10 minutes along Highway 2 during peak hours<sup>3</sup>.
  - Future Durham-Scarborough BRT<sup>4</sup>.

<sup>2</sup> <https://news.ontario.ca/mto/en/2016/08/ontario-officially-opens-bus-only-lanes-in-durham-region.html>

<sup>3</sup> [https://www.durhamregiontransit.com/en/routes-and-schedules/resources/Jan.-7-2019/Route-900\\_January-2019.pdf](https://www.durhamregiontransit.com/en/routes-and-schedules/resources/Jan.-7-2019/Route-900_January-2019.pdf)

<sup>4</sup> <https://www.toronto.ca/legdocs/mmis/2018/ex/bgrd/backgroundfile-114866.pdf>

- **Travel Demand Management Measures:** As mentioned in the 591 Liverpool Road Traffic Impact Study Report (May 2019), the following TDM strategies would further assist in reducing the parking demand in this area:
  - On-site carshare and bikeshare
  - Improved wayfinding and travel planning such as transit route maps and schedules
  - Unbundled resident parking
  - Dedicated shuttle bus to serve the site to/from the Pickering GO station
- **Bedroom-Based Rates:** Pickering’s current parking rates for apartment dwellings are not differentiated by the number of bedrooms per unit. The use of bedroom-based rates in municipalities such as Toronto, Richmond Hill, and Vaughan, reflects the expectation that the number of bedrooms can influence parking demands. As shown in the following table, almost 80% of the units are planned to be 1- or 2- bedroom apartments and applying a blended or average rate based on Zoning By-Law could overstate the parking, without considering the mix of units.

BR Type	Split	Units
1	39%	192
2	39%	192
3	16%	80
3+	7%	34
Visitor	-	498

The following table shows an overall rate ranging from 0.99 to 1.20 spaces per unit based on the proposed unit breakdown.

Municipality	Vaughan		Newmarket		Toronto		Richmond Hill	
By-Law	1-88		2010-40		569-2013		Draft Parking Strategy	
Area	Metropolitan Centre		Urban Centre		Policy Area 4		KDA/Region Centre	
BR Type	Rate	Spaces	Rate	Spaces	Rate	Spaces	Rate	Spaces
1	0.7	134	0.8	153	0.8	153	0.9	172
2	0.9	172	0.9	172	0.9	172	1	192
3	1	80	1.1	88	1.1	88	1.2	96
3+	1	34	1.1	37	1.1	37	1.2	40
Visitor	0.15	74	0.15	74	0.15	74	0.15	74
<b>Total:</b>	-	<b>494</b>	-	<b>524</b>	-	<b>524</b>	-	<b>574</b>
<b>Total Spaces/Unit:</b>	<b>0.99</b>		<b>1.05</b>		<b>1.05</b>		<b>1.15</b>	

Municipality	City of Toronto		City of Vaughan	
By-Law	569-2013		Parking Standards Study	
Area	Other Areas		Other Areas	
BR Type	Rate	Spaces	Rate	Spaces
1	0.9	172	0.9	172
2	1	192	1.1	211
3	1.2	96	1.2	96
3+	1.2	40	1.2	40
Visitor	0.2	99	0.2	99
<b>Total Spaces:</b>	-	<b>599</b>	-	<b>521</b>
<b>Total Spaces per Unit:</b>	<b>1.20</b>		<b>1.05</b>	

Although the above rates are higher than the 0.95, **the rationale is that the starting point for general apartment parking rates should start with these rates, and then the rates can be reduced to account for the above characteristics of the proposed development**, including its proximity to the Pickering GO station, existing transit mode splits in the area, existing carpool splits in the area, the trend of increasing transit mode splits, and the potential for transit service improvements.

- **Shared Parking:** Although the By-Law requires the sum of the parking required for all uses on the lot, the shared parking formula in the City Centre By-Law 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.

Applying the shared parking formula for Retail Store and Residential – Visitor reduces the minimum required spaces from 141 spaces (66 and 75 for commercial and visitor, respectively) to 135 spaces required.

