



Final Report

591 Liverpool Road Traffic Impact Study

Pickering Harbour Company Ltd

June 29, 2021



HDR TEAM

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Table of Contents

1.	Introduction	3
1.1	Background.....	3
1.2	Study Scope of Work	5
1.3	Intersections Operations and Analysis Methodology	5
2.	Existing Traffic Conditions.....	7
2.1	Existing Road Network.....	7
2.2	Transit Service.....	10
2.3	Existing Traffic Volumes.....	11
2.4	Existing Traffic Operations	13
2.4.1	Field Observations	16
2.5	Existing Traffic Queues Based on Synchro Analysis	17
2.6	City Public Parking Lot.....	18
3.	2027 and 2032 Background Traffic Conditions.....	20
3.1	Planned Road Network Improvements.....	20
3.2	Background Development Traffic	20
3.3	Background Traffic Volumes	22
3.4	2027 Background Traffic Operations.....	22
3.5	2027 Background Traffic Queues.....	26
3.6	2032 Background Traffic Operations.....	28
3.7	2032 Background Traffic Queues.....	31
4.	Proposed Development.....	33
4.1	Conceptual Site Plan	33
4.2	Proposed Development Traffic Generation	34
4.3	Site Generated Transit Demand.....	34
4.4	Trip Generation.....	35
5.	2027 and 2032 Total Traffic Conditions.....	40
5.1	2027 Total Traffic Operations.....	40
5.2	2027 Total Queues	44
5.3	2032 Total Traffic Operations.....	46
5.4	2032 Total Queues	50
6.	Parking Assessment	53
6.1	Proposed Parking Rates	53
6.2	Proxy Site Parking Surveys.....	53
7.	Vehicle Maneuvering Diagrams	56
8.	Traffic Demand Management Measures	57
8.1	Cycling.....	57
8.2	Walking.....	57
8.3	Transit.....	57
8.4	Carshare/Bikeshare	59
8.5	Wayfinding and Travel Planning.....	59
8.6	Education/Promotion and Incentives.....	59
9.	Conclusions and Recommendations.....	60



Appendices

- A. Traffic Data Collection
- B. Signal Timing Plan
- C. Synchro Reports
- D. Development Site Traffic
- E. Signal Warrant Analysis
- F. Vehicle Maneuvering Diagrams

Exhibits

Exhibit 1: Site Location.....	4
Exhibit 2: Transportation System of the Study Area	8
Exhibit 3: Existing Road Network	9
Exhibit 4: Transit Route Change (April 2019)	11
Exhibit 5: Existing Traffic Volumes	12
Exhibit 6: Background Development Traffic Volumes.....	21
Exhibit 7: 2027 Background Traffic Volumes.....	24
Exhibit 8: 2032 Background Traffic Volumes.....	29
Exhibit 9: Conceptual Site Plan (June 6, 2021)	33
Exhibit 10: Commercial Traffic Volumes.....	37
Exhibit 11: Residential Traffic Volumes	38
Exhibit 12: Site Traffic Volumes – Total.....	39
Exhibit 13: 2027 Total Traffic Volumes.....	41
Exhibit 14: 2032 Total Traffic Volumes.....	47
Exhibit 15: Proxy Site Parking Survey Locations	54

Tables

Table 1: DRT Transit Service Summary.....	10
Table 2: Summary of Traffic Counts.....	11
Table 3: Existing Traffic Signalized Intersection Operations.....	13
Table 4: Liverpool Road/Bayly Street Intersection Operations – Optimized.....	14
Table 5: Existing Traffic Unsignalized Intersection Operations	14
Table 6: Critical Gap Values for Determining Vehicle Movements from Minor Street	15
Table 7: Vehicle Gap Survey Summary (Available Gaps) – Eastbound and Westbound.....	15
Table 8: Liverpool Road/Tatra Drive Signalized PM Peak Sensitive Analysis – Existing	16
Table 9: Existing Pedestrian and Bicycle Level of Service at Signalized Intersections	16
Table 10: Existing Traffic 95 th Percentile Queue Summary.....	18
Table 11: Parking Survey Summary.....	19
Table 12: 2027 Background Traffic Signalized Intersection Operations.....	22
Table 13: 2027 Background Traffic Unsignalized Intersection Operations.....	25



Table 14: Liverpool Road/Tatra Drive Signalized PM Peak Sensitive Analysis – 2027	
Background.....	26
Table 15: 2027 Background Pedestrian and Bicycle Level of Service	26
Table 16: 2027 Background 95 th Percentile Queue Summary	27
Table 17: 2032 Background Traffic Signalized Intersection Operations.....	28
Table 18: 2032 Background Traffic Unsignalized Intersection Operations.....	30
Table 19: Liverpool Road/Tatra Drive Signalized PM Peak Sensitive Analysis – 2032	
Background.....	31
Table 20: 2032 Background Pedestrian and Bicycle Level of Service	31
Table 21: 2032 Background 95 th Percentile Queue Summary	32
Table 22: Site Traffic Generation	34
Table 23: Transit Site Trip Generation	35
Table 24: Site Traffic Distribution	36
Table 25: 2027 Total Traffic Signalized Intersection Operations.....	40
Table 26: 2027 Total Traffic Unsignalized Intersection Operations.....	42
Table 27: 2027 Total Traffic Krosno Boulevard Signalized Operations.....	43
Table 28: 2027 Total Traffic Tatra Drive Signalized PM Peak Operations	43
Table 29: 2027 Total Pedestrian and Bicycle Level of Service	44
Table 30: 2027 Total 95 th Percentile Queue Summary	45
Table 31: 2032 Total Traffic Signalized Intersection Operations.....	46
Table 32: 2032 Total Traffic Unsignalized Intersection Operations.....	48
Table 33: 2032 Total Traffic Krosno Boulevard Signalized Operations.....	49
Table 34: 2032 Total Traffic Tatra Drive Signalized PM Peak Operations	49
Table 35: 2032 Pedestrian and Bicycle Level of Service	50
Table 36: 2032 Total 95 th Percentile Queue Summary	51
Table 37: Proposed Parking Supply Rates.....	53
Table 38: Proxy Parking Survey Results	54
Table 39: Proxy Parking Surveys for Visitor Parking Excluding Commercial Spaces	55
Table 40: Detailed Vehicle Dimensions for Swept Path Analysis.....	56
Table 41: Proposed Bicycle Parking Supply Rates.....	57
Table 42: Bus Route Services.....	58

1. Introduction

1.1 Background

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

Two previous Traffic Impact Study reports (dated November 2019 and March 2020) were prepared and submitted in regard to the proposed development. The updates in this report reflect the latest proposed concept plan, which include the following changes:

- Reducing the number of proposed residential units from 377 to 201 units (comprising 9 live-work units, 22 townhouse units, and a 12-storey mid-rise building consisting of 153 condominium apartment units and 17 ground floor townhouse units)
- Reducing the proposed commercial space from 1,400 to 250 m² of GFA in the form of live-work units
- Removing the public assembly hall use
- Removing the indoor boat storage
- Increasing the residential parking supply rate from 1.00 spaces per unit to 1.75 spaces per unit for the 22 townhouses, and to 1.25 spaces per unit for the 170 condominium apartment / townhouse units, and 0.25 spaces per unit for residential visitor parking.

The proposed development consists of 32 townhouses (9 of which are live-work units), and 170 condominium units in one 12-storey building (of which, 17 units are ground floor townhomes), 250 m² of potential commercial space in the form of 9 live-work units. The site is proposed to supply 348 parking spaces for both the residential and visitor components. There are also 116 bicycle parking spaces proposed for the development (15 of which will be visitor parking).

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

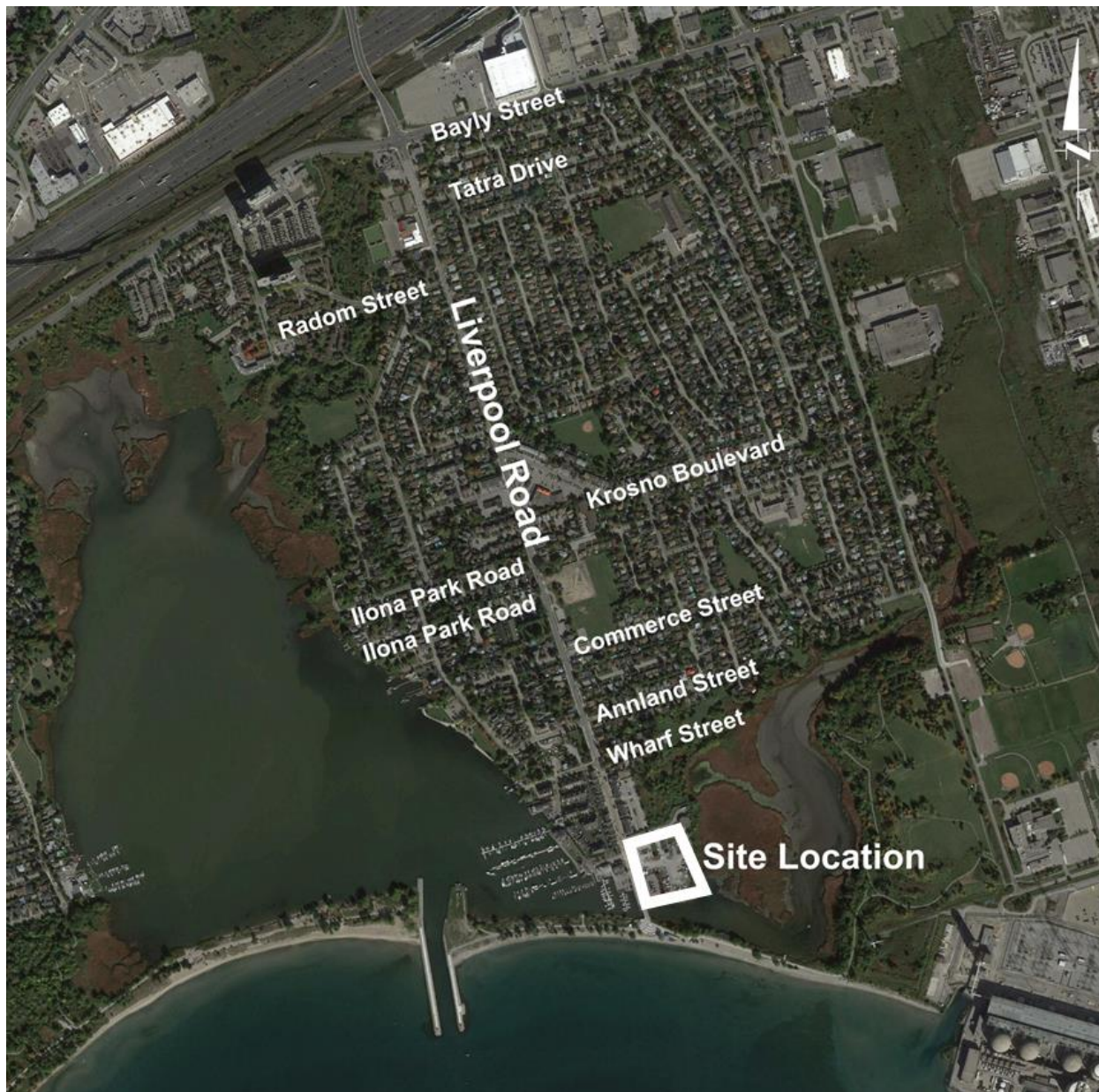


Exhibit 1: Site Location

1.2 Study Scope of Work

The study scope of work was reviewed and approved by City of Pickering and Durham Region (“Region”) staff when the development application and this study were initiated in June 2017, and is summarized below. The scope for this 2021 update study has not changed. Due to the Covid-19 lockdown in Ontario, updated existing traffic counts were not possible at time of preparing the update study and report.

- | | |
|---|---|
| Analysis Scenarios | <ul style="list-style-type: none"> • Existing traffic conditions • Full Build-out traffic conditions <ul style="list-style-type: none"> • 2027 Background Traffic (includes road growth and traffic from approved or under construction background developments in the immediate area) • 2027 Total Traffic (2027 background traffic plus the proposed development traffic) • 5 years from the build-out traffic conditions <ul style="list-style-type: none"> • 2032 Background Traffic (includes road growth and traffic from approved or under construction background developments in the immediate area) • 2032 Total Traffic (2032 background traffic plus the proposed development traffic) |
| Analysis Time Periods | <ul style="list-style-type: none"> • Weekday AM peak hour (between 7:00am – 9:00am) • Weekday PM peak hour (between 4:00pm – 6:00pm) • Weekend Saturday peak hour (between 12:00pm – 2:00pm) – we note that the commercial component has significantly been reduced which would no longer require Saturday analysis for the proposed development; however, we have maintained this time period for consistency with the older traffic impact study reports |
| Study Area Intersections to be Analyzed | <ul style="list-style-type: none"> • Liverpool Road and Bayly Street • Liverpool Road and Tatra Drive • Liverpool Road and Radom Street • Liverpool Road and Krosno Boulevard • Liverpool Road and Ilona Park Road (north) • Liverpool Road and Ilona Park Road (south) • Liverpool Road and Commerce Street • Liverpool Road and Annland Street • Liverpool Road and Wharf Street • Proposed Site Access |

1.3 Intersections Operations and Analysis Methodology

Intersection operations were assessed for the site driveways and study intersections using the software program Synchro 11 and SimTraffic 11, both of which employ methodology from the **Highway Capacity Manual (HCM2010)** published by the Transportation Research Board National

Research Council. Synchro can analyze both signalized and unsignalized intersections in a road corridor or network taking into account the spacing, interaction, queues and operations between intersections.

The signalized intersection analysis considers two separate measures of performance:

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

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

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

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

2. Existing Traffic Conditions

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

2.1 Existing Road Network

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

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

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

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



Exhibit 2: Transportation System of the Study Area

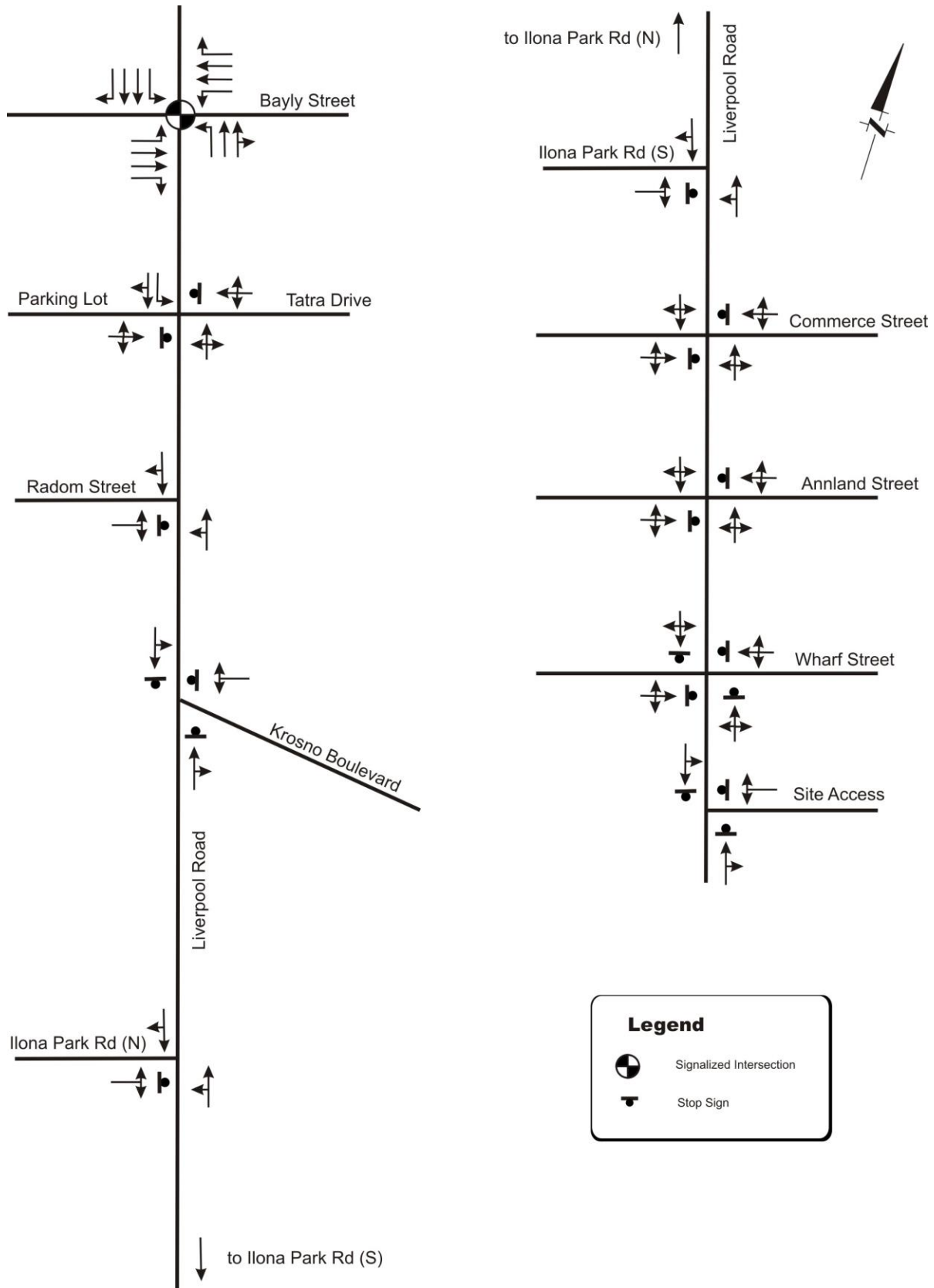


Exhibit 3: Existing Road Network

2.2 Transit Service

Durham Region Transit (DRT) currently operates several transit routes within the study area.

Pickering GO Station is located at the north-east quadrant of the Liverpool Road and Bayly Street intersection, approximately 2km from the proposed site. A summary of DRT services and bus and train services provided at the Pickering GO Station is shown in **Table 1**.

Table 1: DRT Transit Service Summary

Bus / Route	Approximate headways during peak periods
Liverpool Road	
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
Bayly Street	
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
GO Transit	
Lakeshore East Train (GO)	Weekday AM – 20 minutes towards Toronto, 30 minutes towards Oshawa Weekday PM – 20 minutes towards Oshawa, 20 minutes towards Toronto Saturday MID – 30 minutes towards Oshawa, 30 minutes towards Toronto
51, 52, 54 – 407 East Bus (GO)	Weekday AM – 40 minutes Weekday PM – 30 minutes

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

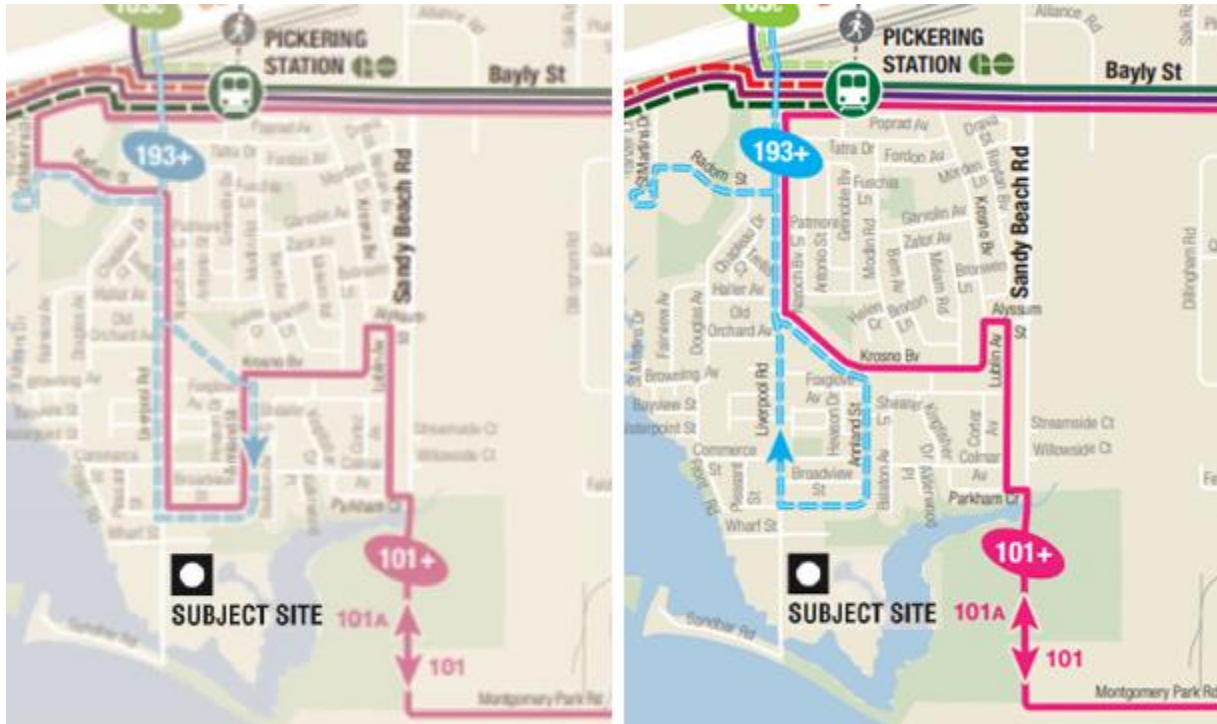


Exhibit 4: Transit Route Change (April 2019)

2.3 Existing Traffic Volumes

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

Table 2: Summary of Traffic Counts

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

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

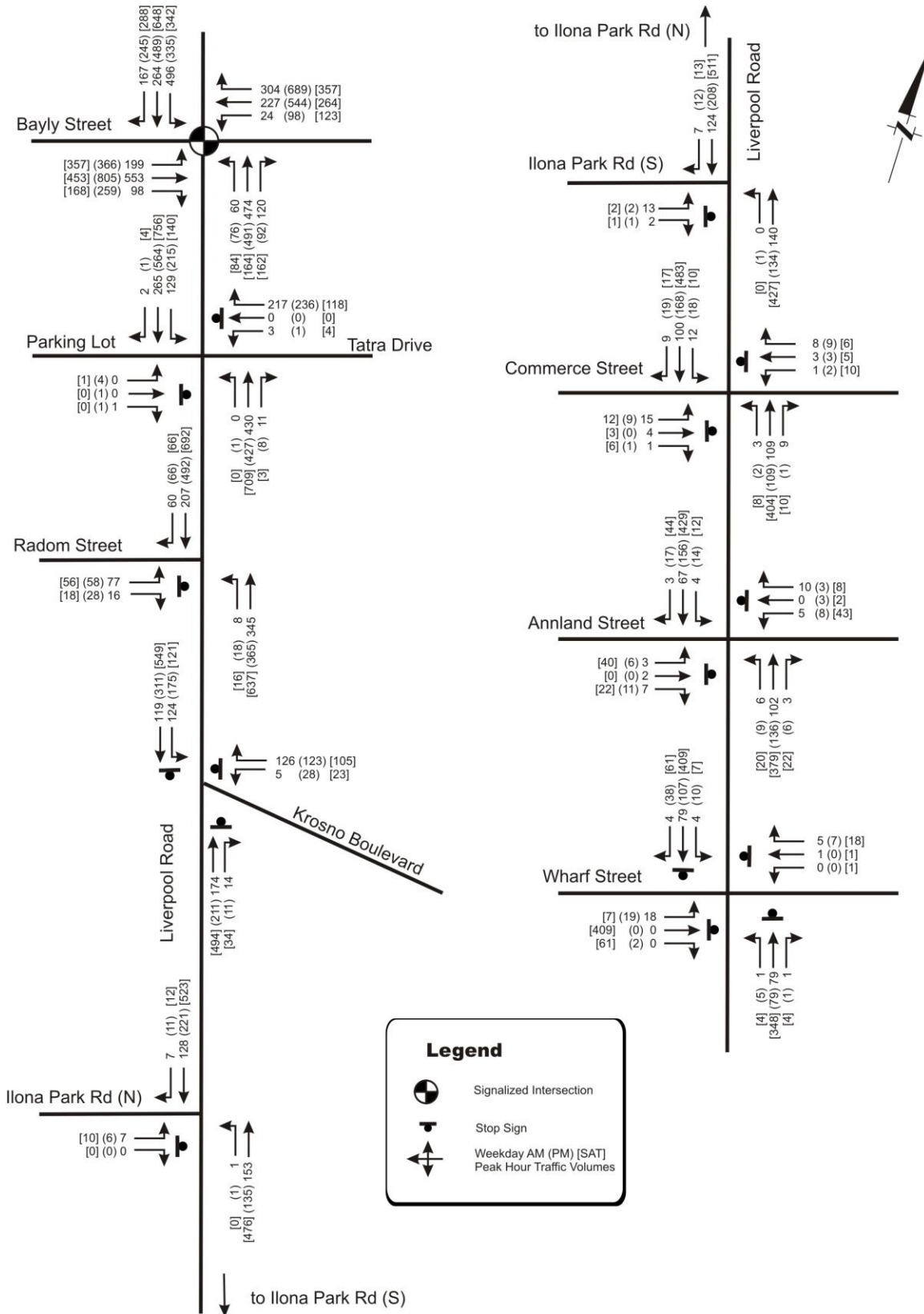


Exhibit 5: Existing Traffic Volumes

2.4 Existing Traffic Operations

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

Table 3: Existing Traffic Signalized Intersection Operations

Intersection & Critical Movement	Weekday AM Peak Hour		Weekday PM Peak Hour		Saturday MID Peak Hour	
	LOS	v/c	LOS	v/c	LOS	v/c
Liverpool Road/Bayly Street	C	0.80	D	1.04	C	0.77
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
Liverpool Road/Bayly Street (optimized)	C	0.79	C	0.91	C	0.71
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
Liverpool Road/Tatra Drive						
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
Liverpool Road/Radom Street						
Eastbound Left-Right	B	0.22	C	0.28	C	0.26
Northbound Left-Through	A	0.01	A	0.02	A	0.01
Liverpool Road/Krosno Boulevard						
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
Liverpool Road/Ilona Park Road (N)						
Eastbound Left-Right	B	0.01	B	0.01	B	0.02
Northbound Left-Through	A	0.00	A	0.00	-	0.00
Liverpool Road/Ilona Park Road (S)						
Eastbound Left-Right	B	0.03	B	0.01	B	0.01
Northbound Left-Through	-	0.00	A	0.00	-	0.00
Liverpool Road/Commerce Street						
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
Liverpool Road/Annland Street						
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
Liverpool Road/Wharf Street						
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 1st, 2017 and Saturday June 3rd, 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
Liverpool Road/Tatra Drive (when pedestrian signals active)		
Eastbound Left-Through-Right	C	0.07
Westbound Left-Through-Right	B	0.64
Northbound Left-through-right	A	0.33
Southbound Left-turn	A	0.31
Southbound Through-Right	A	0.44

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

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

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

Intersection & Critical Movement	Weekday AM Peak Hour		Weekday PM Peak Hour		Saturday MID Peak Hour	
	Pedestrian LOS	Bicycle LOS	Pedestrian LOS	Bicycle LOS	Pedestrian LOS	Bicycle LOS
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	B	C	C	D	C	D

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

2.4.1 Field Observations

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

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

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

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

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

2.5 Existing Traffic Queues Based on Synchro Analysis

Queuing analysis was undertaken at the key movements within the study intersections. The queuing results are based on the Synchro 95th 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 95th 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, 95th 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 95th Percentile Queue Summary

Intersection	Existing Storage and Link Length	Existing 95 th Percentile Queue (m)		
		AM Peak Hour	PM Peak Hour	SAT Peak Hour
Liverpool Road/Bayly Street				
Eastbound Left-turn	115	47.4	115.4	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	181.2	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	103.0	62.1	56.0
Southbound Through	-	23.6	61.8	42.8
Southbound Right-turn	65	7.8	13.7	10.4
Liverpool Road/Tatra Drive				
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
Liverpool Road/Radom Street				
Eastbound Left-Right	-	6.2	8.4	7.6
Northbound Left-Through	-	0.0	0.5	0.3
Liverpool Road/Krosno Boulevard				
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
Liverpool Road/Ilona Park Road (N)				
Eastbound Left-Right	-	0.3	0.3	0.5
Northbound Left-Through	-	0.0	0.0	0.0
Liverpool Road/Ilona Park Road (S)				
Eastbound Left-Right	-	0.6	0.1	0.1
Northbound Left-Through	-	0.0	0.0	0.0
Liverpool Road/Commerce Street				
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
Liverpool Road/Annland Street				
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
Liverpool Road/Wharf Street				
Eastbound Left-Through-Right	-	7.8	13.3	16.8
Westbound Left-Through-Right	-	-	-	13.2
Northbound Left-Through-Right	-	16.2	15.2	15.2
Southbound Left-Through-Right	-	14.2	19.1	18.6

2.6 City Public Parking Lot

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

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

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

- Saturday June 3rd, 2017 from 3:00pm to 7:00pm; and
- Thursday June 8th, 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 rd , 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 th , 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 3rd, 2017 and throughout the day on Thursday June 8th, 2017.

3. 2027 and 2032 Background Traffic Conditions

3.1 Planned Road Network Improvements

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

3.2 Background Development Traffic

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

- During the development of the traffic analysis for 591 Liverpool Road, there was 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. This development has since been refused by LPAT; however, the traffic volumes from the R.B. Morgan Report are still included in the background traffic to be conservative in the forecast traffic volumes. Weekday peak hour site traffic volumes were obtained from a transportation impact study entitled “Proposed Residential Condominium Development” prepared by Dionne Bacchus & Associates dated December 2016. In addition, Saturday trip estimates were obtained from the 9th Edition of “Trip Generation Manual” published by the Institute of Transportation Engineers (“ITE”) using Land Use Code 232: High-Rise Residential Condo/Townhouse. This results in 63 two-way trips during the AM peak hour, 56 two-way trips during the PM peak hour, and 64 trips during the Saturday peak hour.
- A proposed residential development by Madison Liverpool Limited (“Madison Report”) consisting of 10 single family units and 57 townhouses units was proposed to redevelop Father Fenelon Catholic School at 747 Liverpool Road, which was located at the north side of Commerce Street Park on the northeast corner of Liverpool Road and Commerce Street. Weekday peak hour site traffic volumes were obtained from a transportation brief entitled “Revised Transportation Brief” prepared by Stantec Consulting Ltd. The study did not analyze the Saturday mid peak hour period. As a result, trip estimates were also obtained from the ITE using Land Use Codes 210: Single-Family Detached Housing and Land Use Code 230: Residential Condominium/Townhouse. It was anticipated to be at full build-out by the end of 2020. This results in 33 two-way trips during the AM peak hour, 40 two-way trips during the PM peak hour, and 36 trips during the Saturday peak hour.

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

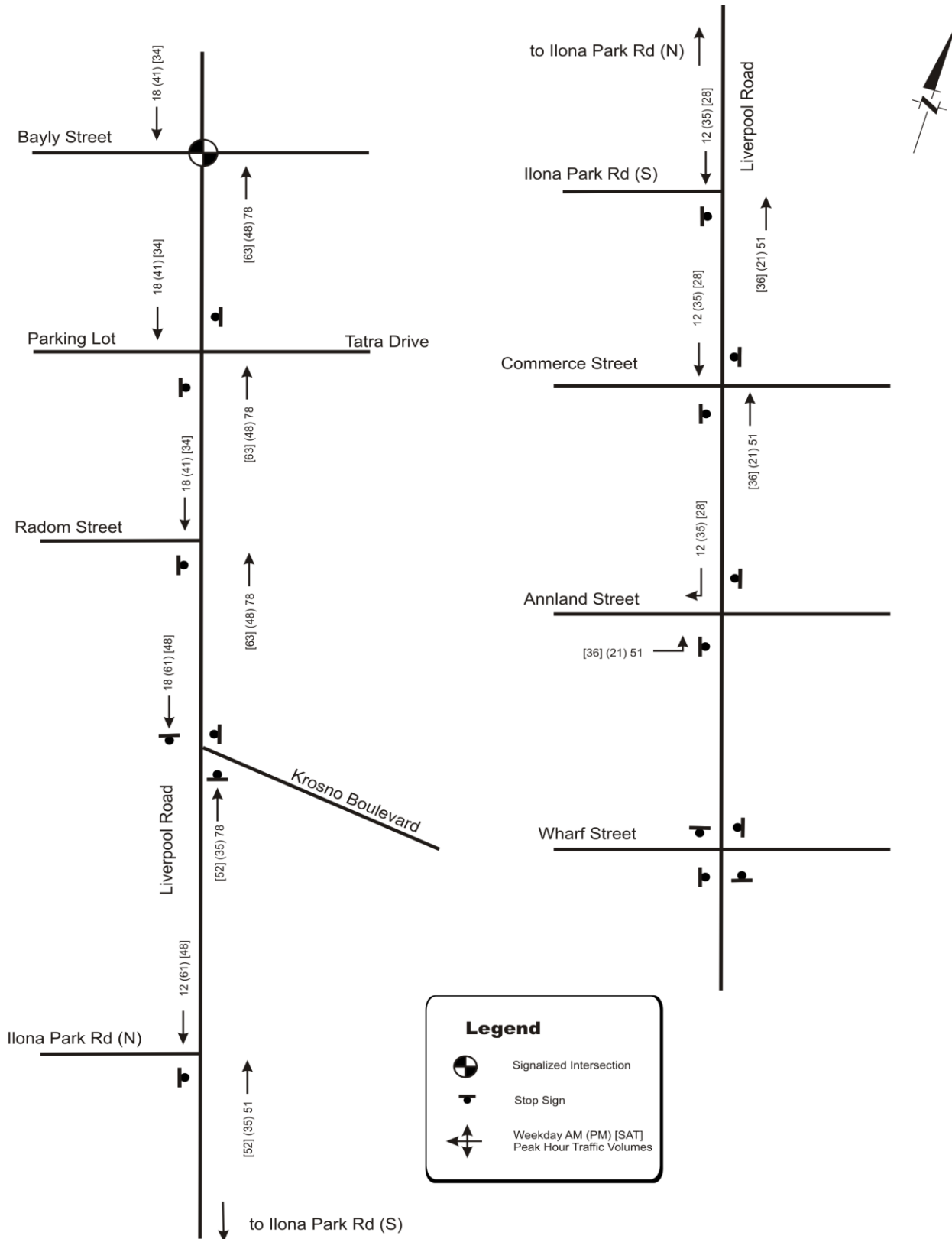


Exhibit 6: Background Development Traffic Volumes

3.3 Background Traffic Volumes

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

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

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

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

3.4 2027 Background Traffic Operations

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

Table 12: 2027 Background Traffic Signalized Intersection Operations

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

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

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



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

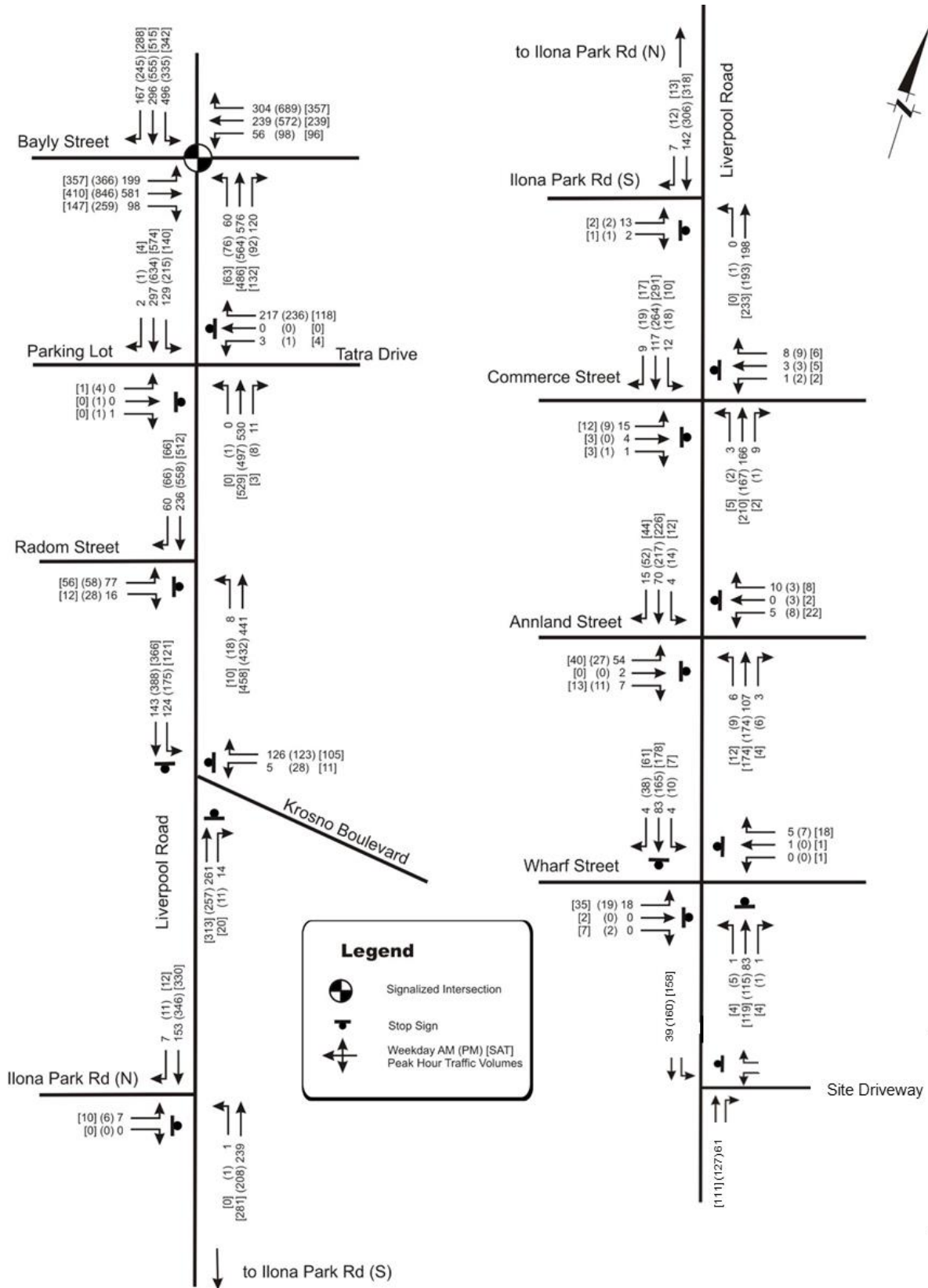


Exhibit 7: 2027 Background Traffic Volumes

Table 13: 2027 Background Traffic Unsignalized Intersection Operations

Intersection & Critical Movement	Weekday AM Peak Hour		Weekday PM Peak Hour		Saturday MID Peak Hour	
	LOS	v/c	LOS	v/c	LOS	v/c
Liverpool Road/Tatra Drive						
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
Liverpool Road/Radom Street						
Eastbound Left-Right	C	0.26	D	0.34	D	0.33
Northbound Left-Through	A	0.01	A	0.02	A	0.01
Liverpool Road/Krosno Boulevard						
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
Liverpool Road/Ilona Park Road (N)						
Eastbound Left-Right	B	0.02	B	0.02	B	0.03
Northbound Left-Through	A	0.00	A	0.00	-	0.00
Liverpool Road/Ilona Park Road (S)						
Eastbound Left-Right	B	0.03	B	0.01	B	0.01
Northbound Left-Through	-	0.00	A	0.00	-	0.00
Liverpool Road/Commerce Street						
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
Liverpool Road/Annland Street						
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
Liverpool Road/Wharf Street						
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
Liverpool Road/Tatra Drive (when pedestrian signals active)		
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
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	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 95th Percentile Queue Summary

Intersection	Existing Storage and Link Length	95 TH Percentile Queue (m) under 2027 Background Traffic Condition		
		AM Peak Hour	PM Peak Hour	SAT Peak Hour
Liverpool Road/Bayly Street				
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	126	93	81
Southbound Through	-	26	60	53
Southbound Right-turn	65	8	23	10
Liverpool Road/Tatra Drive				
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
Liverpool Road/Radom Street				
Eastbound Left-Right	-	8	11	11
Northbound Left-Through	-	<7	<7	<7
Liverpool Road/Krosno Boulevard				
Westbound Left-Right	-	13	16	15
Northbound Right-turn	-	25	27	35
Southbound Left-Through	-	27	62	48
Liverpool Road/Ilona Park Road (N)				
Eastbound Left-Right	-	<7	<7	<7
Northbound Left-Through	-	<7	<7	<7
Liverpool Road/Ilona Park Road (S)				
Eastbound Left-Right	-	<7	<7	<7
Northbound Left-Through	-	<7	<7	<7
Liverpool Road/Commerce Street				
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
Liverpool Road/Annland Street				
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
Liverpool Road/Wharf Street				
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, 95th 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 95th percentile southbound left turn queue.

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

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

3.6 2032 Background Traffic Operations

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

Table 17: 2032 Background Traffic Signalized Intersection Operations

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

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

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

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

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

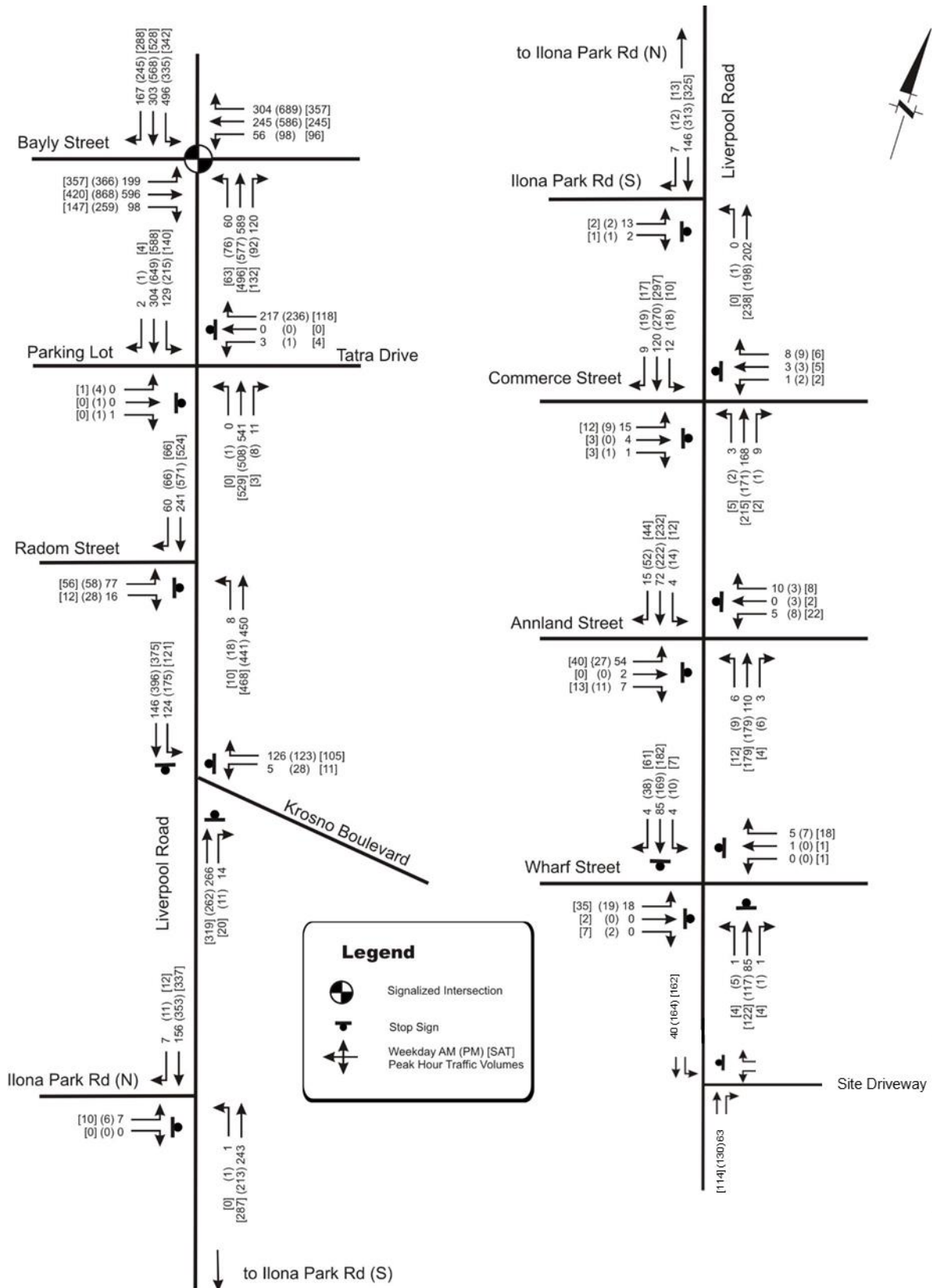


Exhibit 8: 2032 Background Traffic Volumes

Table 18: 2032 Background Traffic Unsignalized Intersection Operations

Intersection & Critical Movement	Weekday AM Peak Hour		Weekday PM Peak Hour		Saturday MID Peak Hour	
	LOS	v/c	LOS	v/c	LOS	v/c
Liverpool Road/Tatra Drive						
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
Liverpool Road/Radom Street						
Eastbound Left-Right	C	0.26	D	0.35	D	0.34
Northbound Left-Through	A	0.01	A	0.02	A	0.01
Liverpool Road/Krosno Boulevard						
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
Liverpool Road/Ilona Park Road (N)						
Eastbound Left-Right	B	0.02	B	0.02	B	0.03
Northbound Left-Through	A	0.00	A	0.00	-	0.00
Liverpool Road/Ilona Park Road (S)						
Eastbound Left-Right	B	0.03	B	0.01	B	0.01
Northbound Left-Through	-	0.00	A	0.00	-	0.00
Liverpool Road/Commerce Street						
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
Liverpool Road/Annland Street						
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
Liverpool Road/Wharf Street						
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
Liverpool Road/Tatra Drive (when pedestrian signals active)		
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
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

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 95th Percentile Queue Summary

Intersection	Existing Storage and Link Length	95 TH Percentile Queue (m) under 2032 Background Traffic Condition		
		AM Peak Hour	PM Peak Hour	SAT Peak Hour
Liverpool Road/Bayly Street				
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	128	96	73
Southbound Through	-	26	61	51
Southbound Right-turn	65	8	24	10
Liverpool Road/Tatra Drive				
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
Liverpool Road/Radom Street				
Eastbound Left-Right	-	8	12	11
Northbound Left-Through	-	<7	<7	<7
Liverpool Road/Krosno Boulevard				
Westbound Left-Right	-	16	15	13
Northbound Right-turn	-	29	28	27
Southbound Left-Through	-	29	58	42
Liverpool Road/Ilona Park Road (N)				
Eastbound Left-Right	-	<7	<7	<7
Northbound Left-Through	-	<7	<7	<7
Liverpool Road/Ilona Park Road (S)				
Eastbound Left-Right	-	<7	<7	<7
Northbound Left-Through	-	<7	<7	<7
Liverpool Road/Commerce Street				
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
Liverpool Road/Annland Street				
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
Liverpool Road/Wharf Street				
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, 95th 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 32 townhouses (9 of which are live-work units), and 170 condominium units in one 12-storey building (of which, 17 units are ground floor townhomes), and there will be 250 m² of potential commercial space in the form of the aforementioned 9 live-work units. The site is proposed to supply 348 parking spaces for both the residential and visitor components. There are also 116 bicycle parking spaces proposed for the development (15 of which will be visitor parking). Details of the justification for the proposed parking supply are provided in **Section 6**. The site concept plan is shown in **Exhibit 9**.

Two 6.5-metre wide, full movement driveway accesses are proposed on the east side of Liverpool Road to the site located just south of the pumping station road.

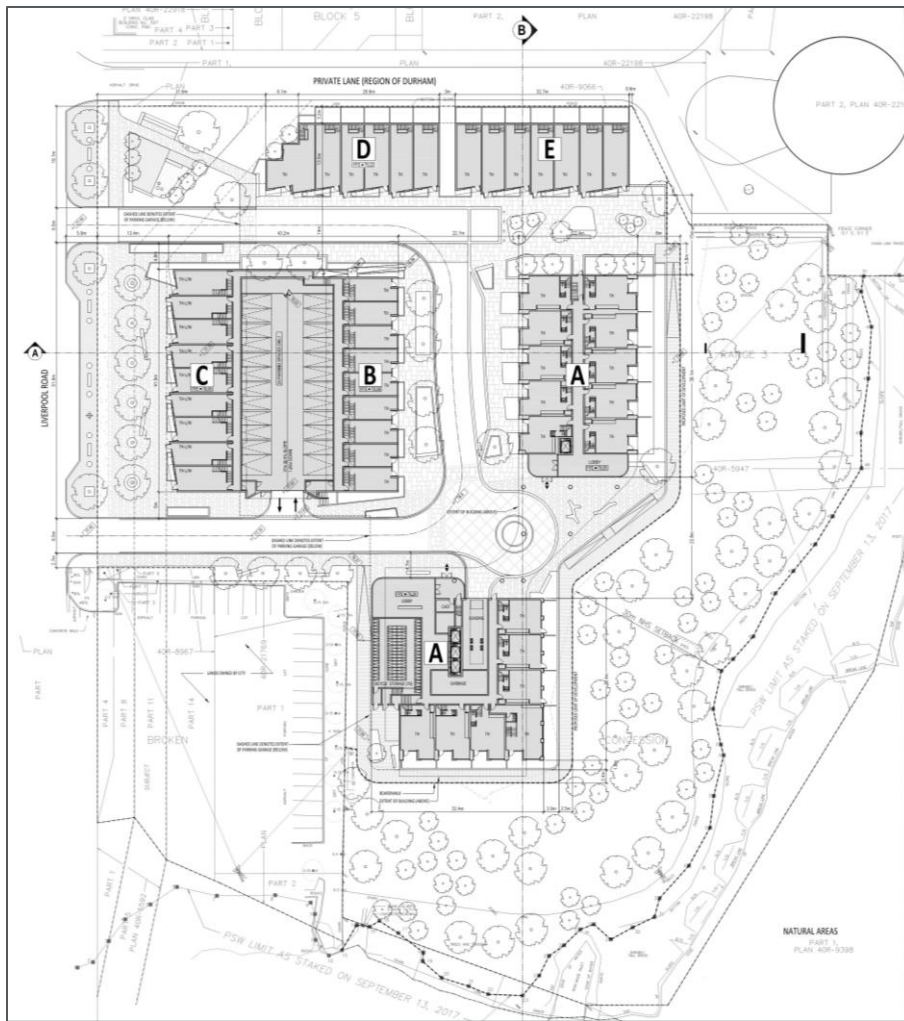


Exhibit 9: Conceptual Site Plan (June 6, 2021)

The conceptual site plan also shows the retained public parking lot along with the indication that the circulation aisles within the lot can serve as a turnaround loop required for emergency vehicles and for a potential shuttle bus that is being recommended to encourage and accommodate transit trips between the GO Station and Frenchmen's Bay. Additional information on the proposed shuttle bus is provided in **Section 8.3** of this report.

4.2 Proposed Development Traffic Generation

Site traffic generation for the proposed residential development was based on ITE Trip Generation Manual (10th Edition). The Multifamily Housing (Low-Rise) land use code 220 was used to estimate the trip generation for the 32 townhouse units, Multifamily Housing (Mid-Rise) land use code 221 was used to estimate the trip generation for the 170 condominium/townhouse units, and Shopping Centre land use code 820 was used to estimate the trip generation for the 250 m² of potential commercial space for the live-work units. Since the proposed development is mixed-use, it is expected that a portion of trips generated by the live-work units could originate from the residential building. In this study, an internal capture rate was not assumed in order to be conservative trip generation. The resulting vehicular traffic generation is summarized in **Table 22**.

Table 22: Site Traffic Generation

		Weekday AM Peak Hour	Weekday PM Peak Hour	Saturday Peak Hour
Land Use (220) Multifamily Housing (Low-Rise) – 31 units				
Gross trip rate	veh / unit	0.46	0.56	0.70
Gross trip generation	veh / h	14	17	22
Gross inbound trips	veh / h	3	11	12
Gross outbound trips	veh / h	11	6	10
Land Use (221) Multifamily Housing (Mid-Rise) – 170 units				
Gross trip rate	veh / unit	0.36	0.44	0.44
Gross trip generation	veh / h	61	75	75
Gross inbound trips	veh / h	16	46	37
Gross outbound trips	veh / h	45	29	38
Land Use (820) Shopping Centre – 2,691 ft²				
Gross trip rate	veh / 1000 ft ²	0.94	3.81	4.50
Gross trip generation	veh / h	3	10	12
Gross inbound trips	veh / h	2	5	6
Gross outbound trips	veh / h	1	5	6
Total				
Total net trip generation	veh / h	78	102	109
Total net inbound trips	veh / h	21	62	55
Total net outbound trips	veh / h	57	40	54

4.3 Site Generated Transit Demand

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

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

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

2. Vehicular site trip generation from **Table 22** - which represents auto-driver trips – was then converted to bus transit trips, and GO Transit Trips using the above mode splits.

3. Using the above information the projected transit demand in person trips was estimated. The resulting transit demand is summarized in **Table 23** below.

Table 23: 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	21	27%	1	2	3
OUT	57	73%	3	4	7
TOTAL	78		4	6	10
Weekday PM Peak Hour	84% Auto		7% Bus Transit	6% GO Train	
IN	62	61%	6	5	11
OUT	40	39%	4	3	7
TOTAL	102		10	8	18

Assuming site generated person trips to/from the GO station also uses the DRT buses on Liverpool Road, the total transit trips would be 10 person-trips during the AM peak hour and 18 person-trips during the PM peak hour.

