



6 PLAZA INC

Transportation Brief

**666, 668, 672, 678, 682 Liverpool Road Residential Development,
Pickering, Ontario**



March 25, 2024

Plaza 6 Inc.
23 Automatic Road
Brampton, ON
L6S 4K6

Attention: Mr. Milan Shah

Transportation Brief – 666, 668, 672, 678, 682 Liverpool Road, Pickering, Ontario

Please find enclosed the Transportation Brief prepared for the proposed residential development at 666 Liverpool Road in the City of Pickering, Ontario.

Should you have any questions or wish to discuss our findings, please contact the undersigned at (613) 745-2213 x3017 or via email at estewart@dillon.ca.

Yours sincerely,

DILLON CONSULTING LIMITED

A handwritten signature in black ink that reads "E. Stewart".

Eric Stewart, P. Eng.
Associate

Our File: 24-9382

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1.0 Introduction

1.1 Purpose

This report documents the anticipated transportation impacts of a proposed 21-unit infill residential development spanning 666, 668, 672, 678, 682 Liverpool Road in Pickering, Ontario. The report follows the format of a transportation brief, documenting existing traffic operations within the vicinity of the site, the number of trips expected to be generated by the new residential development, and the potential impact those trips will have on the surrounding road network.

Figure 1 (next page) illustrates the site location and study area intersections.

1.2 Proposed Development

Figure 2 illustrates the conceptual development plan for the proposed development. The proposed residential development is to be located on Liverpool Road between Commerce Street and Annland Street and it will include 21-unit condo townhouse development with access to Liverpool Road located opposite Broadview Street.

1.3 Scope of Analysis

During the proposal stage, the City of Pickering indicated that a Transportation Impact Brief would be sufficient to accommodate their requirements in support of the development application. The study area includes the following intersections:

- Liverpool Road / Bayly Street;
- Liverpool Road / Annland Street; and,
- Liverpool Road / Commerce Street.

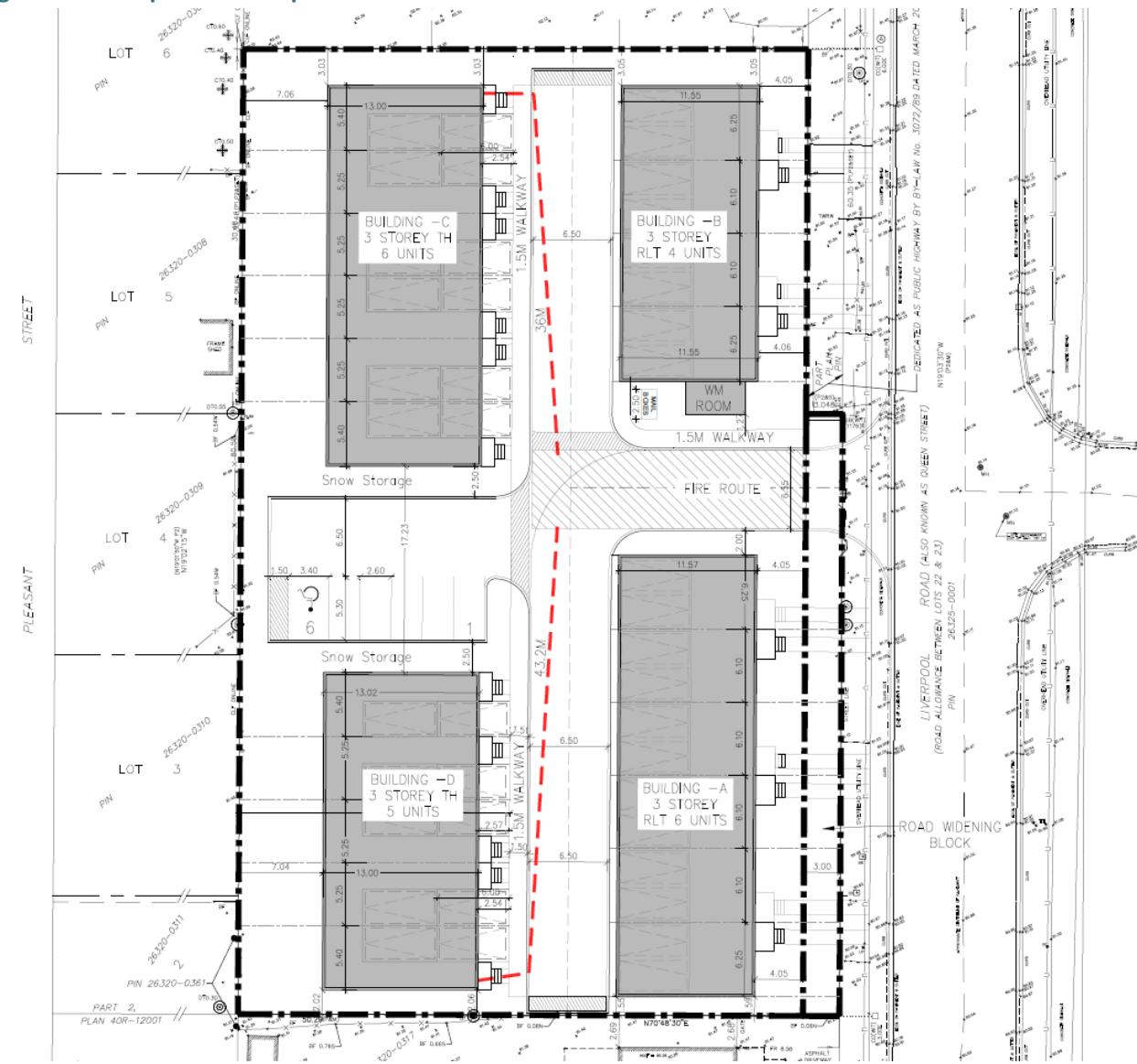
The traffic analysis discusses existing conditions and considers the impacts of traffic generated by the proposed residential development during the weekday AM and PM peak hours.