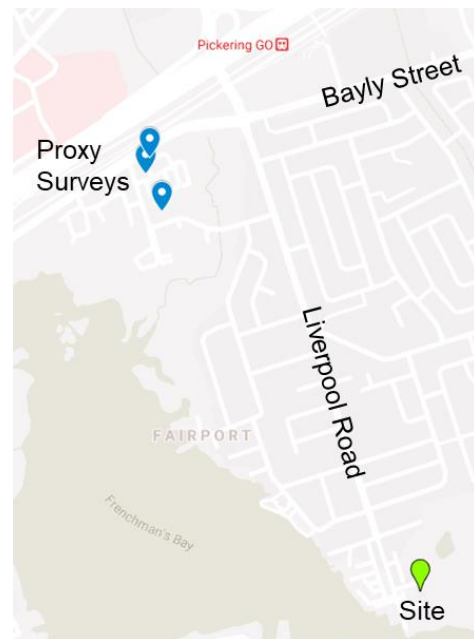
The 6 extra spaces could be used for carshare parking spaces or preferred carpooling parking spaces for the development and for the surrounding area. In particular, a car sharing service within the site can reduce 4 parking spaces for every 1 carshare space provided<sup>5</sup>. The next table shows the shared parking calculations.

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<sup>5</sup> Parking Standards Review: Examination of Potential Options and Impacts of Car Share Programs on Parking Standards, City of Toronto and IBI Group, 2009

<b>Weekday</b>	<b>Morning</b>	<b>Noon</b>	<b>Afternoon</b>	<b>Evening</b>
Retail	42.9 (65%)	59.4 (90%)	59.4 (90%)	59.4 (90%)
Visitor	15 (20%)	15 (20%)	45 (60%)	75 (100%)
<b>Total</b>	<b>58</b>	<b>75</b>	<b>105</b>	<b>135</b>
<b>Weekend</b>	<b>Morning</b>	<b>Noon</b>	<b>Afternoon</b>	<b>Evening</b>
Retail	52.8 (80%)	66 (100%)	66 (100%)	46.2 (70%)
Visitor	15 (20%)	15 (20%)	45 (60%)	75 (100%)
<b>Total</b>	<b>68</b>	<b>81</b>	<b>111</b>	<b>122</b>

- Expanded Public Parking Lot:** The public parking lot is being expanded from 72 to 200 spaces. As noted in the traffic impact study, the expected existing demand for the lot is 94 spaces on the weekday and 138 spaces on the weekend based on the number of vehicles entering/exiting the lot. Even with a conservative estimate that there is a 15% increase in demand with the expanded lot, there would still be 92 remaining spaces on the weekday and 41 spaces for the weekend. These spaces could serve the commercial parking demand, which is proposing a reduction of 20 spaces (86 spaces based on the general areas rate of 4.5 spaces per 100m<sup>2</sup> compared to the proposed 66 spaces at the City Centre’s rate of 3.5 spaces per 100m<sup>2</sup>). The public parking spaces could also accommodate visitor parking demand for the subject site.
- Proxy Site Surveys:** Parking surveys were conducted at nearby condominiums to assess existing parking supply and demand. The area nearest the site are primarily detached homes and townhouses. The locations selected were 1215 Bayly Street, 1235 Bayly Street, and 1210 Radom Street. 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 figure to the right 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 11pm (residential parking). The following table summarizes the peak residential and visitor demand of each of the proxy sites.



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
<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
<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

\*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 visitor demand of 0.19 spaces per unit (including commercial use). Removing the parking reserved for commercial use, the visitor parking demand is lowered to 0.14 spaces per unit.

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

This is an average total demand of 0.99 spaces per unit. Using this rate as a starting point, the proposed TDM measures (shuttle service, carshare, bike share) could further reduce these rates to the proposed City Centre rates.

In summary, it is anticipated that if the Zoning By-Law parking requirements were to apply to 591 Liverpool Road, it would result in a significant oversupply of parking; therefore, it is recommended that the City Centre rates be applied to the development based on the following:

- proxy site surveys showing demand similar to the proposed City Centre rates,
- almost 80% of the apartment units will be 1- or 2-bedroom units,
- there is evidence from other jurisdictions that the initial parking rate should be lower based on bedroom types for multiple dwelling unit buildings,
- the site's proximity to the Pickering GO station,
- the site is located in an area that has a similar transit mode split to the City Centre,

- the site is located in an area that currently exhibits higher carpool mode split than the City Centre,
- the site is located in an area that has higher walk and bike mode than the City Centre,
- the trend of increasing transit mode split with planned transit improvements in the area,
- proposed travel demand management measures for the site including carshare and carpooling spaces, and
- the opportunity to share parking between visitors, commercial patrons, and the public lot.

The proposed parking supply rate and the expanded public parking lot is expected to be sufficient in accommodating the expected parking demand of the subject development.

Should you have any questions, please do not hesitate to contact me.

Yours truly,

**HDR Corporation**



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