4.4 Trip Generation

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

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



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

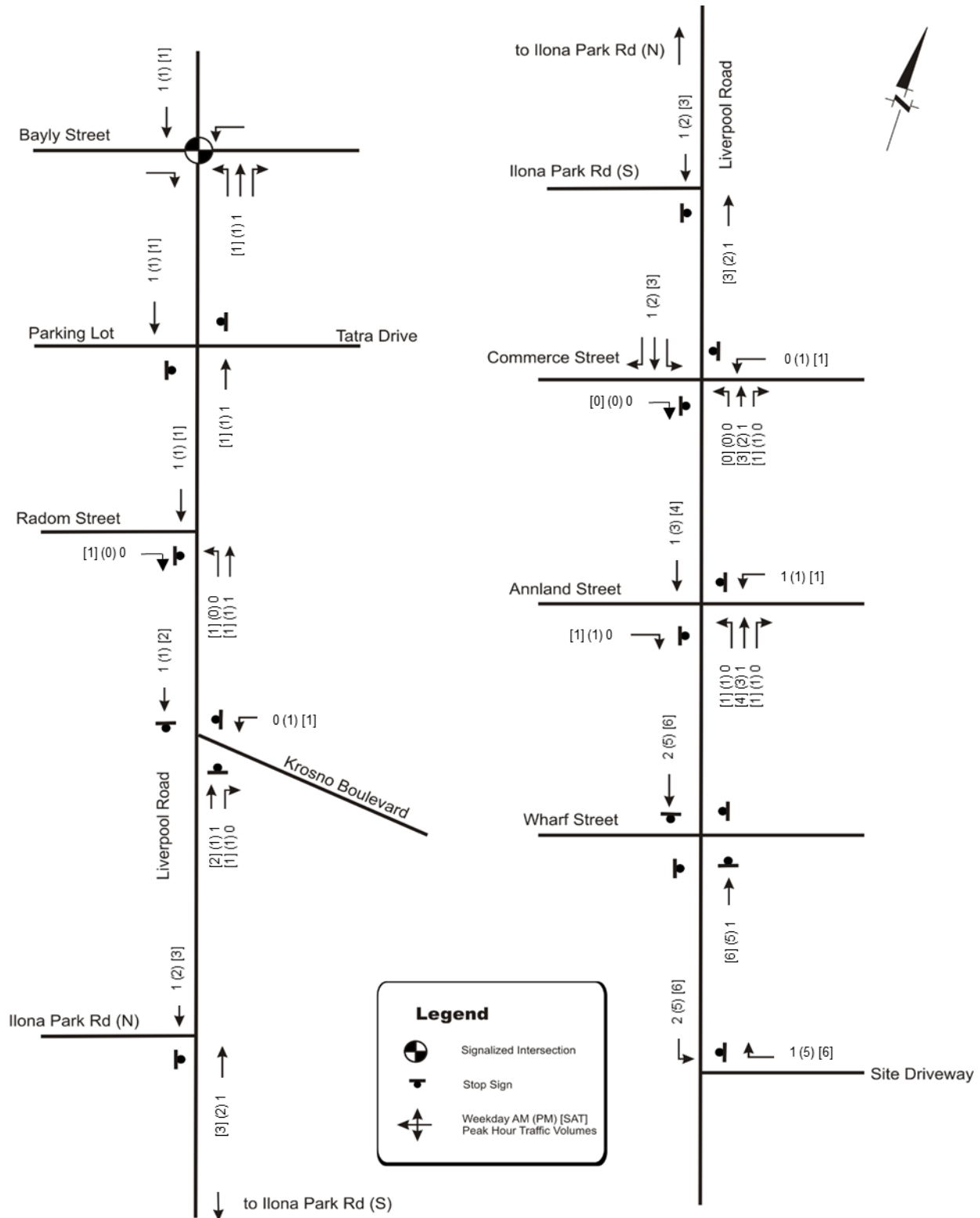
The trip distribution for the assembly hall was based on the existing traffic pattern with consideration given to major routes available to access the site. It is expected that very few trips will be generated during the AM peak hours for the assembly hall.

The trip distribution for the proposed development is summarized in **Table 24**.

Table 24: Site Traffic Distribution

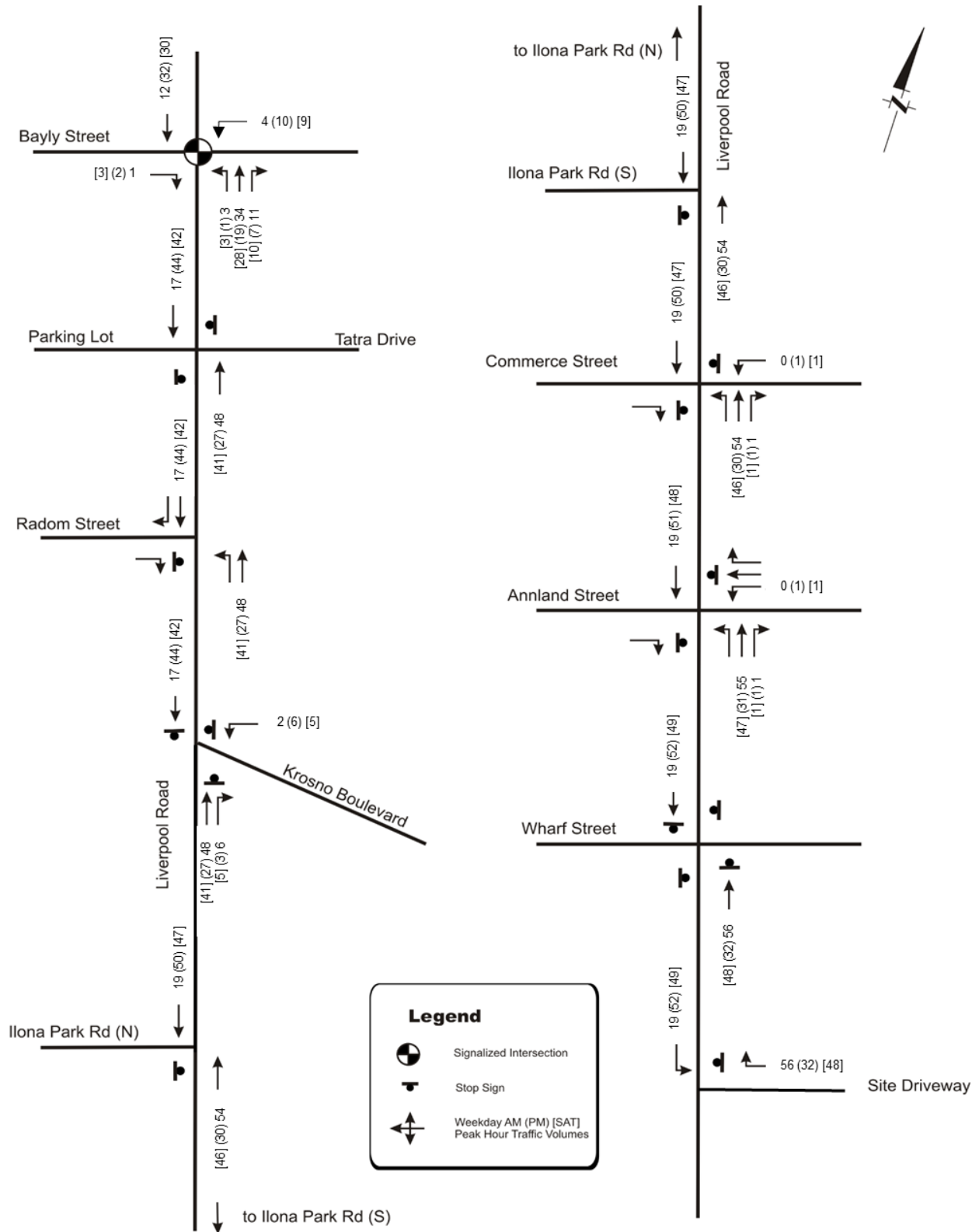
To / From	Via	New Site Trips	
		Residential	Commercial
North	Liverpool Road	60%	15%
South	Liverpool Road	0%	0%
East	Bayly Street	20%	0%
	Krosno Boulevard	10%	10%
	Commerce Street	3%	10%
	Annland Street	2%	30%
West	Bayly Street	5%	5%
	Radom Street	0%	10%
	Commerce Street	0%	5%
	Annland Street	0%	15%
Total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

There are two full movement accesses for the site; however, the site traffic volume has been consolidated into a single driveway to be conservative in the traffic analysis and analyze a worst-case scenario. The commercial, residential, and the total site trips are shown in **Exhibit 10**, **Exhibit 11**, and **Exhibit 12**, respectively.



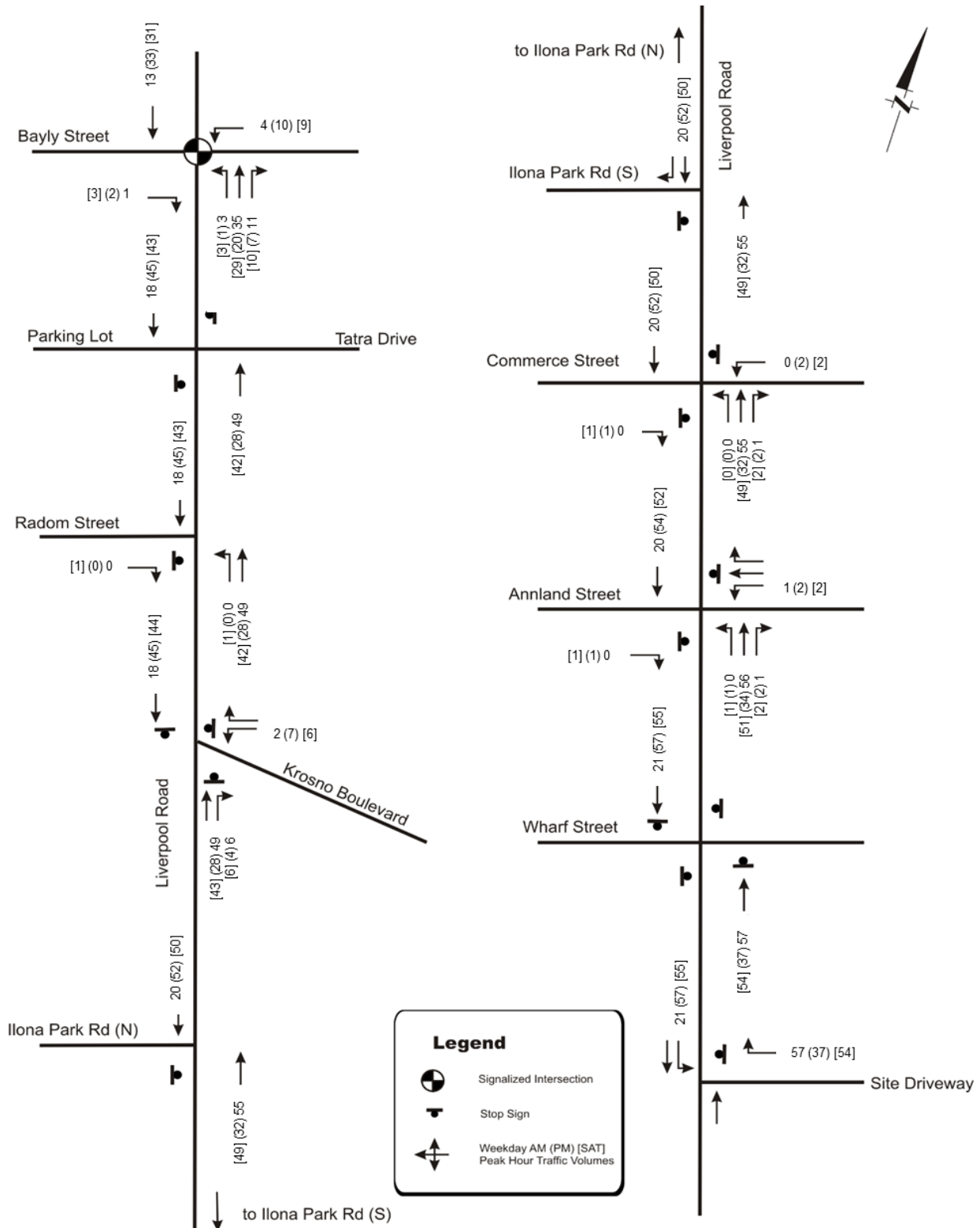
Note: There are two full movement accesses for the site; however, the site traffic volume has been consolidated into a single driveway to be conservative in the traffic analysis and analyze a worst-case scenario.

Exhibit 10: Commercial Traffic Volumes



Note: There are two full movement accesses for the site; however, the site traffic volume has been consolidated into a single driveway to be conservative in the traffic analysis and analyze a worst-case scenario.

Exhibit 11: Residential Traffic Volumes



Note: There are two full movement accesses for the site; however, the site traffic volume has been consolidated into a single driveway to be conservative in the traffic analysis and analyze a worst-case scenario.

Exhibit 12: Site Traffic Volumes – Total

5. 2027 and 2032 Total Traffic Conditions

5.1 2027 Total Traffic Operations

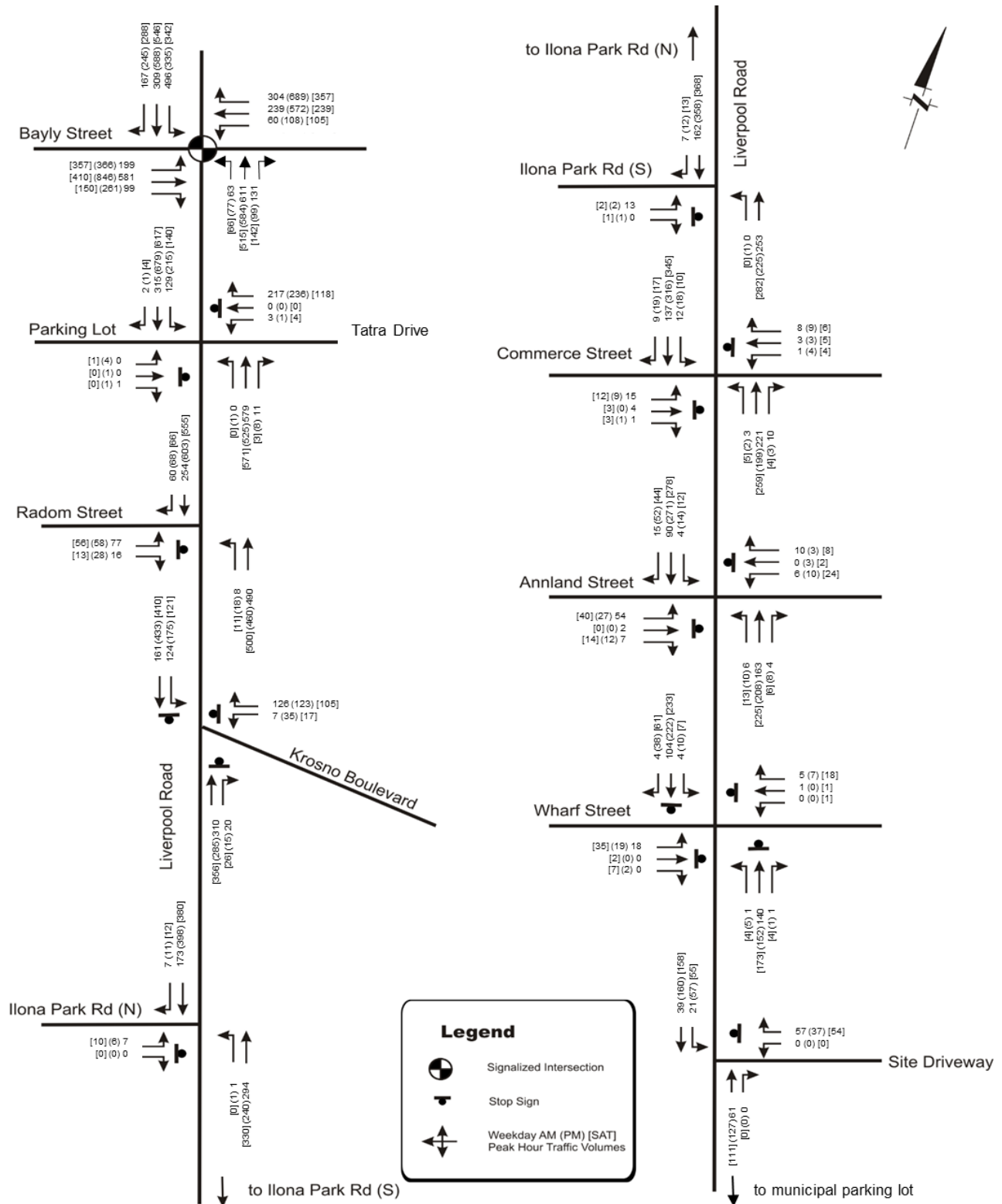
The 2027 total traffic volumes include 2027 background traffic plus the resulting site traffic for the proposed development are shown in **Exhibit 13**. The 2027 total signalized and unsignalized intersection operations are summarized in **Table 25** and **Table 26**, respectively. Detailed HCM output sheets generated by Synchro are provided in **Appendix C**.

Table 25: 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
Liverpool Road/Bayly Street	C	0.85	D	0.97	C	0.82
Eastbound Left-turn	D	0.61	E	0.96	C	0.71
Eastbound Through	D	0.77	C	0.70	C	0.35
Eastbound Right-turn	C	0.08	C	0.24	C	0.11
Westbound Left-turn	C	0.35	C	0.51	C	0.33
Westbound Through	C	0.34	C	0.59	C	0.26
Westbound Right-turn	B	0.39	E	0.97	B	0.44
Northbound Left-turn	C	0.17	C	0.28	C	0.25
Northbound Through-Right	D	0.81	D	0.82	D	0.82
Southbound Left-turn	D	0.85	E	0.94	C	0.82
Southbound Through	B	0.19	C	0.48	C	0.41
Southbound Right-turn	B	0.11	B	0.25	B	0.19

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

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



Note: There are two full movement accesses for the site; however, the site traffic volume has been consolidated into a single driveway to be conservative in the traffic analysis and analyze a worst-case scenario.

Exhibit 13: 2027 Total Traffic Volumes

Table 26: 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
Liverpool Road/Tatra Drive						
Eastbound Left-Through-Right	B	0.00	F	0.33	F	0.02
Westbound Left-Through-Right	C	0.55	C	0.52	C	0.31
Northbound Left-through-right	-	0.00	A	0.00	-	0.00
Southbound Left-turn	A	0.16	A	0.23	A	0.15
Southbound Through-Right	-	0.21	-	0.42	-	0.38
Liverpool Road/Radom Street						
Eastbound Left-Right	C	0.28	D	0.38	D	0.39
Northbound Left-Through	A	0.01	A	0.02	A	0.01
Southbound Through-Right	-	0.20	-	0.41	-	0.40
Liverpool Road/Krosno Boulevard						
Westbound Left-Right	A	0.24	B	0.29	B	0.20
Northbound Right-turn	B	0.57	B	0.50	B	0.55
Southbound Left-Through	B	0.51	E	0.96	C	0.75
Liverpool Road/Ilona Park Road (N)						
Eastbound Left-Right	B	0.02	C	0.02	C	0.03
Northbound Left-Through	A	0.00	A	0.00	-	0.00
Southbound Through-Right	-	0.12	-	0.29	-	0.25
Liverpool Road/Ilona Park Road (S)						
Eastbound Left-Right	B	0.03	B	0.01	B	0.01
Northbound Left-Through	-	0.00	A	0.00	-	0.00
Southbound Through-Right	-	0.12	-	0.25	-	0.24
Liverpool Road/Commerce Street						
Eastbound Left-Through-Right	B	0.05	C	0.03	C	0.06
Westbound Left-Through-Right	B	0.02	B	0.04	B	0.04
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
Liverpool Road/Annland Street						
Eastbound Left-Through-Right	B	0.12	B	0.10	C	0.14
Westbound Left-Through-Right	B	0.03	B	0.04	B	0.09
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
Liverpool Road/Wharf Street						
Eastbound Left-Through-Right	A	0.03	A	0.04	A	0.07
Westbound Left-Through-Right	A	0.01	A	0.01	A	0.03
Northbound Left-Through-Right	A	0.20	A	0.22	A	0.24
Southbound Left-Through-Right	A	0.16	A	0.37	A	0.38
Liverpool Road/Site Access *						
Westbound Left-Right	A	0.08	A	0.06	A	0.02
Northbound Through-Right	-	0.05	-	0.10	-	0.10
Southbound Left-Through	A	0.02	A	0.05	A	0.00

Notes: v/c – volume to capacity ratio, LOS – level of service; * analysis of one combined site driveway to be conservative

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

Southbound movements at Krosno Boulevard at Liverpool Road will operate at level of service ‘E’ and near capacity (v/c ratio = 0.96). Krosno Boulevard at Liverpool Road is currently an all-way stop.

With the new concept plan and reduced site traffic, Krosno signalization is no longer recommended based on the analysis or signal warrants. Additionally, 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. For reference, Krosno Boulevard at Liverpool Road was analyzed as a signalized intersection to identify and assess the potential for this improvement. New traffic signals are not recommended at this time; however, it is recommended to monitor and protect for a signal in the future. The 2027 total signalized intersection operations for Krosno Boulevard at Liverpool Road is summarized in **Table 27**.

Table 27: 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
Liverpool Road/Krosno Boulevard						
Westbound Left-Right	C	0.16	D	0.31	D	0.20
Northbound Right-turn	A	0.30	A	0.24	A	0.28
Southbound Left-Through	A	0.37	A	0.62	A	0.47

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

As shown in **Table 27**, all movements at Krosno Boulevard will operate at level of service ‘D’ or better if signalized.

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

In addition, Tatra Drive at Liverpool Road was also analyzed with signalized operations due to the high volume of pedestrians during the PM peak hour. The results can be found in **Table 28**.

Table 28: 2027 Total Traffic Tatra Drive Signalized PM Peak Operations

Intersection & Critical Movement	Weekday PM Peak Hour	
	LOS	v/c
Liverpool Road/Tatra Drive (when pedestrian signals active)		
Eastbound Left-Through-Right	C	0.07
Westbound Left-Through-Right	C	0.16
Northbound Left-through-right	A	0.40
Southbound Left-turn	A	0.34
Southbound Through-Right	A	0.52

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 29**. 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 29: 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 30** 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 30: 2027 Total 95th Percentile Queue Summary

Intersection	Existing Storage and Link Length	95 TH Percentile Queue (m) under 2027 Total Traffic Condition		
		AM Peak Hour	PM Peak Hour	SAT Peak Hour
Liverpool Road/Bayly Street				
Eastbound Left-turn	115	48	90	74
Eastbound Through	-	77	98	47
Eastbound Right-turn	100	<7	22	14
Westbound Left-turn	50	17	22	23
Westbound Through	-	32	70	31
Westbound Right-turn	150	41	133	50
Northbound Left-turn	75	10	16	13
Northbound Through-Right	-	92	89	83
Southbound Left-turn	50	123	97	83
Southbound Through	-	25	63	55
Southbound Right-turn	65	7	23	10
Liverpool Road/Tatra Drive				
Eastbound Left-Through-Right	-	<7	7	<7
Westbound Left-Through-Right	-	25	23	10
Northbound Left-through-right	-	<7	<7	<7
Southbound Left-turn	40	<7	<7	<7
Liverpool Road/Radom Street				
Eastbound Left-Right	-	9	13	13
Northbound Left-Through	-	<7	<7	<7
Southbound Through-Right	-	<7	<7	<7
Liverpool Road/Krosno Boulevard				
Westbound Left-Right	-	18	16	15
Northbound Right-turn	-	37	29	37
Southbound Left-Through	-	30	55	53
Liverpool Road/Ilona Park Road (N)				
Eastbound Left-Right	-	<7	<7	<7
Northbound Left-Through	-	<7	<7	<7
Southbound Through-Right	-	<7	<7	<7
Liverpool Road/Ilona Park Road (S)				
Eastbound Left-Right	-	<7	<7	<7
Northbound Left-Through	-	<7	<7	<7
Southbound Through-Right	-	<7	<7	<7
Liverpool Road/Commerce Street				
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
Liverpool Road/Anniand Street				
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
Liverpool Road/Wharf Street				
Eastbound Left-Through-Right	-	11	14	14
Westbound Left-Through-Right	-	8	8	12
Northbound Left-Through-Right	-	16	14	18
Southbound Left-Through-Right	-	17	22	24
Liverpool Road/Site Access				
Westbound Left-Right	-	<7	<7	<7
Northbound Through-Right	-	<7	<7	<7
Southbound Left-Through	-	<7	<7	<7

Under 2027 total traffic conditions, 95th 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, protection for signalization is recommended at Liverpool Road at Krosno Boulevard (to be accepted by the City considering the signals are not warranted) as well as signal timing optimization at Liverpool Road at Bayly Street.

5.3 2032 Total Traffic Operations

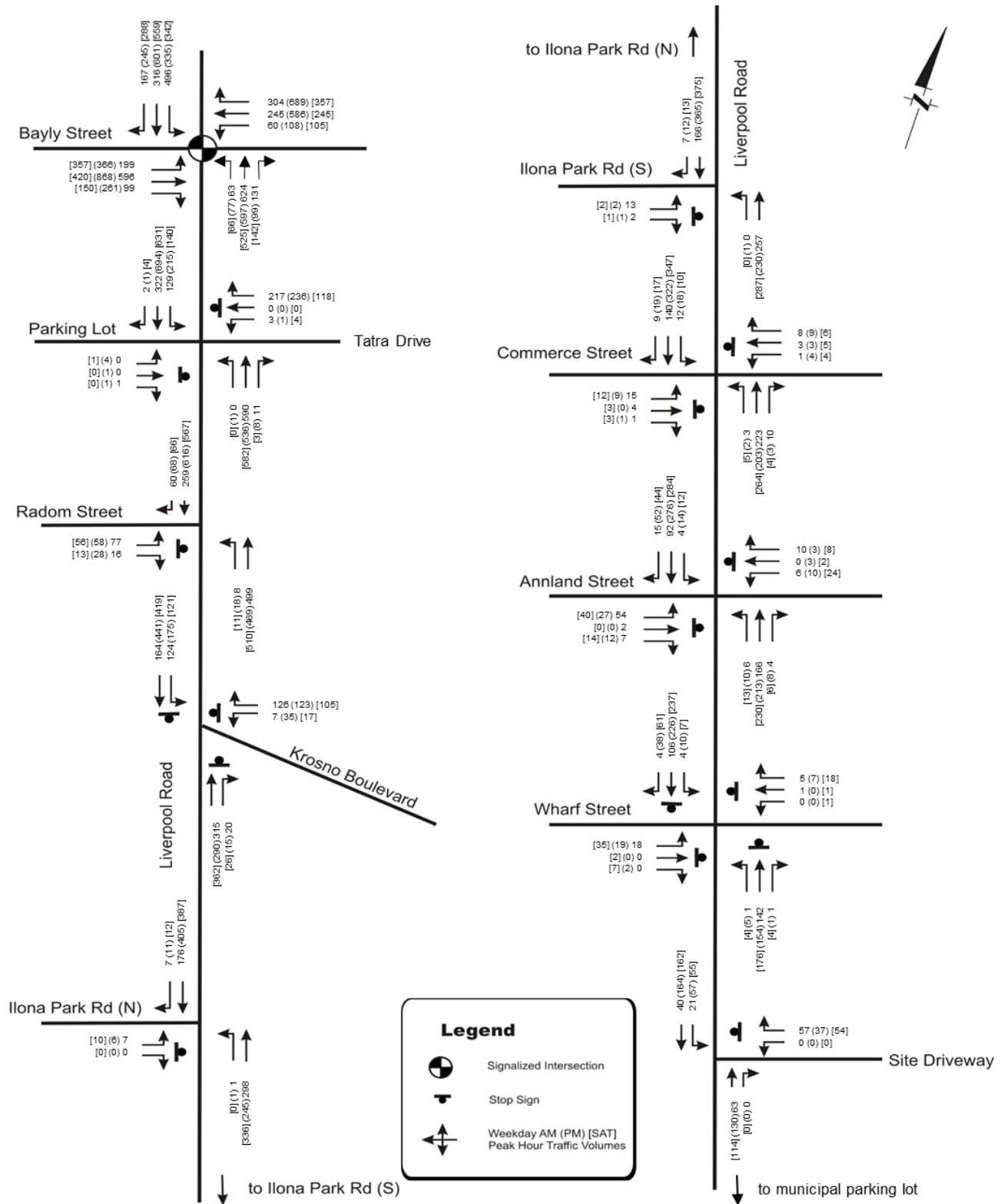
The 2032 total traffic volumes include 2032 background traffic plus the resulting site traffic for the proposed development are shown in **Exhibit 14**. The 2032 total signalized and unsignalized intersection operations are summarized in **Table 31** and **Table 32**, respectively. Detailed HCM output sheets generated by Synchro are provided in **Appendix C**.

Table 31: 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
	Liverpool Road/Bayly Street	C	0.86	D	0.98	C
Eastbound Left-turn	D	0.60	E	0.98	C	0.68
Eastbound Through	D	0.76	C	0.72	C	0.35
Eastbound Right-turn	C	0.08	C	0.25	C	0.11
Westbound Left-turn	C	0.34	C	0.53	C	0.36
Westbound Through	C	0.33	C	0.61	C	0.31
Westbound Right-turn	B	0.39	E	0.97	C	0.47
Northbound Left-turn	C	0.17	C	0.28	C	0.25
Northbound Through-Right	D	0.82	D	0.83	D	0.82
Southbound Left-turn	D	0.89	E	0.95	D	0.84
Southbound Through	B	0.19	C	0.49	C	0.42
Southbound Right-turn	B	0.11	B	0.25	B	0.19

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

Under 2032 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 0.98 or better if signals are optimized.



Note: There are two full movement accesses for the site; however, the site traffic volume has been consolidated into a single driveway to be conservative in the traffic analysis and analyze a worst-case scenario.

Exhibit 14: 2032 Total Traffic Volumes

Table 32: 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
Liverpool Road/Tatra Drive						
Eastbound Left-Through-Right	B	0.00	F	0.36	F	0.03
Westbound Left-Through-Right	C	0.56	C	0.53	C	0.32
Northbound Left-through-right	-	0.00	A	0.00	-	0.00
Southbound Left-turn	A	0.16	A	0.23	A	0.15
Southbound Through-Right	-	0.21	-	0.43	-	0.39
Liverpool Road/Radom Street						
Eastbound Left-Right	C	0.29	D	0.40	E	0.40
Northbound Left-Through	A	0.01	A	0.02	A	0.01
Southbound Through-Right	-	0.20	-	0.41	-	0.41
Liverpool Road/Krosno Boulevard						
Westbound Left-Right	A	0.25	B	0.30	B	0.20
Northbound Right-turn	B	0.58	B	0.51	B	0.56
Southbound Left-Through	B	0.51	F	0.98	C	0.76
Liverpool Road/Ilona Park Road (N)						
Eastbound Left-Right	B	0.02	C	0.02	C	0.03
Northbound Left-Through	A	0.00	A	0.00	-	0.00
Southbound Through-Right	-	0.13	-	0.29	-	0.26
Liverpool Road/Ilona Park Road (S)						
Eastbound Left-Right	B	0.03	B	0.01	B	0.01
Northbound Left-Through	-	0.00	A	0.00	-	0.00
Southbound Through-Right	-	0.12	-	0.26	-	0.25
Liverpool Road/Commerce Street						
Eastbound Left-Through-Right	B	0.05	C	0.03	C	0.06
Westbound Left-Through-Right	B	0.02	B	0.04	B	0.04
Northbound Left-Through-Right	A	0.00	A	0.00	A	0.01
Southbound Left-Through-Right	A	0.02	A	0.02	A	0.01
Liverpool Road/Annland Street						
Eastbound Left-Through-Right	B	0.13	B	0.10	C	0.14
Westbound Left-Through-Right	B	0.03	B	0.04	B	0.09
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
Liverpool Road/Wharf Street						
Eastbound Left-Through-Right	A	0.03	A	0.04	A	0.07
Westbound Left-Through-Right	A	0.01	A	0.01	A	0.03
Northbound Left-Through-Right	A	0.20	A	0.23	A	0.24
Southbound Left-Through-Right	A	0.16	A	0.37	A	0.39
Liverpool Road/Site Access *						
Westbound Left-Right	A	0.08	A	0.06	A	0.01
Northbound Through-Right	-	0.05	-	0.10	-	0.11
Southbound Left-Through	A	0.02	A	0.05	A	0.00

Notes: v/c – volume to capacity ratio, LOS – level of service; * Analysis based on one combined site driveway to be conservative

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 Tatra Drive during the Weekday PM and Saturday peak periods; eastbound movements at Radom Street during the Saturday peak period; and southbound movements Krosno Boulevard during the PM peak period. As mentioned in **Section 2.4**, the number of vehicles exiting the parking lot from the west at Radon is expected to be extremely low during those peaks.

Southbound movements at Krosno Boulevard at Liverpool Road will operate at level of service ‘F’ and near capacity (v/c ratio = 0.98). Krosno Boulevard at Liverpool Road is currently an all-way stop.

As previously mentioned, with the new concept plan and reduced site traffic, Krosno signalization is no longer recommended based on the analysis or signal warrants. For reference, Krosno Boulevard at Liverpool Road was analyzed as a signalized intersection to identify and assess the potential for this improvement. It should be noted that there is no recommendation for a proposed signal at this time; however, it is recommended to monitor and protect for a signal in the future. The 2032 total signalized intersection operations for Krosno Boulevard at Liverpool Road is summarized in **Table 27**.

Table 33: 2032 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
Liverpool Road/Krosno Boulevard						
Westbound Left-Right	C	0.16	D	0.31	D	0.20
Northbound Right-turn	A	0.31	A	0.24	A	0.28
Southbound Left-Through	A	0.38	A	0.62	A	0.47

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

As shown in **Table 27**, all movements at Krosno Boulevard will operate at level of service ‘D’ or better if signalized.

A 1-hour signal warrant analysis was also conducted to determine the need for signalization, and the detailed results can be found in **Appendix E**. The results indicated that both Warrant 1 – Minimum Vehicular Volume and Warrant 2 – Delay to Cross Traffic would still not be met under 2032 conditions.

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 34**.

Table 34: 2032 Total Traffic Tatra Drive Signalized PM Peak Operations

Intersection & Critical Movement	Weekday PM Peak Hour	
	LOS	v/c
Liverpool Road/Tatra Drive (when pedestrian signals active)		
Eastbound Left-Through-Right	C	0.07
Westbound Left-Through-Right	C	0.16
Northbound Left-through-right	A	0.41
Southbound Left-turn	A	0.35
Southbound Through-Right	A	0.53

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



Table 35: 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
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
Liverpool Road/Krosno Boulevard						
Westbound	A	B	A	B	A	B
Northbound	A	B	B	B	B	B
Southbound	B	B	B	C	B	C

5.4 2032 Total Queues

Queues under 2032 total traffic conditions are summarized in **Table 36** 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 36: 2032 Total 95th Percentile Queue Summary

Intersection	Existing Storage and Link Length	95 TH Percentile Queue (m) under 2032 Total Traffic Condition		
		AM Peak Hour	PM Peak Hour	SAT Peak Hour
Liverpool Road/Bayly Street				
Eastbound Left-turn	115	48	92	73
Eastbound Through	-	78	101	47
Eastbound Right-turn	100	<7	23	13
Westbound Left-turn	50	17	22	22
Westbound Through	-	33	71	33
Westbound Right-turn	150	41	133	55
Northbound Left-turn	75	10	16	13
Northbound Through-Right	-	96	95	84
Southbound Left-turn	50	130	100	87
Southbound Through	-	26	65	57
Southbound Right-turn	65	8	24	9
Liverpool Road/Tatra Drive				
Eastbound Left-Through-Right	-	<7	7	<7
Westbound Left-Through-Right	-	26	23	10
Northbound Left-through-right	-	<7	<7	<7
Southbound Left-turn	40	<7	<7	<7
Liverpool Road/Radom Street				
Eastbound Left-Right	-	9	14	14
Northbound Left-Through	-	<7	<7	<7
Southbound Through-Right	-	<7	<7	<7
Liverpool Road/Krosno Boulevard				
Westbound Left-Right	-	16	18	14
Northbound Right-turn	-	33	31	35
Southbound Left-Through	-	30	60	54
Liverpool Road/Ilona Park Road (N)				
Eastbound Left-Right	-	<7	<7	<7
Northbound Left-Through	-	<7	<7	<7
Southbound Through-Right	-	<7	<7	<7
Liverpool Road/Ilona Park Road (S)				
Eastbound Left-Right	-	<7	<7	<7
Northbound Left-Through	-	<7	<7	<7
Southbound Through-Right	-	<7	<7	<7
Liverpool Road/Commerce Street				
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
Liverpool Road/Annland Street				
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
Liverpool Road/Wharf Street				
Eastbound Left-Through-Right	-	12	13	14
Westbound Left-Through-Right	-	<7	7	12
Northbound Left-Through-Right	-	16	16	17
Southbound Left-Through-Right	-	18	20	24
Liverpool/Site Access				
Westbound Left-Right	-	<7	<7	<7
Northbound Through-Right	-	<7	<7	<7
Southbound Left-Through	-	<7	<7	<7

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



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

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

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

6. Parking Assessment

6.1 Proposed Parking Rates

The proposed development will be a mixed-use development comprising 22 townhouses, 9 live-work units, and 170 condominium units in one 12-storey building (of which, 17 units are ground floor townhomes), and there will be 250 m² of potential commercial space in the form of the aforementioned 9 live-work units. The site is proposed to supply 348 parking spaces for both the residential and visitor components.

The proposed parking supply was based on recommended parking rates applied to the site as summarized in **Table 37**, including the consideration of sharing the visitor parking from the potential commercial space of the live-work units with the residential visitor parking.

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

Table 37: Proposed Parking Supply Rates

Land Use	Size	Proposed Rate	Proposed Parking Spaces	Provided Parking Spaces
Condominium Apartment Units (in Mid-Rise Building) <i>Residential</i>	153 units	1.25 spaces/unit	192	192
Townhouses (in Mid-Rise Building) <i>Residential</i>	17 units	2.00 spaces/unit	34	34
Townhouses (Street) <i>Residential</i>	22 units	2.00 spaces/unit	44	44
Live-Work Units <i>Residential</i>	9 units	2.00 spaces/unit	18	18
Condominiums and Townhouses <i>Visitor</i>	192 units	0.25 spaces/unit	48	48
Live-Work Units <i>Visitor</i>	250 m ²	4.5 spaces/100m ²	12	12
Total	-	-	348	348

The development proposes a total of 348 spaces (which includes 268 residential spaces and 75 visitor parking spaces for the residential and live-work units). All residential spaces and visitor parking spaces will be provided in an underground parking garage with the exception of 4 visitor parking spaces provided in the form of lay-by parking at the surface within the site.

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

6.2 Proxy Site Parking Surveys

To determine appropriate parking rates that could be applied to proposed development at 591 Liverpool Road, parking demand surveys were conducted at nearby residential condominium apartment sites to assess the existing parking supply and demand and. The area nearest the site are primarily detached homes and townhouses. The closest similar locations selected were 1215 Bayly Street, 1235 Bayly Street, and 1210 Radom Street. The survey locations relative to the site is shown in **Exhibit 15**.

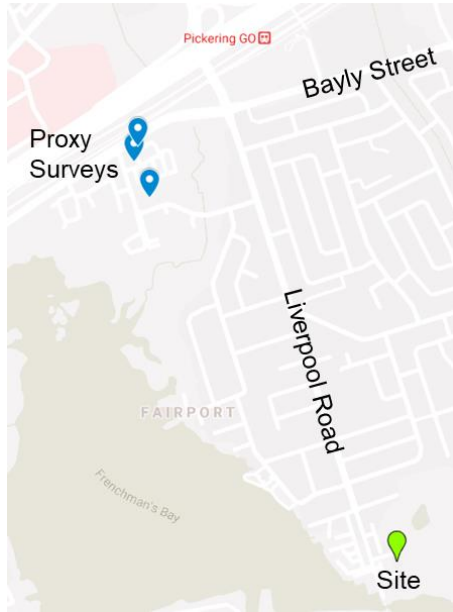


Exhibit 15: Proxy Site Parking Survey Locations

Although these locations are closer to transit (Pickering GO station) than the site, it is only a 10 to 15-minute walk closer than the proposed site, and there are no other similar apartment developments further south. The exhibit above shows the location of the proxy sites. The locations were surveyed during the expected peak parking demand periods between 5:30pm and 7:30pm (visitor parking) and after 11:00pm (residential parking). The peak residential and visitor demand of each of the proxy sites is summarized in **Table 38**.

Table 38: Proxy Parking Survey Results

Location	Number of Units	Supply		Demand	
		[Spaces]	[Spaces/Unit]	[Spaces]	[Spaces/Unit]
Residential					
1215 Bayly	169	172	1.02	135	0.80
1235 Bayly	235	224	0.95	201	0.86
1210 Radom	179	179	1.00	159	0.89
Average			0.99		0.85
Visitor					
1215 Bayly	169	42	0.25	33	0.20
1235 Bayly	235	58	0.25	45	0.19
1210 Radom	179	48	0.27	31	0.17
Average			0.26		0.19

Total					
1215 Bayly	169	214	1.27	168	0.99
1235 Bayly	235	266	1.20	234	1.05
1210 Radom	179	227	1.27	190	1.06
Average			1.25		1.04

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

Based on the results, there is an average demand of residential parking of 0.85 spaces per unit, and a combined visitor and commercial demand of 0.19 spaces per unit. Removing the parking demand for commercial use from the surveys, the visitor parking demand reduces to 0.14 spaces per unit as shown in **Table 39**.

Table 39: Proxy Parking Surveys for Visitor Parking Excluding Commercial Spaces

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

The proposed parking supply rate for the site ranging from 1.5 to 2.0 spaces / unit combined for residents and visitors is similar to the average parking supply for the three proxy sites surveyed.

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

A proposed residential parking rate of 1.25 and 1.75 spaces / unit for residential parking, which is higher than the spaces supplied at the three proxy sites, will be more than sufficient to accommodate the average observed parking demand rate of 0.85 parking spaces / unit.

As discussed earlier, the parking spaces for visitors and for the potential commercial customers for the live-work units can be shared. The visitor rate for the dwelling rates is set as 0.25 spaces / unit which is similar to the observed peak visitor parking rate. For the potential commercial space in the live-work units, the visitor rate is set at 4.5 spaces / 100m². The 4.5 spaces / 100m² for the live-work visitor parking of the 9 units is equivalent to providing 0.25 spaces / unit for visitors and an average of 3.5 spaces / 100 m² of GFA for commercial visitors.

7. Vehicle Maneuvering Diagrams

The internal circulation and loading area were tested using AutoTURN software (within AutoCAD) to check the internal circulation and loading space accessibility for anticipated design vehicles entering the site. The ability for a fire truck to maneuver within the site was tested. The largest vehicle anticipated to enter the site and use the loading space is a Medium Single-Unit Truck ('MSU') vehicle. The refuse collection trucks (Front End Loaders) were also tested. The detailed dimension for the Fire Truck, MSU, and Front End Loaders are presented on the vehicle maneuvering diagrams in **Appendix F** and in **Table 40**.

Table 40: Detailed Vehicle Dimensions for Swept Path Analysis

Vehicle	Dimensions
Fire Truck	
	Width: 2.54 metres
	Track: 2.54 metres
	Lock to Lock Time: 6.0 seconds
	Steering Angle: 37.0 degrees
Garbage Truck – Front End Loader	
	Width: 2.77 metres
	Track: 2.77 metres
	Lock to Lock Time: 6.0 seconds
	Steering Angle: 25.1 degrees
Garbage Truck – Rear End Loader	
	Width: 2.40 metres
	Track: 2.40 metres
	Lock to Lock Time: 6.0 seconds
	Steering Angle: 25.9 degrees
Medium Single-Unit Truck	
	Width: 2.60 metres
	Track: 2.60 metres
	Lock to Lock Time: 6.0 seconds
	Steering Angle: 40.2 degrees

The following vehicle maneuvering diagrams are provided in **Appendix F**:

- Fire truck turning within the site
- Front end loaders and MSU truck travelling inbound towards loading areas
- Front end loaders and MSU truck travelling outbound from loading areas
- Passenger vehicle turning at site underground ramp curve

8. 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.

8.1 Cycling

The proposed development will provide 90 indoor residential bicycle parking spaces and 15 bicycle parking spaces for commercial-visitor parking in the form of bicycle racks located at ground level outside the building and live-work units. For comparison, this supply rate meets the minimum requirements in the City’s Zoning By-law 7553/17 which outlines minimum requirements for bicycle parking spaces for apartment dwelling as 0.5 spaces per unit, stacked dwelling units as 1.0 spaces per unit, and a minimum of 2 bicycle parking spaces for the potential commercial space.

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.

Table 41: Proposed Bicycle Parking Supply Rates

Unit Types	Units	Proposed Rates	Bicycle Parking Spaces Supplied
Dwelling Units	201	0.5 spaces per unit	101
Visitor Parking	-	-	15
Total	201	-	116

8.2 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.

8.3 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 existing bus route services are shown in **Table 42**.

Table 42: Bus Route Services

Bus / Route	Approximate headways during peak periods
Liverpool Road	
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
Bayly Street	
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
GO Transit	
Lakeshore East Train (GO)	Weekday AM – 20 minutes towards Toronto, 30 minutes towards Oshawa Weekday PM – 20 minutes towards Oshawa, 20 minutes towards Toronto Saturday MID – 30 minutes towards Oshawa, 30 minutes towards Toronto
51, 52, 54 – 407 East Bus (GO)	Weekday AM – 40 minutes Weekday PM – 30 minutes

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

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

All transit stops are connected to the existing sidewalk network and as mentioned in **Section 8.2**, 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 10 person-trips during the AM peak hour and 18 person-trips during the PM peak hour.

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

On the other hand, if a dedicated shuttle bus (with a seat capacity of 25 seats) is proposed to serve the site to/from the Pickering GO station in future, then it can be assumed that the proposed shuttle bus can also reduce at least 8 vehicles (i.e. assuming an average car occupancy of 1.5) from the road if a 50% occupancy of the bus is considered for both inbound and outbound traffic. Vehicle maneuvering diagrams showing a 14-metre bus using the internal roadway is presented in **Appendix F**; however, a smaller bus can be used based on the expected ridership.

As all of the future north-south traffic flows travelling through all the intersections will be operating under acceptable LOS and delays under Future Total Traffic Conditions (background plus the subject development), the addition of this shuttle/transit 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.

8.4 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.

8.5 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.

8.6 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.

9. 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 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 32 townhouses (9 of which are live-work units), and 170 condominium units in one 12-storey building (of which, 17 units are ground floor townhomes), and there will be 250 m² of potential commercial space in the form of the aforementioned 9 live-work units. The site is proposed to supply 348 parking spaces for both the residential and visitor components. There are also 116 bicycle parking spaces proposed for the development (15 of which will be visitor parking).

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

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

Only the southbound left-turn 95th 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.

Future residents of the subject development are expected to use the existing transit service on Liverpool Road. In addition, there is an opportunity to work with Durham Region Transit and Metrolinx to provide shuttle buses to/from the site to connect with the GO Station or increased frequency of the DRT 101 and DRT 193, which will further reduce the forecast auto-vehicles that have been estimated and documented in this report. The additional shuttle bus or bus trips will not impact the operations of the road network. The private road network is sufficient to allow a turnaround for a 14-metre bus. Minor reconfiguration of the public parking lot may be required to accommodate the regular city bus; however, the demand response buses (shuttle bus) is expected to meet the expected transit demands.

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

The proposed 12-storey building and townhouse blocks 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 101 and at least 15 bicycle parking spaces, respectively, for residents and visitors. Combined with other potential TDM measures, the subject development will likely result in generating less vehicular traffic based on the available active transportation and transit opportunities. The vehicular traffic estimated in this report is conservative as the study does not account for potential increases in transit service and the application of TDM measures that could reduce vehicle trips.