Figure 1: Site Location and Study Area Intersections**6 PLAZA INC**

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Figure 2: Conceptual Development Plan



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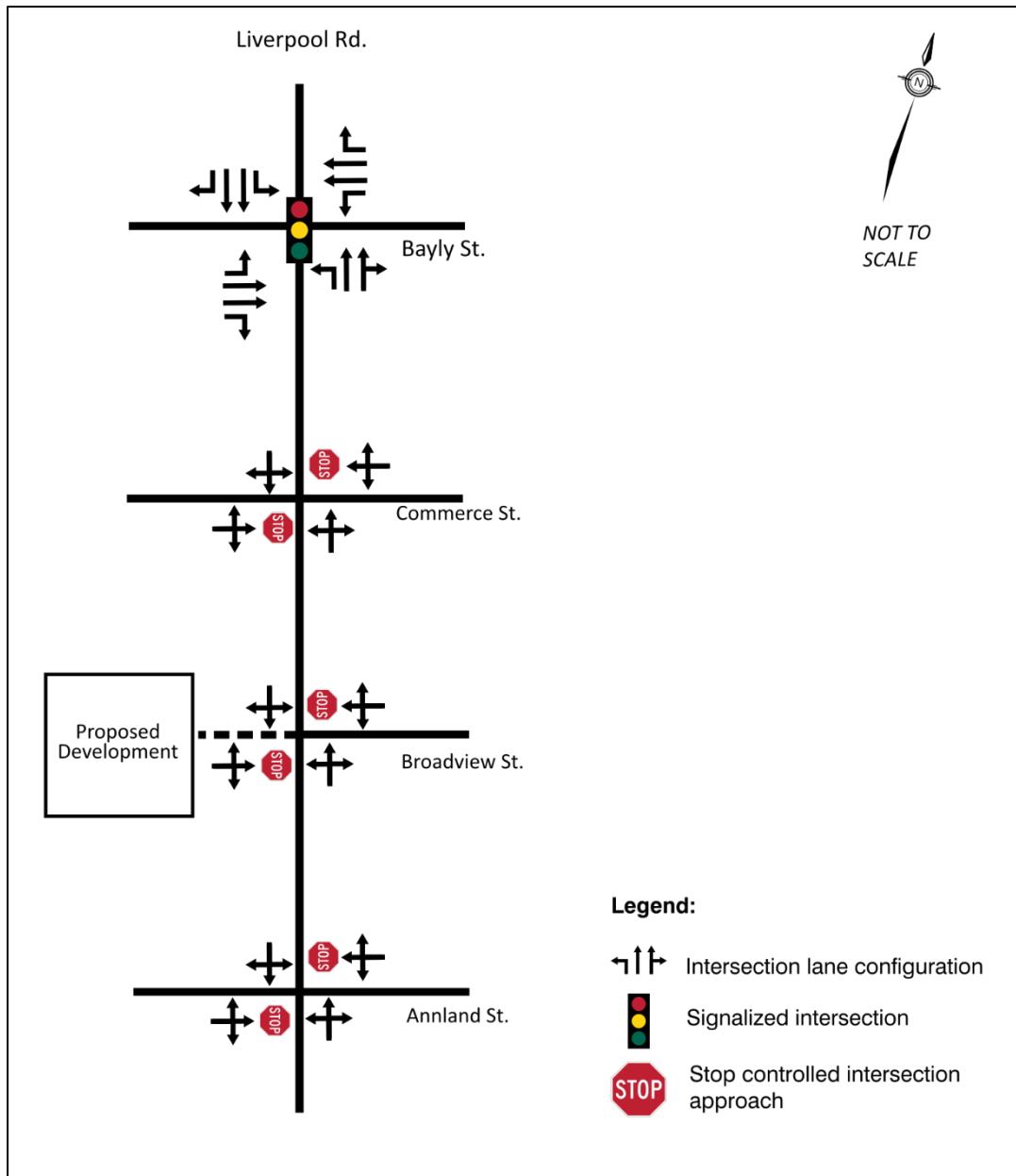
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2.0 Existing Conditions