Appendix A

Traffic Data Collection

North-South Road: Liverpool Road

East-West Road: Annland Street

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

Weather: WKDY-Sunny, SAT - Sunny

MUNICIPALITY: Pickering, Ontario

TIG TCS v1.17

TRAF8 GROUP

		AUTOS												PEDESTRIANS				
	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					
WEEKDAY	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		
SATURDAY	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		
	TOTALS																	
	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

		MEDIUM												BICYCLES			
	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				
WEEKDAY	700	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
	715	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0
	730	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
	745	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	800	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0
	815	0	0	0	0	0	0	0	1	0	0	2	0	1	0	0	1
	830	0	0	0	0	1	0	0	1	0	0	0	0	2	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	1	0	0	0
	1615	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
	1630	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0
	1645	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1700	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	1	1	2	1	0	0	
1730	0	1	0	0	0	0	0	0	0	0	2	0	2	0	2	0	
1745	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	
SATURDAY	1200	0	0	0	0	0	0	0	3	0	0	1	0	8	1	1	0
	1215	0	0	0	0	0	0	0	0	0	0	1	0	1	2	1	0
	1230	0	0	0	0	0	0	0	1	0	0	3	0	7	2	3	0
	1245	0	0	0	0	0	0	0	2	0	0	0	0	0	0	4	0
	1300	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0
	1315	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0
	1330	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	1	0	0	1	3	1	
	TOTALS																
	AM	0	0	0	0	1	0	1	4	0	0	3	1	4	1	0	1
	PM	0	1	0	0	0	0	1	2	0	1	3	1	5	3	3	0
	SAT	0	0	0	1	0	0	0	7	0	0	6	1	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

HEAVY																	
TIME BEGINNING	Annland Street			Annland Street			Liverpool Road			Liverpool Road			U-TURNS				
	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					
WEEKDAY	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	
SATURDAY	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	1	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	1	0	0
	1330	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
1345	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
TOTALS																	
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	2	0	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

TOTAL 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		
WEEKDAY	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	
SATURDAY	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	
TOTALS														
AM	5	2	10	10	1	15	12	167	7	4	131	6	370	
PM	8	2	19	17	5	6	17	262	16	25	326	32	735	
SAT	7	3	24	28	4	10	18	311	11	18	428	26	888	

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	
WEEKDAY	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
SATURDAY	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	
WEEKDAY	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	
SATURDAY	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	
AM 730 - 830	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
	Total	3	2	7	5	0	10	6	102	3	4	67	3	212
	% 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
PM 1600 - 1700	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
	Total	6	0	11	8	3	3	9	136	6	14	156	17	369
	% 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
SAT 1215 - 1315	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
	Total	4	0	13	22	2	8	12	166	4	12	215	16	474
	% 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
AM	6	3	2	1	12	1	0	0	1	2	0	3	0	0	3
PM	4	1	2	3	10	1	2	0	0	3	0	1	0	0	1
SAT	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	
		WEEKDAY												
	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
SATURDAY														
	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	
WEEKDAY	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
SATURDAY	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

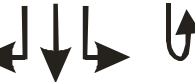
	TIME BEGINNING	Annland Street			Annland Street			Liverpool Road			Liverpool Road			TOTAL VEHICLES
		Eastbound			Westbound			Northbound			Southbound			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
WEEKDAY	700	0	0	0	0	0	0	0	0	0	0	1	0	1
	715	0	0	0	0	0	0	0	0	0	0	1	0	1
	730	0	0	0	0	0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

	Autos	Medium	Heavy	Total
←	3	0	0	3
→	63	3	1	67
↔	4	0	0	4

U-Turns	0
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Pedestrians	1
Bicyclists	1

PERIOD	WEEKDAY AM PEAK HOUR
TIME	0730 - 0830

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

Annland Street

Auto	Medium	Heavy	Total
3	0	0	3
2	0	0	2
7	0	0	7

U-Turns	0
----------------	---



Pedestrians	6
Bicyclists	1

Pedestrians	3
Bicyclists	0

Auto	Medium	Heavy	Total
9	0	1	10
0	0	0	0
5	0	0	5

U-Turns	3
----------------	---

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%

Pedestrians	2
Bicyclists	0



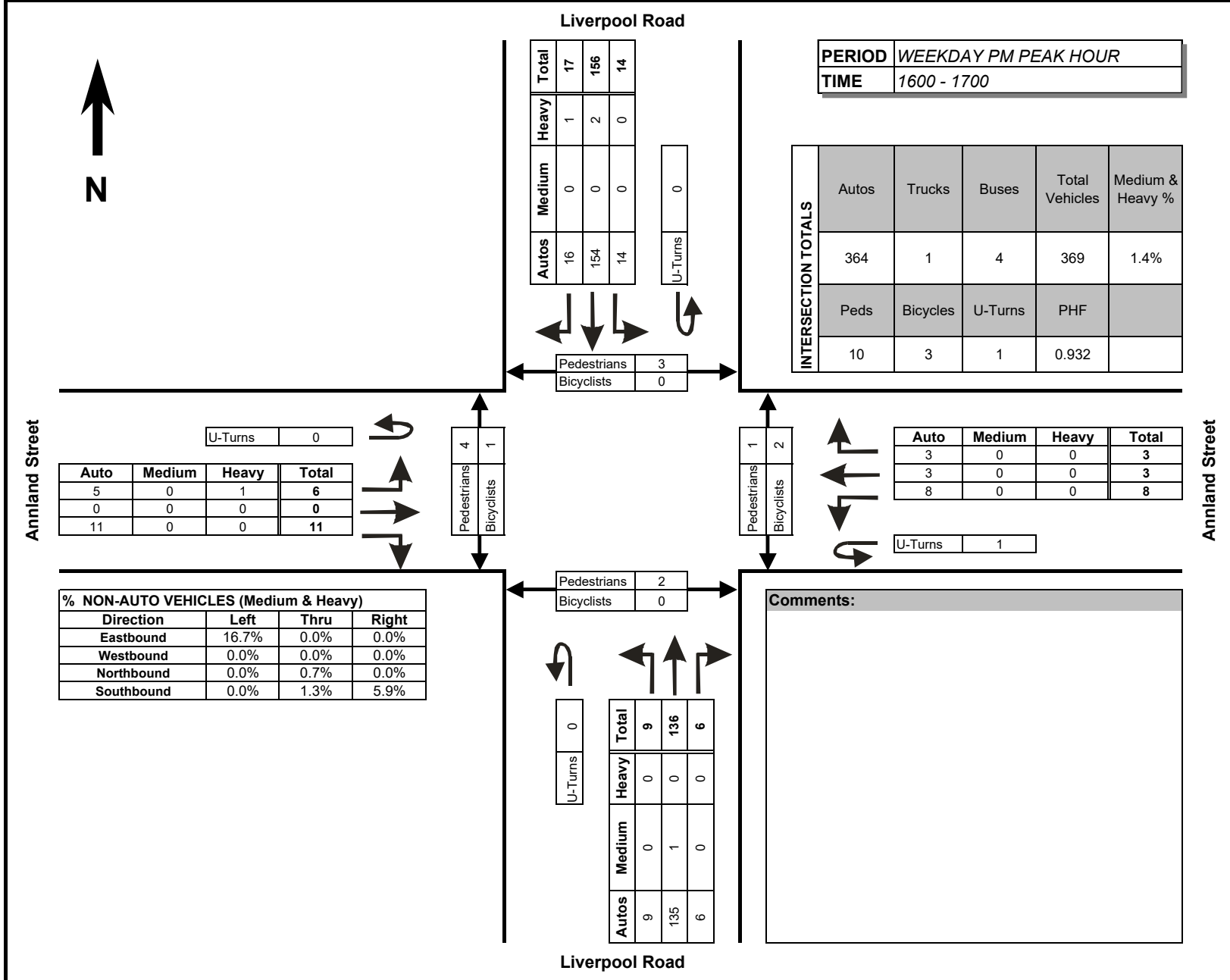
	Autos	Medium	Heavy	Total
←	5	1	0	6
→	100	2	0	102
↔	3	0	0	3

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**



TRAF8 GROUP

TIG TCS v1.17

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

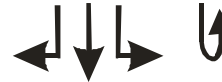
**TURNING
MOVEMENT
DIAGRAM**



Liverpool Road

	Total	16	215	12
	Heavy	0	1	0
	Medium	0	4	0
	Autos	16	210	12

U-Turns	0
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Pedestrians	2
Bicyclists	0

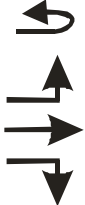
PERIOD	SAT PEAK HOUR
TIME	1215 - 1315

INTERSECTION TOTALS	Autos	465	Trucks	8	Buses	1	Total Vehicles	474	Medium & Heavy %	1.9%
	Peds	23	Bicycles	21	U-Turns	1	PHF	0.933		

Annland Street

U-Turns	0
----------------	---

Auto	4	Medium	0	Heavy	0	Total	4
0	0	0	0	0	0	0	0
13	0	0	0	0	0	13	



Pedestrians	15
Bicyclists	8

Pedestrians	5
Bicyclists	4

Auto	8	Medium	0	Heavy	0	Total	8
2	0	0	0	0	0	2	
22	0	0	0	0	0	22	

U-Turns	1
----------------	---

Annland 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%	2.4%	0.0%
Southbound	0.0%	2.3%	0.0%

Pedestrians	1
Bicyclists	9



	Total	12	166	4
	Heavy	0	0	0
	Medium	0	4	0
	Autos	12	162	4

U-Turns	0
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Liverpool Road

Comments:

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

AUTOS															PEDESTRIANS			
WEEKDAY	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					
	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	
SATURDAY	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		
	TOTALS																	
	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

MEDIUM														BICYCLES			
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					
WEEKDAY	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	
SATURDAY	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	
TOTALS																	
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

		HEAVY												U-TURNS				
	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					
WEEKDAY	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	
SATURDAY	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		
	TOTALS																	
	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

TOTAL 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			
WEEKDAY	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		
SATURDAY	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	
TOTALS															
AM	394	1,100	202	114	428	589	118	872	251	915	493	279	5,755		
PM	751	1,582	471	199	955	1,332	148	1,007	188	631	887	488	8,639		
SAT	663	713	286	195	474	738	127	794	273	674	844	617	6,398		

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	
WEEKDAY	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
SATURDAY	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
WEEKDAY	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	
SATURDAY	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	
AM 730 - 830	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
	Total	199	553	98	56	227	304	60	474	120	496	264	167	3,018
	% 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	
PM 1700 - 1800	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
	Total	366	805	259	98	544	689	76	491	92	335	489	245	4,489
	% 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	
SAT 1230 - 1330	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
	Total	357	390	147	96	227	357	63	402	132	342	458	288	3,259
	% 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
AM	18	35	21	18	92	0	3	0	0	3	1	23	1	1	26
PM	34	54	29	24	141	6	3	6	4	19	0	14	0	0	14
SAT	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	
		WEEKDAY												
	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
SATURDAY														
	1200	336	380	146	92	230	346	62	400	132	321	404	299	3,148
	1215	345	386	143	85	229	346	59	404	118	315	431	301	3,162
	1230	357	388	138	94	225	349	63	395	129	339	451	284	3,212
	1245	341	361	131	95	228	376	70	396	137	338	423	285	3,181
	1300	327	328	123	96	241	374	63	385	134	346	430	308	3,155

North-South Road: Liverpool Road

East-West Road: Bayly Street

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

Weather: WKDY-Sunny, SAT - Sunny

MUNICIPALITY: Pickering, Ontario

TIG TCS v1.17

TRAF8 GROUP

HOURLY SUMMARY - MEDIUM

	TIME BEGINNING	Bayly Street			Bayly Street			Liverpool Road			Liverpool Road			TOTAL VEHICLES
		Eastbound			Westbound			Northbound			Southbound			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
WEEKDAY	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
SATURDAY	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

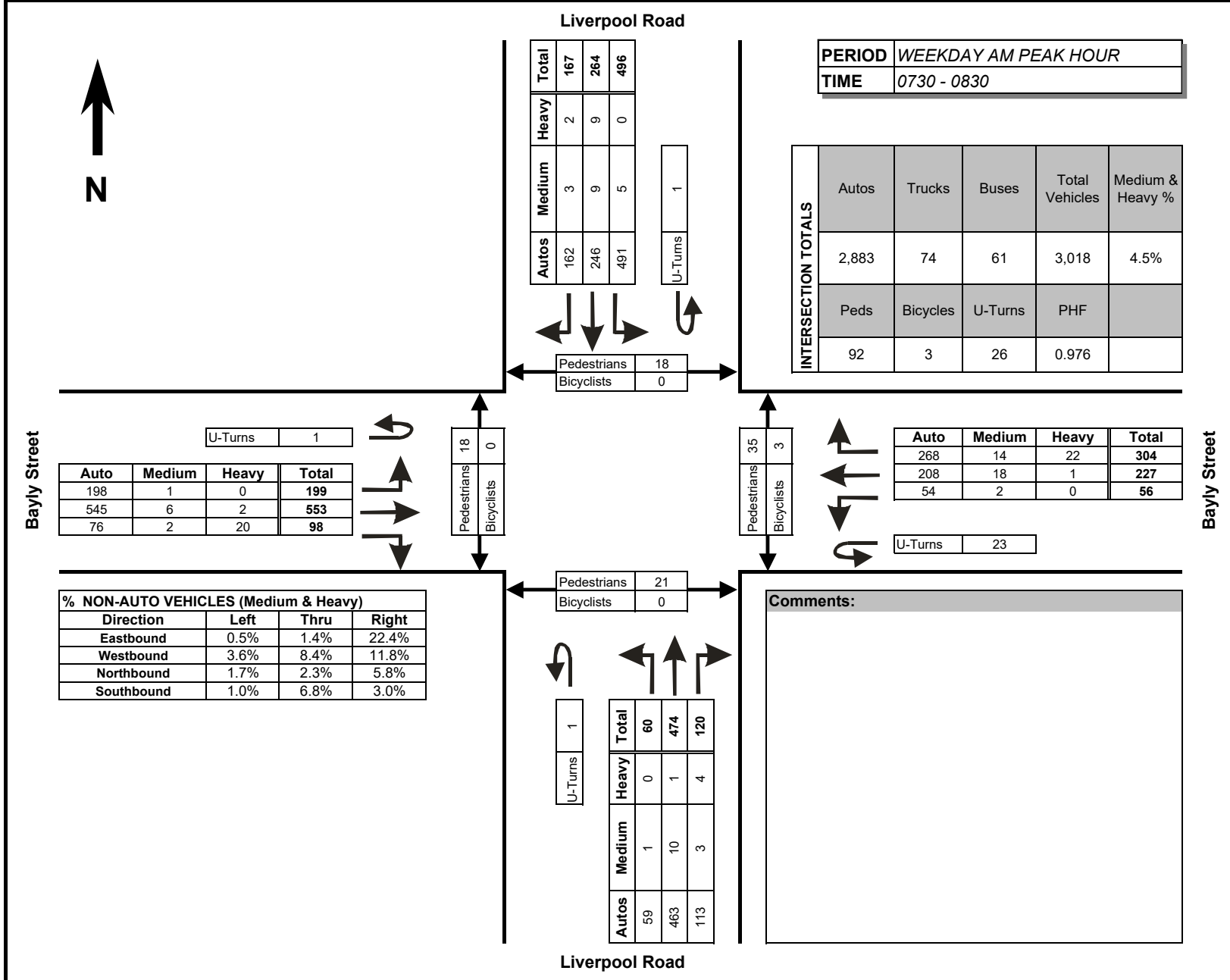
	TIME BEGINNING	Bayly Street			Bayly Street			Liverpool Road			Liverpool Road			TOTAL VEHICLES
		Eastbound			Westbound			Northbound			Southbound			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
WEEKDAY	700	0	3	34	0	3	26	0	2	4	0	7	3	82
	715	0	3	27	0	2	24	0	1	4	0	8	2	71
	730	0	2	20	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
SATURDAY	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

TRAF8 GROUP

TIG TCS v1.17

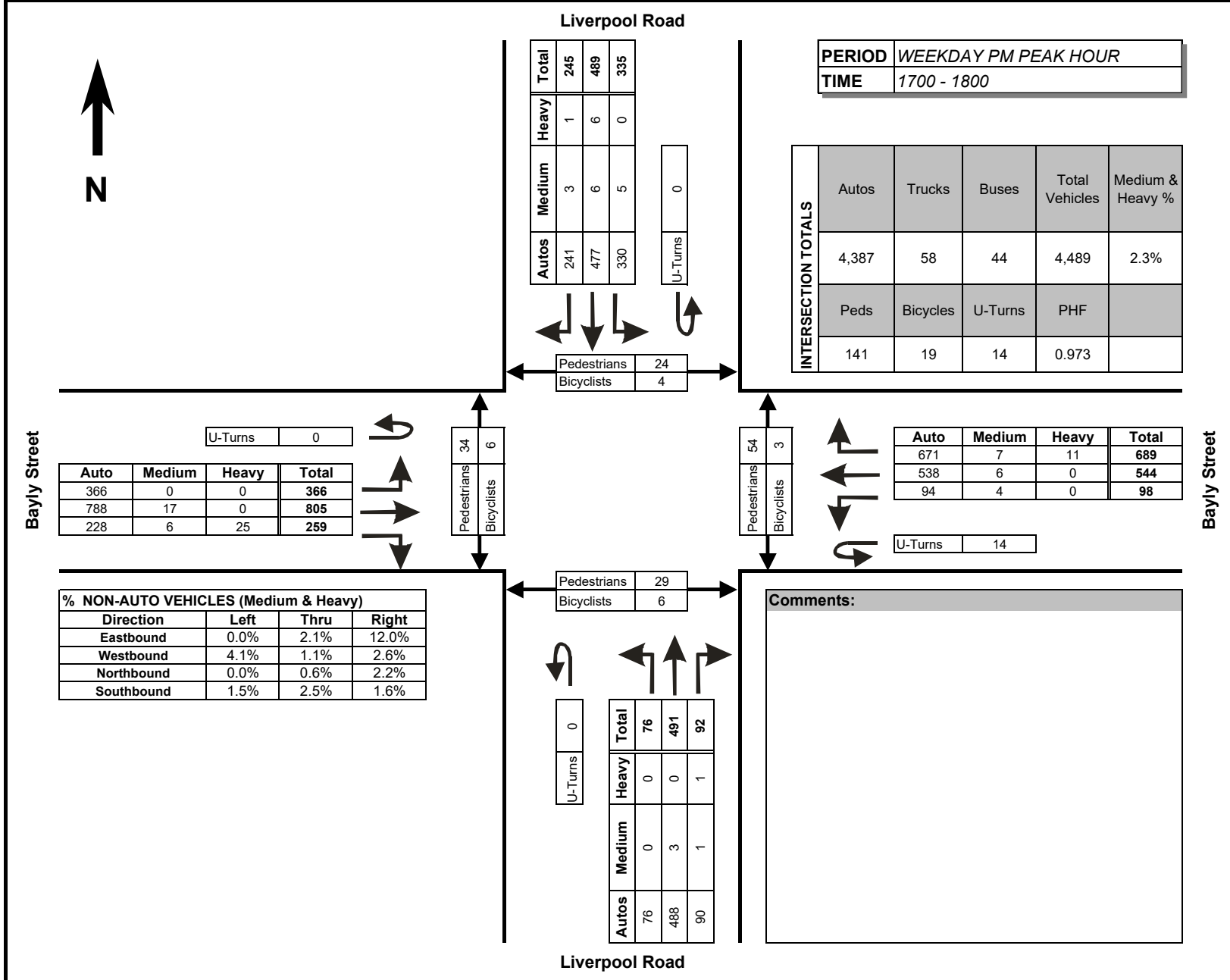
NORTH-SOUTH ROAD: *Liverpool Road*
EAST-WEST ROAD: *Bayly Street*
SURVEY DATE: *Thu Jun 1, Sat Jun 3, 2017*
MUNICIPALITY: *Pickering, Ontario*
WEATHER: *WKDY-Sunny, SAT - Sunny*

**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 15 Min Report

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

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

North-South Road: Liverpool Road

East-West Road: Commerce Street

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

Weather: WKDY-Sunny, SAT - Sunny

MUNICIPALITY: Pickering, Ontario

TIG TCS v1.17

TRAF8 GROUP

		AUTOS												PEDESTRIANS				
	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					
WEEKDAY	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	
SATURDAY	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		
	TOTALS																	
	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

		MEDIUM												BICYCLES			
	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				
WEEKDAY	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	
SATURDAY	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	
	TOTALS																
	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

		HEAVY												U-TURNS			
	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				
WEEKDAY	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	
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
	TOTALS																
	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

TOTAL 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		
WEEKDAY	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	
SATURDAY	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	
TOTALS														
AM	23	9	3	2	6	15	3	192	11	17	162	12	455	
PM	19	4	1	3	5	21	2	206	4	25	320	32	642	
SAT	23	6	5	8	9	17	7	330	5	17	468	37	932	

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	
WEEKDAY	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
SATURDAY	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
WEEKDAY	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	
SATURDAY	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	
AM 745 - 845	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
	Total	15	4	1	1	3	8	3	109	9	12	100	9	274
	% 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
PM 1630 - 1730	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
	Total	9	0	1	2	3	9	2	109	1	18	168	19	341
	% 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
SAT 1300 - 1400	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
	Total	12	3	3	2	5	6	5	166	2	10	250	17	481
	% 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
AM	2	0	14	0	16	1	2	0	0	3	0	0	0	0	0
PM	9	12	2	1	24	0	0	0	0	0	0	0	0	0	0
SAT	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	
		WEEKDAY												
	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
SATURDAY														
	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	
WEEKDAY	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
SATURDAY	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	
WEEKDAY	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
SATURDAY	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

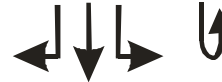
**TURNING
MOVEMENT
DIAGRAM**



Liverpool Road

	Total	9	100	12
	Heavy	4	0	0
	Medium	0	3	0
	Autos	5	97	12

U-Turns	0
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Pedestrians	0
Bicyclists	0

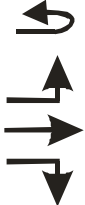
PERIOD	WEEKDAY AM PEAK HOUR
TIME	0745 - 0845

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

Commerce Street

U-Turns	0
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Auto	Medium	Heavy	Total
15	0	0	15
3	0	1	4
1	0	0	1



Pedestrians	2
Bicyclists	1

Pedestrians	0
Bicyclists	2

Auto	Medium	Heavy	Total
7	0	1	8
3	0	0	3
1	0	0	1

U-Turns	0
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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%

Pedestrians	14
Bicyclists	0



	Total	3	109	9
	Heavy	0	0	7
	Medium	0	1	0
	Autos	3	108	2

U-Turns	0
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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

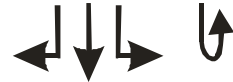
**TURNING
MOVEMENT
DIAGRAM**



Liverpool Road

	Total	19	168	18
	Heavy	1	0	0
	Medium	0	2	0
	Autos	18	166	18

U-Turns	0
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Pedestrians	1
Bicyclists	0

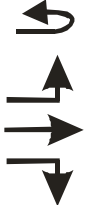
PERIOD	WEEKDAY PM PEAK HOUR
TIME	1630 - 1730

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

Commerce Street

U-Turns	0
----------------	---

Auto	Medium	Heavy	Total
7	2	0	9
0	0	0	0
1	0	0	1



Pedestrians	9
Bicyclists	0

Pedestrians	12
Bicyclists	0

Auto	Medium	Heavy	Total
9	0	0	9
3	0	0	3
1	1	0	2

U-Turns	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%

Pedestrians	2
Bicyclists	0



	Total	2	109	1
	Heavy	0	0	0
	Medium	0	0	0
	Autos	2	109	1

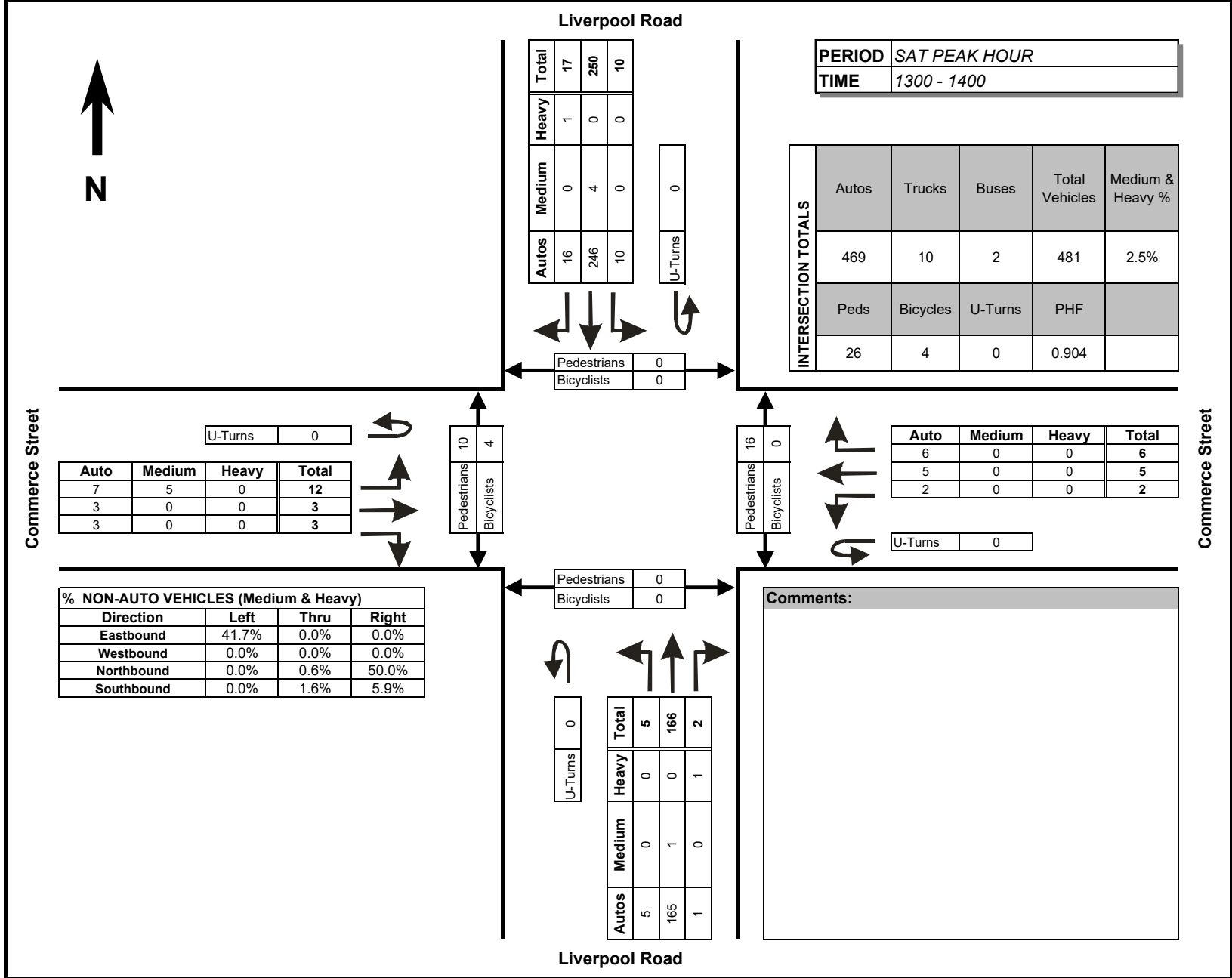
U-Turns	0
----------------	---

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**



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

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

		MEDIUM												BICYCLES			
	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	1	0	0
	730	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
	745	0	0	0	0	0	0	0	0	0	0	2	0	0	1	0	0
	800	0	0	0	0	0	0	0	0	0	0	1	0	0	3	1	0
	815	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	830	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0
	845	0	0	0	0	0	0	0	0	0	0	3	0	2	1	1	0
	1600	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0
	1615	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
	1630	0	0	0	0	0	0	0	0	0	0	1	0	2	3	0	0
	1645	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
	1700	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
1715	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	
1730	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1745	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
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	1	1	0	0
	1315	0	0	0	0	0	0	0	1	0	0	0	0	1	1	0	0
	1330	0	0	0	0	0	0	0	4	0	0	2	0	1	4	0	0
1345	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	
	TOTALS																
	AM	0	0	0	0	0	0	0	1	0	0	8	0	3	6	2	0
	PM	0	0	0	0	0	0	0	2	0	0	1	0	4	5	0	0
	SAT	0	0	0	0	0	0	0	20	0	0	12	0	4	14	0	0

North-South Road: Liverpool Road

East-West Road: Illona Park Road (N)

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

Weather: WKDY-Rain/cloud, SAT - Sunny

MUNICIPALITY: Pickering, Ontario

TIG TCS v1.17

TRAF8 GROUP

		HEAVY											U-TURNS				
	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				
WEEKDAY	700	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
	715	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
	730	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
	745	0	0	0	0	0	0	0	0	4	0	0	2	0	0	0	0
	800	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
	815	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
	830	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	1
	845	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
	1600	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0
	1615	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1630	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1645	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	1700	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1715	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	
1730	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	
1745	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
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	
	TOTALS																
	AM	0	0	0	0	0	0	0	0	12	0	0	4	0	0	0	1
	PM	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0
	SAT	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0

North-South Road: Liverpool Road

East-West Road: Illona Park Road (N)

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

Weather: WKDY-Rain/cloud, SAT - Sunny

MUNICIPALITY: Pickering, Ontario

TIG TCS v1.17

TRAF8 GROUP

TOTAL 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		
WEEKDAY	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	
SATURDAY	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
TOTALS														
AM	21	0	2	0	0	0	3	254	12	0	194	13	499	
PM	15	0	0	0	0	0	2	254	2	0	396	27	696	
SAT	20	0	0	0	0	0	1	412	1	0	538	19	991	

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	
WEEKDAY	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
SATURDAY	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
WEEKDAY 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
SATURDAY 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	
AM 800 - 900	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
	Total	7	0	0	0	0	0	1	153	6	0	128	7	302
	% Hv PHF	0.0% 0.438	0.0% 0.000	0.0% 0.000	0.0% 0.000	0.0% 0.000	0.0% 0.000	0.0% 0.250	0.0% 0.765	100.0% 0.500	0.0% 0.000	4.7% 0.744	14.3% 0.583	4.3% 0.848
PM 1630 - 1730	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
	Total	6	0	0	0	0	0	1	135	1	0	221	11	375
	% Hv PHF	0.0% 0.750	0.0% 0.000	0.0% 0.000	0.0% 0.000	0.0% 0.000	0.0% 0.000	0.0% 0.250	1.5% 0.865	100.0% 0.250	0.0% 0.000	0.5% 0.813	0.0% 0.688	1.1% 0.845
SAT 1215 - 1315	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
	Total	10	0	0	0	0	0	0	218	0	0	268	12	508
	% Hv PHF	0.0% 0.625	0.0% 0.000	0.0% 0.000	0.0% 0.000	0.0% 0.000	0.0% 0.000	0.0% 0.000	3.2% 0.838	0.0% 0.000	0.0% 0.000	3.4% 0.944	0.0% 0.500	3.1% 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
AM	21	5	3	1	30	2	4	2	0	8	0	0	0	1	1
PM	10	9	1	0	20	2	4	0	0	6	0	0	0	0	0
SAT	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	
WEEKDAY	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	
SATURDAY														
	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	
WEEKDAY	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
SATURDAY	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

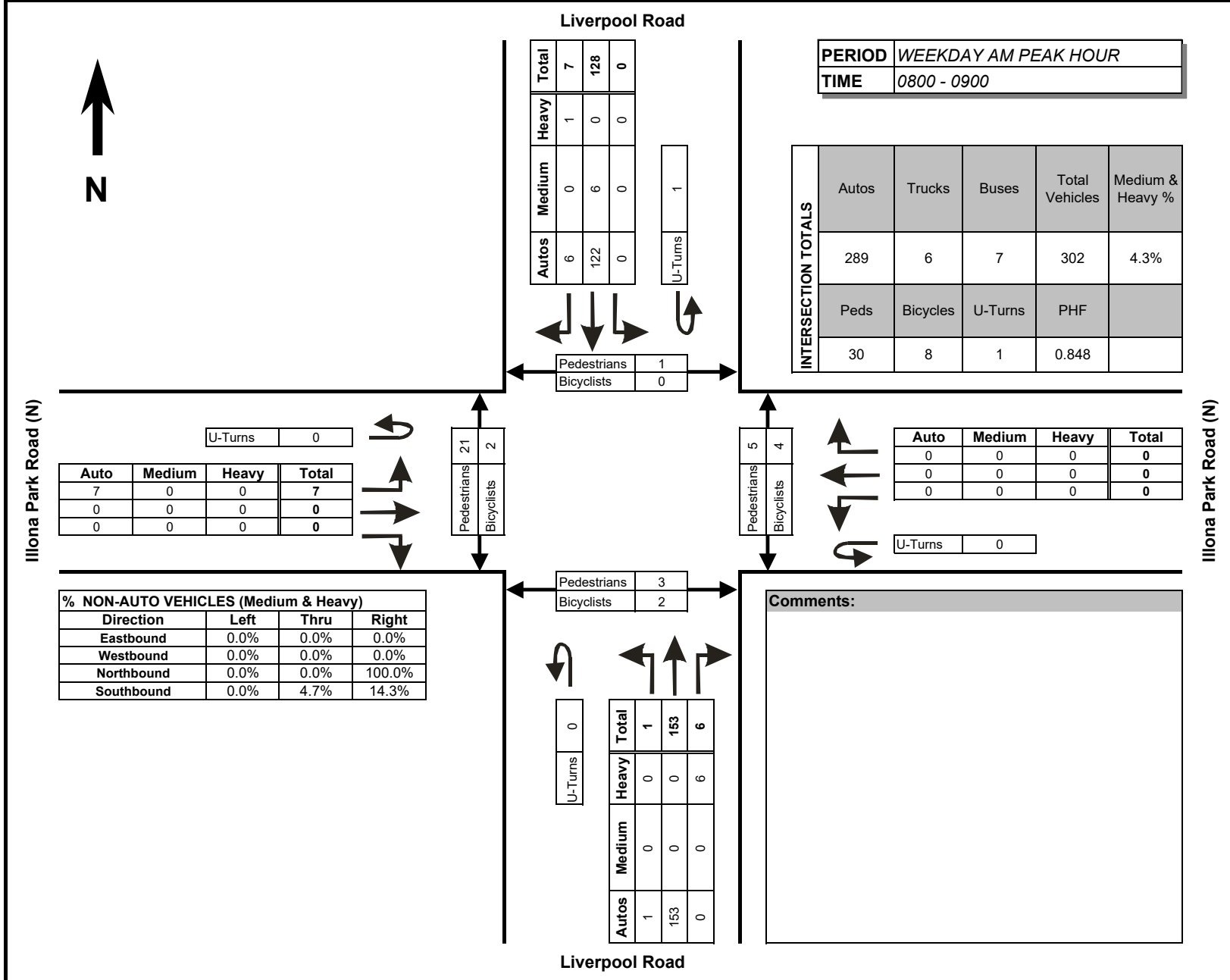
	TIME BEGINNING	Illona Park Road (N)			Illona Park Road (N)			Liverpool Road			Liverpool Road			TOTAL VEHICLES
		Eastbound			Westbound			Northbound			Southbound			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
WEEKDAY	700	0	0	0	0	0	0	0	0	6	0	0	3	9
	715	0	0	0	0	0	0	0	0	5	0	0	4	9
	730	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
SATURDAY	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

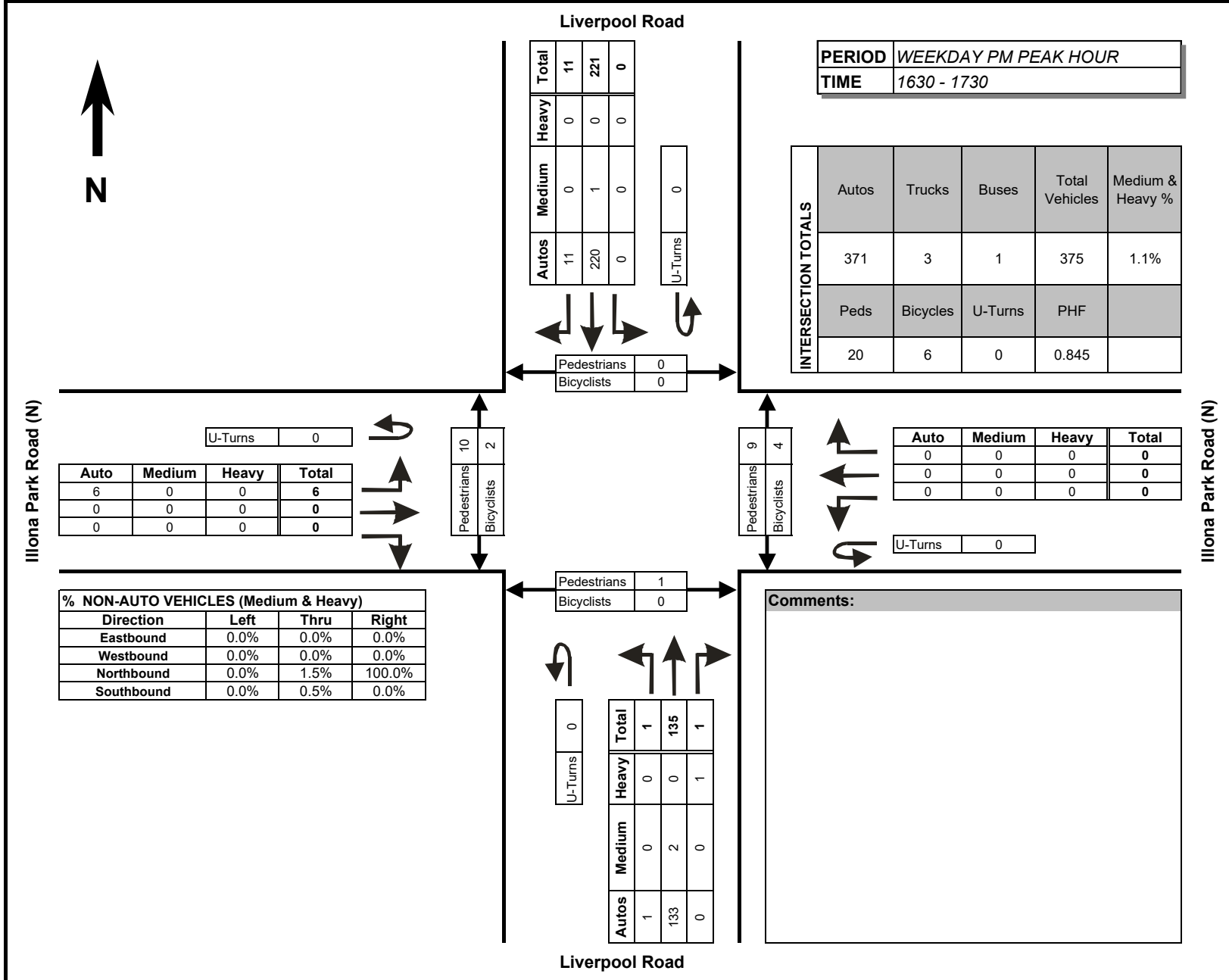
NORTH-SOUTH ROAD: Liverpool Road
EAST-WEST ROAD: Illona Park Road (N)
SURVEY DATE: Tue Jun 6, Sat Jun 3, 2017
MUNICIPALITY: Pickering, Ontario
WEATHER: WKDY-Rain/cloud, SAT - Sunny

**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

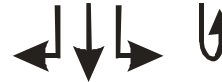
**TURNING
MOVEMENT
DIAGRAM**



Liverpool Road

	Total	12	268	0
	Heavy	0	0	0
	Medium	0	9	0
	Autos	12	259	0

U-Turns	0
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Pedestrians	0
Bicyclists	0

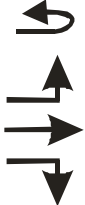
PERIOD	SAT PEAK HOUR
TIME	1215 - 1315

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

Illona Park Road (N)

Auto	Medium	Heavy	Total
10	0	0	10
0	0	0	0
0	0	0	0

U-Turns	0
----------------	---



Pedestrians	9
Bicyclists	1

Pedestrians	13
Bicyclists	5

Auto	Medium	Heavy	Total
0	0	0	0
0	0	0	0
0	0	0	0

U-Turns	0
----------------	---

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%

Pedestrians	1
Bicyclists	0



	Total	218	0
	Heavy	0	0
	Medium	7	0
	Autos	211	0

U-Turns	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 Weather: WKDY-Rain/cloud, SAT - Sunny	MUNICIPALITY: Pickering, Ontario <small>TIG TCS v1.17</small>	TRAF8 GROUP
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		AUTOS												PEDESTRIANS				
	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					
WEEKDAY	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	
SATURDAY	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	
TOTALS																		
	AM	29	0	3	0	0	0	0	227	0	0	181	8	28	8	1	0	
	PM	6	0	1	0	0	0	3	249	0	0	369	27	22	21	0	4	
	SAT	3	0	2	0	0	0	0	375	0	0	507	19	20	16	0	2	

North-South Road: Liverpool Road

East-West Road: Illona Park Road (S)

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

Weather: WKDY-Rain/cloud, SAT - Sunny

MUNICIPALITY: Pickering, Ontario

TIG TCS v1.17

TRAF8 GROUP

MEDIUM														BICYCLES			
WEEKDAY	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				
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	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
	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	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	
SATURDAY	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	0	1	1	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	
TOTALS																	
	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

		HEAVY											U-TURNS				
	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				
WEEKDAY	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	
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	
	TOTALS																
	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

TOTAL 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		
WEEKDAY	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
SATURDAY	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	
TOTALS														
AM	29	1	3	0	0	0	0	228	11	0	189	12	473	
PM	6	0	1	0	0	0	3	251	2	0	370	29	662	
SAT	3	0	2	0	0	0	0	382	1	0	519	20	927	

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	
WEEKDAY	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
SATURDAY	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	
WEEKDAY	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		
SATURDAY	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	
AM 800 - 900	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
	Total	13	1	2	0	0	0	0	140	5	0	124	7	292
	% 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
PM 1630 - 1730	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
	Total	2	0	1	0	0	0	1	134	1	0	208	12	359
	% 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
SAT 1300 - 1400	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
	Total	2	0	1	0	0	0	0	187	1	0	276	13	480
	% 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
AM	22	2	0	0	24	0	3	0	0	3	0	0	0	0	0
PM	9	11	0	3	23	0	4	0	0	4	0	0	0	0	0
SAT	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	
WEEKDAY	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
SATURDAY	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	
WEEKDAY	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
SATURDAY	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

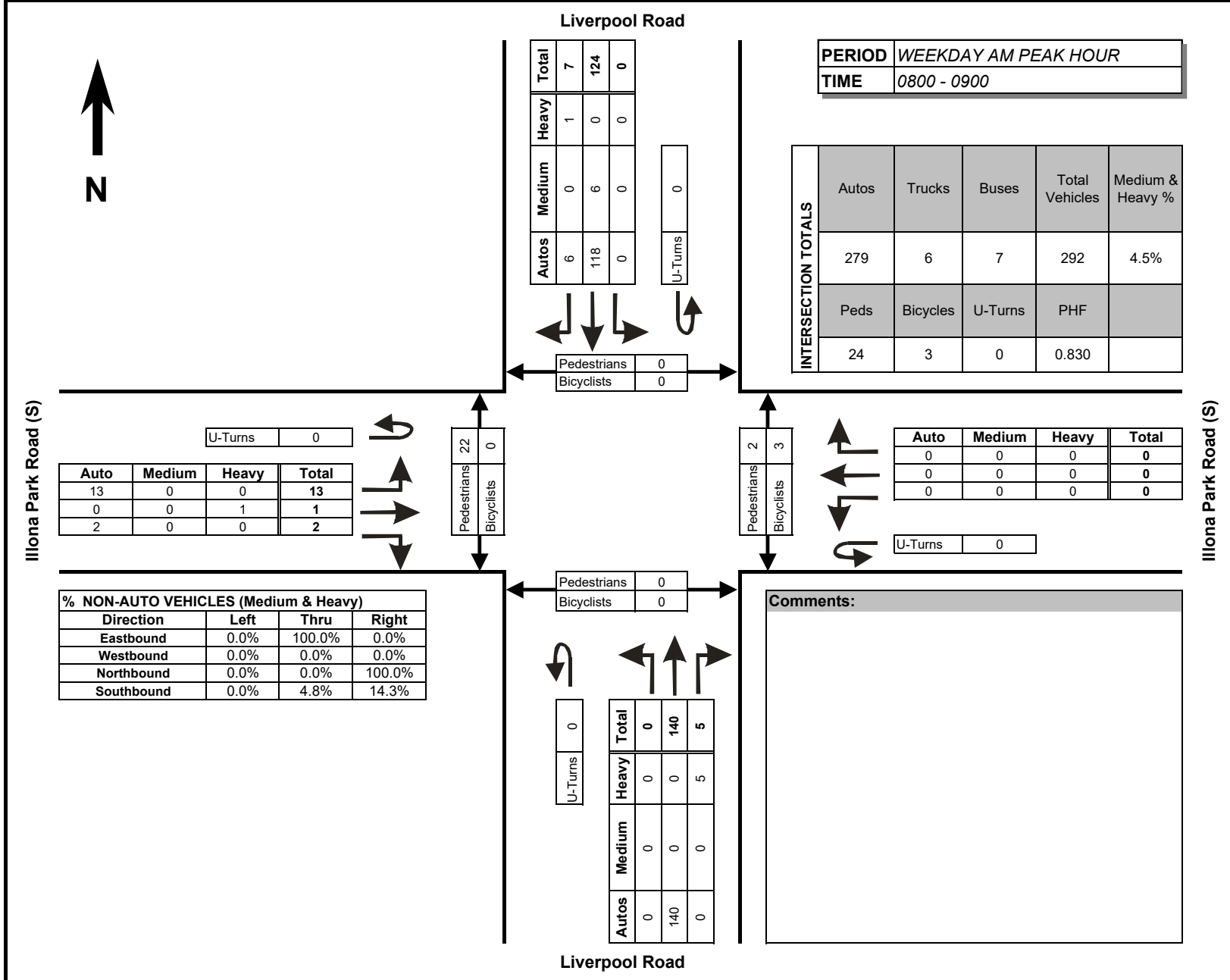
	TIME BEGINNING	Illona Park Road (S)			Illona Park Road (S)			Liverpool Road			Liverpool Road			TOTAL VEHICLES
		Eastbound			Westbound			Northbound			Southbound			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
WEEKDAY	700	0	0	0	0	0	0	0	0	6	0	0	3	9
	715	0	0	0	0	0	0	0	0	5	0	0	4	9
	730	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
SATURDAY	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

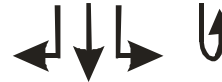
**TURNING
MOVEMENT
DIAGRAM**



Liverpool Road

	Total	12	208	0
	Heavy	0	0	0
	Medium	0	1	0
	Autos	12	207	0

U-Turns	0
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Pedestrians	3
Bicyclists	0

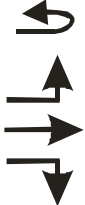
PERIOD	WEEKDAY PM PEAK HOUR
TIME	1630 - 1730

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

Illona Park Road (S)

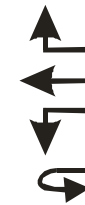
Auto	Medium	Heavy	Total
2	0	0	2
0	0	0	0
1	0	0	1

U-Turns	0
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Pedestrians	9
Bicyclists	0

Pedestrians	11
Bicyclists	4



Auto	Medium	Heavy	Total
0	0	0	0
0	0	0	0
0	0	0	0

U-Turns	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%

Pedestrians	0
Bicyclists	0



	Total	1	134	1
	Heavy	0	0	1
	Medium	0	2	0
	Autos	1	132	0

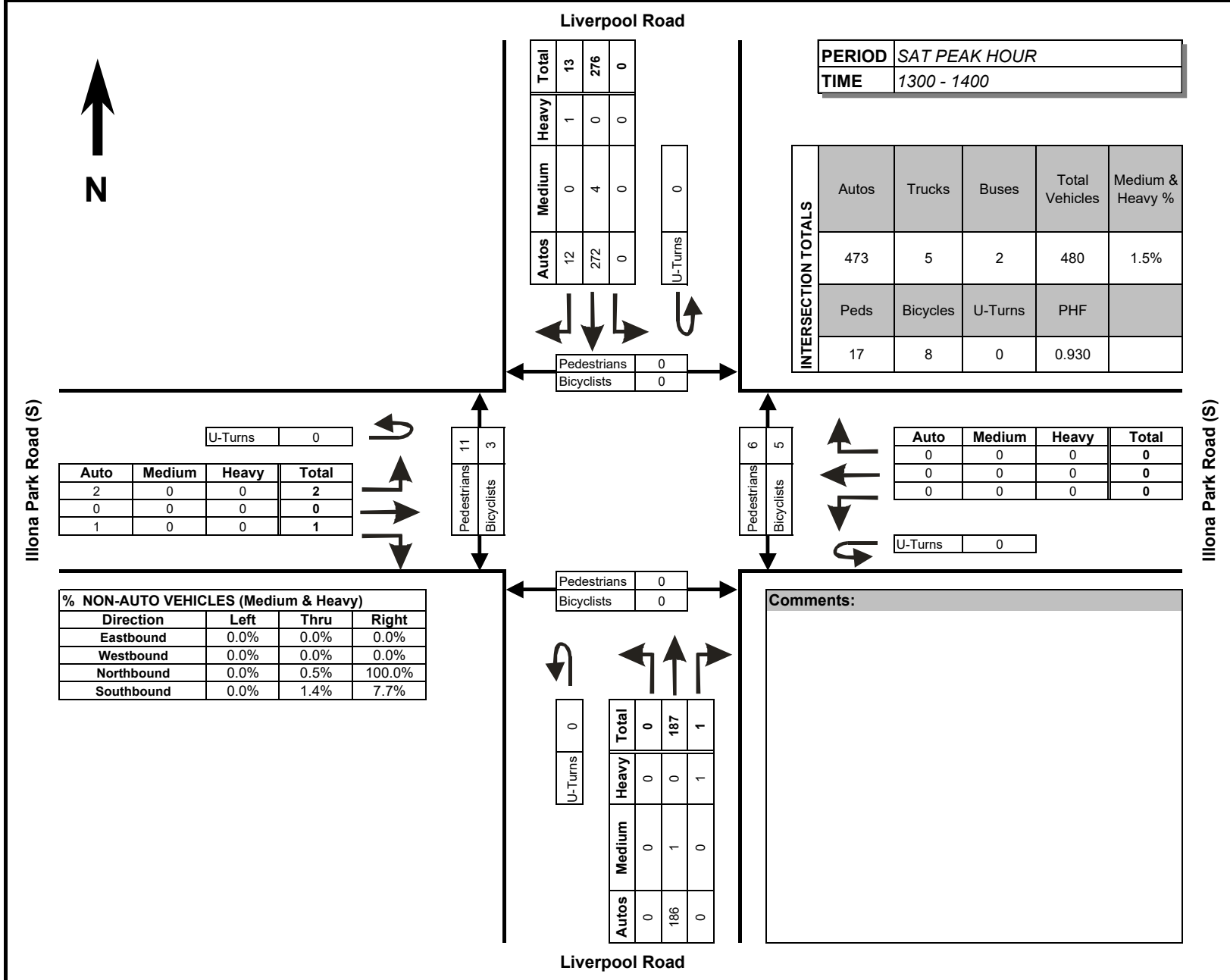
U-Turns	0
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Liverpool Road

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

		AUTOS												PEDESTRIANS			
	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				
WEEKDAY	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	
SATURDAY	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	
	TOTALS																
	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

		MEDIUM												BICYCLES			
	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				
WEEKDAY	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	
SATURDAY	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	
	TOTALS																
	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

		HEAVY											U-TURNS				
	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				
WEEKDAY	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	
SATURDAY	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
TOTALS																	
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

TOTAL 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	
WEEKDAY	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	
SATURDAY	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
TOTALS														
AM	0	0	0	9	2	249	0	353	29	185	194	4	1,025	
PM	0	0	0	49	0	222	0	440	33	325	596	3	1,668	
SAT	0	0	0	23	0	194	0	476	37	224	637	3	1,594	

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	
WEEKDAY	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
SATURDAY	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
WEEKDAY 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
SATURDAY 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	
AM 800 - 900	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
	Total	0	0	0	5	2	126	0	174	14	124	119	0	564
	% 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
PM 1630 - 1730	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
	Total	0	0	0	28	0	123	0	211	11	175	311	2	861
	% 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
SAT 1200 - 1300	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
	Total	0	0	0	11	0	105	0	248	20	121	303	2	810
	% 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
AM	30	12	26	0	68	1	2	0	0	3	0	3	0	0	3
PM	13	18	6	0	37	2	1	2	0	5	0	0	0	0	0
SAT	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	
		WEEKDAY												
	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
SATURDAY														
	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	
WEEKDAY	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
SATURDAY	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	
WEEKDAY	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
SATURDAY	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

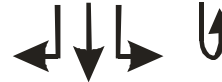
**TURNING
MOVEMENT
DIAGRAM**



Liverpool Road

Total	0	119	124
Heavy	0	1	0
Medium	0	4	5
Autos	0	114	119

U-Turns	0
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Pedestrians	0
Bicyclists	0

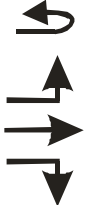
PERIOD	WEEKDAY AM PEAK HOUR
TIME	0800 - 0900

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

Krosno Blvd

U-Turns	0
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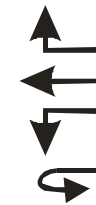
Auto	Medium	Heavy	Total
0	0	0	0
0	0	0	0
0	0	0	0



Pedestrians	30
Bicyclists	1

Pedestrians	12
Bicyclists	2

Auto	Medium	Heavy	Total
123	3	0	126
0	0	2	2
5	0	0	5



U-Turns	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%

Pedestrians	26
Bicyclists	0



U-Turns	0		
Autos	Medium	Heavy	Total
0	0	0	0
166	8	0	174
9	0	5	14

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

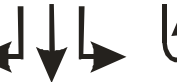
**TURNING
MOVEMENT
DIAGRAM**



Liverpool Road

Autos	0	301	171	
Medium	0	10	4	
Heavy	2	0	0	
Total	2	311	175	

U-Turns	0
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Pedestrians	0
Bicyclists	0

PERIOD	WEEKDAY PM PEAK HOUR
TIME	1630 - 1730

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

Krosno Blvd

Auto	Medium	Heavy	Total
0	0	0	0
0	0	0	0
0	0	0	0

U-Turns	0
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Pedestrians	13
Bicyclists	2

Pedestrians	18
Bicyclists	1

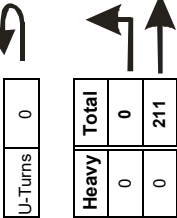
Auto	Medium	Heavy	Total
123	0	0	123
0	0	0	0
28	0	0	28

U-Turns	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%

Pedestrians	6
Bicyclists	2



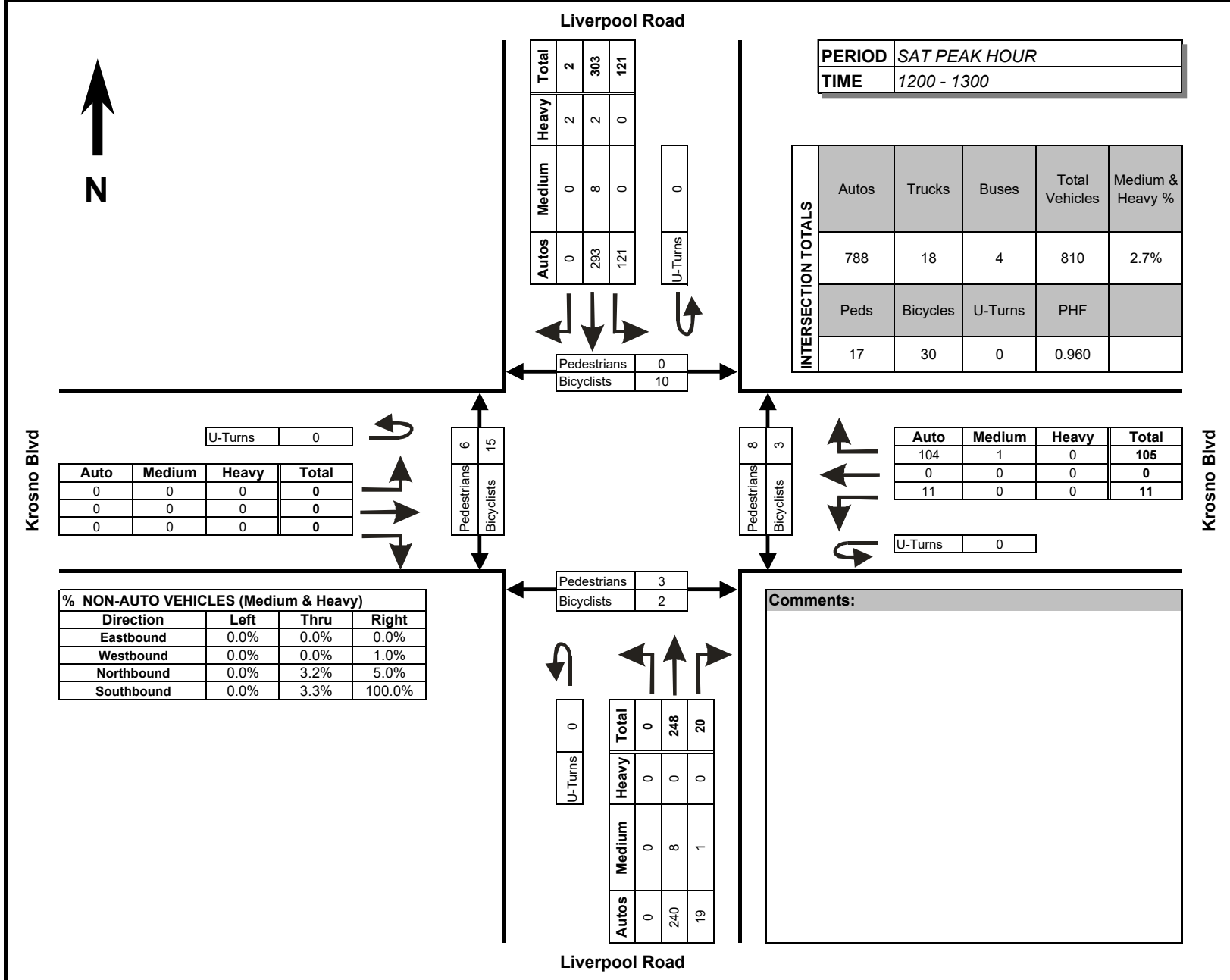
Autos	0	207	11	
Medium	0	4	0	
Heavy	0	0	0	
Total	0	211	11	

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

		AUTOS												PEDESTRIANS			
	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				
WEEKDAY	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	
TOTALS																	
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

MEDIUM														BICYCLES			
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	
TOTALS																	
	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

		HEAVY												U-TURNS			
	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				
WEEKDAY	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	
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	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
	TOTALS																
	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

TOTAL 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		
WEEKDAY	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	
SATURDAY	1200	0	0	0	0	0	0	24	0	0	26	0	50	
	1215	0	0	0	0	0	0	30	0	0	43	0	73	
	1230	0	0	0	0	0	0	29	0	1	31	0	61	
	1245	0	0	0	0	0	2	0	23	0	1	32	0	58
	1300	0	0	0	0	0	2	0	36	0	2	31	0	71
	1315	0	0	0	0	0	1	0	28	0	1	29	0	59
	1330	0	0	0	0	0	1	0	22	0	2	41	0	66
	1345	0	0	0	0	0	1	0	20	0	1	49	0	71
TOTALS														
AM	0	0	0	0	0	0	0	83	0	0	63	0	146	
PM	0	0	0	2	0	3	0	170	1	4	203	0	383	
SAT	0	0	0	0	0	7	0	212	0	8	282	0	509	

North-South Road: Liverpool Road

East-West Road: Pumping Station

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

Weather: WKDY-Sunny, SAT - Sunny

MUNICIPALITY: Pickering, Ontario

TIG TCS v1.17

TRAF8 GROUP

HOURLY SUMMARY - ALL VEHICLES

	TIME BEGINNING	Pumping Station			Pumping Station			Liverpool Road			Liverpool Road			TOTAL VEHICLES
		Eastbound			Westbound			Northbound			Southbound			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
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	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
SATURDAY	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
WEEKDAY	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	
SATURDAY	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	
AM 730 - 830	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
	Total	0	0	0	0	0	0	0	58	0	0	37	0	95
	% 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
PM 1600 - 1700	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
	Total	0	0	0	1	0	2	0	91	0	2	101	0	197
	% 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
SAT 1300 - 1400	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
	Total	0	0	0	0	0	5	0	106	0	6	150	0	267
	% 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
AM	13	7	0	0	20	0	1	0	0	1	0	0	0	0	0
PM	61	33	4	9	107	3	3	0	0	6	0	0	0	0	0
SAT	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	
WEEKDAY	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
SATURDAY	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	
WEEKDAY	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
SATURDAY	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

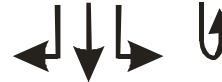
**TURNING
MOVEMENT
DIAGRAM**



Liverpool Road

Total	0	37	0
Heavy	0	0	0
Medium	0	0	0
Autos	0	37	0

U-Turns	0
----------------	---



Pedestrians	0
Bicyclists	0

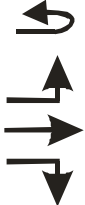
PERIOD	WEEKDAY AM PEAK HOUR
TIME	0730 - 0830

INTERSECTION TOTALS	Autos	Trucks	Buses	Total Vehicles	Medium & Heavy %
	95	0	0	95	0.0%
	Peds	Bicycles	U-Turns	PHF	
	20	1	0	0.742	

Pumping Station

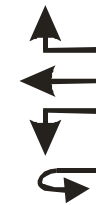
U-Turns	0
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Auto	Medium	Heavy	Total
0	0	0	0
0	0	0	0
0	0	0	0



Pedestrians	13
Bicyclists	0

Pedestrians	7
Bicyclists	1



Auto	Medium	Heavy	Total
0	0	0	0
0	0	0	0
0	0	0	0

U-Turns	0
----------------	---

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%

Pedestrians	0
Bicyclists	0



U-Turns	0
----------------	---

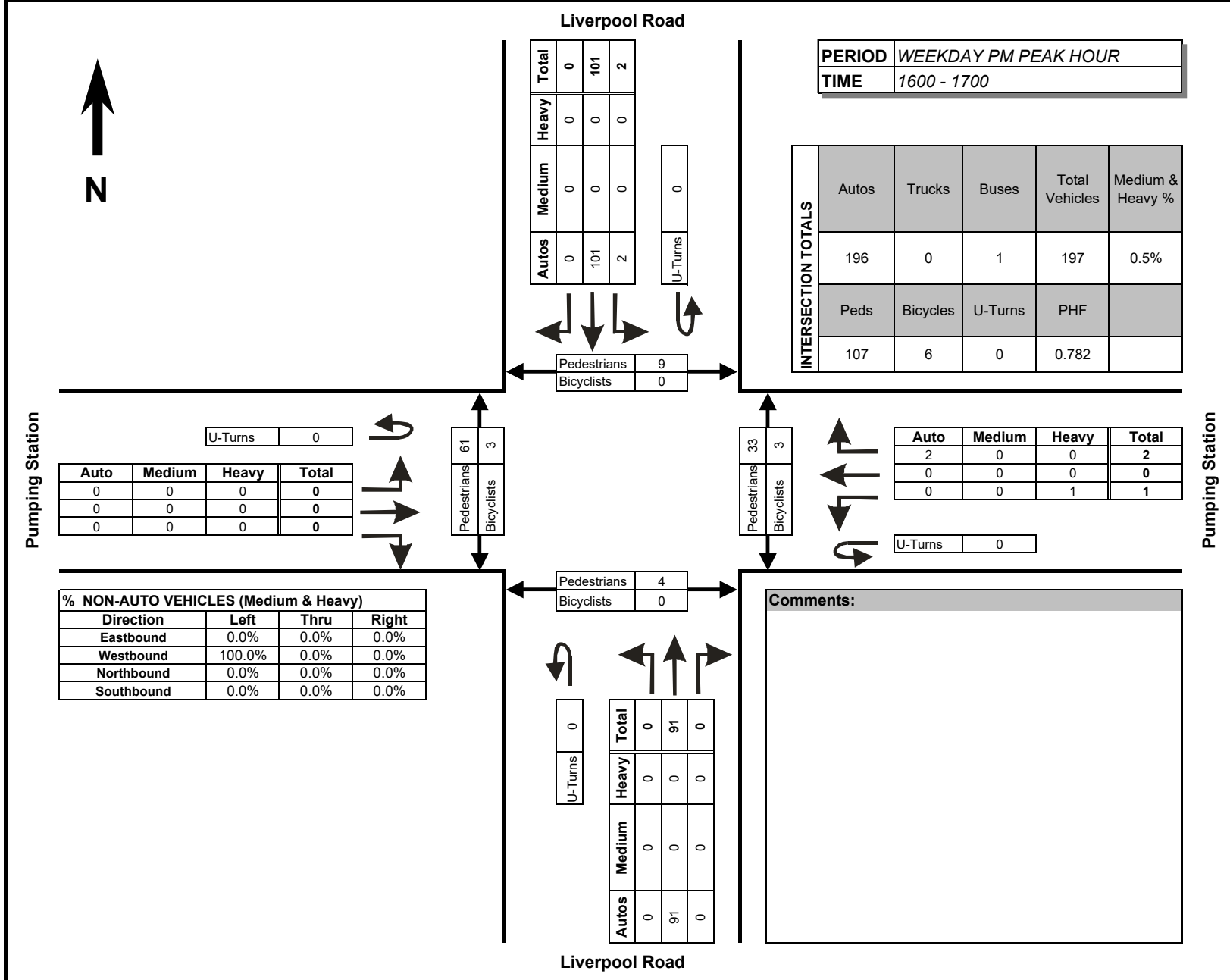
Total	0	58	0
Heavy	0	0	0
Medium	0	0	0
Autos	0	58	0

Liverpool Road

Comments:

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

**TURNING
MOVEMENT
DIAGRAM**



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

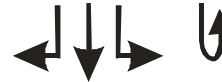
**TURNING
MOVEMENT
DIAGRAM**



Liverpool Road

	Total	0	150	6
	Heavy	0	0	0
	Medium	0	3	0
	Autos	0	147	6

U-Turns	0
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Pedestrians	3
Bicyclists	0

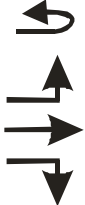
PERIOD	SAT PEAK HOUR
TIME	1300 - 1400

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

Pumping Station

U-Turns	0
----------------	---

Auto	Medium	Heavy	Total
0	0	0	0
0	0	0	0
0	0	0	0



Pedestrians	93
Bicyclists	18

Pedestrians	64
Bicyclists	13

Auto	Medium	Heavy	Total
5	0	0	5
0	0	0	0
0	0	0	0

U-Turns	0
----------------	---

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%

Pedestrians	3
Bicyclists	0



	Total	0	106	0
	Heavy	0	0	0
	Medium	0	0	0
	Autos	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

AUTOS														PEDESTRIANS				
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						
WEEKDAY	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		
SATURDAY	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		
TOTALS																		
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

		MEDIUM												BICYCLES			
WEEKDAY	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				
	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
SATURDAY	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	
	TOTALS																
	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

		HEAVY											U-TURNS				
	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				
WEEKDAY	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	
SATURDAY	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
TOTALS																	
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

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

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	
WEEKDAY	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
SATURDAY	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
WEEKDAY	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	
SATURDAY	1200	6	21	5	0	32	6	6	0	0	12	2	0	0	1	3
	1215	8	22	5	0	35	5	5	0	0	10	2	0	0	1	3
	1230	11	20	5	0	36	3	3	0	0	6	1	0	0	1	2
	1245	14	18	4	1	37	3	6	0	0	9	1	0	0	1	2
	1300	13	13	0	1	27	3	5	0	0	8	1	0	0	0	1

North-South Road: Liverpool Road

East-West Road: Radom Street

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

Weather: WKDY-Sunny, SAT - Sunny

MUNICIPALITY: Pickering, Ontario

TIG TCS v1.17

TRAF8 GROUP

PEAK HOUR VOLUMES - ALL VEHICLES

PEAK HOUR		Radom Street			Radom Street			Liverpool Road			Liverpool Road			TOTAL VEHICLES
		Eastbound			Westbound			Northbound			Southbound			
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
AM 745 - 845	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
	Total	77	0	16	0	0	0	8	345	7	0	207	60	720
	% 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
PM 1700 - 1800	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
	Total	58	0	28	0	0	0	18	365	1	0	492	68	1,030
	% 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
SAT 1200 - 1300	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
	Total	56	0	12	0	0	0	10	376	4	0	455	66	979
	% 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
AM	9	13	0	1	23	5	4	0	0	9	1	0	0	1	2
PM	11	28	1	0	40	7	0	0	0	7	2	0	0	0	2
SAT	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	
		WEEKDAY												
	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
SATURDAY														
	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	
WEEKDAY	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
SATURDAY	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

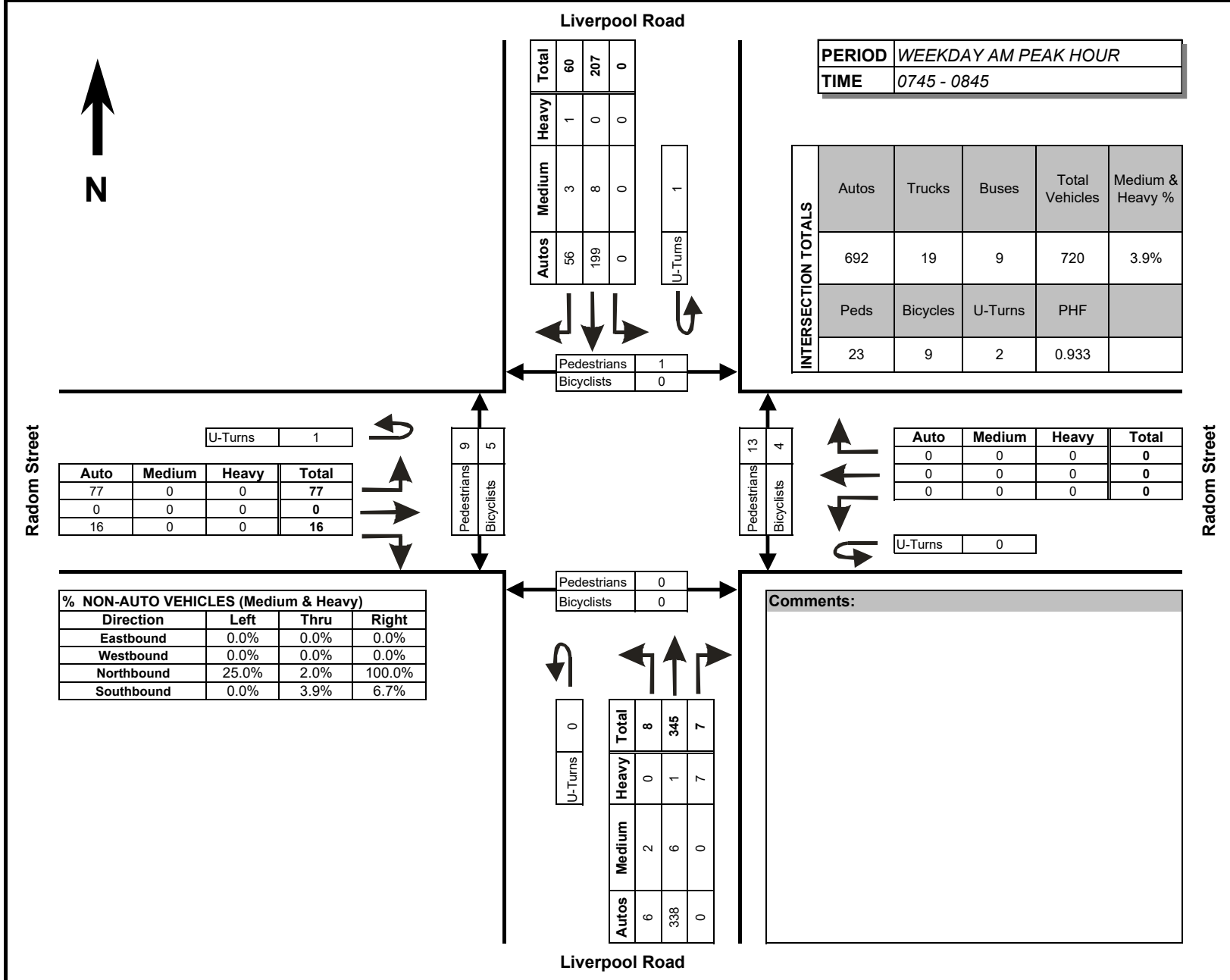
TRAF8 GROUP

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	
WEEKDAY	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
SATURDAY	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

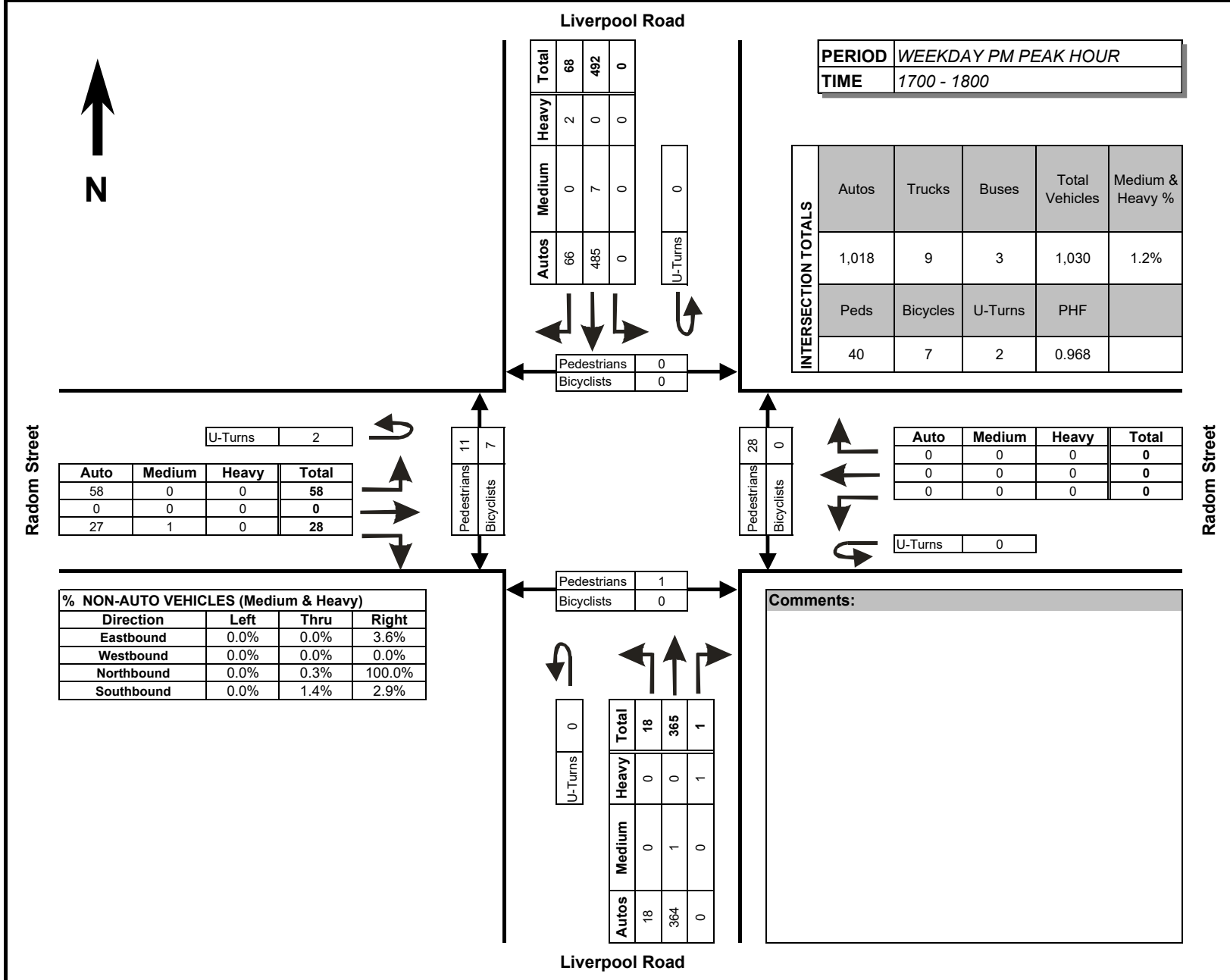
NORTH-SOUTH ROAD: Liverpool Road
EAST-WEST ROAD: Radom Street
SURVEY DATE: Thu Jun 1, Sat Jun 3, 2017
MUNICIPALITY: Pickering, Ontario
WEATHER: WKDY-Sunny, SAT - Sunny

**TURNING
MOVEMENT
DIAGRAM**



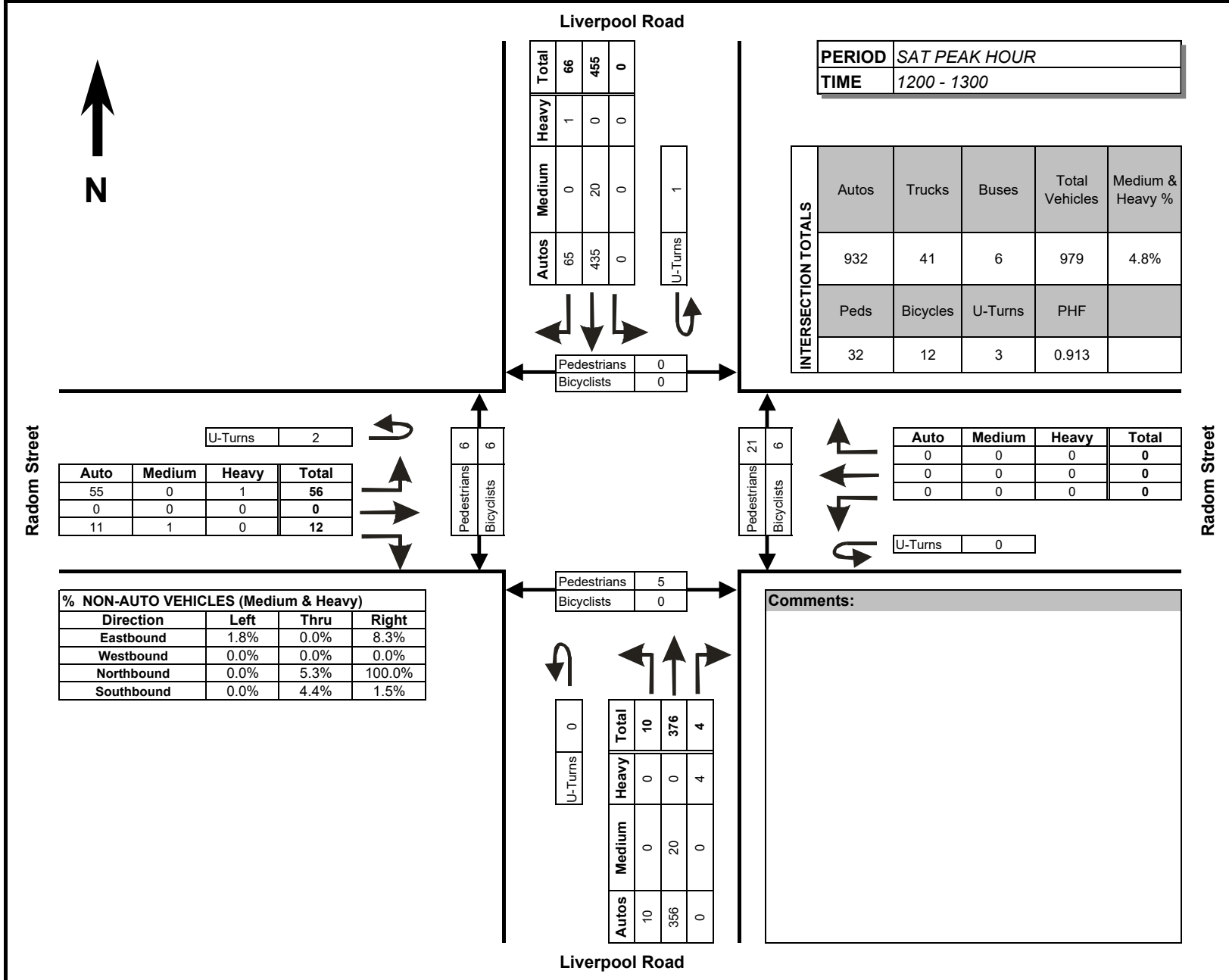
NORTH-SOUTH ROAD: Liverpool Road
EAST-WEST ROAD: Radom Street
SURVEY DATE: Thu Jun 1, Sat Jun 3, 2017
MUNICIPALITY: Pickering, Ontario
WEATHER: WKDY-Sunny, SAT - Sunny

**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

		AUTOS												PEDESTRIANS				
	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					
WEEKDAY	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		
SATURDAY	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		
	TOTALS																	
	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

		MEDIUM												BICYCLES			
	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				
WEEKDAY	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	
SATURDAY	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	
	TOTALS																
	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

		HEAVY												U-TURNS			
	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				
WEEKDAY	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	
SATURDAY	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
	TOTALS																
	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

TOTAL VEHICLES														
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
TOTALS														
	AM	0	1	2	6	3	363	0	808	19	214	443	10	1,869
	PM	6	2	3	4	0	411	2	891	20	396	1,087	2	2,824
	SAT	3	0	1	6	0	232	0	856	13	288	1,027	6	2,432

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	
WEEKDAY	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
SATURDAY	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
WEEKDAY	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	
SATURDAY	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	
AM 745 - 845	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
	Total	0	0	1	3	0	217	0	430	11	129	265	2	1,058
	% 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
PM 1645 - 1745	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
	Total	4	1	1	1	0	236	1	427	8	215	564	1	1,459
	% 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
SAT 1200 - 1300	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
	Total	1	0	0	4	0	118	0	443	3	140	514	4	1,227
	% 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
AM	17	16	6	1	40	3	3	0	0	6	0	2	2	0	4
PM	23	32	22	2	79	2	0	0	0	2	0	0	0	0	0
SAT	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		
WEEKDAY	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		
SATURDAY															
	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	
WEEKDAY	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
SATURDAY	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

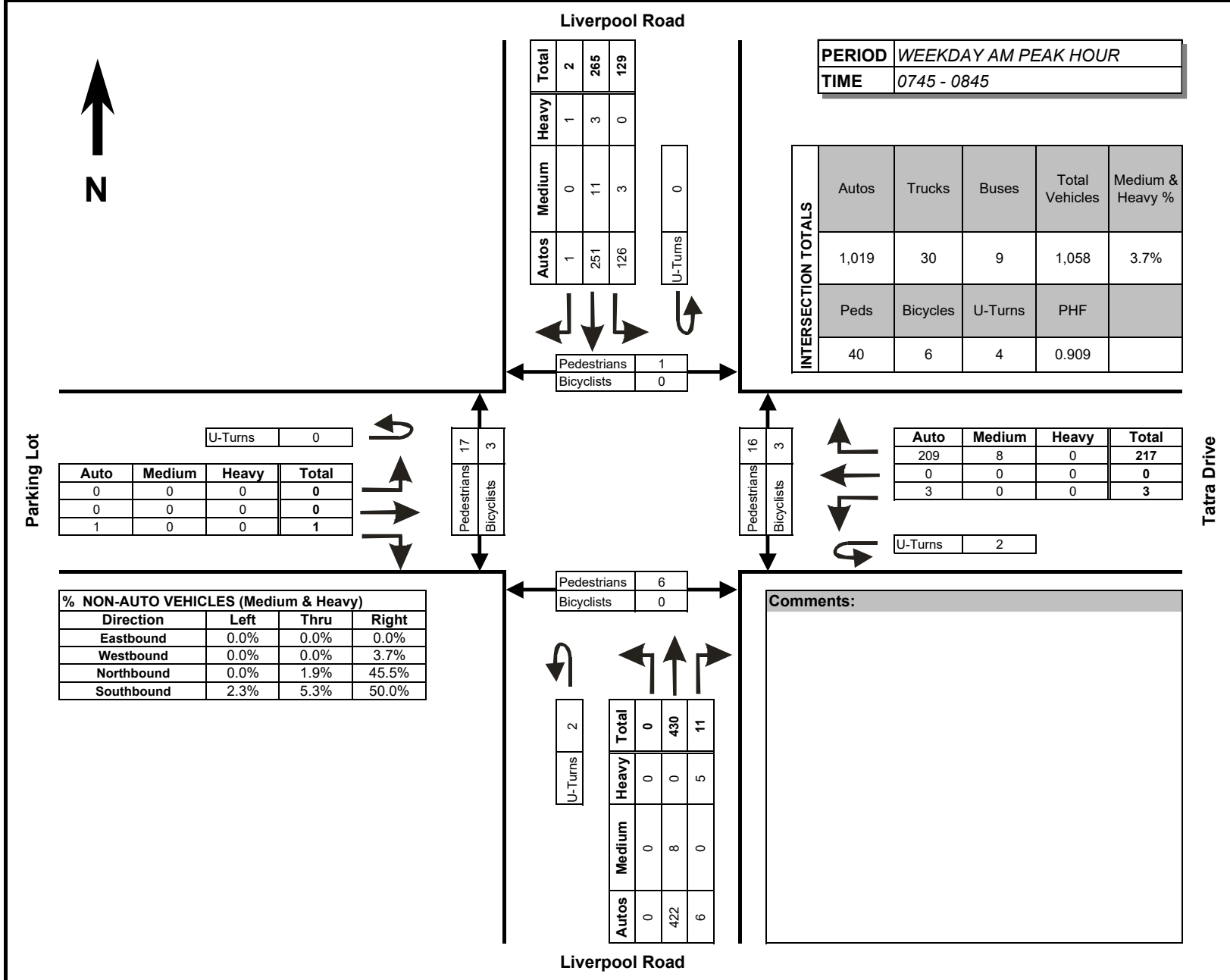
TRAF8 GROUP

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	
WEEKDAY	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
SATURDAY	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

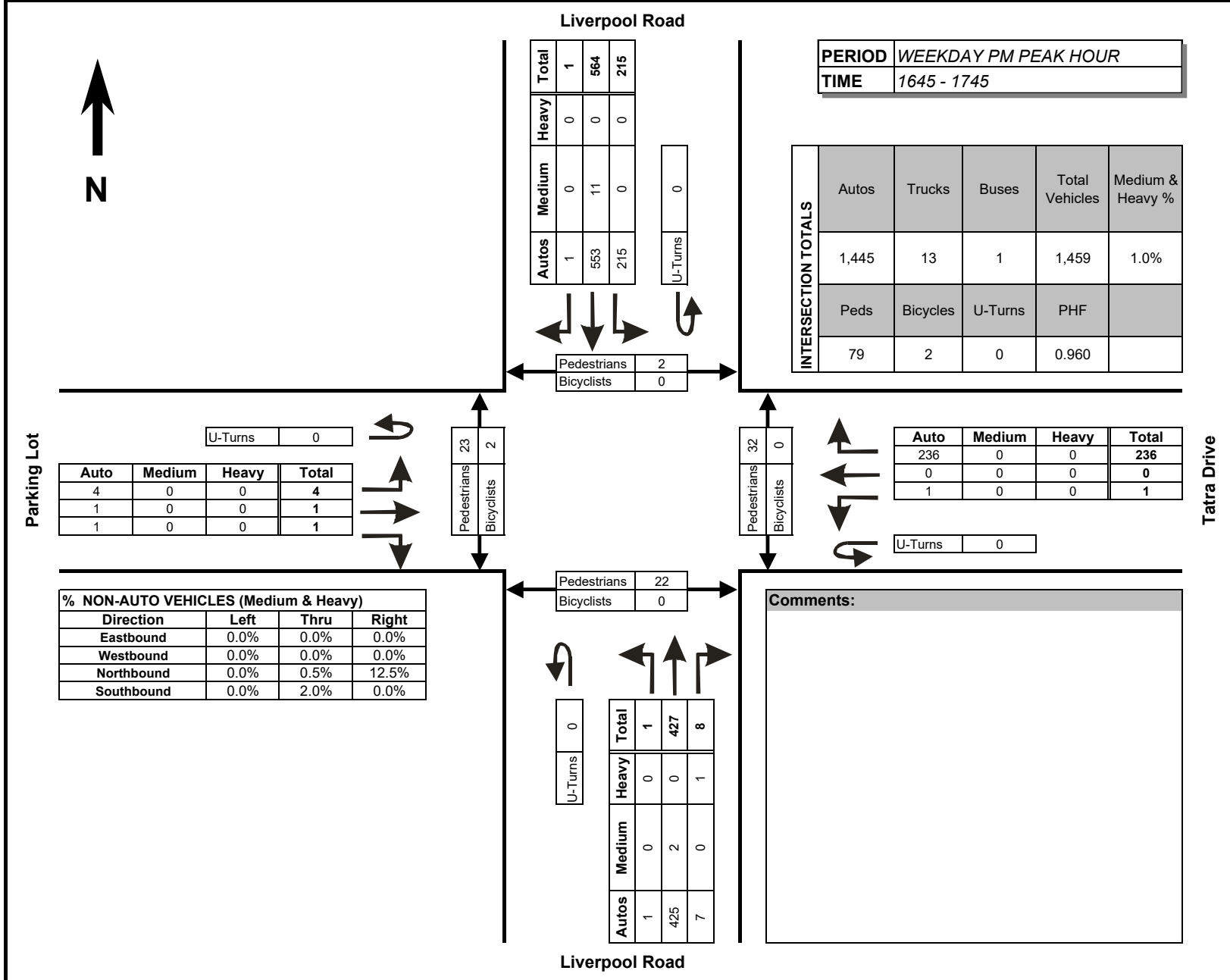
NORTH-SOUTH ROAD: Liverpool Road
EAST-WEST ROAD: Tatra Drive & Parking Lot
SURVEY DATE: Thu Jun 1, Sat Jun 3, 2017
MUNICIPALITY: Pickering, Ontario
WEATHER: WKDY-Sunny, SAT - Sunny

**TURNING
MOVEMENT
DIAGRAM**



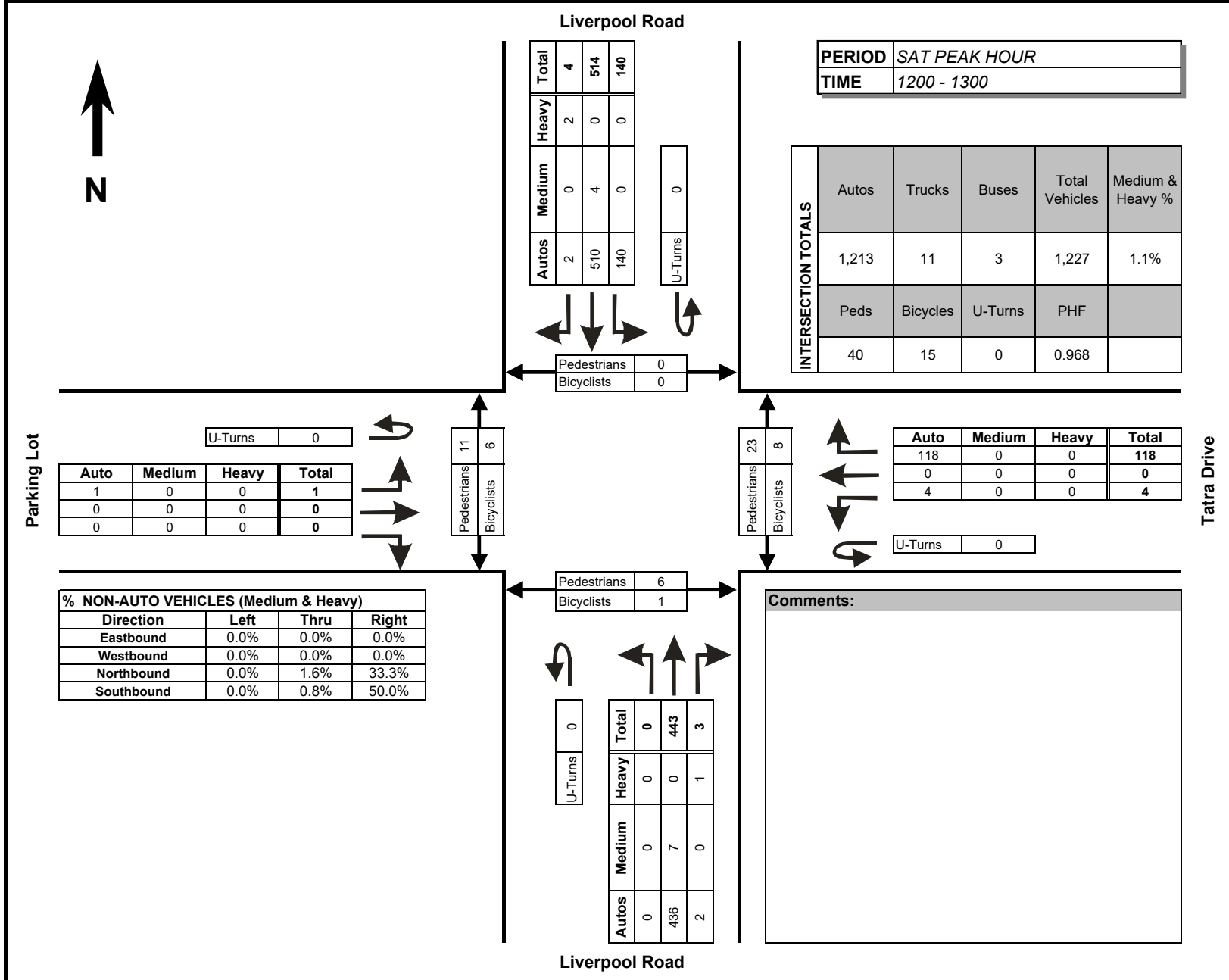
NORTH-SOUTH ROAD: Liverpool Road
EAST-WEST ROAD: Tatra Drive & Parking Lot
SURVEY DATE: Thu Jun 1, Sat Jun 3, 2017
MUNICIPALITY: Pickering, Ontario
WEATHER: WKDY-Sunny, SAT - Sunny

**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

		AUTOS												PEDESTRIANS				
	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					
WEEKDAY	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	
SATURDAY	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		
	TOTALS																	
	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

		MEDIUM												BICYCLES			
	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				
WEEKDAY	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	
SATURDAY	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	
	TOTALS																
	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

		HEAVY												U-TURNS			
	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				
WEEKDAY	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	
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	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
TOTALS																	
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

TOTAL 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		
WEEKDAY	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	
SATURDAY	1200	4	0	0	0	0	3	2	29	0	3	29	12	82
	1215	12	0	0	0	0	4	1	39	1	6	38	9	110
	1230	4	0	1	0	0	4	2	32	0	7	46	11	107
	1245	7	0	0	0	0	2	1	24	2	3	36	13	88
	1300	11	0	4	1	0	5	0	38	2	0	33	20	114
	1315	10	1	1	0	0	4	2	24	1	3	36	15	97
	1330	5	0	1	0	1	5	2	29	1	1	52	16	113
1345	9	1	1	0	0	4	0	22	0	3	48	10	98	
TOTALS														
AM	40	1	0	2	1	12	2	105	2	7	108	17	297	
PM	33	1	7	1	1	10	8	149	3	12	186	82	493	
SAT	62	2	8	1	1	31	10	237	7	26	318	106	809	

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	
WEEKDAY	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
SATURDAY	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	
WEEKDAY	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	
SATURDAY	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		
AM 730 - 830	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	
	Total	18	0	0	0	1	5	1	79	1	4	79	7	195	
	% 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	
PM 1615 - 1715	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	
	Total	19	0	2	0	0	7	5	79	1	10	107	38	268	
	% 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	
SAT 1300 - 1400	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	
	Total	35	2	7	1	1	18	4	113	4	7	169	61	422	
	% 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
AM	6	3	1	1	11	4	0	0	0	4	0	0	0	0	0
PM	15	9	2	1	27	1	3	0	0	4	0	0	0	0	0
SAT	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	
		WEEKDAY												
	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
SATURDAY														
	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	
WEEKDAY	700	0	0	0	0	0	0	0	0	0	0	0	0	0
	715	0	0	0	0	0	0	0	0	0	0	2	0	2
	730	0	0	0	0	0	0	0	1	0	0	2	0	3
	745	0	0	0	0	0	0	0	1	0	0	2	0	3
	800	0	0	0	0	0	0	0	1	0	0	2	0	3
	1600	1	0	0	0	0	0	0	0	0	0	0	1	2
	1615	1	0	0	0	0	0	0	0	0	0	0	1	2
	1630	1	0	0	0	0	0	0	0	0	0	0	1	2
	1645	1	0	0	0	0	0	0	0	0	0	0	1	2
	1700	0	0	1	0	0	0	0	1	0	0	0	1	3
SATURDAY	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	
WEEKDAY	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
SATURDAY	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*

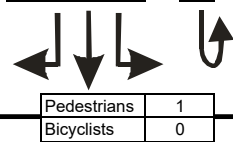
**TURNING
MOVEMENT
DIAGRAM**



Liverpool Road

	Total	7	79	4
	Heavy	0	0	0
	Medium	0	2	0
	Autos	7	77	4

U-Turns	0
----------------	---



Pedestrians	1
Bicyclists	0

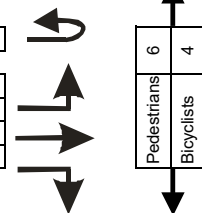
PERIOD	<i>WEEKDAY AM PEAK HOUR</i>
TIME	<i>0730 - 0830</i>

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

Wharf Street

U-Turns	0
----------------	---

Auto	Medium	Heavy	Total
18	0	0	18
0	0	0	0
0	0	0	0



Pedestrians	6
Bicyclists	4

Pedestrians	3
Bicyclists	0

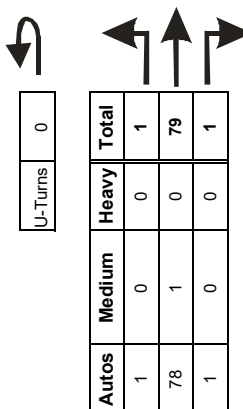
Auto	Medium	Heavy	Total
5	0	0	5
1	0	0	1
0	0	0	0

U-Turns	0
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Wharf Street

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

Pedestrians	1
Bicyclists	0



	Total	1	79	1
	Heavy	0	0	0
	Medium	0	1	0
	Autos	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

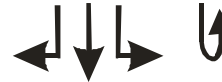
**TURNING
MOVEMENT
DIAGRAM**



Liverpool Road

	Total	38	107	10
	Heavy	0	0	0
	Medium	1	0	0
	Autos	37	107	10

U-Turns	0
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Pedestrians	1
Bicyclists	0

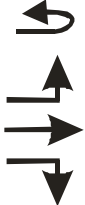
PERIOD	WEEKDAY PM PEAK HOUR
TIME	1615 - 1715

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

Wharf Street

U-Turns	0
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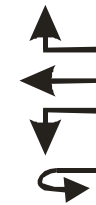
Auto	18	Medium	1	Heavy	0	Total	19
	0		0		0		0
	2		0		0		2



Pedestrians	15
Bicyclists	1

Pedestrians	9
Bicyclists	3

Auto	7	Medium	0	Heavy	0	Total	7
	0		0		0		0
	0		0		0		0



U-Turns	0
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Wharf Street

% NON-AUTO VEHICLES (Medium & Heavy)			
Direction	Left	Thru	Right
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%

Pedestrians	2
Bicyclists	0



	Total	5	79	1
	Heavy	0	0	0
	Medium	0	0	0
	Autos	5	79	1

Liverpool Road

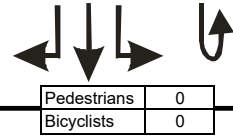
Comments:



Liverpool Road

	Total	61	169	7
	Heavy	0	0	0
	Medium	0	0	0
	Autos	61	169	7

U-Turns	0
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PERIOD	SAT PEAK HOUR
TIME	1300 - 1400

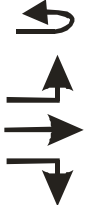
INTERSECTION TOTALS	Autos	Trucks	Buses	Total Vehicles	Medium & Heavy %
	422	0	0	422	0.0%
	Peds	Bicycles	U-Turns	PHF	
	48	24	0	0.925	

Wharf Street

U-Turns	0
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Auto	Medium	Heavy	Total
35	0	0	35
2	0	0	2
7	0	0	7

Pedestrians	31
Bicyclists	12



Pedestrians	14
Bicyclists	12

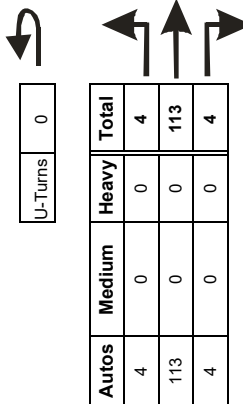
Auto	Medium	Heavy	Total
18	0	0	18
1	0	0	1
1	0	0	1

U-Turns	0
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Wharf Street

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

Pedestrians	3
Bicyclists	0



Comments:

Liverpool Road

GAP SURVEY

LOCATION:

Tatra @ Liverpool

MUNICIPALITY:

Pickering

DATE:

Thursday June 1, 2017

WEATHER:

Sunny

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

**CRITICAL GAP VALUES
MINOR MOVEMENTS**

Type	Left	Thru	Right
Initial	7.5	6.5	6.9
FollowUp	3.5	4	3.3

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

SUMMARY					
730	471	0	74	77	87
745	401	24	52	55	61
800	406	45	54	58	64
815	474	22	76	74	84
TOTAL	1752	91	256	264	296

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

SUMMARY					
1600	331	41	37	41	43
1615	421	47	43	51	55
1630	564	0	82	83	90
1645	451	90	50	57	61
TOTAL	1767	178	212	232	249

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

SUMMARY				
1300	192	19	24	24
1315	202	23	26	29
1330	326	52	51	56
1345	140	14	18	18
TOTAL	860	108	119	127

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

SUMMARY				
730	550	91	93	104
745	502	72	76	82
800	429	73	69	81
815	556	101	98	114
TOTAL	2037	337	336	381

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

SUMMARY				
1600	349	45	49	52
1615	390	45	53	58
1630	401	56	58	60
1645	330	45	46	52
TOTAL	1470	191	206	222

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

SUMMARY				
1300	369	56	54	62
1315	318	42	42	45
1330	373	52	56	60
1345	254	38	38	42
TOTAL	1314	188	190	209

Traf8 Group	LOCATION: Public parking lot Located at south end of Liverpool Rd East side MUNICIPALITY: Pickering WEATHER: 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

Traf8 Group	LOCATION: Public parking lot Located at south end of Liverpool Rd East side MUNICIPALITY: Pickering WEATHER: Saturday - Sunny Thursday - Sunny	PARKING SURVEY

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	
MAX	72	5	76	0

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	
MAX	72	4	76	1

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

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
AM Peak 5:30 to 9:00	100	Max Green	7.0	7.0	20.6	20.6	8.0	26.0	27.3	45.3
PM Peak 14:30 to 19:00	100	Max Green	11.0	7.0	29.6	25.6	20.0	20.0	24.3	24.3
Saturday 8:00 to 19:00	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	
Intersection Summary												
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

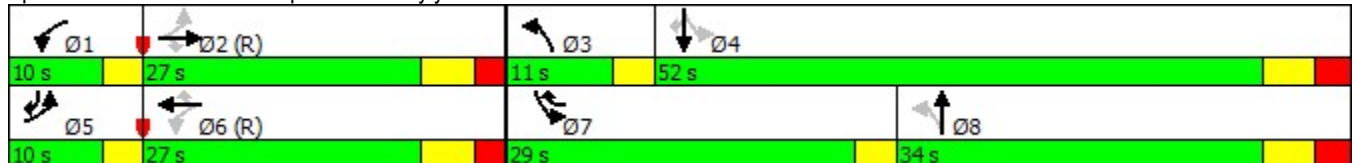
Timing Plan: AM Peak Hour
Existing Traffic Conditions

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		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2							
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										
Intersection Summary												
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			
Direction, Lane #	EB 1	NB 1	SB 1			
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					
Intersection Summary						
Average Delay			2.1			
Intersection Capacity Utilization			36.5%	ICU Level of Service	A	
Analysis Period (min)			15			

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

Timing Plan: AM Peak Hour
 Existing Traffic Conditions






Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	5	126	174	14	124	119
Future Volume (vph)	5	126	174	14	124	119
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	6	159	220	18	157	151

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	165	238	308
Volume Left (vph)	6	0	157
Volume Right (vph)	159	18	0
Hadj (s)	-0.54	0.06	0.17
Departure Headway (s)	4.7	4.8	4.8
Degree Utilization, x	0.21	0.31	0.41
Capacity (veh/h)	702	725	725
Control Delay (s)	8.9	9.9	11.0
Approach Delay (s)	8.9	9.9	11.0
Approach LOS	A	A	B

Intersection Summary			
Delay		10.2	
Level of Service		B	
Intersection Capacity Utilization		42.9%	ICU Level of Service
Analysis Period (min)		15	A

Intersection	
Intersection Delay, s/veh	10.1
Intersection LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	126	174	14	124	119
Future Vol, veh/h	5	126	174	14	124	119
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79
Heavy Vehicles, %	0	2	4	36	4	4
Mvmt Flow	6	159	220	18	157	151
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	8.9	9.8	11
HCM LOS	A	A	B

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	4%	51%
Vol Thru, %	93%	0%	49%
Vol Right, %	7%	96%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	188	131	243
LT Vol	0	5	124
Through Vol	174	0	119
RT Vol	14	126	0
Lane Flow Rate	238	166	308
Geometry Grp	1	1	1
Degree of Util (X)	0.308	0.211	0.404
Departure Headway (Hd)	4.664	4.582	4.726
Convergence, Y/N	Yes	Yes	Yes
Cap	769	779	760
Service Time	2.712	2.63	2.772
HCM Lane V/C Ratio	0.309	0.213	0.405
HCM Control Delay	9.8	8.9	11
HCM Lane LOS	A	A	B
HCM 95th-tile Q	1.3	0.8	2

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

Timing Plan: AM Peak Hour
 Existing Traffic Conditions



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	7	0	1	153	128	7
Future Volume (Veh/h)	7	0	1	153	128	7
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	8	0	1	180	151	8
Pedestrians	21			3	1	
Lane Width (m)	3.7			3.7	3.7	
Walking Speed (m/s)	1.1			1.1	1.1	
Percent Blockage	2			0	0	
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	359	179	180			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	359	179	180			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	100	100			
cM capacity (veh/h)	629	849	1379			
Direction, Lane #	EB 1	NB 1	SB 1			
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					
Intersection Summary						
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			
Direction, Lane #	EB 1	NB 1	SB 1			
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					
Intersection Summary						
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		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
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										
Intersection Summary												
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		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
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										
Intersection Summary												
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	
Direction, Lane #	WB 1	NB 1	SB 1			
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					
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			8.7%		ICU Level of Service	A
Analysis Period (min)			15			

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

Timing Plan: 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	
Intersection Summary												
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

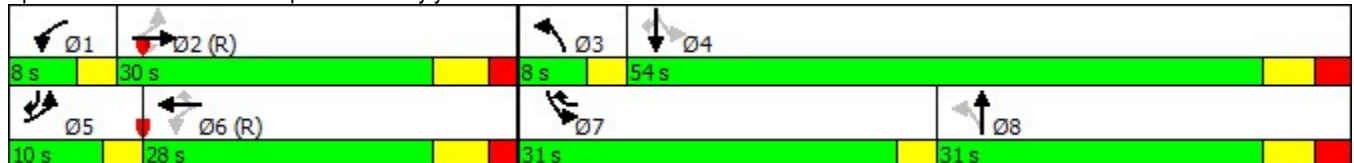
Timing Plan: AM Peak Hour
Existing Traffic Conditions - Bayly Optimized

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 LOS: C
 Intersection Capacity Utilization 92.8%
 ICU Level of Service F
 Analysis Period (min) 15

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	
Intersection Summary												
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

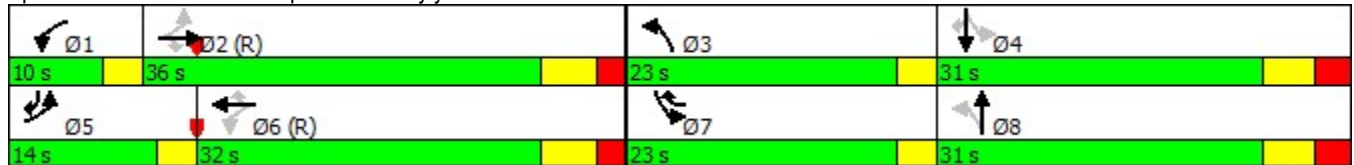
Timing Plan: PM Peak Hour
Existing Traffic Conditions

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

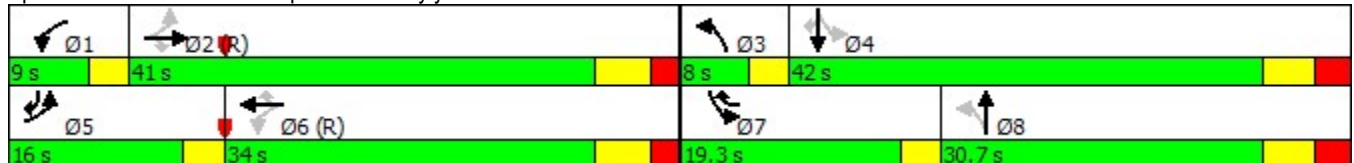
Timing Plan: PM Peak Hour
Existing Volumes - Bayly Optimized

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

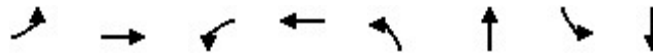
Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 14 (14%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 90
 Control Type: Pretimed
 Maximum v/c Ratio: 0.91
 Intersection Signal Delay: 30.9
 Intersection LOS: C
 Intersection Capacity Utilization 97.4%
 ICU Level of Service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

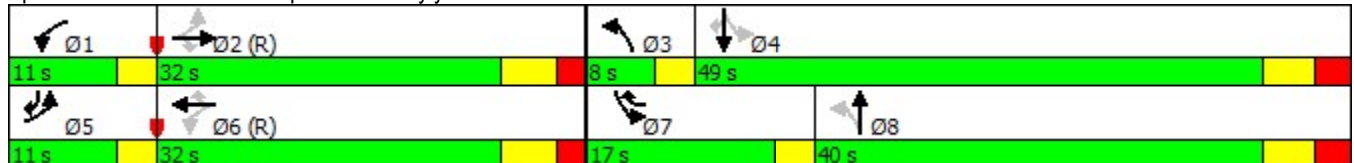
Timing Plan: Sat Peak Hour
Existing Traffic Conditions

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		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2							
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										
Intersection Summary												
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			
Direction, Lane #	EB 1	NB 1	SB 1			
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					
Intersection Summary						
Average Delay			1.6			
Intersection Capacity Utilization			40.1%	ICU Level of Service	A	
Analysis Period (min)			15			

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

Timing Plan: Sat Peak Hour
 Existing Traffic Conditions



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	11	105	248	20	121	303
Future Volume (vph)	11	105	248	20	121	303
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	11	109	258	21	126	316

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	120	279	442
Volume Left (vph)	11	0	126
Volume Right (vph)	109	21	0
Hadj (s)	-0.51	0.01	0.09
Departure Headway (s)	5.0	4.7	4.6
Degree Utilization, x	0.17	0.37	0.57
Capacity (veh/h)	632	730	754
Control Delay (s)	9.1	10.5	13.6
Approach Delay (s)	9.1	10.5	13.6
Approach LOS	A	B	B

Intersection Summary			
Delay		11.9	
Level of Service		B	
Intersection Capacity Utilization		54.1%	ICU Level of Service
Analysis Period (min)		15	A

Intersection	
Intersection Delay, s/veh	11.7
Intersection LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Vol, veh/h	11	105	248	20	121	303
Future Vol, veh/h	11	105	248	20	121	303
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles, %	0	1	3	5	0	3
Mvmt Flow	11	109	258	21	126	316
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	9	10.4	13.3
HCM LOS	A	B	B

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	9%	29%
Vol Thru, %	93%	0%	71%
Vol Right, %	7%	91%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	268	116	424
LT Vol	0	11	121
Through Vol	248	0	303
RT Vol	20	105	0
Lane Flow Rate	279	121	442
Geometry Grp	1	1	1
Degree of Util (X)	0.364	0.167	0.561
Departure Headway (Hd)	4.691	4.968	4.57
Convergence, Y/N	Yes	Yes	Yes
Cap	762	717	786
Service Time	2.743	3.035	2.616
HCM Lane V/C Ratio	0.366	0.169	0.562
HCM Control Delay	10.4	9	13.3
HCM Lane LOS	B	A	B
HCM 95th-tile Q	1.7	0.6	3.5

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

Timing Plan: Sat Peak Hour
 Existing Traffic Conditions



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	0	0	218	268	12
Future Volume (Veh/h)	10	0	0	218	268	12
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	11	0	0	240	295	13
Pedestrians	9			1		
Lane Width (m)	3.7			3.7		
Walking Speed (m/s)	1.1			1.1		
Percent Blockage	1			0		
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	550	312	317			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	550	312	317			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	98	100	100			
cM capacity (veh/h)	495	726	1243			
Direction, Lane #	EB 1	NB 1	SB 1			
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					
Intersection Summary						
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			
Direction, Lane #	EB 1	NB 1	SB 1			
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					
Intersection Summary						
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		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
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										
Intersection Summary												
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		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
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										
Intersection Summary												
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	
Direction, Lane #	WB 1	NB 1	SB 1			
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					
Intersection Summary						
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	
Intersection Summary												
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