2.1 Road Network

Figure 3 illustrates the existing lane configurations and traffic controls at the study intersections. The driveway for proposed development would be located opposite Broadview Street and it would be stop-controlled.

Figure 3: Existing Lane Configurations and Traffic Controls



The following describes the existing road network in the immediate study area:

Liverpool Road is a north-south road that falls partially under the jurisdiction of the City of Pickering and partially under the jurisdiction of the Region of Durham. South of Bayly Street, Liverpool Road is under City jurisdiction and is classified as a collector road with a posted speed limit of 40km/h. It has a two-lane urban cross section with sidewalks on both sides for its entire length south of Bayly Street. On-street parking is provided on both sides of Liverpool Road south of Annland Street as well as on the west side of Liverpool Road between Commerce Street and Annland Street.

Liverpool Road is an Arterial road north of Bayly Street and under the jurisdiction of the Region of Durham. Here, the road widens to a four-lane cross section with sidewalks on both sides and a posted speed limit of 50 km/h.

Broadview Street is under the jurisdiction of the City of Pickering. The street is a two-lane east-west local road with a posted speed limit of 40 km/h. It extends between Liverpool Road to Annland Road. The proposed development would have a driveway on Liverpool Road, opposite Broadview Street.

Bayly Street is under the jurisdiction of the Region of Durham; it runs east-west and spans across Pickering and Ajax. The street is classified as an arterial road that has a four-lane cross section with a posted speed limit of 50 km/h. Bayly Street has sidewalks on the south side west of Liverpool Road and sidewalks on both sides east of Liverpool Road.

Commerce Street is under the jurisdiction of the City of Pickering. The street is a two-lane east-west local road with a posted speed limit of 40 km/h. To the east, Commerce Street dead ends into Annland Street. To the west, Commerce Street dead ends into Front Road.

Annland Street is a two-lane east-west collector road under the jurisdiction of the City of Pickering. To the west of Liverpool Road, Annland Street turns north into Front Road, which runs approximately north-south parallel to Frenchman's Bay. To the east of Liverpool Road, Annland Street turns north and runs approximately north-south to Krosno Boulevard, where it terminates. A sidewalk is located on the south side and it has a posted speed limit of 40 km/h.

2.2

Transit Network

Durham Region Transit (DRT) operates four transit routes in the study area. The Pickering GO Station is located on Bayly Street just east of Liverpool Road. The study area is also within an Urban On-Demand Area, which provides an on-demand shared ride service to transit stops within the area.

Table 1 provides a summary of the DRT and GO Transit routes that serve the Study Area.