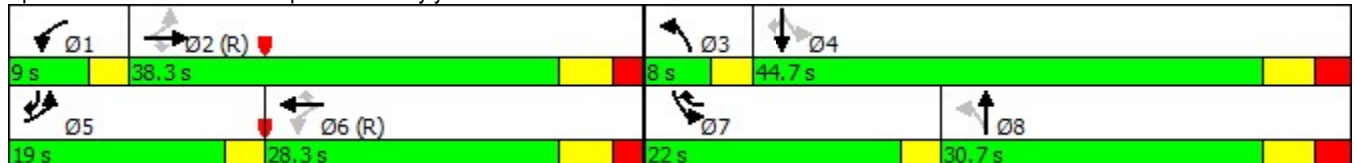
Timing Plan: Sat Peak Hour
Existing Traffic Conditions - Bayly Optimized

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






























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	
Intersection Summary												
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

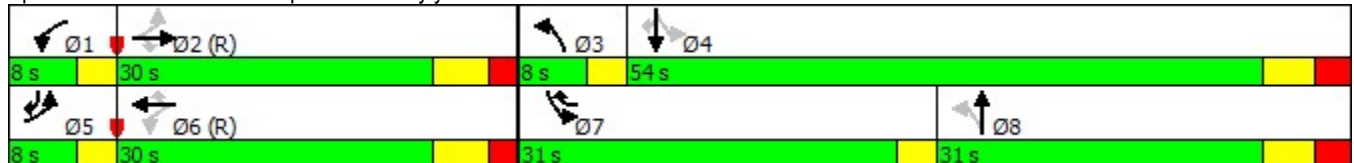
Timing Plan: AM Peak Hour
2027 Background Traffic Conditions

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		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2							
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										
Intersection Summary												
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			
Direction, Lane #	EB 1	NB 1	SB 1			
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					
Intersection Summary						
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			
Direction, Lane #	EB 1	NB 1	SB 1			
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					
Intersection Summary						
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			
Direction, Lane #	EB 1	NB 1	SB 1			
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					
Intersection Summary						
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		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
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										
Intersection Summary												
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		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
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										
Intersection Summary												
Average Delay			3.2									
Intersection Capacity Utilization			23.4%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
 23: Liverpool Rd & Wharf St

Timing Plan: AM Peak Hour
 2027 Background Traffic Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	18	0	0	0	1	5	1	83	1	4	83	4
Future Volume (vph)	18	0	0	0	1	5	1	83	1	4	83	4
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	22	0	0	0	1	6	1	100	1	5	100	5
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	22	7	102	110								
Volume Left (vph)	22	0	1	5								
Volume Right (vph)	0	6	1	5								
Hadj (s)	0.20	-0.51	0.01	0.01								
Departure Headway (s)	4.6	3.9	4.1	4.1								
Degree Utilization, x	0.03	0.01	0.12	0.12								
Capacity (veh/h)	750	877	861	869								
Control Delay (s)	7.7	6.9	7.6	7.7								
Approach Delay (s)	7.7	6.9	7.6	7.7								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			7.6									
Level of Service			A									
Intersection Capacity Utilization			22.7%	ICU Level of Service	A							
Analysis Period (min)			15									

Intersection	
Intersection Delay, s/veh	7.6
Intersection LOS	A










Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	18	0	0	0	1	5	1	83	1	4	83	4
Future Vol, veh/h	18	0	0	0	1	5	1	83	1	4	83	4
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	2	0
Mvmt Flow	22	0	0	0	1	6	1	100	1	5	100	5
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.7	6.9	7.6	7.6
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	1%	100%	0%	4%
Vol Thru, %	98%	0%	17%	91%
Vol Right, %	1%	0%	83%	4%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	85	18	6	91
LT Vol	1	18	0	4
Through Vol	83	0	1	83
RT Vol	1	0	5	4
Lane Flow Rate	102	22	7	110
Geometry Grp	1	1	1	1
Degree of Util (X)	0.115	0.027	0.008	0.122
Departure Headway (Hd)	4.026	4.469	3.878	4.008
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	887	789	928	891
Service Time	2.067	2.563	1.878	2.048
HCM Lane V/C Ratio	0.115	0.028	0.008	0.123
HCM Control Delay	7.6	7.7	6.9	7.6
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.4	0.1	0	0.4
























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

Timing Plan: AM Peak Hour
 2027 Background Traffic Conditions

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	61	0	0	39
Future Volume (Veh/h)	0	0	61	0	0	39
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74
Hourly flow rate (vph)	0	0	82	0	0	53
Pedestrians	7					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	1					
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	142	89			89	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	142	89			89	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	850	968			1509	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	0	82	53			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1509			
Volume to Capacity	0.00	0.05	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			8.7%		ICU Level of Service	A
Analysis Period (min)			15			

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

Timing Plan: PM Peak Hour
2027 Background Traffic Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	366	846	259	98	572	689	76	564	92	335	555	245
Future Volume (vph)	366	846	259	98	572	689	76	564	92	335	555	245
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7		3.0	6.7	3.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.94	1.00	1.00	0.97	1.00	0.99		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1820	3579	1371	1752	3614	1535	1810	3491		1785	3579	1532
Flt Permitted	0.27	1.00	1.00	0.22	1.00	1.00	0.44	1.00		0.18	1.00	1.00
Satd. Flow (perm)	508	3579	1371	405	3614	1535	832	3491		335	3579	1532
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	377	872	267	101	590	710	78	581	95	345	572	253
RTOR Reduction (vph)	0	0	166	0	0	60	0	13	0	0	0	70
Lane Group Flow (vph)	377	872	101	101	590	650	78	663	0	345	572	183
Confl. Peds. (#/hr)	25		30	30		25	36		57	57		36
Confl. Bikes (#/hr)			6			4			3			6
Heavy Vehicles (%)	0%	2%	12%	4%	1%	3%	0%	1%	2%	2%	2%	2%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	5	2		1	6	7	3	8		7	4	5
Permitted Phases	2		2	6		6	8			4		4
Actuated Green, G (s)	43.6	34.6	34.6	33.6	27.6	43.6	29.3	24.3		43.3	35.3	48.3
Effective Green, g (s)	43.6	34.6	34.6	33.6	27.6	43.6	29.3	24.3		43.3	35.3	48.3
Actuated g/C Ratio	0.44	0.35	0.35	0.34	0.28	0.44	0.29	0.24		0.43	0.35	0.48
Clearance Time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7		3.0	6.7	3.0
Lane Grp Cap (vph)	392	1238	474	216	997	669	292	848		377	1263	739
v/s Ratio Prot	c0.12	0.24		0.03	0.16	c0.16	0.01	0.19		0.15	0.16	0.03
v/s Ratio Perm	c0.29		0.07	0.13		0.27	0.06			c0.25		0.09
v/c Ratio	0.96	0.70	0.21	0.47	0.59	0.97	0.27	0.78		0.92	0.45	0.25
Uniform Delay, d1	22.9	28.3	23.1	23.9	31.3	27.6	26.1	35.4		22.5	24.9	15.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	36.8	3.4	1.0	7.1	2.6	28.6	2.2	7.1		29.2	1.2	0.8
Delay (s)	59.7	31.7	24.1	31.0	33.9	56.2	28.3	42.5		51.7	26.1	16.0
Level of Service	E	C	C	C	C	E	C	D		D	C	B
Approach Delay (s)		37.3			45.0			41.0			31.5	
Approach LOS		D			D			D			C	
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

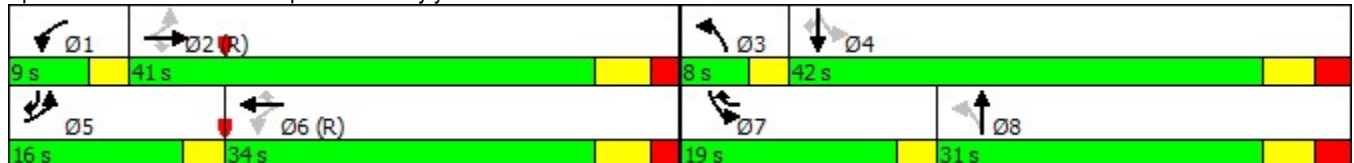
Timing Plan: PM Peak Hour
2027 Background Traffic Conditions

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		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2							
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										
Intersection Summary												
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			
Direction, Lane #	EB 1	NB 1	SB 1			
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					
Intersection Summary						
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	B
Analysis Period (min)	15		

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			
Direction, Lane #	EB 1	NB 1	SB 1			
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					
Intersection Summary						
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			
Direction, Lane #	EB 1	NB 1	SB 1			
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					
Intersection Summary						
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		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
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										
Intersection Summary												
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		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
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										
Intersection Summary												
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

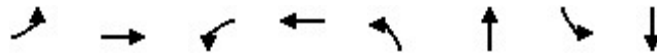
Timing Plan: PM Peak Hour
 2027 Background Traffic Conditions



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	
Direction, Lane #	WB 1	NB 1	SB 1			
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					
Intersection Summary						
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		
Intersection Summary													
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

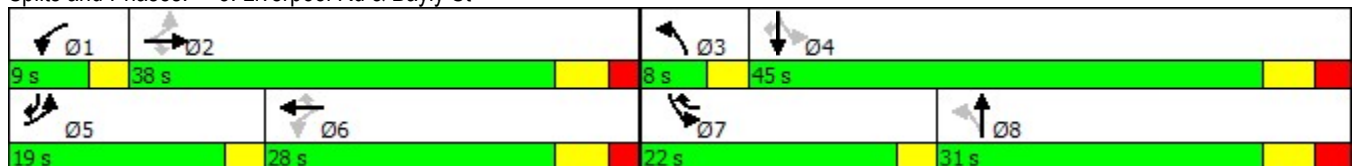


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	357	410	147	96	239	357	63	486	342	515	288
Future Volume (vph)	357	410	147	96	239	357	63	486	342	515	288
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	pm+pt	NA	pm+ov
Protected Phases	5	2		1	6	7	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		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2							
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										
Intersection Summary												
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			
Direction, Lane #	EB 1	NB 1	SB 1			
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					
Intersection Summary						
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			
Direction, Lane #	EB 1	NB 1	SB 1			
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					
Intersection Summary						
Average Delay	0.2					
Intersection Capacity Utilization	28.5%			ICU Level of Service	A	
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
 15: Liverpool Rd & Ilona Park Rd (S)

















Timing Plan: Sat Peak Hour
 2027 Background Traffic Conditions



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	2	1	0	233	318	13
Future Volume (Veh/h)	2	1	0	233	318	13
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	2	1	0	251	342	14
Pedestrians	11					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	1					
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	611	360	367			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	611	360	367			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	455	682	1190			
Direction, Lane #	EB 1	NB 1	SB 1			
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					
Intersection Summary						
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		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
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										
Intersection Summary												
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		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
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										
Intersection Summary												
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	
Direction, Lane #	WB 1	NB 1	SB 1			
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					
Intersection Summary						
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	
Intersection Summary												
HCM 2000 Control Delay			34.1									HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio			0.83									
Actuated Cycle Length (s)			100.0									Sum of lost time (s) 19.1
Intersection Capacity Utilization			93.4%									ICU Level of Service F
Analysis Period (min)			15									
c Critical Lane Group												

Timings
3: Liverpool Rd & Bayly St

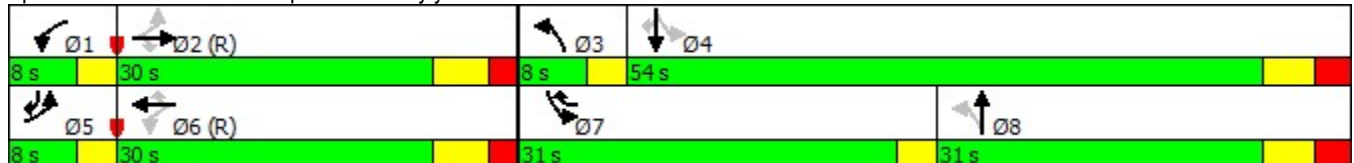
Timing Plan: AM Peak Hour
2032 Background Traffic Conditions

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	
Lane Configurations												
Traffic Volume (vph)	199	596	98	56	245	304	60	589	496	303	167	
Future Volume (vph)	199	596	98	56	245	304	60	589	496	303	167	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	pm+pt	NA	pm+ov	
Protected Phases	5	2		1	6	7	3	8	7	4	5	
Permitted Phases	2		2	6		6	8		4		4	
Detector Phase	5	2	2	1	6	7	3	8	7	4	5	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	8.0	26.4	26.4	8.0	26.4	8.0	8.0	30.7	8.0	30.7	8.0	
Total Split (s)	8.0	30.0	30.0	8.0	30.0	31.0	8.0	31.0	31.0	54.0	8.0	
Total Split (%)	8.0%	30.0%	30.0%	8.0%	30.0%	31.0%	8.0%	31.0%	31.0%	54.0%	8.0%	
Yellow Time (s)	3.0	4.1	4.1	3.0	4.1	3.0	3.0	3.8	3.0	3.8	3.0	
All-Red Time (s)	0.0	2.3	2.3	0.0	2.3	0.0	0.0	2.9	0.0	2.9	0.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7	3.0	6.7	3.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lead	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max	
Act Effct Green (s)	32.0	23.6	23.6	32.0	23.6	55.0	33.0	24.3	59.0	47.3	56.0	
Actuated g/C Ratio	0.32	0.24	0.24	0.32	0.24	0.55	0.33	0.24	0.59	0.47	0.56	
v/c Ratio	0.52	0.71	0.25	0.28	0.31	0.38	0.16	0.85	0.85	0.19	0.18	
Control Delay	30.8	40.5	3.7	25.5	32.8	9.8	13.4	46.0	37.9	15.7	1.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	30.8	40.5	3.7	25.5	32.8	9.8	13.4	46.0	37.9	15.7	1.9	
LOS	C	D	A	C	C	A	B	D	D	B	A	
Approach Delay		34.3			20.6			43.5		24.7		
Approach LOS		C			C			D		C		

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 90
 Control Type: Pretimed
 Maximum v/c Ratio: 0.85
 Intersection Signal Delay: 31.1
 Intersection Capacity Utilization 93.4%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service F

Splits and Phases: 3: Liverpool Rd & Bayly St



Queues
3: Liverpool Rd & Bayly St

Timing Plan: AM Peak Hour
2032 Background Traffic Conditions



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	203	608	100	57	250	310	61	723	506	309	170
v/c Ratio	0.52	0.71	0.25	0.28	0.31	0.38	0.16	0.85	0.85	0.19	0.18
Control Delay	30.8	40.5	3.7	25.5	32.8	9.8	13.4	46.0	37.9	15.7	1.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.8	40.5	3.7	25.5	32.8	9.8	13.4	46.0	37.9	15.7	1.9
Queue Length 50th (m)	28.5	57.2	0.0	7.3	21.1	21.4	4.7	68.6	72.7	17.6	0.0
Queue Length 95th (m)	46.6	76.0	6.1	15.9	32.0	37.7	9.9	#97.3	#127.9	25.7	7.8
Internal Link Dist (m)		177.5			249.4			51.8		146.7	
Turn Bay Length (m)	115.0		100.0	50.0		150.0	75.0		50.0		
Base Capacity (vph)	394	852	407	206	797	820	382	850	592	1613	933
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.71	0.25	0.28	0.31	0.38	0.16	0.85	0.85	0.19	0.18

Intersection Summary



















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

Approach	EB	WB	NB	SB
Crosswalk Length (m)	22.45	22.36	18.57	22.20
Crosswalk Width (m)	1.20	1.20	1.20	1.20
Total Number of Lanes Crossed	6	6	5	6
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	4	8	2	6
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (m)	2.74	2.74	2.74	2.74
Right Corner Size B (m)	2.74	2.74	2.74	2.74
Right Corner Curb Radius (m)	0.00	0.00	0.00	0.00
Right Corner Total Area (sq.m)	7.51	7.51	7.51	7.51
Ped. Left-Right Flow Rate (p/h)	0	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (km/h)	40	40	40	40
Right Corner Area per Ped (sq.m)	0.0	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-	-
Ped. Circulation Area (sq.m)	0.0	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-	-
Pedestrian Delay (s/p)	50.0	50.0	50.0	50.0
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	2.66	2.72	2.52	2.75
Pedestrian Crosswalk LOS	B	B	B	C

Approach	EB	WB	NB	SB
Bicycle Flow Rate (bike/h)	0	0	0	0
Total Flow Rate (veh/h)	911	617	784	985
Effct. Green for Bike (s)	23.6	23.6	24.3	47.3
Cross Street Width (m)	18.57	22.20	22.36	22.45
Through Lanes Number	2	2	2	2
Through Lane Width (m)	3.70	3.70	3.70	3.70
Bicycle Lane Width (m)	0.00	0.00	0.00	0.00
Paved Shoulder Width (m)	0.00	0.00	0.00	0.00
Curb Is Present?	No	No	No	No
On Street Parking?	No	No	No	No
Bicycle Lane Capacity (bike/h)	472	472	486	946
Bicycle Delay (s/bike)	29.2	29.2	28.7	13.9
Bicycle Compliance	Fair	Fair	Fair	Fair
Bicycle LOS Score	3.21	3.15	3.30	3.47
Bicycle LOS	C	C	C	C

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

Timing Plan: AM Peak Hour
2032 Background Traffic Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	1	3	0	217	0	541	11	129	304	2
Future Volume (Veh/h)	0	0	1	3	0	217	0	541	11	129	304	2
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	0	1	3	0	238	0	595	12	142	334	2
Pedestrians		17			16			6			1	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		2			2			1			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh												
Upstream signal (m)											153	
pX, platoon unblocked	0.94	0.94	0.94	0.94	0.94		0.94					
vC, conflicting volume	1476	1259	358	1242	1254	618	353			623		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1475	1245	290	1227	1239	618	285			623		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	98	100	50	100			85		
cM capacity (veh/h)	42	136	696	125	137	478	1196			943		
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			
Direction, Lane #	EB 1	NB 1	SB 1			
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					
Intersection Summary						
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 A
Analysis Period (min)		15	

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)

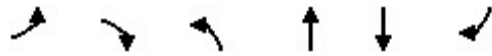
Timing Plan: AM Peak Hour
 2032 Background Traffic Conditions



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			
Direction, Lane #	EB 1	NB 1	SB 1			
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					
Intersection Summary						
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			
Direction, Lane #	EB 1	NB 1	SB 1			
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					
Intersection Summary						
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		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
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										
Intersection Summary												
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		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
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										
Intersection Summary												
Average Delay			3.1									
Intersection Capacity Utilization			23.6%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
 23: Liverpool Rd & Wharf St

Timing Plan: AM Peak Hour
 2032 Background Traffic Conditions

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	18	0	0	0	1	5	1	85	1	4	85	4
Future Volume (vph)	18	0	0	0	1	5	1	85	1	4	85	4
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	22	0	0	0	1	6	1	102	1	5	102	5
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	22	7	104	112								
Volume Left (vph)	22	0	1	5								
Volume Right (vph)	0	6	1	5								
Hadj (s)	0.20	-0.51	0.01	0.01								
Departure Headway (s)	4.6	3.9	4.1	4.1								
Degree Utilization, x	0.03	0.01	0.12	0.13								
Capacity (veh/h)	748	874	860	869								
Control Delay (s)	7.7	6.9	7.6	7.7								
Approach Delay (s)	7.7	6.9	7.6	7.7								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			7.6									
Level of Service			A									
Intersection Capacity Utilization			22.8%	ICU Level of Service	A							
Analysis Period (min)			15									

Intersection	
Intersection Delay, s/veh	7.6
Intersection LOS	A










Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	18	0	0	0	1	5	1	85	1	4	85	4
Future Vol, veh/h	18	0	0	0	1	5	1	85	1	4	85	4
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Heavy Vehicles, %	0	0	0	0	0	0	0	1	0	0	2	0
Mvmt Flow	22	0	0	0	1	6	1	102	1	5	102	5
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.7	6.9	7.6	7.6
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	1%	100%	0%	4%
Vol Thru, %	98%	0%	17%	91%
Vol Right, %	1%	0%	83%	4%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	87	18	6	93
LT Vol	1	18	0	4
Through Vol	85	0	1	85
RT Vol	1	0	5	4
Lane Flow Rate	105	22	7	112
Geometry Grp	1	1	1	1
Degree of Util (X)	0.117	0.027	0.008	0.125
Departure Headway (Hd)	4.029	4.478	3.788	4.01
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	886	788	926	891
Service Time	2.07	2.573	1.888	2.05
HCM Lane V/C Ratio	0.119	0.028	0.008	0.126
HCM Control Delay	7.6	7.7	6.9	7.6
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.4	0.1	0	0.4

HCM Unsignalized Intersection Capacity Analysis
26: Liverpool Rd

Timing Plan: AM Peak Hour
2032 Background Traffic Conditions

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	63	0	0	40
Future Volume (Veh/h)	0	0	63	0	0	40
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.74	0.74	0.74	0.74	0.74	0.74
Hourly flow rate (vph)	0	0	85	0	0	54
Pedestrians	7					
Lane Width (m)	3.7					
Walking Speed (m/s)	1.1					
Percent Blockage	1					
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	146	92			92	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	146	92			92	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	845	964			1505	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	0	85	54			
Volume Left	0	0	0			
Volume Right	0	0	0			
cSH	1700	1700	1505			
Volume to Capacity	0.00	0.05	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	0.0	0.0	0.0			
Lane LOS	A					
Approach Delay (s)	0.0	0.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			8.7%	ICU Level of Service		A
Analysis Period (min)			15			

Intersection: 11: Liverpool Rd & Krosno Blvd

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (m)	19.7	42.4	30.2
Average Queue (m)	8.3	17.2	19.6
95th Queue (m)	15.7	28.9	28.6
Link Distance (m)	265.9	239.9	406.8
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 23: Liverpool Rd & Wharf St




























Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	9.3	9.1	15.8	16.4
Average Queue (m)	3.6	1.8	9.2	11.0
95th Queue (m)	10.9	7.7	11.3	16.0
Link Distance (m)	104.6	110.2	179.8	86.5
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 0

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

Timing Plan: PM Peak Hour
2032 Background Traffic Conditions

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		 			 			 			 		
Traffic Volume (vph)	366	868	259	98	586	689	76	577	92	335	568	245	
Future Volume (vph)	366	868	259	98	586	689	76	577	92	335	568	245	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7		3.0	6.7	3.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00	
Frpb, ped/bikes	1.00	1.00	0.94	1.00	1.00	0.97	1.00	0.99		1.00	1.00	0.96	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00		1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	1820	3579	1369	1752	3614	1533	1810	3493		1785	3579	1531	
Flt Permitted	0.26	1.00	1.00	0.21	1.00	1.00	0.43	1.00		0.17	1.00	1.00	
Satd. Flow (perm)	490	3579	1369	379	3614	1533	821	3493		318	3579	1531	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	
Adj. Flow (vph)	377	895	267	101	604	710	78	595	95	345	586	253	
RTOR Reduction (vph)	0	0	162	0	0	60	0	13	0	0	0	68	
Lane Group Flow (vph)	377	895	105	101	604	650	78	677	0	345	586	185	
Confl. Peds. (#/hr)	26		31	31		26	37		58	58		37	
Confl. Bikes (#/hr)			6			4			3			6	
Heavy Vehicles (%)	0%	2%	12%	4%	1%	3%	0%	1%	2%	2%	2%	2%	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	pm+ov	
Protected Phases	5	2		1	6	7	3	8		7	4	5	
Permitted Phases	2		2	6		6	8			4		4	
Actuated Green, G (s)	43.6	34.6	34.6	33.6	27.6	43.6	29.3	24.3		43.3	35.3	48.3	
Effective Green, g (s)	43.6	34.6	34.6	33.6	27.6	43.6	29.3	24.3		43.3	35.3	48.3	
Actuated g/C Ratio	0.44	0.35	0.35	0.34	0.28	0.44	0.29	0.24		0.43	0.35	0.48	
Clearance Time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7		3.0	6.7	3.0	
Lane Grp Cap (vph)	386	1238	473	209	997	668	290	848		372	1263	739	
v/s Ratio Prot	c0.13	0.25		0.03	0.17	c0.16	0.01	0.19		0.15	0.16	0.03	
v/s Ratio Perm	c0.30		0.08	0.13		0.27	0.07			c0.25		0.09	
v/c Ratio	0.98	0.72	0.22	0.48	0.61	0.97	0.27	0.80		0.93	0.46	0.25	
Uniform Delay, d1	23.1	28.5	23.2	24.0	31.5	27.6	26.1	35.6		23.7	25.0	15.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Incremental Delay, d2	40.3	3.7	1.1	7.8	2.7	28.9	2.3	7.7		31.5	1.2	0.8	
Delay (s)	63.4	32.2	24.3	31.8	34.2	56.5	28.4	43.3		55.2	26.3	16.0	
Level of Service	E	C	C	C	C	E	C	D		E	C	B	
Approach Delay (s)		38.5			45.2			41.8			32.5		
Approach LOS		D			D			D			C		
Intersection Summary													
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

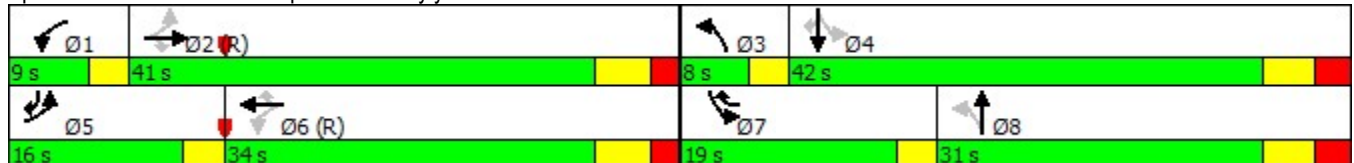
Timing Plan: PM Peak Hour
2032 Background Traffic Conditions

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			
Direction, Lane #	EB 1	NB 1	SB 1			
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					
Intersection Summary						
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)

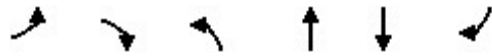
Timing Plan: PM Peak Hour
 2032 Background Traffic Conditions



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

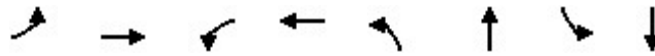
HCM Unsignalized Intersection Capacity Analysis
26: Liverpool Rd

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	
Direction, Lane #	WB 1	NB 1	SB 1			
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					
Intersection Summary						
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 Effect 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		
Intersection Summary													
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

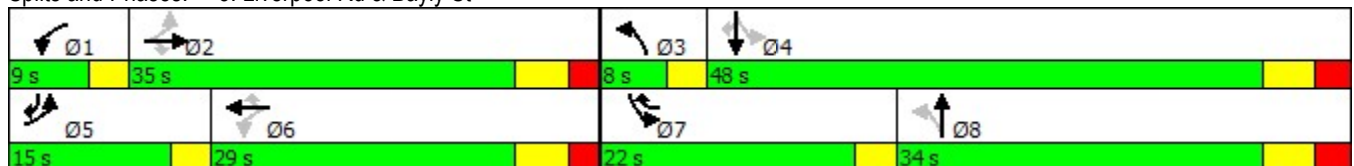


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations											
Traffic Volume (vph)	357	420	147	96	245	357	63	496	342	528	288
Future Volume (vph)	357	420	147	96	245	357	63	496	342	528	288
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	pm+pt	NA	pm+ov
Protected Phases	5	2		1	6	7	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		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2							
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										
Intersection Summary												
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			
Direction, Lane #	EB 1	NB 1	SB 1			
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					
Intersection Summary						
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			
Direction, Lane #	EB 1	NB 1	SB 1			
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					
Intersection Summary						
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			
Direction, Lane #	EB 1	NB 1	SB 1			
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					
Intersection Summary						
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		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
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										
Intersection Summary												
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		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
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										
Intersection Summary												
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	
Direction, Lane #	WB 1	NB 1	SB 1			
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					
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			24.3%		ICU Level of Service	A
Analysis Period (min)			15			

Intersection: 11: Liverpool Rd & Krosno Blvd

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (m)	13.3	35.4	64.6
Average Queue (m)	7.9	19.5	28.8
95th Queue (m)	12.8	26.8	42.0
Link Distance (m)	265.9	239.9	406.8
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 23: Liverpool Rd & Wharf St

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	15.8	9.3	16.8	23.4
Average Queue (m)	7.8	3.3	10.7	14.6
95th Queue (m)	13.9	10.6	15.6	21.2
Link Distance (m)	104.6	110.2	179.8	86.5
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 0



Appendix C.3

Synchro Reports – 2027 and 2032 Total Traffic Intersection Operations

Timings
3: Liverpool Rd & Bayly St

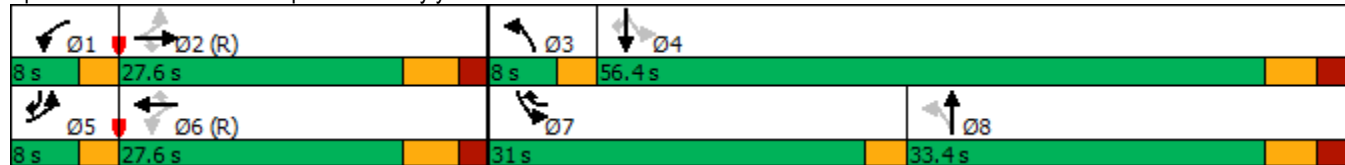
2027 Total Traffic Conditions
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	
Lane Configurations												
Traffic Volume (vph)	199	581	99	60	239	304	63	611	496	309	167	
Future Volume (vph)	199	581	99	60	239	304	63	611	496	309	167	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	pm+pt	NA	pm+ov	
Protected Phases	5	2		1	6	7	3	8	7	4	5	
Permitted Phases	2		2	6		6	8		4		4	
Detector Phase	5	2	2	1	6	7	3	8	7	4	5	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	8.0	27.0	27.0	8.0	27.0	8.0	8.0	31.0	8.0	31.0	8.0	
Total Split (s)	8.0	27.6	27.6	8.0	27.6	31.0	8.0	33.4	31.0	56.4	8.0	
Total Split (%)	8.0%	27.6%	27.6%	8.0%	27.6%	31.0%	8.0%	33.4%	31.0%	56.4%	8.0%	
Yellow Time (s)	3.0	4.1	4.1	3.0	4.1	3.0	3.0	3.8	3.0	3.8	3.0	
All-Red Time (s)	0.0	2.3	2.3	0.0	2.3	0.0	0.0	2.9	0.0	2.9	0.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7	3.0	6.7	3.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lead	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max	
Act Effct Green (s)	29.6	21.2	21.2	29.6	21.2	52.6	35.4	26.7	61.4	49.7	58.4	
Actuated g/C Ratio	0.30	0.21	0.21	0.30	0.21	0.53	0.35	0.27	0.61	0.50	0.58	
v/c Ratio	0.55	0.77	0.27	0.32	0.34	0.39	0.16	0.81	0.84	0.19	0.18	
Control Delay	33.9	45.1	4.2	28.5	35.1	11.1	12.4	41.3	35.2	14.3	1.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	33.9	45.1	4.2	28.5	35.1	11.1	12.4	41.3	35.2	14.3	1.7	
LOS	C	D	A	C	D	B	B	D	D	B	A	
Approach Delay		37.9			22.3			39.1		22.8		
Approach LOS		D			C			D		C		

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 90
 Control Type: Pretimed
 Maximum v/c Ratio: 0.84
 Intersection Signal Delay: 30.8
 Intersection LOS: C
 Intersection Capacity Utilization 94.4%
 ICU Level of Service F
 Analysis Period (min) 15

Splits and Phases: 3: Liverpool Rd & Bayly St



Queues
3: Liverpool Rd & Bayly St

2027 Total Traffic Conditions
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	203	593	101	61	244	310	64	757	506	315	170
v/c Ratio	0.55	0.77	0.27	0.32	0.34	0.39	0.16	0.81	0.84	0.19	0.18
Control Delay	33.9	45.1	4.2	28.5	35.1	11.1	12.4	41.3	35.2	14.3	1.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.9	45.1	4.2	28.5	35.1	11.1	12.4	41.3	35.2	14.3	1.7
Queue Length 50th (m)	29.7	57.3	0.0	8.2	21.2	23.2	4.6	70.1	69.6	17.1	0.0
Queue Length 95th (m)	48.4	76.6	6.5	17.3	32.4	40.7	9.6	92.1	#123.4	24.8	7.3
Internal Link Dist (m)		177.5			249.4			51.8		146.7	
Turn Bay Length (m)	115.0		100.0	50.0		150.0	75.0		50.0		65.0
Base Capacity (vph)	368	766	380	188	716	786	405	931	602	1695	966
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.77	0.27	0.32	0.34	0.39	0.16	0.81	0.84	0.19	0.18

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

3: Liverpool Rd & Bayly St

2027 Total Traffic Conditions
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	199	581	99	60	239	304	63	611	131	496	309	167
Future Volume (vph)	199	581	99	60	239	304	63	611	131	496	309	167
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7		3.0	6.7	3.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00
Frpb, ped/bikes	1.00	1.00	0.95	1.00	1.00	0.98	1.00	0.99		1.00	1.00	0.97
Flpb, ped/bikes	0.99	1.00	1.00	1.00	1.00	1.00	0.99	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1804	3614	1278	1751	3380	1433	1775	3423		1805	3411	1534
Flt Permitted	0.60	1.00	1.00	0.22	1.00	1.00	0.56	1.00		0.15	1.00	1.00
Satd. Flow (perm)	1140	3614	1278	412	3380	1433	1047	3423		293	3411	1534
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	203	593	101	61	244	310	64	623	134	506	315	170
RTOR Reduction (vph)	0	0	80	0	0	37	0	18	0	0	0	77
Lane Group Flow (vph)	203	593	21	61	244	273	64	739	0	506	315	93
Confl. Peds. (#/hr)	19		22	22		19	19		37	37		19
Confl. Bikes (#/hr)			1			1			3			1
Heavy Vehicles (%)	0%	1%	22%	4%	8%	12%	2%	2%	6%	1%	7%	3%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	5	2		1	6	7	3	8		7	4	5
Permitted Phases	2		2	6		6	8			4		4
Actuated Green, G (s)	26.2	21.2	21.2	26.2	21.2	49.2	31.7	26.7		57.7	49.7	54.7
Effective Green, g (s)	26.2	21.2	21.2	26.2	21.2	49.2	31.7	26.7		57.7	49.7	54.7
Actuated g/C Ratio	0.26	0.21	0.21	0.26	0.21	0.49	0.32	0.27		0.58	0.50	0.55
Clearance Time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7		3.0	6.7	3.0
Lane Grp Cap (vph)	331	766	270	174	716	705	368	913		592	1695	839
v/s Ratio Prot	c0.03	c0.16		0.02	0.07	0.11	0.01	0.22		c0.24	0.09	0.01
v/s Ratio Perm	0.13		0.02	0.07		0.08	0.05			c0.25		0.06
v/c Ratio	0.61	0.77	0.08	0.35	0.34	0.39	0.17	0.81		0.85	0.19	0.11
Uniform Delay, d1	31.2	37.1	31.6	28.8	33.5	15.9	24.2	34.3		23.4	13.9	10.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	8.2	7.5	0.6	5.5	1.3	1.6	1.0	7.7		14.6	0.2	0.3
Delay (s)	39.5	44.6	32.2	34.3	34.8	17.5	25.2	41.9		38.0	14.2	11.2
Level of Service	D	D	C	C	C	B	C	D		D	B	B
Approach Delay (s)		42.1			26.0			40.6			25.8	
Approach LOS		D			C			D			C	

Intersection Summary

HCM 2000 Control Delay	33.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	19.1
Intersection Capacity Utilization	94.4%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Approach	EB	WB	NB	SB
Crosswalk Length (m)	6.84	6.82	5.66	6.77
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	2.52	2.76
Pedestrian Crosswalk LOS	B	B	B	C

Approach	EB	WB	NB	SB
Bicycle Flow Rate (bike/h)	0	0	0	0
Total Flow Rate (veh/h)	897	615	821	991
Effct. Green for Bike (s)	21.2	21.2	26.7	49.7
Cross Street Width (m)	18.57	22.20	22.36	22.45
Through Lanes Number	2	2	2	2
Through Lane Width (m)	3.70	3.70	3.70	3.70
Bicycle Lane Width (m)	0.00	0.00	0.00	0.00
Paved Shoulder Width (m)	0.00	0.00	0.00	0.00
Curb Is Present?	No	No	No	No
On Street Parking?	No	No	No	No
Bicycle Lane Capacity (bike/h)	424	424	534	994
Bicycle Delay (s/bike)	31.0	31.0	26.9	12.7
Bicycle Compliance	Poor	Poor	Fair	Fair
Bicycle LOS Score	3.20	3.15	3.33	3.47
Bicycle LOS	C	C	C	C

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

2027 Total Traffic Conditions
AM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕		↕	↕	
Traffic Volume (veh/h)	0	0	1	3	0	217	0	579	11	129	315	2
Future Volume (Veh/h)	0	0	1	3	0	217	0	579	11	129	315	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	636	12	142	346	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	1529	1312	370	1295	1307	659	365			664		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1531	1301	304	1283	1296	659	299			664		
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	47	100			84		
cM capacity (veh/h)	37	125	684	114	126	452	1184			910		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2							
Volume Total	1	241	648	142	348							
Volume Left	0	3	0	142	0							
Volume Right	1	238	12	0	2							
cSH	684	436	1184	910	1700							
Volume to Capacity	0.00	0.55	0.00	0.16	0.20							
Queue Length 95th (m)	0.0	24.8	0.0	4.2	0.0							
Control Delay (s)	10.3	23.0	0.0	9.7	0.0							
Lane LOS	B	C		A								
Approach Delay (s)	10.3	23.0	0.0	2.8								
Approach LOS	B	C										
Intersection Summary												
Average Delay			5.0									
Intersection Capacity Utilization			74.2%		ICU Level of Service					D		
Analysis Period (min)			15									

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

2027 Total Traffic Conditions
 AM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	77	16	8	490	254	60
Future Volume (Veh/h)	77	16	8	490	254	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	527	273	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	860	314	347			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	860	314	347			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.4			
p0 queue free %	74	98	99			
cM capacity (veh/h)	323	724	1085			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	100	536	338			
Volume Left	83	9	0			
Volume Right	17	0	65			
cSH	356	1085	1700			
Volume to Capacity	0.28	0.01	0.20			
Queue Length 95th (m)	8.6	0.2	0.0			
Control Delay (s)	19.0	0.2	0.0			
Lane LOS	C	A				
Approach Delay (s)	19.0	0.2	0.0			
Approach LOS	C					
Intersection Summary						
Average Delay			2.1			
Intersection Capacity Utilization			44.1%	ICU Level of Service	A	
Analysis Period (min)			15			

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

2027 Total Traffic Conditions
 AM Peak Hour



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	7	126	310	20	124	161
Future Volume (vph)	7	126	310	20	124	161
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	9	159	392	25	157	204
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total (vph)	168	417	361			
Volume Left (vph)	9	0	157			
Volume Right (vph)	159	25	0			
Hadj (s)	-0.52	0.06	0.15			
Departure Headway (s)	5.2	4.9	5.0			
Degree Utilization, x	0.24	0.57	0.51			
Capacity (veh/h)	612	703	687			
Control Delay (s)	9.9	14.1	13.1			
Approach Delay (s)	9.9	14.1	13.1			
Approach LOS	A	B	B			
Intersection Summary						
Delay			13.0			
Level of Service			B			
Intersection Capacity Utilization			51.6%	ICU Level of Service	A	
Analysis Period (min)			15			

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

2027 Total Traffic Conditions
 AM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	7	0	1	294	173	7
Future Volume (Veh/h)	7	0	1	294	173	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	346	204	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	578	232	233			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	578	232	233			
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)	470	793	1319			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	8	347	212			
Volume Left	8	1	0			
Volume Right	0	0	8			
cSH	470	1319	1700			
Volume to Capacity	0.02	0.00	0.12			
Queue Length 95th (m)	0.4	0.0	0.0			
Control Delay (s)	12.8	0.0	0.0			
Lane LOS	B	A				
Approach Delay (s)	12.8	0.0	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			27.2%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 15: Liverpool Rd & Ilona Park Rd (S)

















2027 Total Traffic Conditions
 AM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	13	0	0	253	162	7
Future Volume (Veh/h)	13	0	0	253	162	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	305	195	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	526	221	225			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	526	221	225			
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)	505	806	1326			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	16	305	203			
Volume Left	16	0	0			
Volume Right	0	0	8			
cSH	505	1326	1700			
Volume to Capacity	0.03	0.00	0.12			
Queue Length 95th (m)	0.7	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					
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			23.3%	ICU Level of Service	A	
Analysis Period (min)			15			

















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

2027 Total Traffic Conditions
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	4	1	1	3	8	3	221	10	12	137	9
Future Volume (Veh/h)	15	4	1	1	3	8	3	221	10	12	137	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	263	12	14	163	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	488	482	184	491	481	269	176			275		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	488	482	184	491	481	269	176			275		
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	100	99	99	100			99		
cM capacity (veh/h)	477	445	849	474	480	746	1410			1300		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	24	15	279	188								
Volume Left	18	1	4	14								
Volume Right	1	10	12	11								
cSH	479	629	1410	1300								
Volume to Capacity	0.05	0.02	0.00	0.01								
Queue Length 95th (m)	1.2	0.6	0.1	0.2								
Control Delay (s)	12.9	10.9	0.1	0.7								
Lane LOS	B	B	A	A								
Approach Delay (s)	12.9	10.9	0.1	0.7								
Approach LOS	B	B										
Intersection Summary												
Average Delay			1.3									
Intersection Capacity Utilization			30.4%		ICU Level of Service				A			
Analysis Period (min)			15									

















HCM Unsignalized Intersection Capacity Analysis
20: Liverpool Rd & Annland St

2027 Total Traffic Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	54	2	7	6	0	10	6	163	4	4	90	15
Future Volume (Veh/h)	54	2	7	6	0	10	6	163	4	4	90	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	7	0	12	7	196	5	5	108	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	358	351	125	354	358	202	132			204		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	358	351	125	354	358	202	132			204		
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 %	89	100	99	99	100	99	99			100		
cM capacity (veh/h)	580	567	924	588	562	815	1357			1376		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	75	19	208	131								
Volume Left	65	7	7	5								
Volume Right	8	12	5	18								
cSH	604	713	1357	1376								
Volume to Capacity	0.12	0.03	0.01	0.00								
Queue Length 95th (m)	3.2	0.6	0.1	0.1								
Control Delay (s)	11.8	10.2	0.3	0.3								
Lane LOS	B	B	A	A								
Approach Delay (s)	11.8	10.2	0.3	0.3								
Approach LOS	B	B										
Intersection Summary												
Average Delay			2.7									
Intersection Capacity Utilization			25.7%		ICU Level of Service				A			
Analysis Period (min)			15									










HCM Unsignalized Intersection Capacity Analysis
 23: Liverpool Rd & Wharf St

2027 Total Traffic Conditions
 AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	18	0	0	0	1	5	1	140	1	4	104	4
Future Volume (vph)	18	0	0	0	1	5	1	140	1	4	104	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	169	1	5	125	5
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	22	7	171	135								
Volume Left (vph)	22	0	1	5								
Volume Right (vph)	0	6	1	5								
Hadj (s)	0.20	-0.51	0.01	0.02								
Departure Headway (s)	4.8	4.1	4.1	4.2								
Degree Utilization, x	0.03	0.01	0.20	0.16								
Capacity (veh/h)	698	808	855	852								
Control Delay (s)	7.9	7.1	8.1	7.9								
Approach Delay (s)	7.9	7.1	8.1	7.9								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			8.0									
Level of Service			A									
Intersection Capacity Utilization			23.8%	ICU Level of Service	A							
Analysis Period (min)			15									

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

2027 Total Traffic Conditions
 AM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	57	61	0	21	39
Future Volume (Veh/h)	0	57	61	0	21	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	77	82	0	28	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	198	89			89	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	198	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	92			98	
cM capacity (veh/h)	775	968			1509	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	77	82	81			
Volume Left	0	0	28			
Volume Right	77	0	0			
cSH	968	1700	1509			
Volume to Capacity	0.08	0.05	0.02			
Queue Length 95th (m)	2.0	0.0	0.4			
Control Delay (s)	9.0	0.0	2.7			
Lane LOS	A		A			
Approach Delay (s)	9.0	0.0	2.7			
Approach LOS	A					
Intersection Summary						
Average Delay			3.8			
Intersection Capacity Utilization			20.1%		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)	21.1	49.6	38.2
Average Queue (m)	10.3	21.6	19.0
95th Queue (m)	17.8	36.7	29.5
Link Distance (m)	265.9	239.9	406.8
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 23: Liverpool Rd & Wharf St

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	10.7	9.2	19.7	17.8
Average Queue (m)	3.7	1.9	10.6	10.3
95th Queue (m)	11.1	8.0	16.0	16.8
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

Timings
11: Liverpool Rd & Krosno Blvd

2027 Total Traffic Conditions
AM Peak Hour (Krosno Signalized)



Lane Group	WBL	NBT	SBL	SBT
Lane Configurations	W	T		T
Traffic Volume (vph)	7	310	124	161
Future Volume (vph)	7	310	124	161
Turn Type	Prot	NA	Perm	NA
Protected Phases	8	2		6
Permitted Phases			6	
Detector Phase	8	2	6	6
Switch Phase				
Minimum Initial (s)	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	24.0
Total Split (s)	26.0	64.0	64.0	64.0
Total Split (%)	28.9%	71.1%	71.1%	71.1%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0
Total Lost Time (s)	6.0	6.0		6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	None	Max	Max	Max
Act Effct Green (s)	7.4	62.4		62.4
Actuated g/C Ratio	0.09	0.76		0.76
v/c Ratio	0.58	0.30		0.37
Control Delay	15.3	3.9		4.9
Queue Delay	0.0	0.0		0.0
Total Delay	15.3	3.9		4.9
LOS	B	A		A
Approach Delay	15.3	3.9		4.9
Approach LOS	B	A		A

Intersection Summary

Cycle Length: 90	
Actuated Cycle Length: 81.9	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.58	
Intersection Signal Delay: 6.3	Intersection LOS: A
Intersection Capacity Utilization 56.8%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 11: Liverpool Rd & Krosno Blvd



Queues
11: Liverpool Rd & Krosno Blvd










2027 Total Traffic Conditions
AM Peak Hour (Krosno Signalized)



Lane Group	WBL	NBT	SBT
Lane Group Flow (vph)	168	417	361
v/c Ratio	0.58	0.30	0.37
Control Delay	15.3	3.9	4.9
Queue Delay	0.0	0.0	0.0
Total Delay	15.3	3.9	4.9
Queue Length 50th (m)	1.3	13.4	12.7
Queue Length 95th (m)	12.3	25.9	26.0
Internal Link Dist (m)	251.2	233.4	388.4
Turn Bay Length (m)			
Base Capacity (vph)	512	1369	965
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.33	0.30	0.37
Intersection Summary			

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

2027 Total Traffic Conditions
 AM Peak Hour (Krosno Signalized)

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	7	126	310	20	124	161
Future Volume (vph)	7	126	310	20	124	161
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)	1602		1794			1796
Flt Permitted	1.00		1.00			0.69
Satd. Flow (perm)	1602		1794			1266
Peak-hour factor, PHF	0.79	0.79	0.79	0.79	0.79	0.79
Adj. Flow (vph)	9	159	392	25	157	204
RTOR Reduction (vph)	145	0	2	0	0	0
Lane Group Flow (vph)	23	0	415	0	0	361
Confl. Peds. (#/hr)	6	2		12	12	
Confl. Bikes (#/hr)				2		
Heavy Vehicles (%)	0%	2%	4%	36%	4%	4%
Turn Type	Prot		NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases					6	
Actuated Green, G (s)	7.4		62.4			62.4
Effective Green, g (s)	7.4		62.4			62.4
Actuated g/C Ratio	0.09		0.76			0.76
Clearance Time (s)	6.0		6.0			6.0
Vehicle Extension (s)	3.0		3.0			3.0
Lane Grp Cap (vph)	144		1368			965
v/s Ratio Prot	c0.01		0.23			
v/s Ratio Perm						c0.29
v/c Ratio	0.16		0.30			0.37
Uniform Delay, d1	34.3		3.0			3.2
Progression Factor	1.00		1.00			1.00
Incremental Delay, d2	0.5		0.6			1.1
Delay (s)	34.9		3.6			4.3
Level of Service	C		A			A
Approach Delay (s)	34.9		3.6			4.3
Approach LOS	C		A			A
Intersection Summary						
HCM 2000 Control Delay			9.4		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.35			
Actuated Cycle Length (s)			81.8		Sum of lost time (s)	12.0
Intersection Capacity Utilization			56.8%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

Approach	WB	NB	SB
Crosswalk Length (m)	7.89	6.89	6.89
Crosswalk Width (m)	1.20	1.20	1.20
Total Number of Lanes Crossed	2	2	2
Number of Right-Turn Islands	0	0	0
Type of Control	None	None	None
Corresponding Signal Phase	2	6	8
Effective Walk Time (s)	0.0	0.0	0.0
Right Corner Size A (m)	2.74	2.74	2.74
Right Corner Size B (m)	2.74	2.74	2.74
Right Corner Curb Radius (m)	0.00	0.00	0.00
Right Corner Total Area (sq.m)	7.51	7.51	7.51
Ped. Left-Right Flow Rate (p/h)	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0
85th percentile speed (km/h)	40	40	40
Right Corner Area per Ped (sq.m)	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-
Ped. Circulation Area (sq.m)	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-
Pedestrian Delay (s/p)	45.0	45.0	45.0
Pedestrian Compliance Code	Poor	Poor	Poor
Pedestrian Crosswalk Score	1.87	1.98	2.10
Pedestrian Crosswalk LOS	A	A	B

Approach	WB	NB	SB
Bicycle Flow Rate (bike/h)	0	0	0
Total Flow Rate (veh/h)	168	417	361
Effct. Green for Bike (s)	7.4	62.4	62.4
Cross Street Width (m)	7.40	8.51	7.40
Through Lanes Number	1	1	1
Through Lane Width (m)	3.70	3.70	3.70
Bicycle Lane Width (m)	0.00	0.00	0.00
Paved Shoulder Width (m)	0.00	0.00	0.00
Curb Is Present?	No	No	No
On Street Parking?	No	No	No
Bicycle Lane Capacity (bike/h)	164	1387	1387
Bicycle Delay (s/bike)	37.9	4.2	4.2
Bicycle Compliance	Poor	Good	Good
Bicycle LOS Score	2.18	2.65	2.50
Bicycle LOS	B	B	B

Timings
3: Liverpool Rd & Bayly St

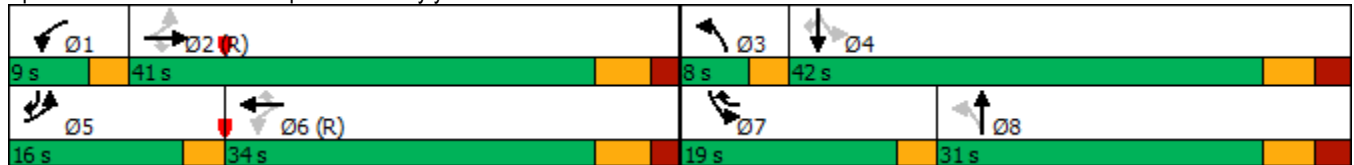
2027 Total Traffic Conditions
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	
Lane Configurations												
Traffic Volume (vph)	366	846	261	108	572	689	77	584	335	588	245	
Future Volume (vph)	366	846	261	108	572	689	77	584	335	588	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	0.43	0.48	0.59	0.91	0.25	0.82	0.91	0.48	0.29	
Control Delay	50.4	32.0	6.8	23.5	34.2	38.0	18.0	43.9	52.6	26.8	6.4	
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	6.8	23.5	34.2	38.0	18.0	43.9	52.6	26.8	6.4	
LOS	D	C	A	C	C	D	B	D	D	C	A	
Approach Delay		32.1			35.3			41.3		29.9		
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: 33.9
 Intersection Capacity Utilization 97.5%
 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

2027 Total Traffic Conditions
PM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	377	872	269	111	590	710	79	704	345	606	253
v/c Ratio	0.92	0.70	0.43	0.48	0.59	0.91	0.25	0.82	0.91	0.48	0.29
Control Delay	50.4	32.0	6.8	23.5	34.2	38.0	18.0	43.9	52.6	26.8	6.4
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	6.8	23.5	34.2	38.0	18.0	43.9	52.6	26.8	6.4
Queue Length 50th (m)	47.2	76.1	3.7	11.8	52.0	99.4	8.2	66.4	46.4	47.5	10.6
Queue Length 95th (m)	#89.6	97.6	21.7	21.6	69.5	#133.3	16.2	#88.9	#97.4	63.3	22.9
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		65.0
Base Capacity (vph)	408	1238	631	229	997	776	314	860	378	1263	860
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	0.43	0.48	0.59	0.91	0.25	0.82	0.91	0.48	0.29

Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

3: Liverpool Rd & Bayly St

2027 Total Traffic Conditions
PM Peak Hour



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	366	846	261	108	572	689	77	584	99	335	588	245
Future Volume (vph)	366	846	261	108	572	689	77	584	99	335	588	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	1811	3487		1786	3579	1532
Flt Permitted	0.27	1.00	1.00	0.22	1.00	1.00	0.42	1.00		0.16	1.00	1.00
Satd. Flow (perm)	508	3579	1371	405	3614	1535	806	3487		301	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	269	111	590	710	79	602	102	345	606	253
RTOR Reduction (vph)	0	0	157	0	0	60	0	14	0	0	0	69
Lane Group Flow (vph)	377	872	112	111	590	650	79	690	0	345	606	184
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	286	847		367	1263	739
v/s Ratio Prot	c0.12	0.24		0.03	0.16	c0.16	0.01	0.20		0.15	0.17	0.03
v/s Ratio Perm	c0.29		0.08	0.14		0.27	0.07			c0.26		0.09
v/c Ratio	0.96	0.70	0.24	0.51	0.59	0.97	0.28	0.82		0.94	0.48	0.25
Uniform Delay, d1	22.9	28.3	23.3	24.0	31.3	27.6	26.1	35.7		24.8	25.2	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	1.2	8.5	2.6	28.6	2.4	8.5		34.0	1.3	0.8
Delay (s)	59.7	31.7	24.5	32.5	33.9	56.2	28.5	44.2		58.8	26.5	16.0
Level of Service	E	C	C	C	C	E	C	D		E	C	B
Approach Delay (s)		37.3			45.0			42.6			33.5	
Approach LOS		D			D			D			C	