Table 1: Summary of DRT and GO Transit Service

Bus/Route	Approximately Headways during Peak Periods
Liverpool Road	
101 Bay Ridges	Weekday AM – 30 Minutes Weekday PM – 30 Minutes
Bayly Street	
120 Whites (DRT)	Weekday AM – 30 Minutes Weekday PM – 30 Minutes
291 Harwood-Kingston (DRT)	Weekday PM – 120 Minutes
917 Bayly-Consumers (DRT)	Weekday AM – 30 Minutes Weekday PM – 30 Minutes
GO Transit	
Lakeshore East Train (GO)	Weekday AM – 15 Minutes Westbound, 30 Eastbound Weekday PM – 30 Minutes Westbound, 15 Eastbound
41, 45, 47, 48 – Hamilton/Pickering (GO)	Weekday AM – 25 to 40 Minutes Westbound, 40 Minutes Eastbound Weekday PM – 30 to 60 Minutes Westbound, 30 Minutes Eastbound
94 – Pickering/Square One	Weekday AM – Approximately 60 Minutes Weekday PM – Approximately 60 Minutes

2.3

Active Transportation Network

Sidewalks and bike sharrows are located on both sides of Liverpool Road, providing connections to commercial plazas, parks and transit stops to the north and to the Fairport Yacht Club and Waterfront Trail to the south.

There is an approximately 2.5-metre sidewalk on the south side of Annland Street as part of the waterfront trail; it travels west from Liverpool Road to the waterfront and continues north into Progress Frenchman's Bay East Park. Commerce Street provides a sidewalk on the north side between Liverpool Road and Annland Street.

2.4

Traffic Volumes

For the intersections of Bayly Street/Liverpool Road and Bayly Street/Annland Street, traffic counts were collected in September 2023. Consistent with 640 Liverpool Road TIA report, a 0.5% growth rate was applied to factor the data to a 2024 baseline year. This growth rate was applied to all turning movements, except for turning movements to/from Annland street since this area is developed and not anticipated to see additional traffic growth.

For the intersections of Liverpool Road/Commerce Street, the City provided traffic counts from May 2015 which were then factored up to the 2024 horizon year by assuming a 2% growth rate. The traffic count was then balanced with the adjacent intersections (which had newer traffic counts from Summer 2023)

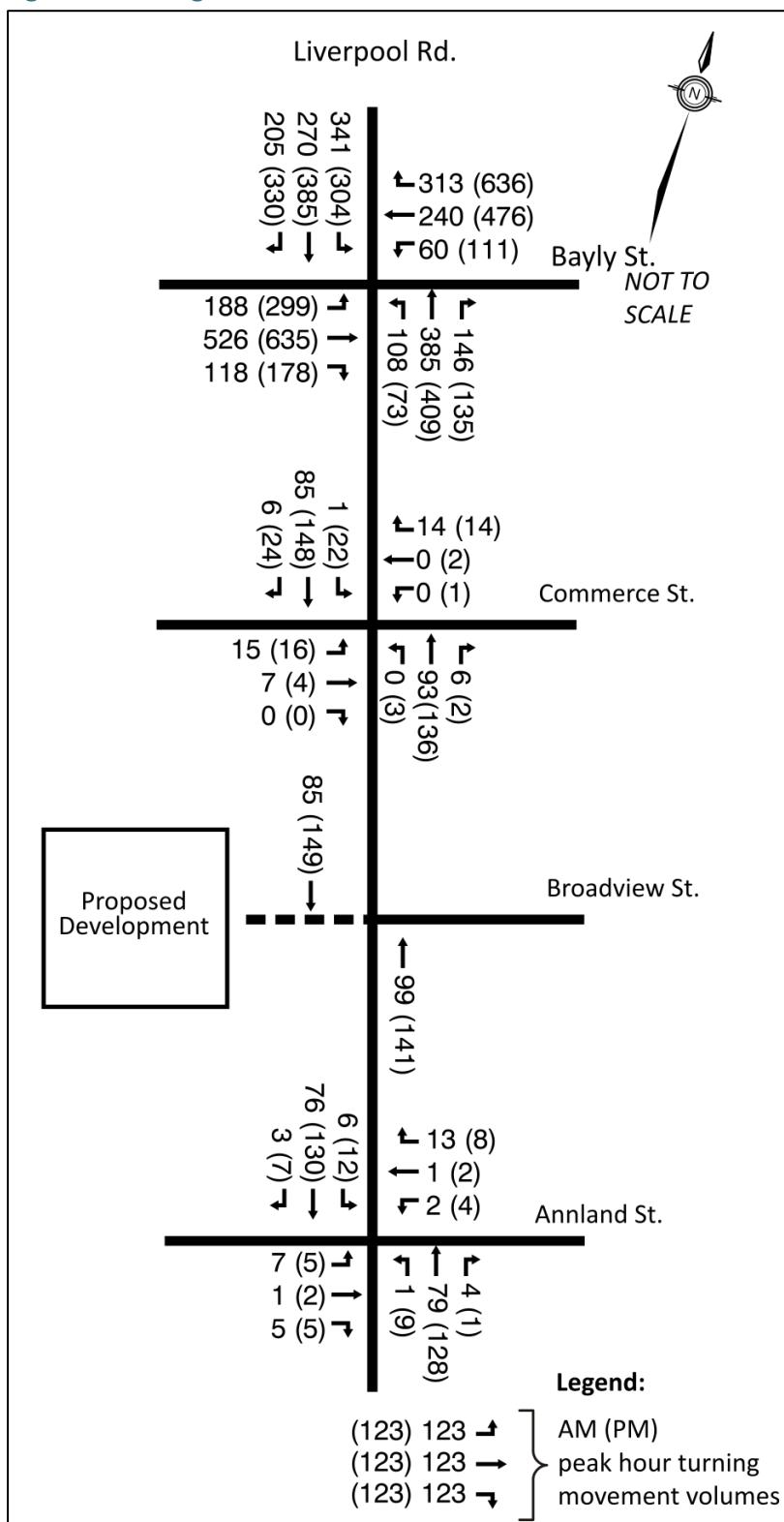
Table 2 summarizes the turning movement counts used in this analysis. Turning movement count data is available in **Appendix A**.

Table 2: Summary of Traffic Counts

Location	Count Date
Liverpool Road and Commerce Street	Wednesday, May 20, 2015
Liverpool Road and Bayly Street	Tuesday, September 12, 2023
Liverpool Road and Annland Street	Tuesday, September 12, 2023

Figure 4 illustrates the existing 2024 peak hour traffic volumes at the study area intersections.

Figure 4: Existing 2024 Traffic Volumes



3.0**Existing Intersection Operations**

Intersection operational analyses were completed using Trafficware's Synchro software (Version 11), which is based on the Highway Capacity Manual (HCM) methodology.

The volume-to-capacity (v/c) ratio, average vehicle delay (delay), and level of service (LOS) were noted for all turning movements at signalized intersections. At unsignalized intersection, the v/c ratio, delay, and LOS were noted for stop-controlled movements only. The existing traffic control signal timing plans are provided in **Appendix B**, and Synchro analysis worksheets reports are provided in **Appendix C**.

The following subsections summarize the study area intersections operations for existing traffic conditions. Critical movements are also identified, which the City of Pickering TIA Guidelines define as:

- Any individual through or shared through/turning movement operating at a v/c ratio of 0.85 or greater;
- Any individual exclusive turning movement operating at a v/c ratio of 0.90 or greater
- Any individual movement at a signalized intersection operating at LOS F; and,
- Any individual movement at an unsignalized intersection operating at LOS D or worse.

3.1**Liverpool Road and Bayly Street**

Table 3 summarizes the intersection operations at Liverpool Road and Bayly Street. The intersection operates below capacity under existing conditions. All individual movements operate at LOS D or better with a v/c ratio below critical levels for all individual movements and acceptable levels of delay.

Table 3: Existing Intersection Operations at Liverpool Road and Bayly Street

Movement	AM Peak Hour			PM Peak Hour		
	v/c	LOS¹	Delay (s/veh)	v/c	LOS¹	Delay (s/veh)
EB Left	0.56	D	36.1	0.85	D	20.9
EB Through	0.77	D	45.1	0.64	C	3
EB Right	0.08	C	32.6	0.12	C	0.6
WB Left	0.29	C	30.9	0.44	C	5.2
WB Through	0.36	D	35.4	0.54	C	2.3
WB Right	0.37	B	18.8	0.87	D	13.6
NB Left	0.27	C	24.1	0.14	B	0.5
NB Through/Right	0.57	C	33.8	0.65	D	4
SB Left	0.61	B	17.9	0.67	C	7.2
SB Through	0.18	B	16.5	0.46	C	1.8
SB Right	0.15	B	12.6	0.22	C	0.9

Notes:

¹ Level of Service (LOS), applied to an intersection, is a measure qualifying the amount of delay experienced by motorists, expressed either for specific turning movements or for the intersection as a whole. A more detailed explanation of LOS is provided in **Appendix D**.