Intersection Summary

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	97.5%	ICU Level of Service	F
Analysis Period (min)	15		


















c Critical Lane Group

Approach	EB	WB	NB	SB
Crosswalk Length (m)	6.84	6.82	5.66	6.77
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	2.60	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)	1518	1411	783	1204
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	3.81	3.30	3.65
Bicycle LOS	D	D	C	D

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

2027 Total Traffic Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	1	1	1	0	236	1	525	8	215	679	1
Future Volume (Veh/h)	4	1	1	1	0	236	1	525	8	215	679	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	547	8	224	707	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	0.83	0.83	0.83	0.83	0.83		0.83					
vC, conflicting volume	1980	1768	752	1764	1764	585	731			587		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2075	1821	604	1816	1817	585	578			587		
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 %	69	98	100	97	100	51	100			77		
cM capacity (veh/h)	13	47	401	37	48	498	820			967		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2							
Volume Total	6	247	556	224	708							
Volume Left	4	1	1	224	0							
Volume Right	1	246	8	0	1							
cSH	18	474	820	967	1700							
Volume to Capacity	0.33	0.52	0.00	0.23	0.42							
Queue Length 95th (m)	7.0	22.5	0.0	6.8	0.0							
Control Delay (s)	282.7	20.6	0.0	9.8	0.0							
Lane LOS	F	C	A	A								
Approach Delay (s)	282.7	20.6	0.0	2.4								
Approach LOS	F	C										
Intersection Summary												
Average Delay			5.2									
Intersection Capacity Utilization			88.9%		ICU Level of Service				E			
Analysis Period (min)			15									

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

2027 Total Traffic Conditions
 PM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	58	28	18	460	603	68
Future Volume (Veh/h)	58	28	18	460	603	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	474	622	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	0.83	0.83	0.83			
vC, conflicting volume	1180	669	703			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1113	496	537			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	68	94	98			
cM capacity (veh/h)	186	466	853			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	89	493	692			
Volume Left	60	19	0			
Volume Right	29	0	70			
cSH	232	853	1700			
Volume to Capacity	0.38	0.02	0.41			
Queue Length 95th (m)	13.0	0.5	0.0			
Control Delay (s)	29.9	0.6	0.0			
Lane LOS	D	A				
Approach Delay (s)	29.9	0.6	0.0			
Approach LOS	D					
Intersection Summary						
Average Delay			2.3			
Intersection Capacity Utilization			50.7%	ICU Level of Service	A	
Analysis Period (min)			15			

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

2027 Total Traffic Conditions
 PM Peak Hour



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	35	123	285	15	175	433
Future Volume (vph)	35	123	285	15	175	433
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	39	138	320	17	197	487
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total (vph)	177	337	684			
Volume Left (vph)	39	0	197			
Volume Right (vph)	138	17	0			
Hadj (s)	-0.42	0.00	0.10			
Departure Headway (s)	6.0	5.4	5.1			
Degree Utilization, x	0.29	0.50	0.96			
Capacity (veh/h)	581	658	699			
Control Delay (s)	11.4	13.7	46.7			
Approach Delay (s)	11.4	13.7	46.7			
Approach LOS	B	B	E			
Intersection Summary						
Delay			32.2			
Level of Service			D			
Intersection Capacity Utilization			68.0%	ICU Level of Service		C
Analysis Period (min)			15			

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

2027 Total Traffic Conditions
 PM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	6	0	1	240	398	11
Future Volume (Veh/h)	6	0	1	240	398	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	286	474	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	778	492	497			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	778	492	497			
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)	364	575	1067			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	7	287	487			
Volume Left	7	1	0			
Volume Right	0	0	13			
cSH	364	1067	1700			
Volume to Capacity	0.02	0.00	0.29			
Queue Length 95th (m)	0.4	0.0	0.0			
Control Delay (s)	15.1	0.0	0.0			
Lane LOS	C	A				
Approach Delay (s)	15.1	0.0	0.0			
Approach LOS	C					
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			32.0%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 15: Liverpool Rd & Ilona Park Rd (S)

















2027 Total Traffic Conditions
 PM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	2	1	1	2	2	1
Traffic Volume (veh/h)	2	1	1	225	358	12
Future Volume (Veh/h)	2	1	1	225	358	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	262	416	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	699	432	439			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	699	432	439			
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)	404	622	1122			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	3	263	430			
Volume Left	2	1	0			
Volume Right	1	0	14			
cSH	457	1122	1700			
Volume to Capacity	0.01	0.00	0.25			
Queue Length 95th (m)	0.2	0.0	0.0			
Control Delay (s)	12.9	0.0	0.0			
Lane LOS	B	A				
Approach Delay (s)	12.9	0.0	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			29.6%	ICU Level of Service	A	
Analysis Period (min)			15			

















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

2027 Total Traffic Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	0	1	4	3	9	2	199	3	18	316	19
Future Volume (Veh/h)	9	0	1	4	3	9	2	199	3	18	316	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	5	3	10	2	229	3	21	363	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	672	673	385	666	682	244	394			244		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	672	673	385	666	682	244	394			244		
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	98	99	99	100			98		
cM capacity (veh/h)	324	365	660	301	360	790	1165			1318		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	11	18	234	406								
Volume Left	10	5	2	21								
Volume Right	1	10	3	22								
cSH	340	479	1165	1318								
Volume to Capacity	0.03	0.04	0.00	0.02								
Queue Length 95th (m)	0.8	0.9	0.0	0.4								
Control Delay (s)	15.9	12.8	0.1	0.6								
Lane LOS	C	B	A	A								
Approach Delay (s)	15.9	12.8	0.1	0.6								
Approach LOS	C	B										
Intersection Summary												
Average Delay			1.0									
Intersection Capacity Utilization			40.0%		ICU Level of Service				A			
Analysis Period (min)			15									

















HCM Unsignalized Intersection Capacity Analysis
20: Liverpool Rd & Annland St

2027 Total Traffic Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	0	12	10	3	3	10	208	8	14	271	52
Future Volume (Veh/h)	27	0	12	10	3	3	10	208	8	14	271	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	13	11	3	3	11	224	9	15	291	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	611	609	325	616	632	232	351			234		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	611	609	325	616	632	232	351			234		
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 %	92	100	98	97	99	100	99			99		
cM capacity (veh/h)	372	402	717	390	390	808	1214			1344		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	42	17	244	362								
Volume Left	29	11	11	15								
Volume Right	13	3	9	56								
cSH	437	429	1214	1344								
Volume to Capacity	0.10	0.04	0.01	0.01								
Queue Length 95th (m)	2.4	0.9	0.2	0.3								
Control Delay (s)	14.1	13.7	0.4	0.4								
Lane LOS	B	B	A	A								
Approach Delay (s)	14.1	13.7	0.4	0.4								
Approach LOS	B	B										
Intersection Summary												
Average Delay			1.6									
Intersection Capacity Utilization			33.6%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
 23: Liverpool Rd & Wharf St

2027 Total Traffic Conditions
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	19	0	2	0	0	7	5	152	1	10	222	38
Future Volume (vph)	19	0	2	0	0	7	5	152	1	10	222	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	181	1	12	264	45
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	25	8	188	321								
Volume Left (vph)	23	0	6	12								
Volume Right (vph)	2	8	1	45								
Hadj (s)	0.21	-0.60	0.00	-0.07								
Departure Headway (s)	5.2	4.4	4.3	4.1								
Degree Utilization, x	0.04	0.01	0.22	0.37								
Capacity (veh/h)	621	716	815	854								
Control Delay (s)	8.4	7.5	8.5	9.5								
Approach Delay (s)	8.4	7.5	8.5	9.5								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			9.1									
Level of Service			A									
Intersection Capacity Utilization			33.4%	ICU Level of Service	A							
Analysis Period (min)			15									

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

2027 Total Traffic Conditions
 PM Peak Hour



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	37	127	0	57	160
Future Volume (Veh/h)	0	37	127	0	57	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	47	163	0	73	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	551	205			196	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	551	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	94			95	
cM capacity (veh/h)	330	806			1344	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	47	163	278			
Volume Left	0	0	73			
Volume Right	47	0	0			
cSH	806	1700	1344			
Volume to Capacity	0.06	0.10	0.05			
Queue Length 95th (m)	1.4	0.0	1.3			
Control Delay (s)	9.7	0.0	2.4			
Lane LOS	A		A			
Approach Delay (s)	9.7	0.0	2.4			
Approach LOS	A					
Intersection Summary						
Average Delay			2.3			
Intersection Capacity Utilization			38.6%	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	38.5	69.8
Average Queue (m)	9.4	18.6	34.8
95th Queue (m)	16.4	28.8	55.0
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)	14.7	9.2	19.2	23.3
Average Queue (m)	5.4	1.9	11.4	15.3
95th Queue (m)	13.6	7.9	17.7	21.6
Link Distance (m)	104.6	110.2	179.8	86.5
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 0

Timings
11: Liverpool Rd & Krosno Blvd

2027 Total Traffic Conditions
PM Peak Hour (Krosno Signalized)



Lane Group	WBL	NBT	SBL	SBT
Lane Configurations	W	T		T
Traffic Volume (vph)	35	285	175	433
Future Volume (vph)	35	285	175	433
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)	8.3	64.1		64.1
Actuated g/C Ratio	0.10	0.76		0.76
v/c Ratio	0.61	0.24		0.62
Control Delay	19.5	3.8		8.3
Queue Delay	0.0	0.0		0.0
Total Delay	19.5	3.8		8.3
LOS	B	A		A
Approach Delay	19.5	3.8		8.3
Approach LOS	B	A		A

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 84.4
 Natural Cycle: 65
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.62
 Intersection Signal Delay: 8.7
 Intersection Capacity Utilization 73.0%
 Analysis Period (min) 15

Intersection LOS: A
 ICU Level of Service C

Splits and Phases: 11: Liverpool Rd & Krosno Blvd



Queues
11: Liverpool Rd & Krosno Blvd










2027 Total Traffic Conditions
PM Peak Hour (Krosno Signalized)



Lane Group	WBL	NBT	SBT
Lane Group Flow (vph)	177	337	684
v/c Ratio	0.61	0.24	0.62
Control Delay	19.5	3.8	8.3
Queue Delay	0.0	0.0	0.0
Total Delay	19.5	3.8	8.3
Queue Length 50th (m)	5.6	11.4	36.5
Queue Length 95th (m)	22.3	25.4	84.5
Internal Link Dist (m)	251.2	233.4	388.4
Turn Bay Length (m)			
Base Capacity (vph)	472	1417	1108
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.38	0.24	0.62
Intersection Summary			

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

2027 Total Traffic Conditions
 PM Peak Hour (Krosno Signalized)

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	35	123	285	15	175	433
Future Volume (vph)	35	123	285	15	175	433
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0			6.0
Lane Util. Factor	1.00		1.00			1.00
Frbp, ped/bikes	1.00		1.00			1.00
Flpb, ped/bikes	1.00		1.00			0.99
Frt	0.89		0.99			1.00
Flt Protected	0.99		1.00			0.99
Satd. Flow (prot)	1700		1867			1830
Flt Permitted	0.99		1.00			0.79
Satd. Flow (perm)	1700		1867			1461
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	39	138	320	17	197	487
RTOR Reduction (vph)	124	0	1	0	0	0
Lane Group Flow (vph)	53	0	336	0	0	684
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)	8.3		64.0			64.0
Effective Green, g (s)	8.3		64.0			64.0
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)	167		1417			1109
v/s Ratio Prot	c0.03		0.18			
v/s Ratio Perm						c0.47
v/c Ratio	0.31		0.24			0.62
Uniform Delay, d1	35.4		3.0			4.6
Progression Factor	1.00		1.00			1.00
Incremental Delay, d2	1.1		0.4			2.6
Delay (s)	36.4		3.4			7.2
Level of Service	D		A			A
Approach Delay (s)	36.4		3.4			7.2
Approach LOS	D		A			A
Intersection Summary						
HCM 2000 Control Delay			10.4		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.58			
Actuated Cycle Length (s)			84.3		Sum of lost time (s)	12.0
Intersection Capacity Utilization			73.0%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

Approach	WB	NB	SB
Crosswalk Length (m)	2.59	2.26	2.26
Crosswalk Width (m)	1.20	1.20	1.20
Total Number of Lanes Crossed	2	2	2
Number of Right-Turn Islands	0	0	0
Type of Control	None	None	None
Corresponding Signal Phase	2	6	8
Effective Walk Time (s)	0.0	0.0	0.0
Right Corner Size A (m)	2.74	2.74	2.74
Right Corner Size B (m)	2.74	2.74	2.74
Right Corner Curb Radius (m)	0.00	0.00	0.00
Right Corner Total Area (sq.m)	7.51	7.51	7.51
Ped. Left-Right Flow Rate (p/h)	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0
85th percentile speed (km/h)	40	40	40
Right Corner Area per Ped (sq.m)	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-
Ped. Circulation Area (sq.m)	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-
Pedestrian Delay (s/p)	45.0	45.0	45.0
Pedestrian Compliance Code	Poor	Poor	Poor
Pedestrian Crosswalk Score	1.88	2.08	2.19
Pedestrian Crosswalk LOS	A	B	B

Approach	WB	NB	SB
Bicycle Flow Rate (bike/h)	0	0	0
Total Flow Rate (veh/h)	177	337	684
Effct. Green for Bike (s)	8.3	64.1	64.1
Cross Street Width (m)	7.40	8.51	7.40
Through Lanes Number	1	1	1
Through Lane Width (m)	3.70	3.70	3.70
Bicycle Lane Width (m)	0.00	0.00	0.00
Paved Shoulder Width (m)	0.00	0.00	0.00
Curb Is Present?	No	No	No
On Street Parking?	No	No	No
Bicycle Lane Capacity (bike/h)	184	1424	1424
Bicycle Delay (s/bike)	37.1	3.7	3.7
Bicycle Compliance	Poor	Good	Good
Bicycle LOS Score	2.19	2.51	3.03
Bicycle LOS	B	B	C

Timings
6: Liverpool Rd & Parking Lot/Tatra Dr

2027 Total Traffic Conditions
PM Peak Hour (Tatra Signalized)



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↕		↕		↕	↗	↘
Traffic Volume (vph)	4	1	1	0	1	525	215	679
Future Volume (vph)	4	1	1	0	1	525	215	679
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0
Total Split (s)	26.0	26.0	26.0	26.0	64.0	64.0	64.0	64.0
Total Split (%)	28.9%	28.9%	28.9%	28.9%	71.1%	71.1%	71.1%	71.1%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lost Time Adjust (s)		0.0		0.0		0.0		0.0
Total Lost Time (s)		7.0		7.0		7.0		7.0
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	Max	Max	Max	Max
Act Effct Green (s)		7.5		7.5		57.9	57.9	57.9
Actuated g/C Ratio		0.09		0.09		0.73	0.73	0.73
v/c Ratio		0.08		0.66		0.40	0.34	0.52
Control Delay		31.5		13.7		5.5	6.2	6.8
Queue Delay		0.0		0.0		0.0	0.0	0.9
Total Delay		31.5		13.7		5.5	6.2	7.6
LOS		C		B		A	A	A
Approach Delay		31.5		13.7		5.5		7.3
Approach LOS		C		B		A		A

Intersection Summary

Cycle Length: 90	
Actuated Cycle Length: 79.4	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.66	
Intersection Signal Delay: 7.7	Intersection LOS: A
Intersection Capacity Utilization 96.4%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 6: Liverpool Rd & Parking Lot/Tatra Dr



Queues
6: Liverpool Rd & Parking Lot/Tatra Dr


















2027 Total Traffic Conditions
PM Peak Hour (Tatra Signalized)



Lane Group	EBT	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	6	247	556	224	708
v/c Ratio	0.08	0.66	0.40	0.34	0.52
Control Delay	31.5	13.7	5.5	6.2	6.8
Queue Delay	0.0	0.0	0.0	0.0	0.9
Total Delay	31.5	13.7	5.5	6.2	7.6
Queue Length 50th (m)	0.7	0.1	22.6	8.7	33.0
Queue Length 95th (m)	4.0	19.1	51.8	25.1	75.6
Internal Link Dist (m)	73.5	201.1	160.3		52.8
Turn Bay Length (m)				45.0	
Base Capacity (vph)	197	578	1391	650	1372
Starvation Cap Reductn	0	0	0	0	370
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.03	0.43	0.40	0.34	0.71
Intersection Summary					

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

2027 Total Traffic Conditions
PM Peak Hour (Tatra Signalized)

														
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations														
Traffic Volume (vph)	4	1	1	1	0	236	1	525	8	215	679	1		
Future Volume (vph)	4	1	1	1	0	236	1	525	8	215	679	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			1911		1768	1883			
Flt Permitted		0.44			1.00			1.00		0.48	1.00			
Satd. Flow (perm)		824			1636			1910		893	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	547	8	224	707	1		
RTOR Reduction (vph)	0	1	0	0	223	0	0	1	0	0	0	0		
Lane Group Flow (vph)	0	5	0	0	24	0	0	555	0	224	708	0		
Confl. Peds. (#/hr)	2		22	22		2	23		32	32		23		
Confl. Bikes (#/hr)												2		
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	12%	0%	2%	0%		
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA			
Protected Phases		4			8			2			6			
Permitted Phases	4			8			2			6				
Actuated Green, G (s)		7.5			7.5			57.9		57.9	57.9			
Effective Green, g (s)		7.5			7.5			57.9		57.9	57.9			
Actuated g/C Ratio		0.09			0.09			0.73		0.73	0.73			
Clearance Time (s)		7.0			7.0			7.0		7.0	7.0			
Vehicle Extension (s)		3.0			3.0			3.0		3.0	3.0			
Lane Grp Cap (vph)		77			154			1392		651	1373			
v/s Ratio Prot											c0.38			
v/s Ratio Perm		0.01			c0.01			0.29		0.25				
v/c Ratio		0.07			0.16			0.40		0.34	0.52			
Uniform Delay, d1		32.8			33.0			4.1		3.9	4.7			
Progression Factor		1.00			1.00			1.00		1.00	1.00			
Incremental Delay, d2		0.4			0.5			0.9		1.4	1.4			
Delay (s)		33.1			33.5			5.0		5.3	6.1			
Level of Service		C			C			A		A	A			
Approach Delay (s)		33.1			33.5			5.0		5.9				
Approach LOS		C			C			A			A			
Intersection Summary														
HCM 2000 Control Delay			9.6									HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio			0.47											
Actuated Cycle Length (s)			79.4								14.0			
Intersection Capacity Utilization			96.4%										ICU Level of Service	F
Analysis Period (min)			15											
c Critical Lane Group														

Approach	EB	WB	NB	SB
Crosswalk Length (m)	2.26	2.52	3.35	4.51
Crosswalk Width (m)	1.20	1.20	1.20	1.20
Total Number of Lanes Crossed	2	2	2	4
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	6	2	4	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (m)	2.74	2.74	2.74	2.74
Right Corner Size B (m)	2.74	2.74	2.74	2.74
Right Corner Curb Radius (m)	0.00	0.00	0.00	0.00
Right Corner Total Area (sq.m)	7.51	7.51	7.51	7.51
Ped. Left-Right Flow Rate (p/h)	0	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (km/h)	40	40	40	40
Right Corner Area per Ped (sq.m)	0.0	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-	-
Ped. Circulation Area (sq.m)	0.0	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-	-
Pedestrian Delay (s/p)	45.0	45.0	45.0	45.0
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	1.73	1.92	2.24	2.49
Pedestrian Crosswalk LOS	A	A	B	B

Approach	EB	WB	NB	SB
Bicycle Flow Rate (bike/h)	0	0	0	0
Total Flow Rate (veh/h)	6	247	556	932
Effct. Green for Bike (s)	7.5	7.5	57.9	57.9
Cross Street Width (m)	10.99	14.80	8.26	7.40
Through Lanes Number	1	1	1	1
Through Lane Width (m)	3.70	3.70	3.70	3.70
Bicycle Lane Width (m)	0.00	0.00	0.00	0.00
Paved Shoulder Width (m)	0.00	0.00	0.00	0.00
Curb Is Present?	No	No	No	No
On Street Parking?	No	No	No	No
Bicycle Lane Capacity (bike/h)	167	167	1287	1287
Bicycle Delay (s/bike)	37.8	37.8	5.7	5.7
Bicycle Compliance	Poor	Poor	Good	Good
Bicycle LOS Score	2.09	2.68	2.86	3.44
Bicycle LOS	B	B	C	C

Timings
3: Liverpool Rd & Bayly St

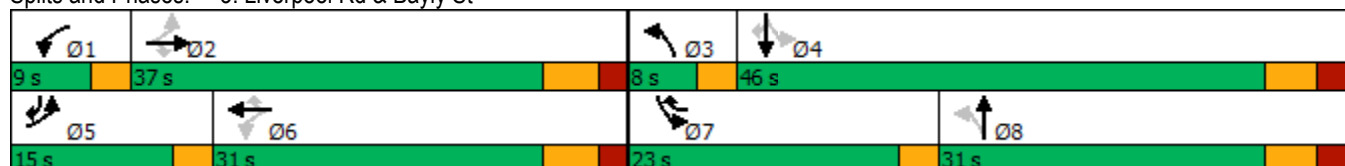
2027 Total Traffic Conditions
SAT Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	
Lane Configurations												
Traffic Volume (vph)	357	410	150	105	239	357	66	515	342	546	288	
Future Volume (vph)	357	410	150	105	239	357	66	515	342	546	288	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	pm+pt	NA	pm+ov	
Protected Phases	5	2		1	6	7	3	8	7	4	5	
Permitted Phases	2		2	6		6	8		4		4	
Detector Phase	5	2	2	1	6	7	3	8	7	4	5	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	8.0	26.4	26.4	8.0	26.4	8.0	8.0	30.7	8.0	30.7	8.0	
Total Split (s)	15.0	37.0	37.0	9.0	31.0	23.0	8.0	31.0	23.0	46.0	15.0	
Total Split (%)	15.0%	37.0%	37.0%	9.0%	31.0%	23.0%	8.0%	31.0%	23.0%	46.0%	15.0%	
Yellow Time (s)	3.0	4.1	4.1	3.0	4.1	3.0	3.0	3.8	3.0	3.8	3.0	
All-Red Time (s)	0.0	2.3	2.3	0.0	2.3	0.0	0.0	2.9	0.0	2.9	0.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7	3.0	6.7	3.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lead	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	Max	Max	None	Max	None	None	None	None	None	None	
Act Effct Green (s)	43.1	32.6	32.6	34.1	24.7	46.8	31.1	22.4	47.9	37.9	53.7	
Actuated g/C Ratio	0.44	0.34	0.34	0.35	0.25	0.48	0.32	0.23	0.49	0.39	0.55	
v/c Ratio	0.67	0.34	0.26	0.28	0.27	0.45	0.21	0.83	0.80	0.40	0.30	
Control Delay	27.0	26.6	5.6	19.8	30.7	12.5	16.0	43.8	34.0	22.7	2.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	27.0	26.6	5.6	19.8	30.7	12.5	16.0	43.8	34.0	22.7	2.0	
LOS	C	C	A	B	C	B	B	D	C	C	A	
Approach Delay		23.3			19.8			41.3		20.9		
Approach LOS		C			B			D		C		

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 97
 Natural Cycle: 75
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.83
 Intersection Signal Delay: 25.5
 Intersection Capacity Utilization 92.9%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service F

Splits and Phases: 3: Liverpool Rd & Bayly St



Queues
3: Liverpool Rd & Bayly St

2027 Total Traffic Conditions
SAT Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	368	423	155	108	246	368	68	677	353	563	297
v/c Ratio	0.67	0.34	0.26	0.28	0.27	0.45	0.21	0.83	0.80	0.40	0.30
Control Delay	27.0	26.6	5.6	19.8	30.7	12.5	16.0	43.8	34.0	22.7	2.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.0	26.6	5.6	19.8	30.7	12.5	16.0	43.8	34.0	22.7	2.0
Queue Length 50th (m)	49.7	33.6	0.0	12.4	20.3	29.2	6.4	61.9	42.8	40.6	0.0
Queue Length 95th (m)	74.4	46.8	13.6	22.9	30.8	50.2	13.1	82.7	#82.5	54.5	10.2
Internal Link Dist (m)		177.5			249.4			51.8		146.7	
Turn Bay Length (m)	115.0		100.0	50.0		150.0	75.0		50.0		65.0
Base Capacity (vph)	553	1228	598	381	918	836	320	881	464	1453	1002
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	0.67	0.34	0.26	0.28	0.27	0.44	0.21	0.77	0.76	0.39	0.30

























Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

3: Liverpool Rd & Bayly St

2027 Total Traffic Conditions
SAT Peak Hour



















													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (vph)	357	410	150	105	239	357	66	515	142	342	546	288	
Future Volume (vph)	357	410	150	105	239	357	66	515	142	342	546	288	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7		3.0	6.7	3.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00	
Frpb, ped/bikes	1.00	1.00	0.96	1.00	1.00	0.99	1.00	0.99		1.00	1.00	0.97	
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00	1.00	1.00	1.00		1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	
Satd. Flow (prot)	1818	3650	1476	1776	3614	1579	1818	3414		1804	3579	1574	
Flt Permitted	0.54	1.00	1.00	0.51	1.00	1.00	0.44	1.00		0.17	1.00	1.00	
Satd. Flow (perm)	1025	3650	1476	944	3614	1579	844	3414		320	3579	1574	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	
Adj. Flow (vph)	368	423	155	108	246	368	68	531	146	353	563	297	
RTOR Reduction (vph)	0	0	103	0	0	58	0	25	0	0	0	146	
Lane Group Flow (vph)	368	423	52	108	246	310	68	652	0	353	563	151	
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)	40.4	32.7	32.7	30.1	25.4	44.2	26.9	23.0		44.8	37.9	49.9	
Effective Green, g (s)	40.4	32.7	32.7	30.1	25.4	44.2	26.9	23.0		44.8	37.9	49.9	
Actuated g/C Ratio	0.41	0.33	0.33	0.31	0.26	0.45	0.27	0.23		0.46	0.39	0.51	
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)	518	1214	490	328	933	709	269	798		429	1379	799	
v/s Ratio Prot	c0.09	0.12		0.02	0.07	0.08	0.01	0.19		c0.16	0.16	0.02	
v/s Ratio Perm	c0.21		0.03	0.08		0.11	0.06			c0.22		0.07	
v/c Ratio	0.71	0.35	0.11	0.33	0.26	0.44	0.25	0.82		0.82	0.41	0.19	
Uniform Delay, d1	22.1	24.8	22.7	25.2	29.0	18.5	26.9	35.7		21.9	22.0	13.2	
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	4.6	0.8	0.4	0.6	0.7	0.4	0.5	6.5		12.1	0.2	0.1	
Delay (s)	26.6	25.5	23.1	25.8	29.7	19.0	27.4	42.1		33.9	22.2	13.3	
Level of Service	C	C	C	C	C	B	C	D		C	C	B	
Approach Delay (s)		25.6			23.6			40.8			23.4		
Approach LOS		C			C			D			C		
Intersection Summary													
HCM 2000 Control Delay			27.6									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			0.82										
Actuated Cycle Length (s)			98.3									Sum of lost time (s)	19.1
Intersection Capacity Utilization			92.9%									ICU Level of Service	F
Analysis Period (min)			15										
c	Critical Lane Group												

Approach	EB	WB	NB	SB
Crosswalk Length (m)	6.84	6.82	5.66	6.77
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	2.57	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)	946	722	745	1213
Effct. Green for Bike (s)	32.6	24.7	22.4	37.9
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)	652	494	448	758
Bicycle Delay (s/bike)	22.7	28.4	30.1	19.3
Bicycle Compliance	Fair	Fair	Poor	Fair
Bicycle LOS Score	3.24	3.24	3.27	3.66
Bicycle LOS	C	C	C	D

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

2027 Total Traffic Conditions
SAT Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	0	0	4	0	118	0	571	3	140	617	4
Future Volume (Veh/h)	1	0	0	4	0	118	0	571	3	140	617	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	589	3	144	636	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	1650	1552	655	1544	1552	614	651			615		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1677	1561	501	1551	1562	614	496			615		
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	94	100	75	100			85		
cM capacity (veh/h)	41	79	478	66	78	485	902			952		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2							
Volume Total	1	126	592	144	640							
Volume Left	1	4	0	144	0							
Volume Right	0	122	3	0	4							
cSH	41	404	902	952	1700							
Volume to Capacity	0.02	0.31	0.00	0.15	0.38							
Queue Length 95th (m)	0.6	10.0	0.0	4.0	0.0							
Control Delay (s)	94.4	17.9	0.0	9.5	0.0							
Lane LOS	F	C		A								
Approach Delay (s)	94.4	17.9	0.0	1.7								
Approach LOS	F	C										
Intersection Summary												
Average Delay			2.5									
Intersection Capacity Utilization			80.4%		ICU Level of Service				D			
Analysis Period (min)			15									

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










2027 Total Traffic Conditions
 SAT Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	56	13	11	500	555	66
Future Volume (Veh/h)	56	13	11	500	555	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	14	12	549	610	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	0.84	0.84	0.84			
vC, conflicting volume	1226	658	689			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1171	492	529			
tC, single (s)	6.4	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.4	2.2			
p0 queue free %	64	97	99			
cM capacity (veh/h)	174	467	871			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	76	561	683			
Volume Left	62	12	0			
Volume Right	14	0	73			
cSH	197	871	1700			
Volume to Capacity	0.39	0.01	0.40			
Queue Length 95th (m)	12.9	0.3	0.0			
Control Delay (s)	34.3	0.4	0.0			
Lane LOS	D	A				
Approach Delay (s)	34.3	0.4	0.0			
Approach LOS	D					
Intersection Summary						
Average Delay			2.1			
Intersection Capacity Utilization			47.2%	ICU Level of Service	A	
Analysis Period (min)			15			

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

2027 Total Traffic Conditions
 SAT Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	17	105	356	26	121	410
Future Volume (vph)	17	105	356	26	121	410
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	18	109	371	27	126	427
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total (vph)	127	398	553			
Volume Left (vph)	18	0	126			
Volume Right (vph)	109	27	0			
Hadj (s)	-0.47	0.01	0.08			
Departure Headway (s)	5.7	5.0	4.9			
Degree Utilization, x	0.20	0.55	0.75			
Capacity (veh/h)	571	702	726			
Control Delay (s)	10.1	13.9	20.9			
Approach Delay (s)	10.1	13.9	20.9			
Approach LOS	B	B	C			
Intersection Summary						
Delay			17.1			
Level of Service			C			
Intersection Capacity Utilization			66.1%	ICU Level of Service		C
Analysis Period (min)			15			

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

2027 Total Traffic Conditions
 SAT Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	0	0	330	380	12
Future Volume (Veh/h)	10	0	0	330	380	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	363	418	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	796	434	440			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	796	434	440			
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)	355	620	1121			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	11	363	431			
Volume Left	11	0	0			
Volume Right	0	0	13			
cSH	355	1121	1700			
Volume to Capacity	0.03	0.00	0.25			
Queue Length 95th (m)	0.7	0.0	0.0			
Control Delay (s)	15.5	0.0	0.0			
Lane LOS	C					
Approach Delay (s)	15.5	0.0	0.0			
Approach LOS	C					
Intersection Summary						
Average Delay	0.2					
Intersection Capacity Utilization	31.1%			ICU Level of Service	A	
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
 15: Liverpool Rd & Ilona Park Rd (S)

















2027 Total Traffic Conditions
 SAT Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	2	1	0	2	2	1
Traffic Volume (veh/h)	2	1	0	282	368	13
Future Volume (Veh/h)	2	1	0	282	368	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	303	396	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	717	414	421			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	717	414	421			
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)	395	636	1137			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	3	303	410			
Volume Left	2	0	0			
Volume Right	1	0	14			
cSH	452	1137	1700			
Volume to Capacity	0.01	0.00	0.24			
Queue Length 95th (m)	0.2	0.0	0.0			
Control Delay (s)	13.0	0.0	0.0			
Lane LOS	B					
Approach Delay (s)	13.0	0.0	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			30.2%	ICU Level of Service	A	
Analysis Period (min)			15			

















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

2027 Total Traffic Conditions
 SAT Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	3	3	4	5	6	5	259	4	10	341	17
Future Volume (Veh/h)	12	3	3	4	5	6	5	259	4	10	341	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	4	6	7	6	288	4	11	379	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	732	740	398	733	748	306	408			308		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	732	740	398	733	748	306	408			308		
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 %	95	99	100	99	98	99	99			99		
cM capacity (veh/h)	273	333	649	320	330	727	1150			1244		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	19	17	298	409								
Volume Left	13	4	6	11								
Volume Right	3	7	4	19								
cSH	310	422	1150	1244								
Volume to Capacity	0.06	0.04	0.01	0.01								
Queue Length 95th (m)	1.5	1.0	0.1	0.2								
Control Delay (s)	17.4	13.9	0.2	0.3								
Lane LOS	C	B	A	A								
Approach Delay (s)	17.4	13.9	0.2	0.3								
Approach LOS	C	B										
Intersection Summary												
Average Delay			1.0									
Intersection Capacity Utilization			34.3%		ICU Level of Service				A			
Analysis Period (min)			15									

















HCM Unsignalized Intersection Capacity Analysis
20: Liverpool Rd & Annland St

2027 Total Traffic Conditions
SAT Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	0	14	24	2	8	13	225	6	12	278	44
Future Volume (Veh/h)	40	0	14	24	2	8	13	225	6	12	278	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	15	26	2	9	14	242	6	13	299	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	648	644	338	642	665	252	361			253		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	648	644	338	642	665	252	361			253		
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 %	88	100	98	93	99	99	99			99		
cM capacity (veh/h)	362	378	697	367	368	786	1191			1318		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	58	37	262	359								
Volume Left	43	26	14	13								
Volume Right	15	9	6	47								
cSH	413	422	1191	1318								
Volume to Capacity	0.14	0.09	0.01	0.01								
Queue Length 95th (m)	3.7	2.2	0.3	0.2								
Control Delay (s)	15.1	14.4	0.5	0.4								
Lane LOS	C	B	A	A								
Approach Delay (s)	15.1	14.4	0.5	0.4								
Approach LOS	C	B										
Intersection Summary												
Average Delay			2.3									
Intersection Capacity Utilization			32.0%		ICU Level of Service				A			
Analysis Period (min)			15									










HCM Unsignalized Intersection Capacity Analysis
 23: Liverpool Rd & Wharf St

2027 Total Traffic Conditions
 SAT Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	35	2	7	1	1	18	4	173	4	7	233	61
Future Volume (vph)	35	2	7	1	1	18	4	173	4	7	233	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	188	4	8	253	66
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	48	22	196	327								
Volume Left (vph)	38	1	4	8								
Volume Right (vph)	8	20	4	66								
Hadj (s)	0.06	-0.54	-0.01	-0.12								
Departure Headway (s)	5.1	4.6	4.4	4.2								
Degree Utilization, x	0.07	0.03	0.24	0.38								
Capacity (veh/h)	630	691	790	837								
Control Delay (s)	8.5	7.7	8.8	9.7								
Approach Delay (s)	8.5	7.7	8.8	9.7								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			9.2									
Level of Service			A									
Intersection Capacity Utilization			36.3%	ICU Level of Service	A							
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
26: Liverpool Rd

2027 Total Traffic Conditions
SAT Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	5	165	0	6	213
Future Volume (Veh/h)	0	5	165	0	6	213
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	176	0	6	227
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	482	243			240	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	482	243			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 %	100	99			100	
cM capacity (veh/h)	509	748			1244	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	5	176	233			
Volume Left	0	0	6			
Volume Right	5	0	0			
cSH	748	1700	1244			
Volume to Capacity	0.01	0.10	0.00			
Queue Length 95th (m)	0.2	0.0	0.1			
Control Delay (s)	9.8	0.0	0.2			
Lane LOS	A		A			
Approach Delay (s)	9.8	0.0	0.2			
Approach LOS	A					
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			27.0%		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)	17.4	44.5	63.6
Average Queue (m)	8.7	23.0	33.5
95th Queue (m)	15.1	36.4	53.0
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)	15.0	9.3	16.9	27.1
Average Queue (m)	7.5	4.9	11.8	16.4
95th Queue (m)	14.3	12.4	17.8	23.9
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)				

Zone Summary

Zone wide Queuing Penalty: 0

Timings
11: Liverpool Rd & Krosno Blvd

2027 Total Traffic Conditions
SAT Peak Hour (Krosno Signalized)



Lane Group	WBL	NBT	SBL	SBT
Lane Configurations	W	T		T
Traffic Volume (vph)	17	356	121	410
Future Volume (vph)	17	356	121	410
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 Effct Green (s)	7.5	66.2		66.2
Actuated g/C Ratio	0.09	0.77		0.77
v/c Ratio	0.53	0.28		0.47
Control Delay	18.0	3.6		5.4
Queue Delay	0.0	0.0		0.0
Total Delay	18.0	3.6		5.4
LOS	B	A		A
Approach Delay	18.0	3.6		5.4
Approach LOS	B	A		A

Intersection Summary




Cycle Length: 90	
Actuated Cycle Length: 85.7	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.53	
Intersection Signal Delay: 6.2	Intersection LOS: A
Intersection Capacity Utilization 71.1%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 11: Liverpool Rd & Krosno Blvd












Queues
11: Liverpool Rd & Krosno Blvd

2027 Total Traffic Conditions
SAT Peak Hour (Krosno Signalized)

			
Lane Group	WBL	NBT	SBT
Lane Group Flow (vph)	127	398	553
v/c Ratio	0.53	0.28	0.47
Control Delay	18.0	3.6	5.4
Queue Delay	0.0	0.0	0.0
Total Delay	18.0	3.6	5.4
Queue Length 50th (m)	2.7	13.0	22.7
Queue Length 95th (m)	17.2	28.3	50.5
Internal Link Dist (m)	251.2	233.4	388.4
Turn Bay Length (m)			
Base Capacity (vph)	444	1423	1186
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.29	0.28	0.47
Intersection Summary			

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

2027 Total Traffic Conditions
SAT Peak Hour (Krosno Signalized)

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	17	105	356	26	121	410
Future Volume (vph)	17	105	356	26	121	410
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0			6.0
Lane Util. Factor	1.00		1.00			1.00
Frpb, ped/bikes	0.95		1.00			1.00
Flpb, ped/bikes	1.00		1.00			1.00
Frt	0.88		0.99			1.00
Flt Protected	0.99		1.00			0.99
Satd. Flow (prot)	1583		1841			1852
Flt Permitted	0.99		1.00			0.82
Satd. Flow (perm)	1583		1841			1537
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	18	109	371	27	126	427
RTOR Reduction (vph)	99	0	2	0	0	0
Lane Group Flow (vph)	28	0	396	0	0	553
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)	7.5		66.2			66.2
Effective Green, g (s)	7.5		66.2			66.2
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)	138		1422			1187
v/s Ratio Prot	c0.02		0.22			
v/s Ratio Perm						c0.36
v/c Ratio	0.20		0.28			0.47
Uniform Delay, d1	36.3		2.8			3.5
Progression Factor	1.00		1.00			1.00
Incremental Delay, d2	0.7		0.5			1.3
Delay (s)	37.0		3.3			4.8
Level of Service	D		A			A
Approach Delay (s)	37.0		3.3			4.8
Approach LOS	D		A			A
Intersection Summary						
HCM 2000 Control Delay			8.0		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.44			
Actuated Cycle Length (s)			85.7		Sum of lost time (s)	12.0
Intersection Capacity Utilization			71.1%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

Approach	WB	NB	SB
Crosswalk Length (m)	2.59	2.26	2.26
Crosswalk Width (m)	1.20	1.20	1.20
Total Number of Lanes Crossed	2	2	2
Number of Right-Turn Islands	0	0	0
Type of Control	None	None	None
Corresponding Signal Phase	2	6	8
Effective Walk Time (s)	0.0	0.0	0.0
Right Corner Size A (m)	2.74	2.74	2.74
Right Corner Size B (m)	2.74	2.74	2.74
Right Corner Curb Radius (m)	0.00	0.00	0.00
Right Corner Total Area (sq.m)	7.51	7.51	7.51
Ped. Left-Right Flow Rate (p/h)	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0
85th percentile speed (km/h)	40	40	40
Right Corner Area per Ped (sq.m)	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-
Ped. Circulation Area (sq.m)	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-
Pedestrian Delay (s/p)	45.0	45.0	45.0
Pedestrian Compliance Code	Poor	Poor	Poor
Pedestrian Crosswalk Score	1.84	2.07	2.14
Pedestrian Crosswalk LOS	A	B	B

Approach	WB	NB	SB
Bicycle Flow Rate (bike/h)	0	0	0
Total Flow Rate (veh/h)	127	398	553
Effct. Green for Bike (s)	7.5	66.2	66.2
Cross Street Width (m)	7.40	8.51	7.40
Through Lanes Number	1	1	1
Through Lane Width (m)	3.70	3.70	3.70
Bicycle Lane Width (m)	0.00	0.00	0.00
Paved Shoulder Width (m)	0.00	0.00	0.00
Curb Is Present?	No	No	No
On Street Parking?	No	No	No
Bicycle Lane Capacity (bike/h)	167	1471	1471
Bicycle Delay (s/bike)	37.8	3.1	3.1
Bicycle Compliance	Poor	Good	Good
Bicycle LOS Score	2.11	2.61	2.81
Bicycle LOS	B	B	C

Timings
3: Liverpool Rd & Bayly St

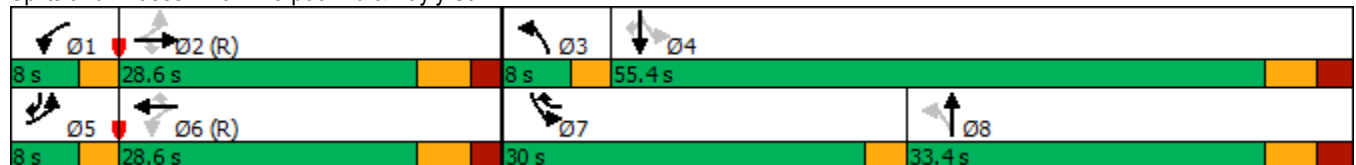
2032 Total Traffic Conditions
AM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	
Lane Configurations												
Traffic Volume (vph)	199	596	99	60	245	304	63	624	496	316	167	
Future Volume (vph)	199	596	99	60	245	304	63	624	496	316	167	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	pm+pt	NA	pm+ov	
Protected Phases	5	2		1	6	7	3	8	7	4	5	
Permitted Phases	2		2	6		6	8		4		4	
Detector Phase	5	2	2	1	6	7	3	8	7	4	5	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	8.0	26.4	26.4	8.0	26.4	8.0	8.0	30.7	8.0	30.7	8.0	
Total Split (s)	8.0	28.6	28.6	8.0	28.6	30.0	8.0	33.4	30.0	55.4	8.0	
Total Split (%)	8.0%	28.6%	28.6%	8.0%	28.6%	30.0%	8.0%	33.4%	30.0%	55.4%	8.0%	
Yellow Time (s)	3.0	4.1	4.1	3.0	4.1	3.0	3.0	3.8	3.0	3.8	3.0	
All-Red Time (s)	0.0	2.3	2.3	0.0	2.3	0.0	0.0	2.9	0.0	2.9	0.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7	3.0	6.7	3.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lead	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max	
Act Effct Green (s)	30.6	22.2	22.2	30.6	22.2	52.6	35.4	26.7	60.4	48.7	57.4	
Actuated g/C Ratio	0.31	0.22	0.22	0.31	0.22	0.53	0.35	0.27	0.60	0.49	0.57	
v/c Ratio	0.54	0.76	0.26	0.32	0.33	0.39	0.16	0.83	0.87	0.19	0.18	
Control Delay	32.6	43.4	4.0	27.6	34.2	11.1	12.5	42.3	40.1	14.9	1.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	32.6	43.4	4.0	27.6	34.2	11.1	12.5	42.3	40.1	14.9	1.8	
LOS	C	D	A	C	C	B	B	D	D	B	A	
Approach Delay		36.6			22.0			40.0		25.5		
Approach LOS		D			C			D		C		

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 90
 Control Type: Pretimed
 Maximum v/c Ratio: 0.87
 Intersection Signal Delay: 31.5
 Intersection Capacity Utilization 94.7%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service F

Splits and Phases: 3: Liverpool Rd & Bayly St



Queues
3: Liverpool Rd & Bayly St

2032 Total Traffic Conditions
AM Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	203	608	101	61	250	310	64	771	506	322	170
v/c Ratio	0.54	0.76	0.26	0.32	0.33	0.39	0.16	0.83	0.87	0.19	0.18
Control Delay	32.6	43.4	4.0	27.6	34.2	11.1	12.5	42.3	40.1	14.9	1.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.6	43.4	4.0	27.6	34.2	11.1	12.5	42.3	40.1	14.9	1.8
Queue Length 50th (m)	29.2	58.3	0.0	8.1	21.5	23.2	4.7	71.9	72.5	17.8	0.0
Queue Length 95th (m)	47.6	77.5	6.4	17.0	32.6	40.7	9.9	#95.7	#129.3	26.0	7.5
Internal Link Dist (m)		177.5			249.4			51.8		146.7	
Turn Bay Length (m)	115.0		100.0	50.0		150.0	75.0		50.0		65.0
Base Capacity (vph)	378	802	391	192	750	786	403	932	579	1661	952
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.76	0.26	0.32	0.33	0.39	0.16	0.83	0.87	0.19	0.18
























Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

3: Liverpool Rd & Bayly St

2032 Total Traffic Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	199	596	99	60	245	304	63	624	131	496	316	167
Future Volume (vph)	199	596	99	60	245	304	63	624	131	496	316	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	3425		1805	3411	1534
Flt Permitted	0.60	1.00	1.00	0.22	1.00	1.00	0.56	1.00		0.15	1.00	1.00
Satd. Flow (perm)	1133	3614	1276	413	3380	1431	1040	3425		277	3411	1534
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	203	608	101	61	250	310	64	637	134	506	322	170
RTOR Reduction (vph)	0	0	79	0	0	37	0	18	0	0	0	79
Lane Group Flow (vph)	203	608	22	61	250	273	64	753	0	506	322	91
Confl. Peds. (#/hr)	19		23	23		19	19		38	38		19
Confl. Bikes (#/hr)			1			1			3			1
Heavy Vehicles (%)	0%	1%	22%	4%	8%	12%	2%	2%	6%	1%	7%	3%
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	5	2		1	6	7	3	8		7	4	5
Permitted Phases	2		2	6		6	8			4		4
Actuated Green, G (s)	27.2	22.2	22.2	27.2	22.2	49.2	31.7	26.7		56.7	48.7	53.7
Effective Green, g (s)	27.2	22.2	22.2	27.2	22.2	49.2	31.7	26.7		56.7	48.7	53.7
Actuated g/C Ratio	0.27	0.22	0.22	0.27	0.22	0.49	0.32	0.27		0.57	0.49	0.54
Clearance Time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7		3.0	6.7	3.0
Lane Grp Cap (vph)	341	802	283	179	750	704	366	914		569	1661	823
v/s Ratio Prot	c0.03	c0.17		0.02	0.07	0.10	0.01	0.22		c0.24	0.09	0.01
v/s Ratio Perm	0.13		0.02	0.08		0.09	0.05			c0.26		0.05
v/c Ratio	0.60	0.76	0.08	0.34	0.33	0.39	0.17	0.82		0.89	0.19	0.11
Uniform Delay, d1	30.4	36.4	30.8	28.0	32.7	15.9	24.2	34.4		24.9	14.5	11.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	7.5	6.6	0.5	5.1	1.2	1.6	1.0	8.4		18.5	0.3	0.3
Delay (s)	37.8	43.0	31.4	33.2	33.9	17.6	25.2	42.8		43.4	14.8	11.7
Level of Service	D	D	C	C	C	B	C	D		D	B	B
Approach Delay (s)		40.6			25.7			41.5			28.8	
Approach LOS		D			C			D			C	
Intersection Summary												
HCM 2000 Control Delay			34.5			HCM 2000 Level of Service			C			
HCM 2000 Volume to Capacity ratio			0.86									
Actuated Cycle Length (s)			100.0	Sum of lost time (s)					19.1			
Intersection Capacity Utilization			94.7%	ICU Level of Service			F					
Analysis Period (min)			15									



















c Critical Lane Group

Approach	EB	WB	NB	SB
Crosswalk Length (m)	6.84	6.82	5.66	6.77
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	2.53	2.76
Pedestrian Crosswalk LOS	B	B	B	C

Approach	EB	WB	NB	SB
Bicycle Flow Rate (bike/h)	0	0	0	0
Total Flow Rate (veh/h)	912	621	835	998
Effct. Green for Bike (s)	22.2	22.2	26.7	48.7
Cross Street Width (m)	18.57	22.20	22.36	22.45
Through Lanes Number	2	2	2	2
Through Lane Width (m)	3.70	3.70	3.70	3.70
Bicycle Lane Width (m)	0.00	0.00	0.00	0.00
Paved Shoulder Width (m)	0.00	0.00	0.00	0.00
Curb Is Present?	No	No	No	No
On Street Parking?	No	No	No	No
Bicycle Lane Capacity (bike/h)	444	444	534	974
Bicycle Delay (s/bike)	30.3	30.3	26.9	13.2
Bicycle Compliance	Poor	Poor	Fair	Fair
Bicycle LOS Score	3.21	3.16	3.34	3.48
Bicycle LOS	C	C	C	C

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

2032 Total Traffic Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	1	3	0	217	0	590	11	129	322	2
Future Volume (Veh/h)	0	0	1	3	0	217	0	590	11	129	322	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	648	12	142	354	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	1549	1332	378	1315	1327	671	373			676		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1552	1321	307	1303	1316	671	302			676		
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	47	100			84		
cM capacity (veh/h)	34	121	678	109	122	445	1175			901		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2							
Volume Total	1	241	660	142	356							
Volume Left	0	3	0	142	0							
Volume Right	1	238	12	0	2							
cSH	678	429	1175	901	1700							
Volume to Capacity	0.00	0.56	0.00	0.16	0.21							
Queue Length 95th (m)	0.0	25.6	0.0	4.2	0.0							
Control Delay (s)	10.3	23.6	0.0	9.7	0.0							
Lane LOS	B	C		A								
Approach Delay (s)	10.3	23.6	0.0	2.8								
Approach LOS	B	C										
Intersection Summary												
Average Delay			5.1									
Intersection Capacity Utilization			75.2%		ICU Level of Service				D			
Analysis Period (min)			15									

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

2032 Total Traffic Conditions
 AM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	77	16	8	499	259	60
Future Volume (Veh/h)	77	16	8	499	259	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	537	278	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	876	320	352			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	872	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 %	74	98	99			
cM capacity (veh/h)	316	721	1080			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	100	546	343			
Volume Left	83	9	0			
Volume Right	17	0	65			
cSH	349	1080	1700			
Volume to Capacity	0.29	0.01	0.20			
Queue Length 95th (m)	8.8	0.2	0.0			
Control Delay (s)	19.4	0.2	0.0			
Lane LOS	C	A				
Approach Delay (s)	19.4	0.2	0.0			
Approach LOS	C					
Intersection Summary						
Average Delay			2.1			
Intersection Capacity Utilization			44.6%	ICU Level of Service	A	
Analysis Period (min)			15			

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

2032 Total Traffic Conditions
 AM Peak Hour



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	7	126	315	20	124	164
Future Volume (vph)	7	126	315	20	124	164
Peak Hour Factor	0.79	0.79	0.79	0.79	0.79	0.79
Hourly flow rate (vph)	9	159	399	25	157	208
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total (vph)	168	424	365			
Volume Left (vph)	9	0	157			
Volume Right (vph)	159	25	0			
Hadj (s)	-0.52	0.06	0.15			
Departure Headway (s)	5.3	4.9	5.1			
Degree Utilization, x	0.25	0.58	0.51			
Capacity (veh/h)	609	702	685			
Control Delay (s)	9.9	14.4	13.3			
Approach Delay (s)	9.9	14.4	13.3			
Approach LOS	A	B	B			
Intersection Summary						
Delay			13.2			
Level of Service			B			
Intersection Capacity Utilization			52.1%	ICU Level of Service	A	
Analysis Period (min)			15			

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

2032 Total Traffic Conditions
 AM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	7	0	1	298	176	7
Future Volume (Veh/h)	7	0	1	298	176	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	351	207	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	586	235	236			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	586	235	236			
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)	465	790	1315			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	8	352	215			
Volume Left	8	1	0			
Volume Right	0	0	8			
cSH	465	1315	1700			
Volume to Capacity	0.02	0.00	0.13			
Queue Length 95th (m)	0.4	0.0	0.0			
Control Delay (s)	12.9	0.0	0.0			
Lane LOS	B	A				
Approach Delay (s)	12.9	0.0	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			27.4%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 15: Liverpool Rd & Ilona Park Rd (S)

















2032 Total Traffic Conditions
 AM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	13	2	0	257	166	7
Future Volume (Veh/h)	13	2	0	257	166	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	310	200	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	536	226	230			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	536	226	230			
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)	498	801	1321			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	18	310	208			
Volume Left	16	0	0			
Volume Right	2	0	8			
cSH	520	1321	1700			
Volume to Capacity	0.03	0.00	0.12			
Queue Length 95th (m)	0.8	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					
Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			23.5%	ICU Level of Service	A	
Analysis Period (min)			15			

















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

2032 Total Traffic Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	4	1	1	3	8	3	223	10	12	140	9
Future Volume (Veh/h)	15	4	1	1	3	8	3	223	10	12	140	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	265	12	14	167	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	494	488	188	497	487	271	180			277		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	494	488	188	497	487	271	180			277		
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	100	99	99	100			99		
cM capacity (veh/h)	473	442	845	470	476	744	1405			1298		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	24	15	281	192								
Volume Left	18	1	4	14								
Volume Right	1	10	12	11								
cSH	475	626	1405	1298								
Volume to Capacity	0.05	0.02	0.00	0.01								
Queue Length 95th (m)	1.2	0.6	0.1	0.2								
Control Delay (s)	13.0	10.9	0.1	0.7								
Lane LOS	B	B	A	A								
Approach Delay (s)	13.0	10.9	0.1	0.7								
Approach LOS	B	B										
Intersection Summary												
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

2032 Total Traffic Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	54	2	7	6	0	10	6	166	4	4	92	15
Future Volume (Veh/h)	54	2	7	6	0	10	6	166	4	4	92	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	7	0	12	7	200	5	5	111	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	366	358	128	360	364	206	135			208		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	366	358	128	360	364	206	135			208		
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 %	89	100	99	99	100	99	99			100		
cM capacity (veh/h)	574	562	920	581	557	811	1354			1371		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	75	19	212	134								
Volume Left	65	7	7	5								
Volume Right	8	12	5	18								
cSH	597	708	1354	1371								
Volume to Capacity	0.13	0.03	0.01	0.00								
Queue Length 95th (m)	3.3	0.6	0.1	0.1								
Control Delay (s)	11.9	10.2	0.3	0.3								
Lane LOS	B	B	A	A								
Approach Delay (s)	11.9	10.2	0.3	0.3								
Approach LOS	B	B										
Intersection Summary												
Average Delay			2.7									
Intersection Capacity Utilization			25.8%		ICU Level of Service				A			
Analysis Period (min)			15									










HCM Unsignalized Intersection Capacity Analysis
23: Liverpool Rd & Wharf St

2032 Total Traffic Conditions
AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	18	0	0	0	1	5	1	142	1	4	106	4
Future Volume (vph)	18	0	0	0	1	5	1	142	1	4	106	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	171	1	5	128	5
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	22	7	173	138								
Volume Left (vph)	22	0	1	5								
Volume Right (vph)	0	6	1	5								
Hadj (s)	0.20	-0.51	0.01	0.02								
Departure Headway (s)	4.8	4.1	4.1	4.2								
Degree Utilization, x	0.03	0.01	0.20	0.16								
Capacity (veh/h)	696	804	855	852								
Control Delay (s)	7.9	7.1	8.1	7.9								
Approach Delay (s)	7.9	7.1	8.1	7.9								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			8.0									
Level of Service			A									
Intersection Capacity Utilization			23.9%	ICU Level of Service	A							
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
26: Liverpool Rd

2032 Total Traffic Conditions
AM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	57	63	0	21	40
Future Volume (Veh/h)	0	57	63	0	21	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	77	85	0	28	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	202	92			92	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	202	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	92			98	
cM capacity (veh/h)	771	964			1505	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	77	85	82			
Volume Left	0	0	28			
Volume Right	77	0	0			
cSH	964	1700	1505			
Volume to Capacity	0.08	0.05	0.02			
Queue Length 95th (m)	2.0	0.0	0.4			
Control Delay (s)	9.1	0.0	2.6			
Lane LOS	A		A			
Approach Delay (s)	9.1	0.0	2.6			
Approach LOS	A					
Intersection Summary						
Average Delay			3.7			
Intersection Capacity Utilization			20.1%	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)	18.6	41.4	38.8
Average Queue (m)	9.2	20.8	19.1
95th Queue (m)	16.1	32.6	29.9
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)	10.5	9.2	20.5	20.2
Average Queue (m)	4.2	1.4	10.5	11.4
95th Queue (m)	11.8	6.7	16.0	17.9
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)				

Zone Summary

Zone wide Queuing Penalty: 0

Timings
11: Liverpool Rd & Krosno Blvd

2032 Total Traffic Conditions
AM Peak Hour (Krosno Signalized)

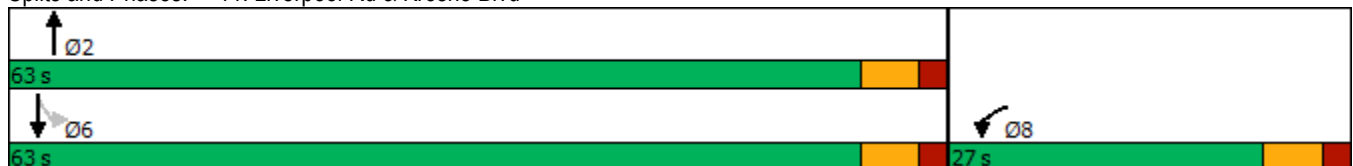


Lane Group	WBL	NBT	SBL	SBT
Lane Configurations				
Traffic Volume (vph)	7	315	124	164
Future Volume (vph)	7	315	124	164
Turn Type	Prot	NA	Perm	NA
Protected Phases	8	2		6
Permitted Phases			6	
Detector Phase	8	2	6	6
Switch Phase				
Minimum Initial (s)	5.0	5.0	5.0	5.0
Minimum Split (s)	24.0	24.0	24.0	24.0
Total Split (s)	27.0	63.0	63.0	63.0
Total Split (%)	30.0%	70.0%	70.0%	70.0%
Yellow Time (s)	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0
Total Lost Time (s)	6.0	6.0		6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	None	Max	Max	Max
Act Effect Green (s)	7.4	61.4		61.4
Actuated g/C Ratio	0.09	0.76		0.76
v/c Ratio	0.58	0.31		0.38
Control Delay	15.2	4.0		5.0
Queue Delay	0.0	0.0		0.0
Total Delay	15.2	4.0		5.0
LOS	B	A		A
Approach Delay	15.2	4.0		5.0
Approach LOS	B	A		A

Intersection Summary

Cycle Length: 90	
Actuated Cycle Length: 80.8	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.58	
Intersection Signal Delay: 6.4	Intersection LOS: A
Intersection Capacity Utilization 57.2%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 11: Liverpool Rd & Krosno Blvd



Queues
11: Liverpool Rd & Krosno Blvd










2032 Total Traffic Conditions
AM Peak Hour (Krosno Signalized)



Lane Group	WBL	NBT	SBT
Lane Group Flow (vph)	168	424	365
v/c Ratio	0.58	0.31	0.38
Control Delay	15.2	4.0	5.0
Queue Delay	0.0	0.0	0.0
Total Delay	15.2	4.0	5.0
Queue Length 50th (m)	1.2	13.7	12.9
Queue Length 95th (m)	12.1	26.3	26.3
Internal Link Dist (m)	251.2	233.4	388.4
Turn Bay Length (m)			
Base Capacity (vph)	534	1364	962
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.31	0.31	0.38
Intersection Summary			

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

2032 Total Traffic Conditions
 AM Peak Hour (Krosno Signalized)

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	7	126	315	20	124	164
Future Volume (vph)	7	126	315	20	124	164
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)	1602		1795			1797
Flt Permitted	1.00		1.00			0.69
Satd. Flow (perm)	1602		1795			1266
Peak-hour factor, PHF	0.79	0.79	0.79	0.79	0.79	0.79
Adj. Flow (vph)	9	159	399	25	157	208
RTOR Reduction (vph)	144	0	2	0	0	0
Lane Group Flow (vph)	24	0	422	0	0	365
Confl. Peds. (#/hr)	6	2		12	12	
Confl. Bikes (#/hr)				2		
Heavy Vehicles (%)	0%	2%	4%	36%	4%	4%
Turn Type	Prot		NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases					6	
Actuated Green, G (s)	7.4		61.4			61.4
Effective Green, g (s)	7.4		61.4			61.4
Actuated g/C Ratio	0.09		0.76			0.76
Clearance Time (s)	6.0		6.0			6.0
Vehicle Extension (s)	3.0		3.0			3.0
Lane Grp Cap (vph)	146		1364			962
v/s Ratio Prot	c0.01		0.24			
v/s Ratio Perm						c0.29
v/c Ratio	0.16		0.31			0.38
Uniform Delay, d1	33.8		3.0			3.3
Progression Factor	1.00		1.00			1.00
Incremental Delay, d2	0.5		0.6			1.1
Delay (s)	34.4		3.6			4.4
Level of Service	C		A			A
Approach Delay (s)	34.4		3.6			4.4
Approach LOS	C		A			A
Intersection Summary						
HCM 2000 Control Delay			9.3		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.36			
Actuated Cycle Length (s)			80.8		Sum of lost time (s)	12.0
Intersection Capacity Utilization			57.2%		ICU Level of Service	B
Analysis Period (min)			15			
c Critical Lane Group						

Approach	WB	NB	SB
Crosswalk Length (m)	2.59	2.26	2.26
Crosswalk Width (m)	1.20	1.20	1.20
Total Number of Lanes Crossed	2	2	2
Number of Right-Turn Islands	0	0	0
Type of Control	None	None	None
Corresponding Signal Phase	2	6	8
Effective Walk Time (s)	0.0	0.0	0.0
Right Corner Size A (m)	2.74	2.74	2.74
Right Corner Size B (m)	2.74	2.74	2.74
Right Corner Curb Radius (m)	0.00	0.00	0.00
Right Corner Total Area (sq.m)	7.51	7.51	7.51
Ped. Left-Right Flow Rate (p/h)	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0
85th percentile speed (km/h)	40	40	40
Right Corner Area per Ped (sq.m)	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-
Ped. Circulation Area (sq.m)	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-
Pedestrian Delay (s/p)	45.0	45.0	45.0
Pedestrian Compliance Code	Poor	Poor	Poor
Pedestrian Crosswalk Score	1.87	1.99	2.10
Pedestrian Crosswalk LOS	A	A	B

Approach	WB	NB	SB
Bicycle Flow Rate (bike/h)	0	0	0
Total Flow Rate (veh/h)	168	424	365
Effct. Green for Bike (s)	7.4	61.4	61.4
Cross Street Width (m)	7.40	8.51	7.40
Through Lanes Number	1	1	1
Through Lane Width (m)	3.70	3.70	3.70
Bicycle Lane Width (m)	0.00	0.00	0.00
Paved Shoulder Width (m)	0.00	0.00	0.00
Curb Is Present?	No	No	No
On Street Parking?	No	No	No
Bicycle Lane Capacity (bike/h)	164	1364	1364
Bicycle Delay (s/bike)	37.9	4.5	4.5
Bicycle Compliance	Poor	Good	Good
Bicycle LOS Score	2.18	2.66	2.50
Bicycle LOS	B	B	B

Timings
3: Liverpool Rd & Bayly St

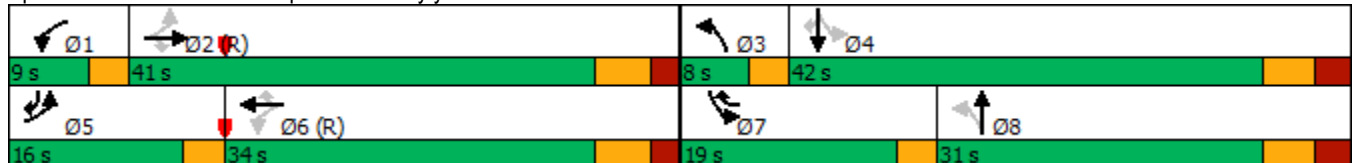
2032 Total Traffic Conditions
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	
Lane Configurations												
Traffic Volume (vph)	366	868	261	108	586	689	77	597	335	601	245	
Future Volume (vph)	366	868	261	108	586	689	77	597	335	601	245	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	pm+pt	NA	pm+ov	
Protected Phases	5	2		1	6	7	3	8	7	4	5	
Permitted Phases	2		2	6		6	8		4		4	
Detector Phase	5	2	2	1	6	7	3	8	7	4	5	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	8.0	27.0	27.0	8.0	27.0	8.0	8.0	31.0	8.0	31.0	8.0	
Total Split (s)	16.0	41.0	41.0	9.0	34.0	19.0	8.0	31.0	19.0	42.0	16.0	
Total Split (%)	16.0%	41.0%	41.0%	9.0%	34.0%	19.0%	8.0%	31.0%	19.0%	42.0%	16.0%	
Yellow Time (s)	3.0	4.1	4.1	3.0	4.1	3.0	3.0	3.8	3.0	3.8	3.0	
All-Red Time (s)	0.0	2.3	2.3	0.0	2.3	0.0	0.0	2.9	0.0	2.9	0.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	3.0	6.4	6.4	3.0	6.4	3.0	3.0	6.7	3.0	6.7	3.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lead	Lag	Lead	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max	
Act Effct Green (s)	47.0	34.6	34.6	37.0	27.6	47.0	33.0	24.3	47.0	35.3	52.0	
Actuated g/C Ratio	0.47	0.35	0.35	0.37	0.28	0.47	0.33	0.24	0.47	0.35	0.52	
v/c Ratio	0.94	0.72	0.43	0.50	0.61	0.92	0.25	0.83	0.92	0.49	0.30	
Control Delay	53.3	32.6	7.2	24.3	34.5	38.2	18.0	44.8	55.6	26.9	6.6	
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	7.2	24.3	34.5	38.2	18.0	44.8	55.6	26.9	6.6	
LOS	D	C	A	C	C	D	B	D	E	C	A	
Approach Delay		33.2			35.5			42.2		30.8		
Approach LOS		C			D			D		C		

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 90
 Control Type: Pretimed
 Maximum v/c Ratio: 0.94
 Intersection Signal Delay: 34.7
 Intersection LOS: C
 Intersection Capacity Utilization 97.9%
 ICU Level of Service F
 Analysis Period (min) 15

Splits and Phases: 3: Liverpool Rd & Bayly St



Queues
3: Liverpool Rd & Bayly St

2032 Total Traffic Conditions
PM Peak Hour



























Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	377	895	269	111	604	710	79	717	345	620	253
v/c Ratio	0.94	0.72	0.43	0.50	0.61	0.92	0.25	0.83	0.92	0.49	0.30
Control Delay	53.3	32.6	7.2	24.3	34.5	38.2	18.0	44.8	55.6	26.9	6.6
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	7.2	24.3	34.5	38.2	18.0	44.8	55.6	26.9	6.6
Queue Length 50th (m)	47.2	78.7	4.5	11.8	53.5	99.4	8.2	68.0	47.6	48.9	11.0
Queue Length 95th (m)	#92.1	101.0	22.9	21.6	71.2	#133.4	16.2	#95.1	#99.4	65.0	23.5
Internal Link Dist (m)		177.5			249.4			51.8		146.7	
Turn Bay Length (m)	115.0		100.0	50.0		150.0	75.0		50.0		65.0
Base Capacity (vph)	402	1238	626	221	997	775	311	861	373	1263	857
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	0.43	0.50	0.61	0.92	0.25	0.83	0.92	0.49	0.30

Intersection Summary

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

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

2032 Total Traffic Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	366	868	261	108	586	689	77	597	99	335	601	245
Future Volume (vph)	366	868	261	108	586	689	77	597	99	335	601	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	1811	3489		1786	3579	1531
Flt Permitted	0.26	1.00	1.00	0.21	1.00	1.00	0.42	1.00		0.15	1.00	1.00
Satd. Flow (perm)	490	3579	1369	379	3614	1533	795	3489		285	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	269	111	604	710	79	615	102	345	620	253
RTOR Reduction (vph)	0	0	153	0	0	60	0	14	0	0	0	67
Lane Group Flow (vph)	377	895	116	111	604	650	79	703	0	345	620	186
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	283	847		363	1263	739
v/s Ratio Prot	c0.13	0.25		0.03	0.17	c0.16	0.01	0.20		0.15	0.17	0.03
v/s Ratio Perm	c0.30		0.08	0.15		0.27	0.07			c0.26		0.09
v/c Ratio	0.98	0.72	0.25	0.53	0.61	0.97	0.28	0.83		0.95	0.49	0.25
Uniform Delay, d1	23.1	28.5	23.4	24.1	31.5	27.6	26.1	35.9		25.8	25.3	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	1.2	9.3	2.7	28.9	2.4	9.3		36.2	1.4	0.8
Delay (s)	63.4	32.2	24.6	33.5	34.2	56.5	28.6	45.2		62.0	26.7	16.0
Level of Service	E	C	C	C	C	E	C	D		E	C	B
Approach Delay (s)		38.5			45.3			43.5			34.5	
Approach LOS		D			D			D			C	
Intersection Summary												
HCM 2000 Control Delay			40.3			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			97.9%	ICU Level of Service						F		
Analysis Period (min)			15									


















c Critical Lane Group

Approach	EB	WB	NB	SB
Crosswalk Length (m)	6.84	6.82	5.66	6.77
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	2.61	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)	1541	1425	796	1218
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	3.82	3.31	3.66
Bicycle LOS	D	D	C	D

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

2032 Total Traffic Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	1	1	1	0	236	1	536	8	215	694	1
Future Volume (Veh/h)	4	1	1	1	0	236	1	536	8	215	694	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	558	8	224	723	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	0.83	0.83	0.83	0.83	0.83		0.83					
vC, conflicting volume	2006	1794	768	1790	1791	596	747			598		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2111	1855	617	1851	1851	596	591			598		
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 %	67	98	100	97	100	50	100			77		
cM capacity (veh/h)	12	45	391	35	45	490	805			958		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2							
Volume Total	6	247	567	224	724							
Volume Left	4	1	1	224	0							
Volume Right	1	246	8	0	1							
cSH	17	466	805	958	1700							
Volume to Capacity	0.36	0.53	0.00	0.23	0.43							
Queue Length 95th (m)	7.4	23.2	0.0	6.9	0.0							
Control Delay (s)	312.8	21.1	0.0	9.9	0.0							
Lane LOS	F	C	A	A								
Approach Delay (s)	312.8	21.1	0.0	2.3								
Approach LOS	F	C										
Intersection Summary												
Average Delay			5.3									
Intersection Capacity Utilization			90.2%		ICU Level of Service				E			
Analysis Period (min)			15									

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










2032 Total Traffic Conditions
 PM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	58	28	18	469	616	68
Future Volume (Veh/h)	58	28	18	469	616	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	484	635	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	0.82	0.82	0.82			
vC, conflicting volume	1203	682	716			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1138	503	545			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	66	94	98			
cM capacity (veh/h)	178	458	840			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	89	503	705			
Volume Left	60	19	0			
Volume Right	29	0	70			
cSH	223	840	1700			
Volume to Capacity	0.40	0.02	0.41			
Queue Length 95th (m)	13.7	0.5	0.0			
Control Delay (s)	31.5	0.6	0.0			
Lane LOS	D	A				
Approach Delay (s)	31.5	0.6	0.0			
Approach LOS	D					
Intersection Summary						
Average Delay			2.4			
Intersection Capacity Utilization			51.2%	ICU Level of Service	A	
Analysis Period (min)			15			

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

2032 Total Traffic Conditions
 PM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	35	123	290	15	175	441
Future Volume (vph)	35	123	290	15	175	441
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	39	138	326	17	197	496
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total (vph)	177	343	693			
Volume Left (vph)	39	0	197			
Volume Right (vph)	138	17	0			
Hadj (s)	-0.42	0.00	0.10			
Departure Headway (s)	6.0	5.4	5.1			
Degree Utilization, x	0.30	0.51	0.98			
Capacity (veh/h)	580	658	698			
Control Delay (s)	11.5	14.0	50.1			
Approach Delay (s)	11.5	14.0	50.1			
Approach LOS	B	B	F			
Intersection Summary						
Delay			34.2			
Level of Service			D			
Intersection Capacity Utilization			68.7%	ICU Level of Service		C
Analysis Period (min)			15			

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

2032 Total Traffic Conditions
 PM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	6	0	1	245	405	11
Future Volume (Veh/h)	6	0	1	245	405	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	292	482	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	792	500	505			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	792	500	505			
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)	357	569	1060			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	7	293	495			
Volume Left	7	1	0			
Volume Right	0	0	13			
cSH	357	1060	1700			
Volume to Capacity	0.02	0.00	0.29			
Queue Length 95th (m)	0.5	0.0	0.0			
Control Delay (s)	15.3	0.0	0.0			
Lane LOS	C	A				
Approach Delay (s)	15.3	0.0	0.0			
Approach LOS	C					
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			32.3%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
 15: Liverpool Rd & Ilona Park Rd (S)

















2032 Total Traffic Conditions
 PM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	2	1	1	230	365	12
Future Volume (Veh/h)	2	1	1	230	365	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	267	424	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	712	440	447			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	712	440	447			
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)	397	616	1114			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	3	268	438			
Volume Left	2	1	0			
Volume Right	1	0	14			
cSH	450	1114	1700			
Volume to Capacity	0.01	0.00	0.26			
Queue Length 95th (m)	0.2	0.0	0.0			
Control Delay (s)	13.0	0.0	0.0			
Lane LOS	B	A				
Approach Delay (s)	13.0	0.0	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay	0.1					
Intersection Capacity Utilization	30.0%			ICU Level of Service	A	
Analysis Period (min)	15					

















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

2032 Total Traffic Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	0	1	4	3	9	2	203	3	18	322	19
Future Volume (Veh/h)	9	0	1	4	3	9	2	203	3	18	322	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	5	3	10	2	233	3	21	370	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	683	684	392	676	694	248	401			248		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	683	684	392	676	694	248	401			248		
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	98	99	99	100			98		
cM capacity (veh/h)	319	360	654	296	355	786	1158			1314		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	11	18	238	413								
Volume Left	10	5	2	21								
Volume Right	1	10	3	22								
cSH	334	473	1158	1314								
Volume to Capacity	0.03	0.04	0.00	0.02								
Queue Length 95th (m)	0.8	0.9	0.0	0.4								
Control Delay (s)	16.1	12.9	0.1	0.5								
Lane LOS	C	B	A	A								
Approach Delay (s)	16.1	12.9	0.1	0.5								
Approach LOS	C	B										
Intersection Summary												
Average Delay			1.0									
Intersection Capacity Utilization			40.4%		ICU Level of Service				A			
Analysis Period (min)			15									

















HCM Unsignalized Intersection Capacity Analysis
20: Liverpool Rd & Annland St

2032 Total Traffic Conditions
PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	0	12	10	3	3	10	213	8	14	276	52
Future Volume (Veh/h)	27	0	12	10	3	3	10	213	8	14	276	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	13	11	3	3	11	229	9	15	297	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	622	620	331	626	644	238	357			239		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	622	620	331	626	644	238	357			239		
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 %	92	100	98	97	99	100	99			99		
cM capacity (veh/h)	365	396	711	383	384	803	1208			1338		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	42	17	249	368								
Volume Left	29	11	11	15								
Volume Right	13	3	9	56								
cSH	430	422	1208	1338								
Volume to Capacity	0.10	0.04	0.01	0.01								
Queue Length 95th (m)	2.5	1.0	0.2	0.3								
Control Delay (s)	14.3	13.9	0.4	0.4								
Lane LOS	B	B	A	A								
Approach Delay (s)	14.3	13.9	0.4	0.4								
Approach LOS	B	B										
Intersection Summary												
Average Delay			1.6									
Intersection Capacity Utilization			33.9%		ICU Level of Service				A			
Analysis Period (min)			15									










HCM Unsignalized Intersection Capacity Analysis
 23: Liverpool Rd & Wharf St

2032 Total Traffic Conditions
 PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	19	0	2	0	0	7	5	154	1	10	226	38
Future Volume (vph)	19	0	2	0	0	7	5	154	1	10	226	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	183	1	12	269	45
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	25	8	190	326								
Volume Left (vph)	23	0	6	12								
Volume Right (vph)	2	8	1	45								
Hadj (s)	0.21	-0.60	0.00	-0.07								
Departure Headway (s)	5.2	4.4	4.3	4.1								
Degree Utilization, x	0.04	0.01	0.23	0.37								
Capacity (veh/h)	619	713	814	854								
Control Delay (s)	8.4	7.5	8.6	9.5								
Approach Delay (s)	8.4	7.5	8.6	9.5								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			9.1									
Level of Service			A									
Intersection Capacity Utilization			33.6%	ICU Level of Service	A							
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
26: Liverpool Rd

2032 Total Traffic Conditions
PM Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	37	130	0	57	164
Future Volume (Veh/h)	0	37	130	0	57	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	47	167	0	73	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	560	209			200	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	560	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	94			95	
cM capacity (veh/h)	326	802			1340	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	47	167	283			
Volume Left	0	0	73			
Volume Right	47	0	0			
cSH	802	1700	1340			
Volume to Capacity	0.06	0.10	0.05			
Queue Length 95th (m)	1.4	0.0	1.3			
Control Delay (s)	9.8	0.0	2.4			
Lane LOS	A		A			
Approach Delay (s)	9.8	0.0	2.4			
Approach LOS	A					
Intersection Summary						
Average Delay			2.3			
Intersection Capacity Utilization			38.9%		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)	22.1	39.0	74.0
Average Queue (m)	10.1	18.6	36.6
95th Queue (m)	17.8	30.5	59.9
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)	16.6	9.2	17.8	21.9
Average Queue (m)	4.8	1.6	10.6	14.3
95th Queue (m)	13.4	7.2	15.6	20.4
Link Distance (m)	104.6	110.2	179.8	86.5
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 0

Timings
11: Liverpool Rd & Krosno Blvd

2032 Total Traffic Conditions
PM Peak Hour (Krosno Signalized)



Lane Group	WBL	NBT	SBL	SBT
Lane Configurations	W	T		T
Traffic Volume (vph)	35	290	175	441
Future Volume (vph)	35	290	175	441
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)	8.3	64.1		64.1
Actuated g/C Ratio	0.10	0.76		0.76
v/c Ratio	0.61	0.24		0.62
Control Delay	19.5	3.8		8.4
Queue Delay	0.0	0.0		0.0
Total Delay	19.5	3.8		8.4
LOS	B	A		A
Approach Delay	19.5	3.8		8.4
Approach LOS	B	A		A

Intersection Summary

Cycle Length: 90
 Actuated Cycle Length: 84.4
 Natural Cycle: 65
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.62
 Intersection Signal Delay: 8.7
 Intersection Capacity Utilization 73.7%
 Analysis Period (min) 15

Intersection LOS: A
 ICU Level of Service D

Splits and Phases: 11: Liverpool Rd & Krosno Blvd



Queues
11: Liverpool Rd & Krosno Blvd










2032 Total Traffic Conditions
PM Peak Hour (Krosno Signalized)



Lane Group	WBL	NBT	SBT
Lane Group Flow (vph)	177	343	693
v/c Ratio	0.61	0.24	0.62
Control Delay	19.5	3.8	8.4
Queue Delay	0.0	0.0	0.0
Total Delay	19.5	3.8	8.4
Queue Length 50th (m)	5.6	11.6	37.5
Queue Length 95th (m)	22.3	25.8	86.5
Internal Link Dist (m)	251.2	233.4	388.4
Turn Bay Length (m)			
Base Capacity (vph)	472	1417	1109
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.38	0.24	0.62
Intersection Summary			

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

2032 Total Traffic Conditions
 PM Peak Hour (Krosno Signalized)

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	35	123	290	15	175	441
Future Volume (vph)	35	123	290	15	175	441
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	0.89		0.99			1.00
Flt Protected	0.99		1.00			0.99
Satd. Flow (prot)	1700		1867			1830
Flt Permitted	0.99		1.00			0.79
Satd. Flow (perm)	1700		1867			1461
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	39	138	326	17	197	496
RTOR Reduction (vph)	124	0	1	0	0	0
Lane Group Flow (vph)	53	0	342	0	0	693
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)	8.3		64.0			64.0
Effective Green, g (s)	8.3		64.0			64.0
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)	167		1417			1109
v/s Ratio Prot	c0.03		0.18			
v/s Ratio Perm						c0.47
v/c Ratio	0.31		0.24			0.62
Uniform Delay, d1	35.4		3.0			4.7
Progression Factor	1.00		1.00			1.00
Incremental Delay, d2	1.1		0.4			2.7
Delay (s)	36.4		3.4			7.3
Level of Service	D		A			A
Approach Delay (s)	36.4		3.4			7.3
Approach LOS	D		A			A
Intersection Summary						
HCM 2000 Control Delay			10.5		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.59			
Actuated Cycle Length (s)			84.3		Sum of lost time (s)	12.0
Intersection Capacity Utilization			73.7%		ICU Level of Service	D
Analysis Period (min)			15			
c Critical Lane Group						

Approach	WB	NB	SB
Crosswalk Length (m)	2.59	2.26	2.26
Crosswalk Width (m)	1.20	1.20	1.20
Total Number of Lanes Crossed	2	2	2
Number of Right-Turn Islands	0	0	0
Type of Control	None	None	None
Corresponding Signal Phase	2	6	8
Effective Walk Time (s)	0.0	0.0	0.0
Right Corner Size A (m)	2.74	2.74	2.74
Right Corner Size B (m)	2.74	2.74	2.74
Right Corner Curb Radius (m)	0.00	0.00	0.00
Right Corner Total Area (sq.m)	7.51	7.51	7.51
Ped. Left-Right Flow Rate (p/h)	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0
85th percentile speed (km/h)	40	40	40
Right Corner Area per Ped (sq.m)	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-
Ped. Circulation Area (sq.m)	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-
Pedestrian Delay (s/p)	45.0	45.0	45.0
Pedestrian Compliance Code	Poor	Poor	Poor
Pedestrian Crosswalk Score	1.88	2.08	2.19
Pedestrian Crosswalk LOS	A	B	B

Approach	WB	NB	SB
Bicycle Flow Rate (bike/h)	0	0	0
Total Flow Rate (veh/h)	177	343	693
Effct. Green for Bike (s)	8.3	64.1	64.1
Cross Street Width (m)	7.40	8.51	7.40
Through Lanes Number	1	1	1
Through Lane Width (m)	3.70	3.70	3.70
Bicycle Lane Width (m)	0.00	0.00	0.00
Paved Shoulder Width (m)	0.00	0.00	0.00
Curb Is Present?	No	No	No
On Street Parking?	No	No	No
Bicycle Lane Capacity (bike/h)	184	1424	1424
Bicycle Delay (s/bike)	37.1	3.7	3.7
Bicycle Compliance	Poor	Good	Good
Bicycle LOS Score	2.19	2.52	3.04
Bicycle LOS	B	B	C

Timings
6: Liverpool Rd & Parking Lot/Tatra Dr

2032 Total Traffic Conditions
PM Peak Hour (Tatra Signalized)



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations		↕		↕		↕	↗	↘
Traffic Volume (vph)	4	1	1	0	1	536	215	694
Future Volume (vph)	4	1	1	0	1	536	215	694
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		0.41	0.35	0.53
Control Delay		31.2		13.1		5.9	6.5	7.3
Queue Delay		0.0		0.0		0.0	0.0	1.0
Total Delay		31.2		13.1		5.9	6.5	8.2
LOS		C		B		A	A	A
Approach Delay		31.2		13.1		5.9		7.8
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: 8.0	Intersection LOS: A
Intersection Capacity Utilization 97.7%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 6: Liverpool Rd & Parking Lot/Tatra Dr



Queues
6: Liverpool Rd & Parking Lot/Tatra Dr

2032 Total Traffic Conditions
PM Peak Hour (Tatra Signalized)



Lane Group	EBT	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	6	247	567	224	724
v/c Ratio	0.08	0.64	0.41	0.35	0.53
Control Delay	31.2	13.1	5.9	6.5	7.3
Queue Delay	0.0	0.0	0.0	0.0	1.0
Total Delay	31.2	13.1	5.9	6.5	8.2
Queue Length 50th (m)	0.7	0.1	23.2	8.7	34.2
Queue Length 95th (m)	4.0	18.9	58.2	27.2	85.5
Internal Link Dist (m)	73.5	201.1	160.3		52.8
Turn Bay Length (m)				45.0	
Base Capacity (vph)	188	581	1381	649	1361
Starvation Cap Reductn	0	0	0	0	362
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.03	0.43	0.41	0.35	0.72
Intersection Summary					

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

2032 Total Traffic Conditions
PM Peak Hour (Tatra Signalized)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Lane Configurations		↕			↕			↕		↕	↕			
Traffic Volume (vph)	4	1	1	1	0	236	1	536	8	215	694	1		
Future Volume (vph)	4	1	1	1	0	236	1	536	8	215	694	1		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900		
Total Lost time (s)		7.0			7.0			7.0		7.0	7.0			
Lane Util. Factor		1.00			1.00			1.00		1.00	1.00			
Frbp, ped/bikes		0.99			0.98			1.00		1.00	1.00			
Flpb, ped/bikes		1.00			1.00			1.00		0.99	1.00			
Frt		0.98			0.87			1.00		1.00	1.00			
Flt Protected		0.97			1.00			1.00		0.95	1.00			
Satd. Flow (prot)		1792			1637			1913		1807	1883			
Flt Permitted		0.42			1.00			1.00		0.47	1.00			
Satd. Flow (perm)		781			1635			1912		900	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	558	8	224	723	1		
RTOR Reduction (vph)	0	1	0	0	221	0	0	1	0	0	0	0		
Lane Group Flow (vph)	0	5	0	0	26	0	0	566	0	224	724	0		
Confl. Peds. (#/hr)	2		22	22		2	23		32	32		23		
Confl. Bikes (#/hr)												2		
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	12%	0%	2%	0%		
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA			
Protected Phases		4			8			2			6			
Permitted Phases	4			8			2			6				
Actuated Green, G (s)		7.9			7.9			57.1		57.1	57.1			
Effective Green, g (s)		7.9			7.9			57.1		57.1	57.1			
Actuated g/C Ratio		0.10			0.10			0.72		0.72	0.72			
Clearance Time (s)		7.0			7.0			7.0		7.0	7.0			
Vehicle Extension (s)		3.0			3.0			3.0		3.0	3.0			
Lane Grp Cap (vph)		78			163			1381		650	1361			
v/s Ratio Prot											c0.38			
v/s Ratio Perm		0.01			c0.02			0.30		0.25				
v/c Ratio		0.07			0.16			0.41		0.34	0.53			
Uniform Delay, d1		32.2			32.5			4.3		4.0	4.9			
Progression Factor		1.00			1.00			1.00		1.00	1.00			
Incremental Delay, d2		0.4			0.5			0.9		1.4	1.5			
Delay (s)		32.6			33.0			5.2		5.5	6.4			
Level of Service		C			C			A		A	A			
Approach Delay (s)		32.6			33.0			5.2			6.2			
Approach LOS		C			C			A			A			
Intersection Summary														
HCM 2000 Control Delay			9.7									HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio			0.49											
Actuated Cycle Length (s)			79.0							14.0				
Intersection Capacity Utilization			97.7%										ICU Level of Service	F
Analysis Period (min)			15											
c	Critical Lane Group													

Approach	EB	WB	NB	SB
Crosswalk Length (m)	2.26	2.52	3.35	4.51
Crosswalk Width (m)	1.20	1.20	1.20	1.20
Total Number of Lanes Crossed	2	2	2	4
Number of Right-Turn Islands	0	0	0	0
Type of Control	None	None	None	None
Corresponding Signal Phase	6	2	4	8
Effective Walk Time (s)	0.0	0.0	0.0	0.0
Right Corner Size A (m)	2.74	2.74	2.74	2.74
Right Corner Size B (m)	2.74	2.74	2.74	2.74
Right Corner Curb Radius (m)	0.00	0.00	0.00	0.00
Right Corner Total Area (sq.m)	7.51	7.51	7.51	7.51
Ped. Left-Right Flow Rate (p/h)	0	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0	0
85th percentile speed (km/h)	40	40	40	40
Right Corner Area per Ped (sq.m)	0.0	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-	-
Ped. Circulation Area (sq.m)	0.0	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-	-
Pedestrian Delay (s/p)	45.0	45.0	45.0	45.0
Pedestrian Compliance Code	Poor	Poor	Poor	Poor
Pedestrian Crosswalk Score	1.73	1.92	2.25	2.50
Pedestrian Crosswalk LOS	A	A	B	B

Approach	EB	WB	NB	SB
Bicycle Flow Rate (bike/h)	0	0	0	0
Total Flow Rate (veh/h)	6	247	567	948
Effct. Green for Bike (s)	7.9	7.9	57.1	57.1
Cross Street Width (m)	10.99	14.80	8.26	7.40
Through Lanes Number	1	1	1	1
Through Lane Width (m)	3.70	3.70	3.70	3.70
Bicycle Lane Width (m)	0.00	0.00	0.00	0.00
Paved Shoulder Width (m)	0.00	0.00	0.00	0.00
Curb Is Present?	No	No	No	No
On Street Parking?	No	No	No	No
Bicycle Lane Capacity (bike/h)	176	176	1269	1269
Bicycle Delay (s/bike)	37.4	37.4	6.0	6.0
Bicycle Compliance	Poor	Poor	Good	Good
Bicycle LOS Score	2.09	2.68	2.88	3.47
Bicycle LOS	B	B	C	C

Timings
3: Liverpool Rd & Bayly St

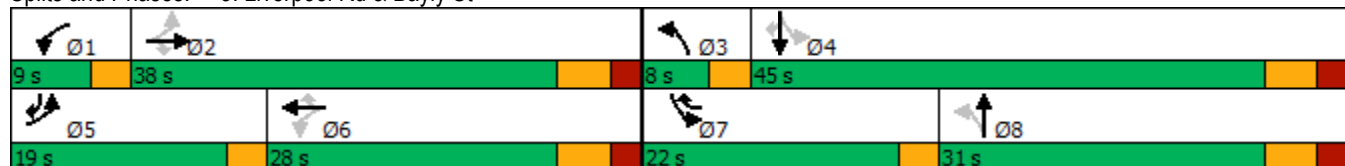
2032 Total Traffic Conditions
SAT Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR	
Lane Configurations												
Traffic Volume (vph)	357	420	150	105	245	357	66	525	342	559	288	
Future Volume (vph)	357	420	150	105	245	357	66	525	342	559	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)	43.4	33.0	33.0	31.1	21.7	43.4	31.4	22.7	47.8	37.8	56.9	
Actuated g/C Ratio	0.45	0.34	0.34	0.32	0.22	0.45	0.32	0.23	0.49	0.39	0.59	
v/c Ratio	0.64	0.35	0.26	0.31	0.31	0.48	0.21	0.84	0.81	0.41	0.28	
Control Delay	25.1	26.3	5.4	20.3	33.6	14.6	16.4	44.2	36.4	23.2	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	25.1	26.3	5.4	20.3	33.6	14.6	16.4	44.2	36.4	23.2	1.7	
LOS	C	C	A	C	C	B	B	D	D	C	A	
Approach Delay		22.4			22.1			41.7		21.8		
Approach LOS		C			C			D		C		

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 97.2
 Natural Cycle: 75
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.84
 Intersection Signal Delay: 26.1
 Intersection LOS: C
 Intersection Capacity Utilization 92.9%
 ICU Level of Service F
 Analysis Period (min) 15

Splits and Phases: 3: Liverpool Rd & Bayly St



Queues
3: Liverpool Rd & Bayly St

2032 Total Traffic Conditions
SAT Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	368	433	155	108	253	368	68	687	353	576	297
v/c Ratio	0.64	0.35	0.26	0.31	0.31	0.48	0.21	0.84	0.81	0.41	0.28
Control Delay	25.1	26.3	5.4	20.3	33.6	14.6	16.4	44.2	36.4	23.2	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	25.1	26.3	5.4	20.3	33.6	14.6	16.4	44.2	36.4	23.2	1.7
Queue Length 50th (m)	48.7	34.1	0.0	12.1	21.8	32.0	6.6	63.2	44.2	42.5	0.0
Queue Length 95th (m)	72.9	47.2	13.4	22.4	33.0	55.2	13.4	84.1	#87.1	57.0	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		65.0
Base Capacity (vph)	583	1239	603	350	805	774	319	879	446	1414	1054
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	0.63	0.35	0.26	0.31	0.31	0.48	0.21	0.78	0.79	0.41	0.28

























Intersection Summary

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

HCM Signalized Intersection Capacity Analysis

3: Liverpool Rd & Bayly St

2032 Total Traffic Conditions
SAT Peak Hour



















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	357	420	150	105	245	357	66	525	142	342	559	288
Future Volume (vph)	357	420	150	105	245	357	66	525	142	342	559	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)	1817	3650	1476	1776	3614	1578	1819	3415		1804	3579	1577
Flt Permitted	0.52	1.00	1.00	0.50	1.00	1.00	0.44	1.00		0.17	1.00	1.00
Satd. Flow (perm)	1004	3650	1476	935	3614	1578	833	3415		315	3579	1577
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	155	108	253	368	68	541	146	353	576	297
RTOR Reduction (vph)	0	0	103	0	0	62	0	24	0	0	0	137
Lane Group Flow (vph)	368	433	52	108	253	306	68	663	0	353	576	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)	40.7	33.0	33.0	27.1	22.4	40.7	27.3	23.4		44.7	37.8	53.1
Effective Green, g (s)	40.7	33.0	33.0	27.1	22.4	40.7	27.3	23.4		44.7	37.8	53.1
Actuated g/C Ratio	0.41	0.34	0.34	0.28	0.23	0.41	0.28	0.24		0.45	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
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)	541	1222	494	297	821	652	269	811		419	1373	850
v/s Ratio Prot	c0.11	0.12		0.02	0.07	0.09	0.01	0.19		c0.16	0.16	0.03
v/s Ratio Perm	c0.18		0.04	0.08		0.11	0.06			c0.23		0.07
v/c Ratio	0.68	0.35	0.11	0.36	0.31	0.47	0.25	0.82		0.84	0.42	0.19
Uniform Delay, d1	21.3	24.7	22.6	27.6	31.6	21.0	26.7	35.5		22.4	22.3	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	3.5	0.8	0.4	0.8	1.0	0.5	0.5	6.4		14.2	0.2	0.1
Delay (s)	24.8	25.5	23.0	28.3	32.6	21.6	27.2	41.9		36.6	22.5	11.8
Level of Service	C	C	C	C	C	C	C	D		D	C	B
Approach Delay (s)		24.8			26.4			40.6			24.0	
Approach LOS		C			C			D			C	
Intersection Summary												
HCM 2000 Control Delay			28.1			HCM 2000 Level of Service		C				
HCM 2000 Volume to Capacity ratio			0.82									
Actuated Cycle Length (s)			98.5			Sum of lost time (s)		19.1				
Intersection Capacity Utilization			92.9%			ICU Level of Service		F				
Analysis Period (min)			15									
c Critical Lane Group												

Approach	EB	WB	NB	SB
Crosswalk Length (m)	6.84	6.82	5.66	6.77
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	2.57	2.81
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)	956	729	755	1226
Effct. Green for Bike (s)	33.0	21.7	22.7	37.8
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)	660	434	454	756
Bicycle Delay (s/bike)	22.4	30.7	29.9	19.3
Bicycle Compliance	Fair	Poor	Fair	Fair
Bicycle LOS Score	3.25	3.25	3.28	3.67
Bicycle LOS	C	C	C	D

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

2032 Total Traffic Conditions
SAT Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	0	0	4	0	118	0	582	3	140	631	4
Future Volume (Veh/h)	1	0	0	4	0	118	0	582	3	140	631	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	600	3	144	651	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	0.84	0.84	0.84	0.84	0.84		0.84					
vC, conflicting volume	1676	1578	670	1570	1578	624	666			626		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1709	1593	513	1583	1593	624	508			626		
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 %	97	100	100	94	100	74	100			85		
cM capacity (veh/h)	39	75	467	63	74	478	888			944		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1	SB 2							
Volume Total	1	126	603	144	655							
Volume Left	1	4	0	144	0							
Volume Right	0	122	3	0	4							
cSH	39	395	888	944	1700							
Volume to Capacity	0.03	0.32	0.00	0.15	0.39							
Queue Length 95th (m)	0.6	10.3	0.0	4.1	0.0							
Control Delay (s)	100.5	18.3	0.0	9.5	0.0							
Lane LOS	F	C		A								
Approach Delay (s)	100.5	18.3	0.0	1.7								
Approach LOS	F	C										
Intersection Summary												
Average Delay			2.5									
Intersection Capacity Utilization			81.7%		ICU Level of Service					D		
Analysis Period (min)			15									

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










2032 Total Traffic Conditions
 SAT Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	56	13	11	510	567	66
Future Volume (Veh/h)	56	13	11	510	567	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	14	12	560	623	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	0.83	0.83	0.83			
vC, conflicting volume	1250	670	702			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1197	497	536			
tC, single (s)	6.4	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.4	2.2			
p0 queue free %	63	97	99			
cM capacity (veh/h)	166	459	858			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	76	572	696			
Volume Left	62	12	0			
Volume Right	14	0	73			
cSH	189	858	1700			
Volume to Capacity	0.40	0.01	0.41			
Queue Length 95th (m)	13.6	0.3	0.0			
Control Delay (s)	36.4	0.4	0.0			
Lane LOS	E	A				
Approach Delay (s)	36.4	0.4	0.0			
Approach LOS	E					
Intersection Summary						
Average Delay			2.2			
Intersection Capacity Utilization			47.8%	ICU Level of Service	A	
Analysis Period (min)			15			

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

2032 Total Traffic Conditions
 SAT Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	17	105	362	26	121	419
Future Volume (vph)	17	105	362	26	121	419
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	18	109	377	27	126	436
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total (vph)	127	404	562			
Volume Left (vph)	18	0	126			
Volume Right (vph)	109	27	0			
Hadj (s)	-0.47	0.01	0.08			
Departure Headway (s)	5.7	5.0	4.9			
Degree Utilization, x	0.20	0.56	0.76			
Capacity (veh/h)	570	701	725			
Control Delay (s)	10.1	14.2	21.8			
Approach Delay (s)	10.1	14.2	21.8			
Approach LOS	B	B	C			
Intersection Summary						
Delay			17.6			
Level of Service			C			
Intersection Capacity Utilization			66.9%	ICU Level of Service		C
Analysis Period (min)			15			

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

2032 Total Traffic Conditions
 SAT Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	0	0	336	387	12
Future Volume (Veh/h)	10	0	0	336	387	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	369	425	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	810	442	447			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	810	442	447			
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)	349	614	1114			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	11	369	438			
Volume Left	11	0	0			
Volume Right	0	0	13			
cSH	349	1114	1700			
Volume to Capacity	0.03	0.00	0.26			
Queue Length 95th (m)	0.7	0.0	0.0			
Control Delay (s)	15.6	0.0	0.0			
Lane LOS	C					
Approach Delay (s)	15.6	0.0	0.0			
Approach LOS	C					
Intersection Summary						
Average Delay	0.2					
Intersection Capacity Utilization	31.5%			ICU Level of Service	A	
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
 15: Liverpool Rd & Ilona Park Rd (S)

















2032 Total Traffic Conditions
 SAT Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	2	1	0	287	375	13
Future Volume (Veh/h)	2	1	0	287	375	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	309	403	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	730	421	428			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	730	421	428			
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)	388	630	1130			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	3	309	417			
Volume Left	2	0	0			
Volume Right	1	0	14			
cSH	445	1130	1700			
Volume to Capacity	0.01	0.00	0.25			
Queue Length 95th (m)	0.2	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					
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			30.6%	ICU Level of Service	A	
Analysis Period (min)			15			

















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

2032 Total Traffic Conditions
 SAT Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	3	3	4	5	6	5	264	4	10	347	17
Future Volume (Veh/h)	12	3	3	4	5	6	5	264	4	10	347	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	4	6	7	6	293	4	11	386	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	744	752	406	745	760	311	415			313		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	744	752	406	745	760	311	415			313		
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 %	95	99	100	99	98	99	99			99		
cM capacity (veh/h)	267	328	643	314	325	722	1144			1239		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	19	17	303	416								
Volume Left	13	4	6	11								
Volume Right	3	7	4	19								
cSH	304	416	1144	1239								
Volume to Capacity	0.06	0.04	0.01	0.01								
Queue Length 95th (m)	1.5	1.0	0.1	0.2								
Control Delay (s)	17.6	14.0	0.2	0.3								
Lane LOS	C	B	A	A								
Approach Delay (s)	17.6	14.0	0.2	0.3								
Approach LOS	C	B										
Intersection Summary												
Average Delay			1.0									
Intersection Capacity Utilization			34.6%		ICU Level of Service				A			
Analysis Period (min)			15									

















HCM Unsignalized Intersection Capacity Analysis
20: Liverpool Rd & Annland St

2032 Total Traffic Conditions
SAT Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	0	14	24	2	8	13	230	6	12	284	44
Future Volume (Veh/h)	40	0	14	24	2	8	13	230	6	12	284	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	15	26	2	9	14	247	6	13	305	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	660	656	344	654	676	257	367			258		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	660	656	344	654	676	257	367			258		
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 %	88	100	98	93	99	99	99			99		
cM capacity (veh/h)	356	372	692	361	362	781	1185			1312		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	58	37	267	365								
Volume Left	43	26	14	13								
Volume Right	15	9	6	47								
cSH	407	415	1185	1312								
Volume to Capacity	0.14	0.09	0.01	0.01								
Queue Length 95th (m)	3.7	2.2	0.3	0.2								
Control Delay (s)	15.3	14.5	0.5	0.4								
Lane LOS	C	B	A	A								
Approach Delay (s)	15.3	14.5	0.5	0.4								
Approach LOS	C	B										
Intersection Summary												
Average Delay			2.3									
Intersection Capacity Utilization			32.4%		ICU Level of Service					A		
Analysis Period (min)			15									










HCM Unsignalized Intersection Capacity Analysis
 23: Liverpool Rd & Wharf St

2032 Total Traffic Conditions
 SAT Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	35	2	7	1	1	18	4	176	4	7	237	61
Future Volume (vph)	35	2	7	1	1	18	4	176	4	7	237	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	191	4	8	258	66
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	48	22	199	332								
Volume Left (vph)	38	1	4	8								
Volume Right (vph)	8	20	4	66								
Hadj (s)	0.06	-0.54	-0.01	-0.11								
Departure Headway (s)	5.1	4.6	4.4	4.2								
Degree Utilization, x	0.07	0.03	0.24	0.39								
Capacity (veh/h)	627	687	789	836								
Control Delay (s)	8.5	7.7	8.8	9.8								
Approach Delay (s)	8.5	7.7	8.8	9.8								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay			9.3									
Level of Service			A									
Intersection Capacity Utilization			36.5%	ICU Level of Service	A							
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
26: Liverpool Rd

2032 Total Traffic Conditions
SAT Peak Hour

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	5	168	0	6	217
Future Volume (Veh/h)	0	5	168	0	6	217
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	179	0	6	231
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	489	246			243	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	489	246			243	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			100	
cM capacity (veh/h)	504	746			1240	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	5	179	237			
Volume Left	0	0	6			
Volume Right	5	0	0			
cSH	746	1700	1240			
Volume to Capacity	0.01	0.11	0.00			
Queue Length 95th (m)	0.2	0.0	0.1			
Control Delay (s)	9.9	0.0	0.2			
Lane LOS	A		A			
Approach Delay (s)	9.9	0.0	0.2			
Approach LOS	A					
Intersection Summary						
Average Delay			0.3			
Intersection Capacity Utilization			27.2%		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)	14.9	45.5	62.9
Average Queue (m)	7.9	22.0	33.0
95th Queue (m)	13.5	34.7	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)	16.4	9.2	19.0	25.8
Average Queue (m)	7.0	4.5	11.6	16.6
95th Queue (m)	14.3	11.9	17.4	23.6
Link Distance (m)	104.6	110.2	179.8	86.5
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 0

Timings
11: Liverpool Rd & Krosno Blvd

2032 Total Traffic Conditions
SAT Peak Hour (Krosno Signalized)



Lane Group	WBL	NBT	SBL	SBT
Lane Configurations	W	T		T
Traffic Volume (vph)	17	362	121	419
Future Volume (vph)	17	362	121	419
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)	7.5	67.2		67.2
Actuated g/C Ratio	0.09	0.78		0.78
v/c Ratio	0.53	0.28		0.47
Control Delay	18.2	3.6		5.4
Queue Delay	0.0	0.0		0.0
Total Delay	18.2	3.6		5.4
LOS	B	A		A
Approach Delay	18.2	3.6		5.4
Approach LOS	B	A		A

Intersection Summary




Cycle Length: 90
 Actuated Cycle Length: 86.7
 Natural Cycle: 60
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.53
 Intersection Signal Delay: 6.2
 Intersection Capacity Utilization 71.9%
 Analysis Period (min) 15
 Intersection LOS: A
 ICU Level of Service C

Splits and Phases: 11: Liverpool Rd & Krosno Blvd












Queues
11: Liverpool Rd & Krosno Blvd

2032 Total Traffic Conditions
SAT Peak Hour (Krosno Signalized)

			
Lane Group	WBL	NBT	SBT
Lane Group Flow (vph)	127	404	562
v/c Ratio	0.53	0.28	0.47
Control Delay	18.2	3.6	5.4
Queue Delay	0.0	0.0	0.0
Total Delay	18.2	3.6	5.4
Queue Length 50th (m)	2.8	13.2	23.2
Queue Length 95th (m)	17.2	28.7	51.5
Internal Link Dist (m)	251.2	233.4	388.4
Turn Bay Length (m)			
Base Capacity (vph)	422	1428	1191
Starvation Cap Reductn	0	0	0
Spillback Cap Reductn	0	0	0
Storage Cap Reductn	0	0	0
Reduced v/c Ratio	0.30	0.28	0.47
Intersection Summary			

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

2032 Total Traffic Conditions
 SAT Peak Hour (Krosno Signalized)

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	17	105	362	26	121	419
Future Volume (vph)	17	105	362	26	121	419
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0		6.0			6.0
Lane Util. Factor	1.00		1.00			1.00
Frpb, ped/bikes	0.95		1.00			1.00
Flpb, ped/bikes	1.00		1.00			1.00
Frt	0.88		0.99			1.00
Flt Protected	0.99		1.00			0.99
Satd. Flow (prot)	1582		1841			1852
Flt Permitted	0.99		1.00			0.82
Satd. Flow (perm)	1582		1841			1538
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	18	109	377	27	126	436
RTOR Reduction (vph)	100	0	2	0	0	0
Lane Group Flow (vph)	27	0	402	0	0	562
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)	7.5		67.2			67.2
Effective Green, g (s)	7.5		67.2			67.2
Actuated g/C Ratio	0.09		0.78			0.78
Clearance Time (s)	6.0		6.0			6.0
Vehicle Extension (s)	3.0		3.0			3.0
Lane Grp Cap (vph)	136		1426			1192
v/s Ratio Prot	c0.02		0.22			
v/s Ratio Perm						c0.37
v/c Ratio	0.20		0.28			0.47
Uniform Delay, d1	36.8		2.8			3.5
Progression Factor	1.00		1.00			1.00
Incremental Delay, d2	0.7		0.5			1.3
Delay (s)	37.6		3.3			4.8
Level of Service	D		A			A
Approach Delay (s)	37.6		3.3			4.8
Approach LOS	D		A			A
Intersection Summary						
HCM 2000 Control Delay			8.0		HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.44			
Actuated Cycle Length (s)			86.7		Sum of lost time (s)	12.0
Intersection Capacity Utilization			71.9%		ICU Level of Service	C
Analysis Period (min)			15			
c Critical Lane Group						