3.2

Liverpool Road / Commerce Street

Table 4 summarizes the intersection operations. The intersection is currently operating below capacity; the eastbound approach at the intersection currently operates at LOS B and the westbound at LOS A during both the AM peak hour and PM peak hour, with minimal delays. Further, both approaches operate well within capacity for both analysis periods.

Table 4: Existing Intersection Operations at Liverpool Road and Commerce Street

Movement	AM Peak Hour			PM Peak Hour		
	v/c	LOS ¹	Delay (s/veh)	v/c	LOS ¹	Delay (s/veh)
EB	0.04	B	10.7	0.05	B	12.3
WB	0.02	A	9.2	0.03	A	9.6

3.3

Liverpool Road / Annland Street

Table 5 summarizes the intersection operations. The two-way stop-controlled intersection is operating below capacity under existing conditions; All movements operate at LOS B or better during both peak hours with low levels of delay.

Table 5: Existing Intersection Operations at Liverpool Road and Annland Street

Movement	AM Peak Hour			PM Peak Hour		
	v/c	LOS ¹	Delay (s/veh)	v/c	LOS ¹	Delay (s/veh)
EB	0.03	B	10.3	0.02	B	10.5
WB	0.03	A	9.5	0.02	B	10.2

4.0 Background Developments

4.1 591 Liverpool Road

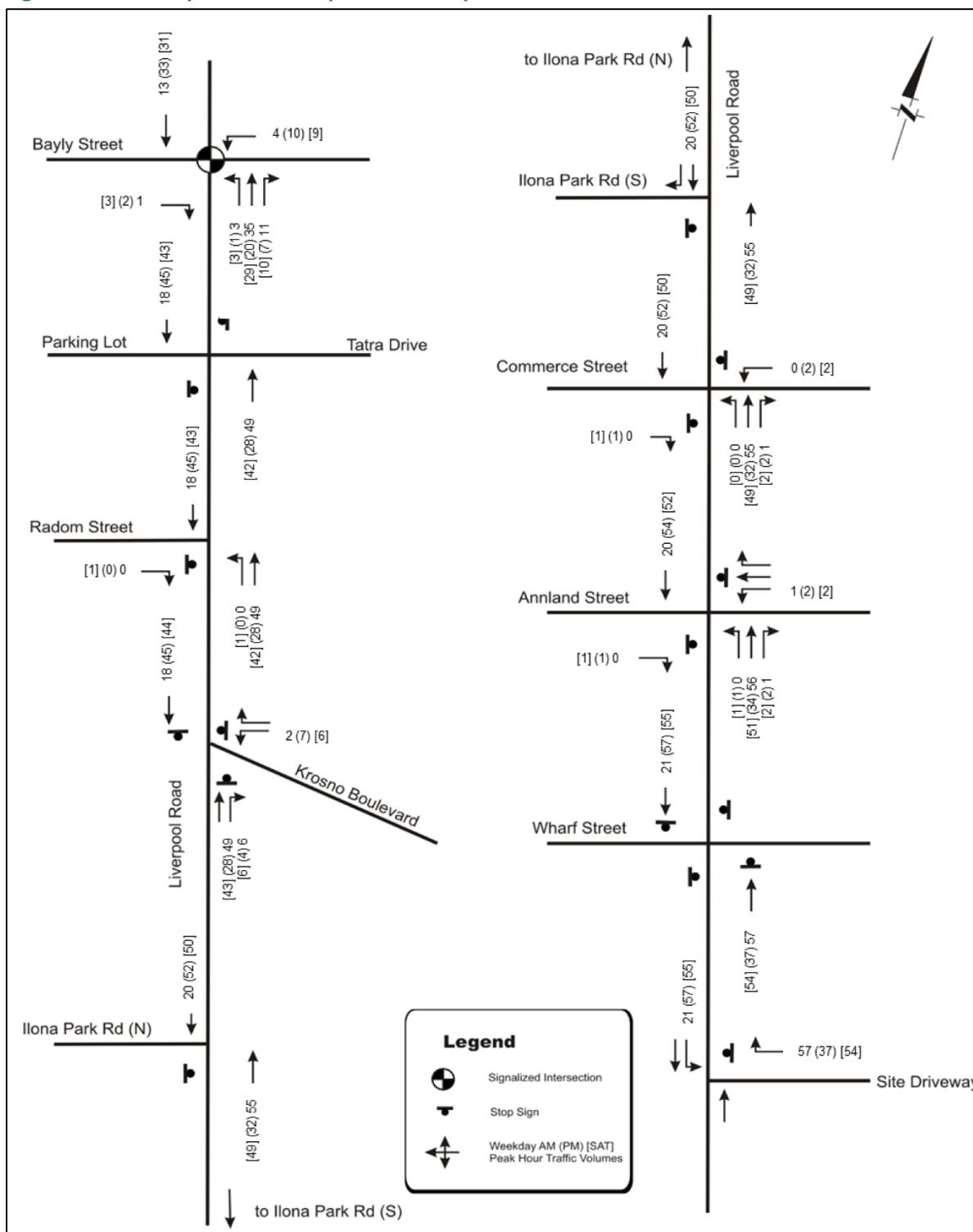
A Traffic Impact Study (TIS) dated June 2021¹ identifies a proposed development at 591 Liverpool Road with 201 residential units and 250 square metres (2,690 square feet) of commercial space. The proposed development is anticipated to generate 21 inbound and 57 outbound vehicle trips during the weekday AM peak hour, and 62 inbound and 40 outbound vehicle trips during the weekday PM peak hour.