Approach	WB	NB	SB
Crosswalk Length (m)	2.59	2.26	2.26
Crosswalk Width (m)	1.20	1.20	1.20
Total Number of Lanes Crossed	2	2	2
Number of Right-Turn Islands	0	0	0
Type of Control	None	None	None
Corresponding Signal Phase	2	6	8
Effective Walk Time (s)	0.0	0.0	0.0
Right Corner Size A (m)	2.74	2.74	2.74
Right Corner Size B (m)	2.74	2.74	2.74
Right Corner Curb Radius (m)	0.00	0.00	0.00
Right Corner Total Area (sq.m)	7.51	7.51	7.51
Ped. Left-Right Flow Rate (p/h)	0	0	0
Ped. Right-Left Flow Rate (p/h)	0	0	0
Ped. R. Sidewalk Flow Rate (p/h)	0	0	0
Veh. Perm. L. Flow in Walk (v/h)	0	0	0
Veh. Perm. R. Flow in Walk (v/h)	0	0	0
Veh. RTOR Flow in Walk (v/h)	0	0	0
85th percentile speed (km/h)	40	40	40
Right Corner Area per Ped (sq.m)	0.0	0.0	0.0
Right Corner Quality of Service	-	-	-
Ped. Circulation Area (sq.m)	0.0	0.0	0.0
Crosswalk Circulation Code	-	-	-
Pedestrian Delay (s/p)	45.0	45.0	45.0
Pedestrian Compliance Code	Poor	Poor	Poor
Pedestrian Crosswalk Score	1.84	2.07	2.15
Pedestrian Crosswalk LOS	A	B	B

Approach	WB	NB	SB
Bicycle Flow Rate (bike/h)	0	0	0
Total Flow Rate (veh/h)	127	404	562
Effct. Green for Bike (s)	7.5	67.2	67.2
Cross Street Width (m)	7.40	8.51	7.40
Through Lanes Number	1	1	1
Through Lane Width (m)	3.70	3.70	3.70
Bicycle Lane Width (m)	0.00	0.00	0.00
Paved Shoulder Width (m)	0.00	0.00	0.00
Curb Is Present?	No	No	No
On Street Parking?	No	No	No
Bicycle Lane Capacity (bike/h)	167	1493	1493
Bicycle Delay (s/bike)	37.8	2.9	2.9
Bicycle Compliance	Poor	Good	Good
Bicycle LOS Score	2.11	2.62	2.83
Bicycle LOS	B	B	C



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 (9th 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 ¹	4	21	25	20	10	30
	10 Single Family Units ²	2	6	8	6	4	10
	Total	6	27	33	26	14	40
Existing Elementary School	409 Students ³	101	83	184	30	31	61

¹ITE Land Use Code 230; ²ITE Land Use Code 210; ³ITE 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	¹ -	-	-	-	¹ -	-	-	-
	SB	Left/Thru/Right	A	1	0.01	< 1	A	1	0.02	1

¹ No Left Turn Volume/Unopposed Movement



Map data © 2015 Google





Appendix E

Signal Warrant Analysis

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

Horizon Year: **2027**
 City: **City of Pickering**
 Major Street: **Liverpool Road** North/South? **Y**
 Minor Street: **Krosno Road**
 No. of Approach Lanes (Major): **1**
 Tee Intersection? **Y**
 Restricted Urban Flow Condition? **Y**
 PM Forecast Only? **Y**
 One Road or Both Roads are in Future? **Y**

Table 21 - Justification 7 Projected Volumes (OTM Book 12 - 2007 Version)

Justification	Description	Minimum Requirements			
		1 Lane Highways		2 Lane Highways	
		Free Flow (Rural)	Restricted (Urban)	Free Flow (Rural)	Restricted (Urban)
1. Minimum Vehicular Volume	A. Vehicle Volume, All Approaches (Average Hour)	480	720	600	900
	B. Vehicle Volume, Along Minor Streets (Average Hour)	120	170	120	170
2. Delay to Cross Traffic	A. Vehicle Volume, Major Street (Average Hour)	480	720	600	900
	B. Combined Vehicle and Pedestrian Volume Crossing Artery from Minor Streets (Average Hour)	50	75	120	170

Table 22 - Future Dev. Volume Expansion Required to Meet Justification

Roadway Condition	Threshold for AHV
Both intersecting roads exist; Development is Future	120%
One Road or Both intersecting roads are Future; Development is Future	150%

Time Period	Major Street Liverpool Road						Minor Street Krosno Road					
	Northbound			Southbound			Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
	AM											
PM	0	285	15	175	433	0	0	0	0	35	0	123

Volume	Average Hourly Volumes			Compliance (%)	Individual Justification Met?
	AM	PM	AHV		
Warrant 1	1A - All Approaches (Intersection)	1066	1066	148%	Yes
	1B - Minor St (Major Direction)	158	158	93%	No
Warrant 2	2A - Major St (Both Directions)	908	908	126%	Yes
	2B - Combined Crossing (Veh plus Peds)	35	35	47%	No

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

Horizon Year: **2032**
 City: **City of Pickering**
 Major Street: **Liverpool Road** North/South? **Y**
 Minor Street: **Krosno Road**
 No. of Approach Lanes (Major): **1**
 Tee Intersection? **Y**
 Restricted Urban Flow Condition? **Y**
 PM Forecast Only? **Y**
 One Road or Both Roads are in Future? **Y**

Table 21 - Justification 7 Projected Volumes (OTM Book 12 - 2007 Version)

Justification	Description	Minimum Requirements			
		1 Lane Highways		2 Lane Highways	
		Free Flow (Rural)	Restricted (Urban)	Free Flow (Rural)	Restricted (Urban)
1. Minimum Vehicular Volume	A. Vehicle Volume, All Approaches (Average Hour)	480	720	600	900
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Table 22 - Future Dev. Volume Expansion Required to Meet Justification

Roadway Condition	Threshold for AHV
Both intersecting roads exist; Development is Future	120%
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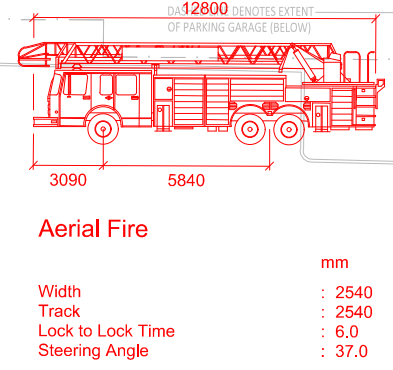
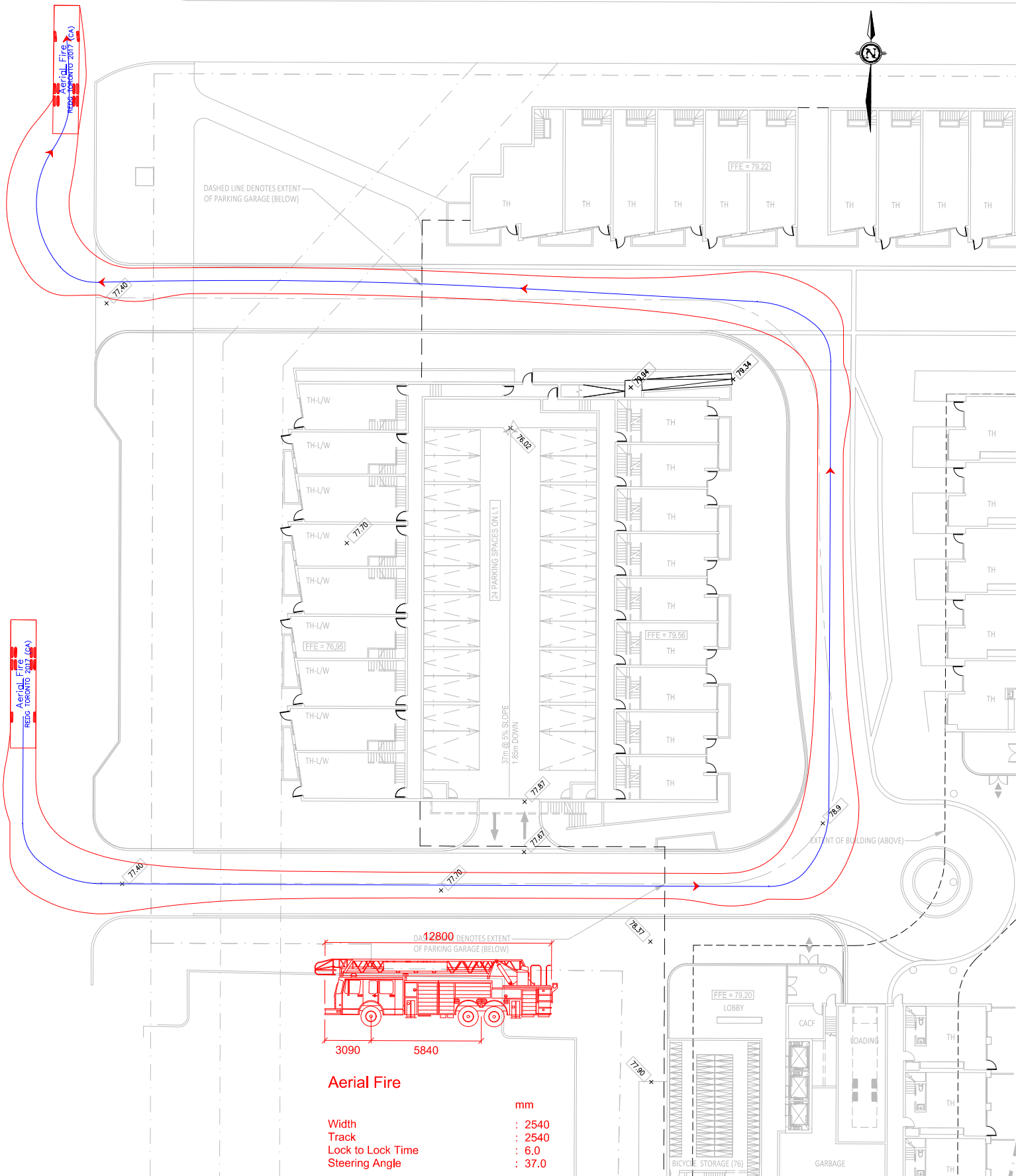
Time Period	Major Street Liverpool Road						Minor Street Krosno Road					
	Northbound			Southbound			Eastbound			Westbound		
	Left	Through	Right	Left	Through	Right	Left	Through	Right	Left	Through	Right
	AM											
PM	0	290	15	175	441	0	0	0	0	35	0	123

Volume	Average Hourly Volumes			Compliance (%)	Individual Justification Met?	
	AM	PM	AHV			
Warrant 1	1A - All Approaches (Intersection)		1079	1079	150%	Yes
	1B - Minor St (Major Direction)		158	158	93%	No
Warrant 2	2A - Major St (Both Directions)		921	921	128%	Yes
	2B - Combined Crossing (Veh plus Peds)		35	35	47%	No



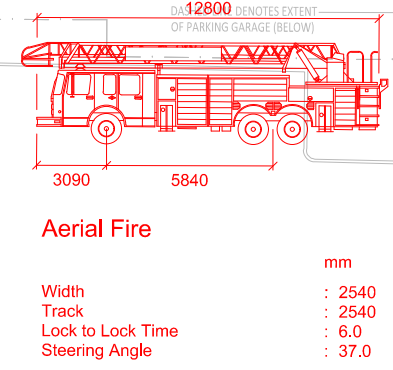
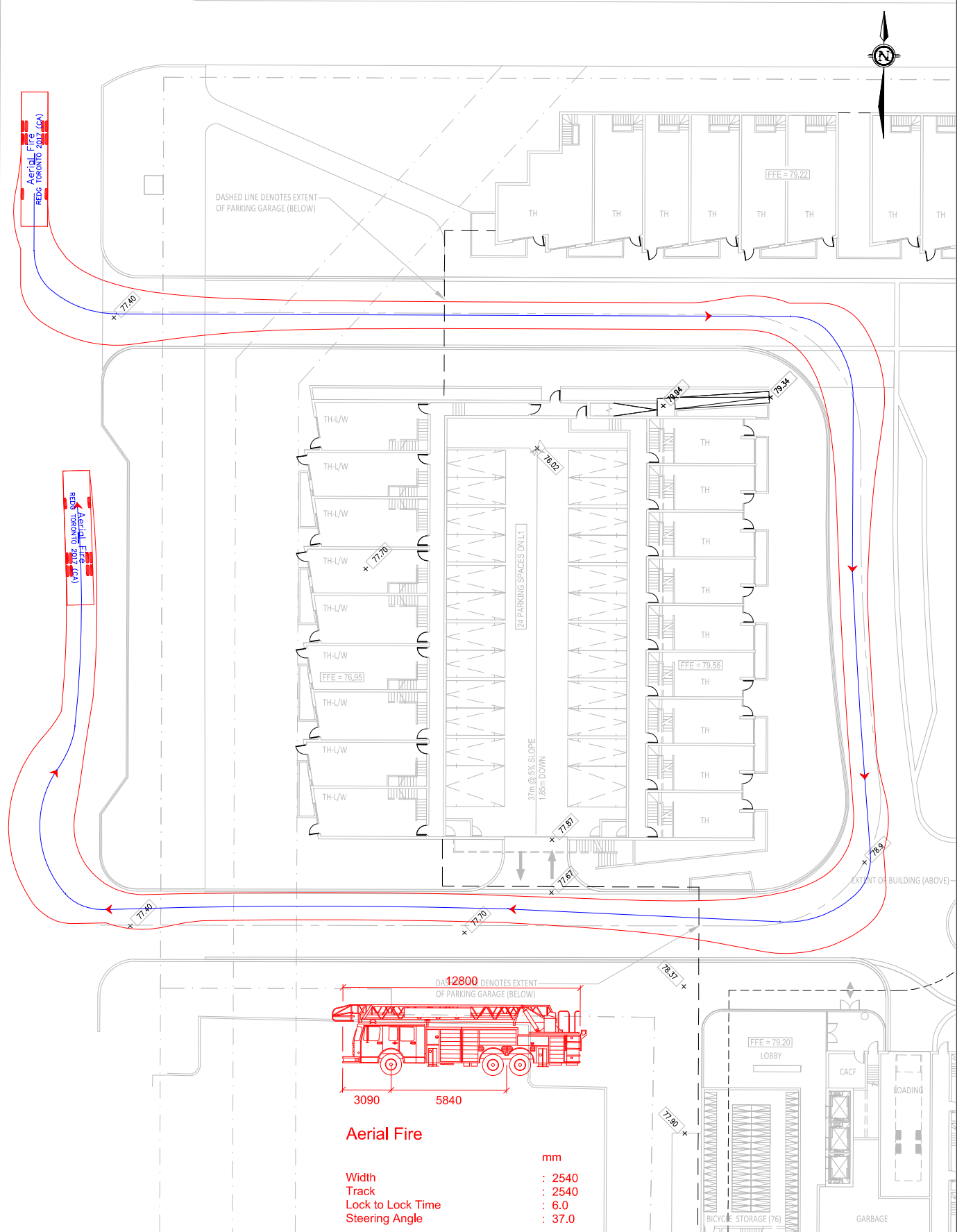
Appendix F

Vehicle Maneuvering Diagrams



Aerial Fire

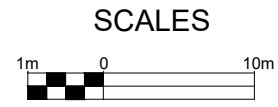
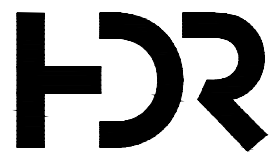
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Aerial Fire

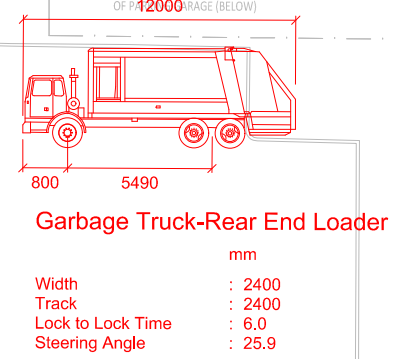
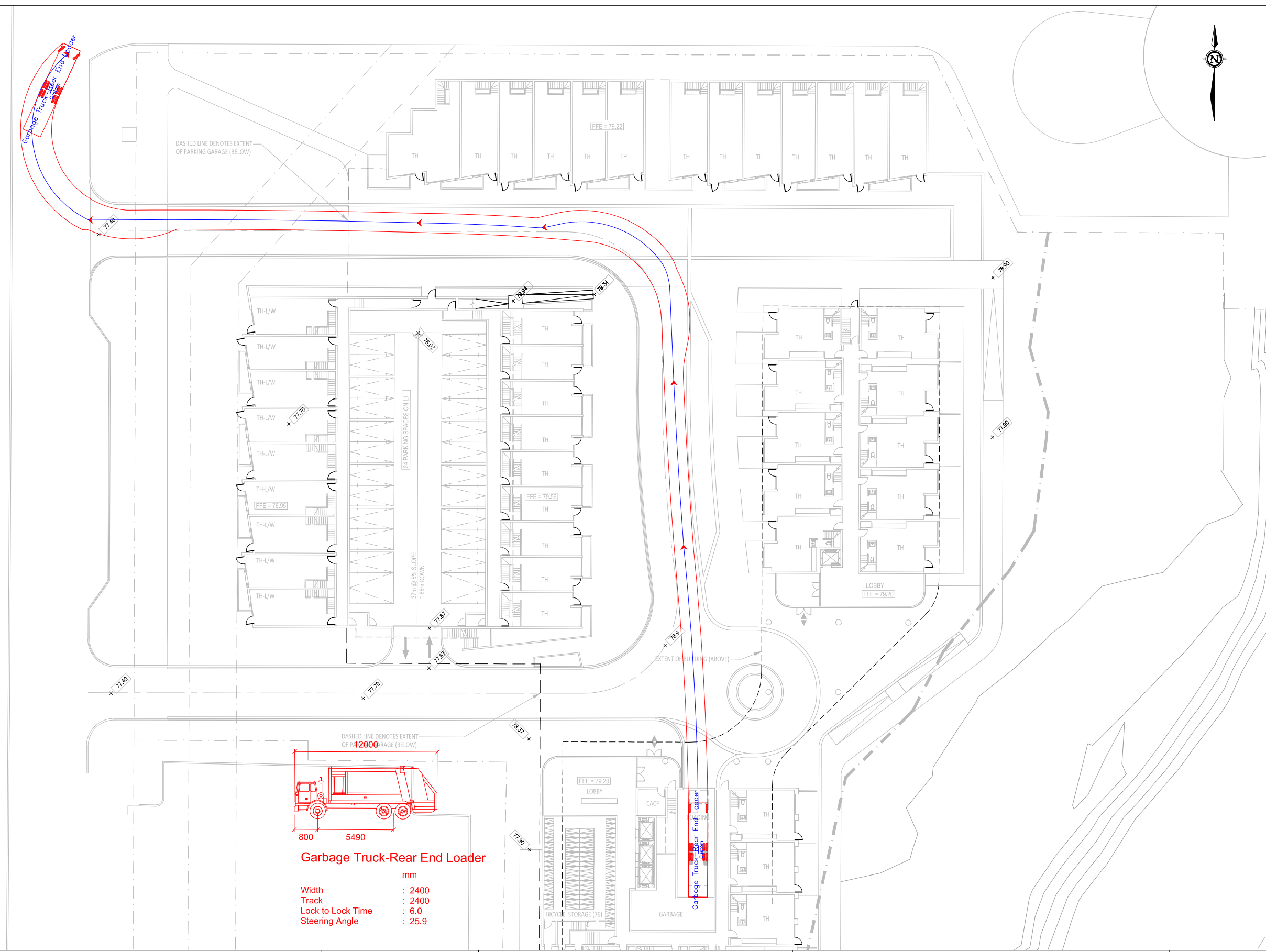
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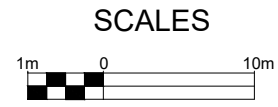
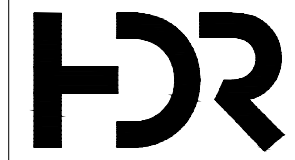


**591 LIVERPOOL TIS
VEHICLE TURNING SIMULATION
FIRE TRUCK - INBOUND & OUTBOUND**

DWG No.
1



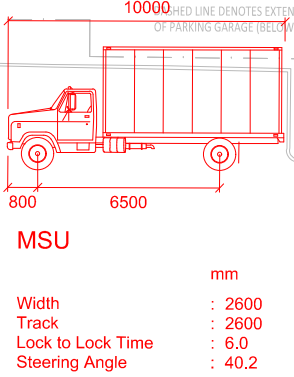
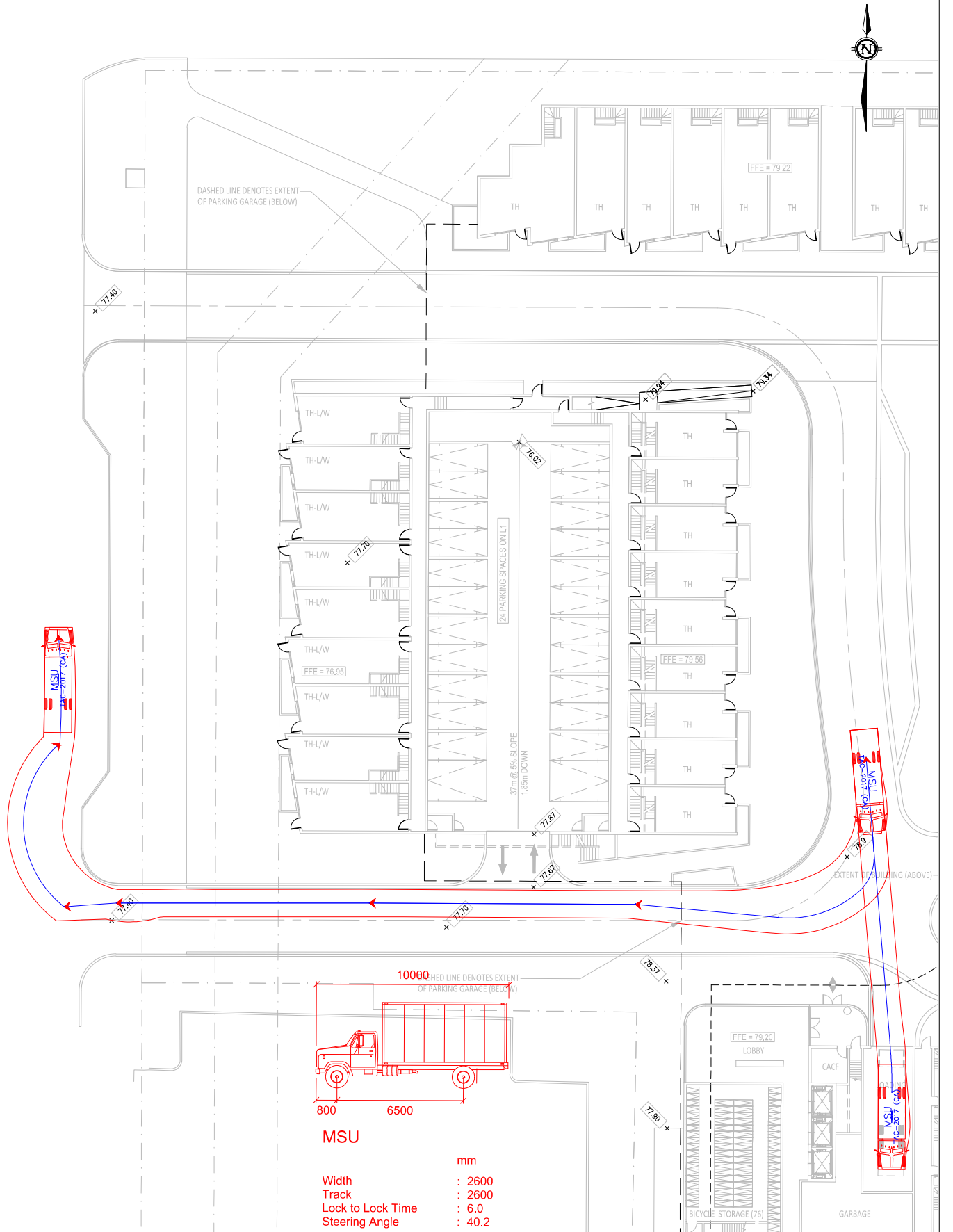
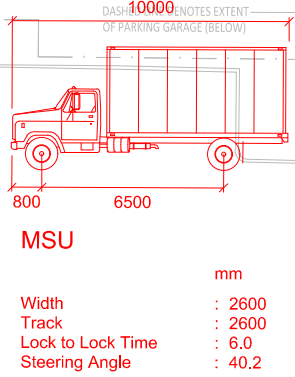
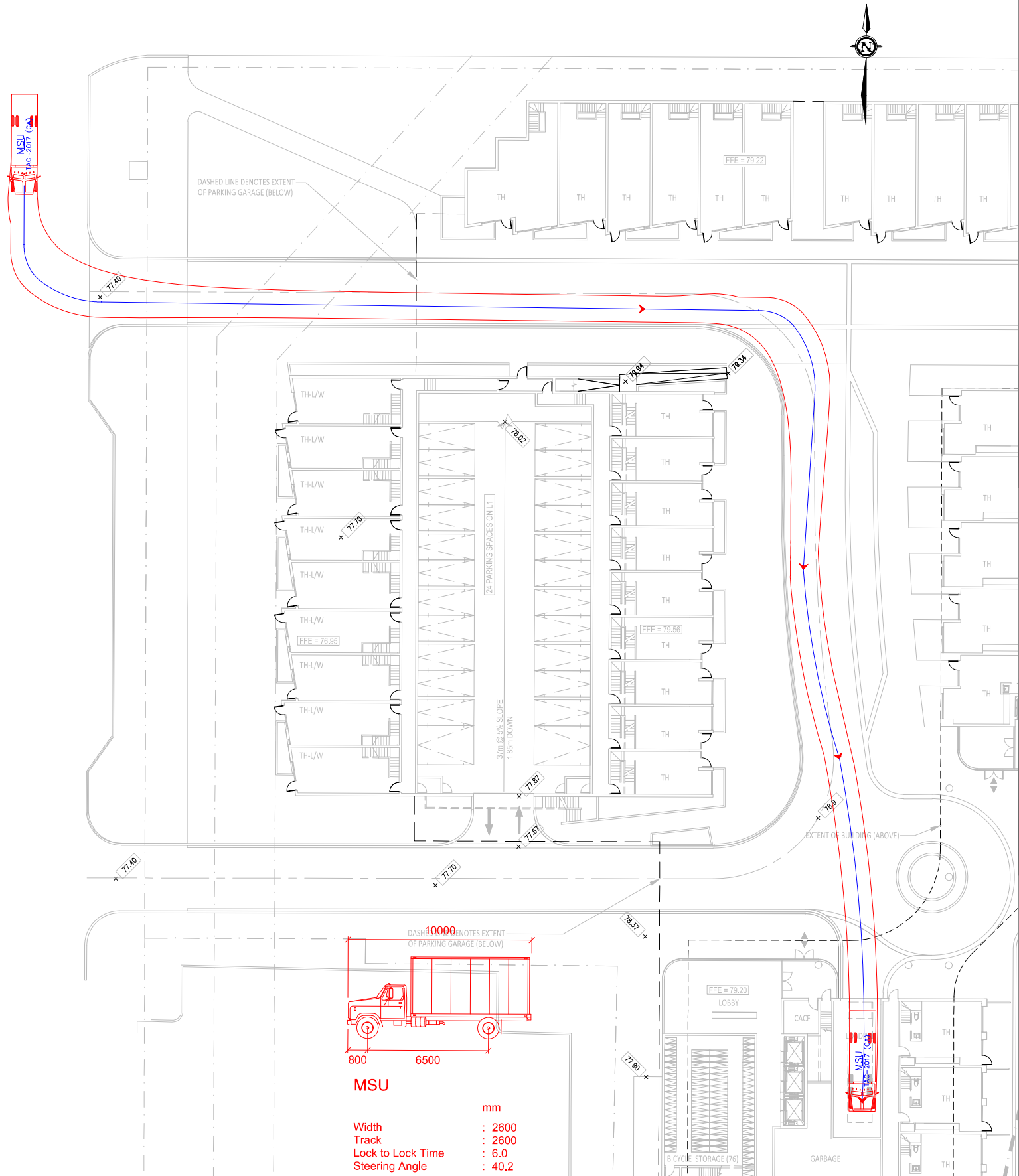
JUNE 2021



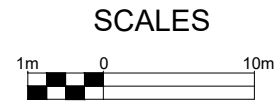
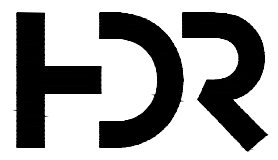
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 REAR LOAD TRUCK
 INBOUND & OUTBOUND**

DWG No.
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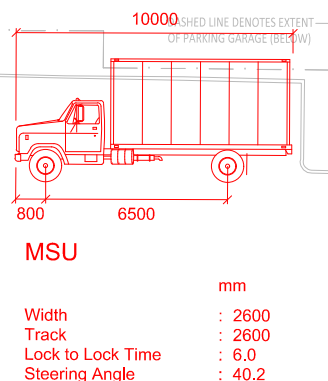
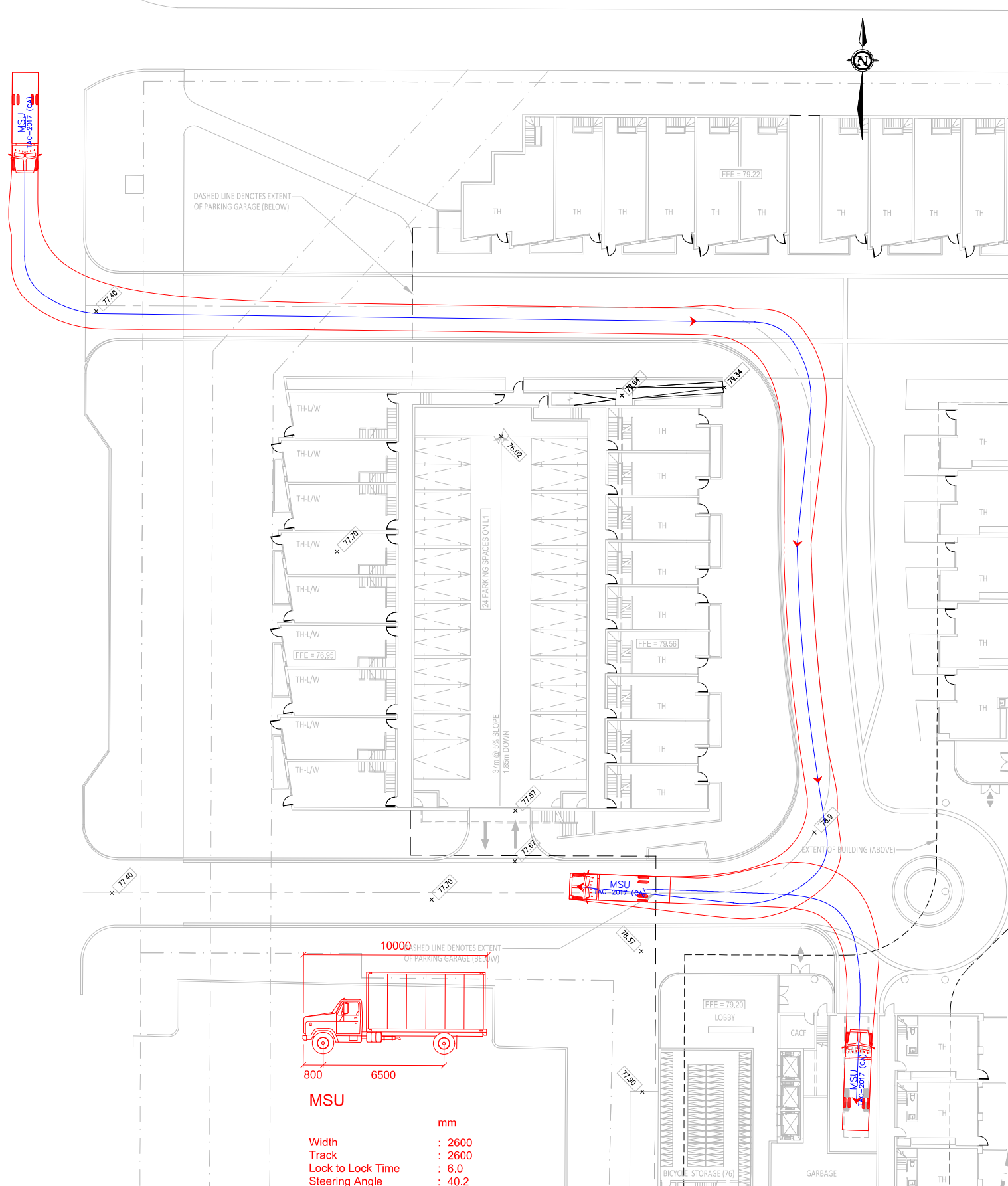


JUNE 2021

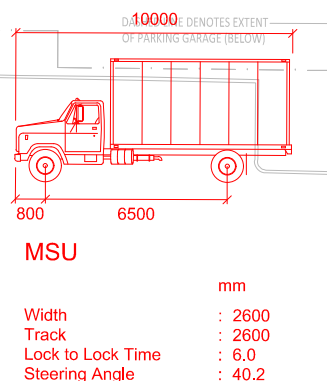
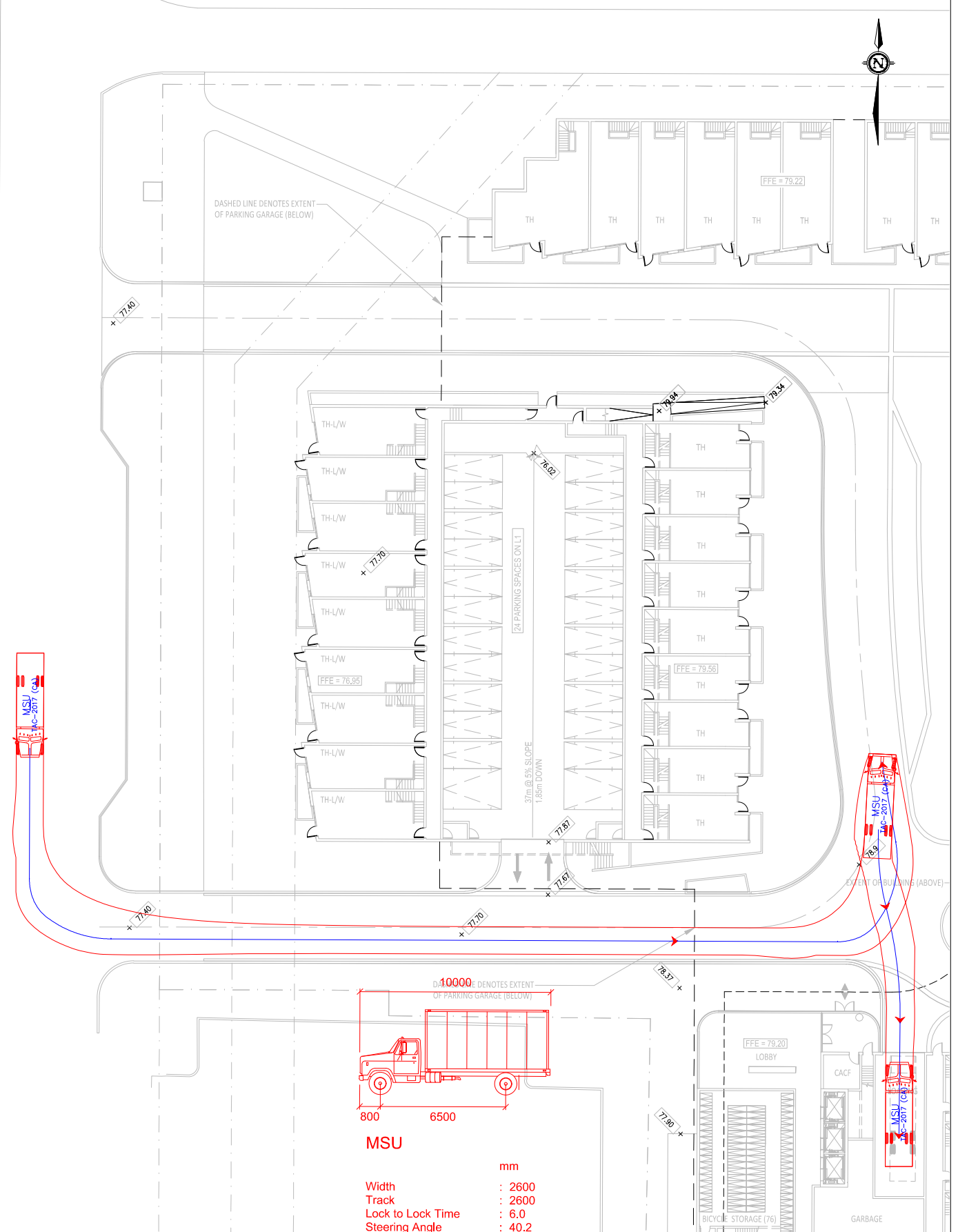


591 LIVERPOOL TIS
VEHICLE TURNING SIMULATION
MSU TRUCK - FRONT-IN
INBOUND & OUTBOUND

DWG No.
5



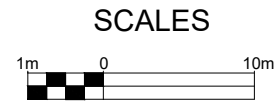
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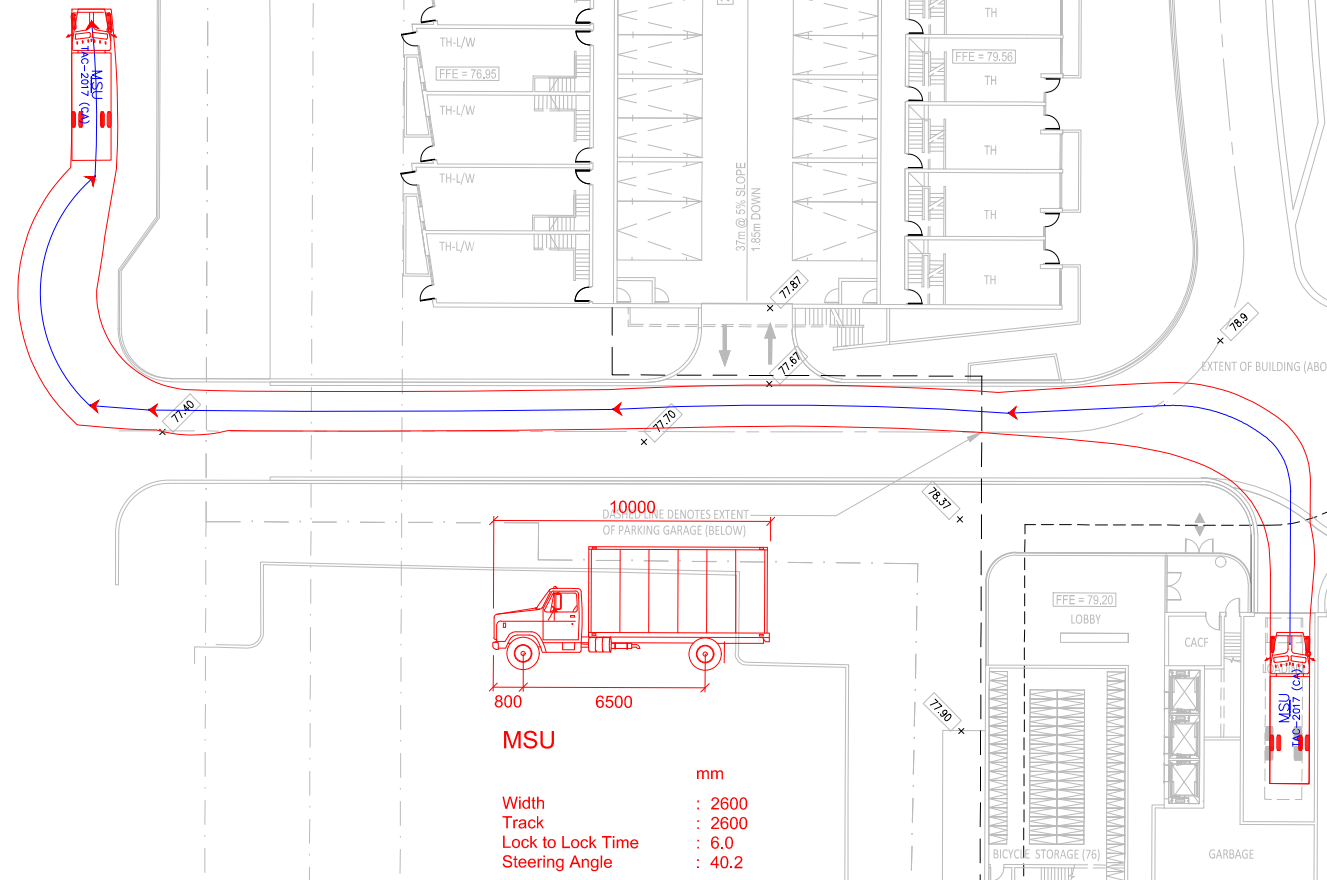
JUNE 2021



**591 LIVERPOOL TIS
 VEHICLE TURNING SIMULATION
 MSU TRUCK - REVERSE-IN
 INBOUND**

DWG No.

6



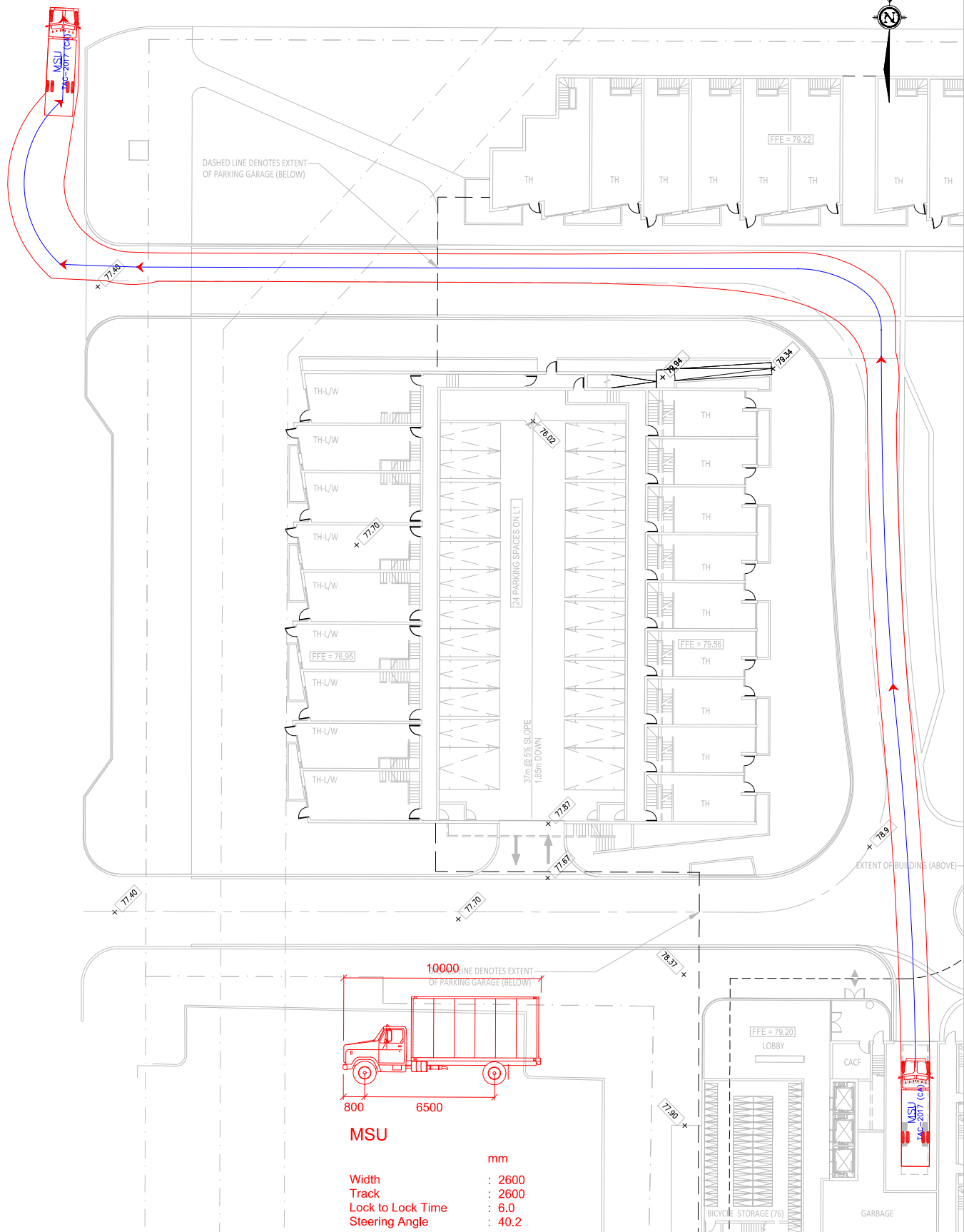
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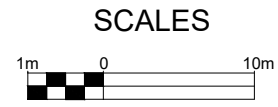
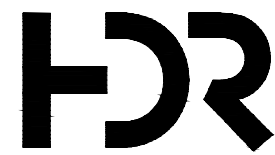
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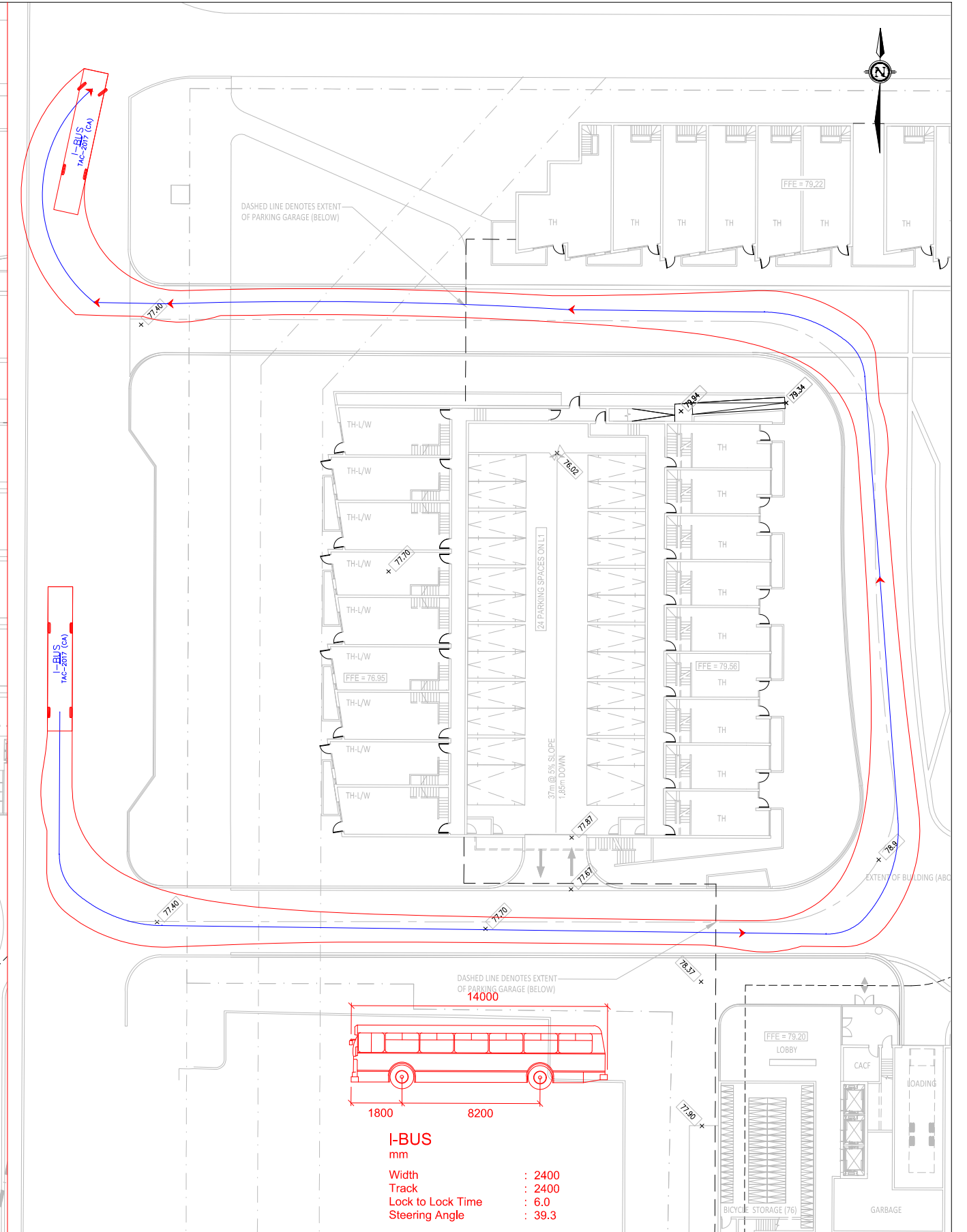
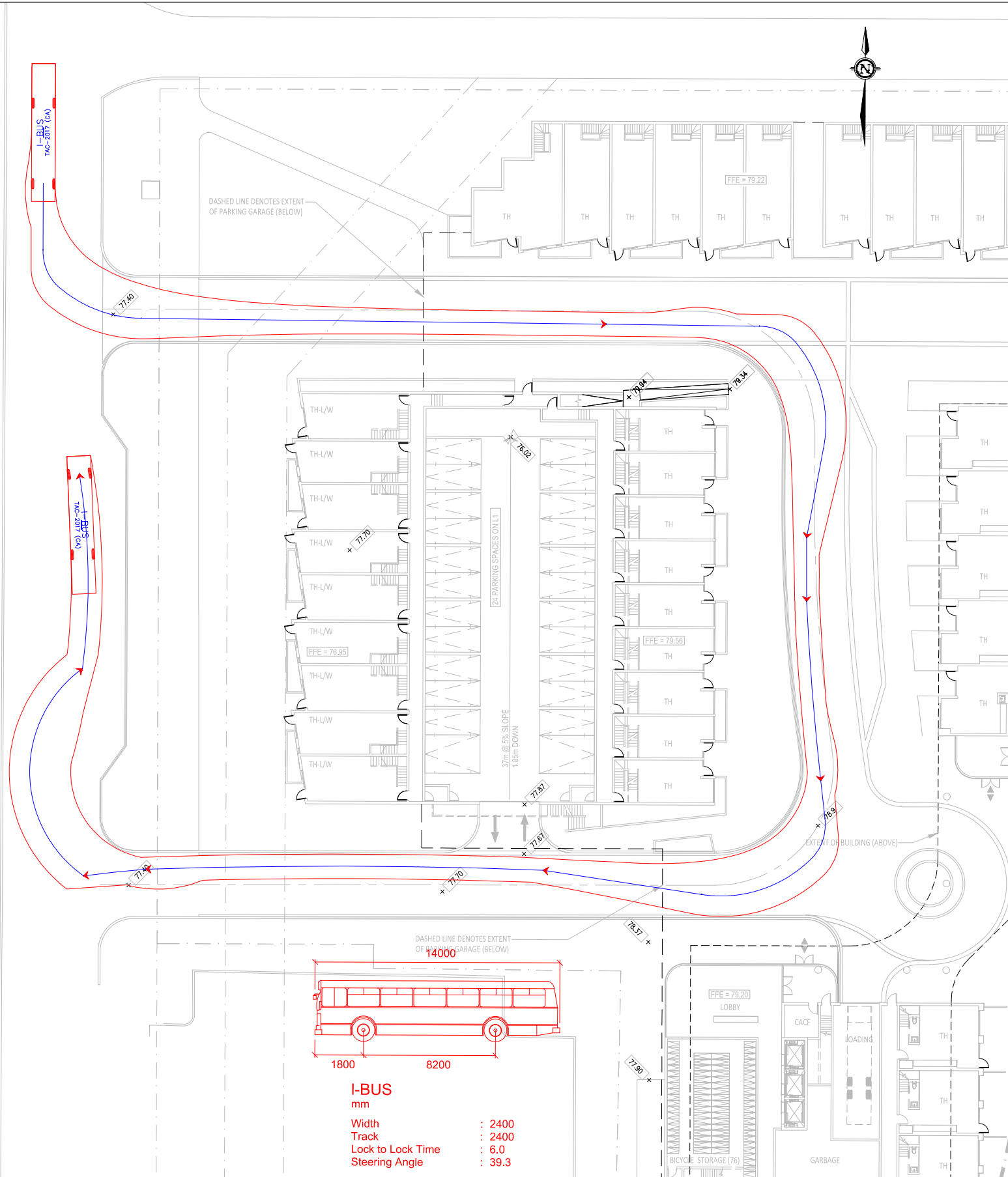
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JUNE 2021

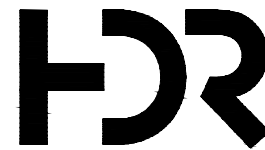


591 LIVERPOOL TIS
VEHICLE TURNING SIMULATION
MSU TRUCK - REVERSE-IN
OUTBOUND

DWG No.
7



JUNE 2021



SCALES



591 LIVERPOOL TIS
VEHICLE TURNING SIMULATION
INTERCITY BUS - INBOUND & OUTBOUND

DWG No.

8

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