Figure 5 (see next page) illustrates the number of vehicle trips expected to be generated by the proposed development at the various study area intersections. In the vicinity of the proposed development at 666, 668, 672, 678, 682 Liverpool Road, this shows at most an additional 55 vehicles per hour northbound during the weekday AM peak hour and 55 vehicles per hour southbound during the weekday PM peak.

This is less than one vehicle per minute on average and this is not anticipated to have a significant impact on traffic operations. The Traffic Impact Study for the proposed development at 591 Liverpool Road concluded that the existing transportation network can accommodate the traffic generated by that proposed development.

¹ https://www.pickering.ca/media/1mrhh2sg/591liverpool_rd_tis-210629.pdf

Figure 5: 591 Liverpool Road Proposed Development Site Generated Traffic



Source: 591 Liverpool Road Traffic Impact Study, June 2021, Exhibit 12

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4.2

640 Liverpool Road

A Traffic Brief was completed in September 2019 by Dillon Consulting for the development of 640 Liverpool Road. This proposed development is to be located south of 666 Liverpool Road and consists of 51 townhouses, with 10 of those units providing live-work units.

Table 6 summarizes the number of vehicle trips expected to be generated by the proposed development. Based on the ITE trip generation rates for townhouses, it is anticipated that the development at 640 Liverpool Road will produce 24 vehicle trips (7 inbound and 17 outbound) during the weekday AM peak hour and 29 vehicle trips (16 inbound and 13 outbound) during the weekday PM peak hour.

Table 6: Estimated Number of Vehicle Trips Generated by 640 Liverpool Road Development

	AM Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total
Single Family Attached Housing						
(ITE Land Use Code 215) – Peak Hour of Adjacent Street Traffic						
% in/out, trip generation rates	31%	69%	0.48	57%	43%	0.57
Vehicle trips (51 townhouses)	7	17	24	16	13	29

Considering the minimal number of anticipated new trips and the capacity analysis results provided in section 3, the proposed development at 640 Liverpool Road is expected to have minimal impact on the study area intersections. This intersection of Bayly Street/Liverpool Road is designed to accommodate relatively high volumes of traffic; therefore, the additional 17 peak hour vehicle trips will have a negligible impact on the intersection operations.

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5.0 Site Traffic Volumes

This section outlines the estimated number of new trips produced by the proposed development, and the anticipated impacts these trips will have on the surrounding road network.

5.1 Trip Generation

Vehicle trip generation was estimated based on the published rates within the Institute of Transportation Engineers' (ITE) *Trip Generation Manual, 11th edition*. ITE Land Use Code #220: *Multifamily Housing (Low-Rise)* was used since this corresponded most closely to proposed 21-unit condo townhouse development; site generated trips are summarized in **Table 7**.

Table 7: Estimated Number of Vehicle Trips Generated by the Proposed Development

	AM Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total
Multifamily Housing (Low-Rise)						
(ITE Land Use Code 220) – Peak Hour of Adjacent Street Traffic						
% in/out, trip generation rates	24%	76%	0.40	63%	37%	0.51
Vehicle trips (21 townhouses)	2	6	8	7	4	11

Figure 6 (see next page) illustrates the estimated assignment of trips to the various accesses and the road network. The majority of the trips are expected to travel to/from the north of the site via Liverpool Road.

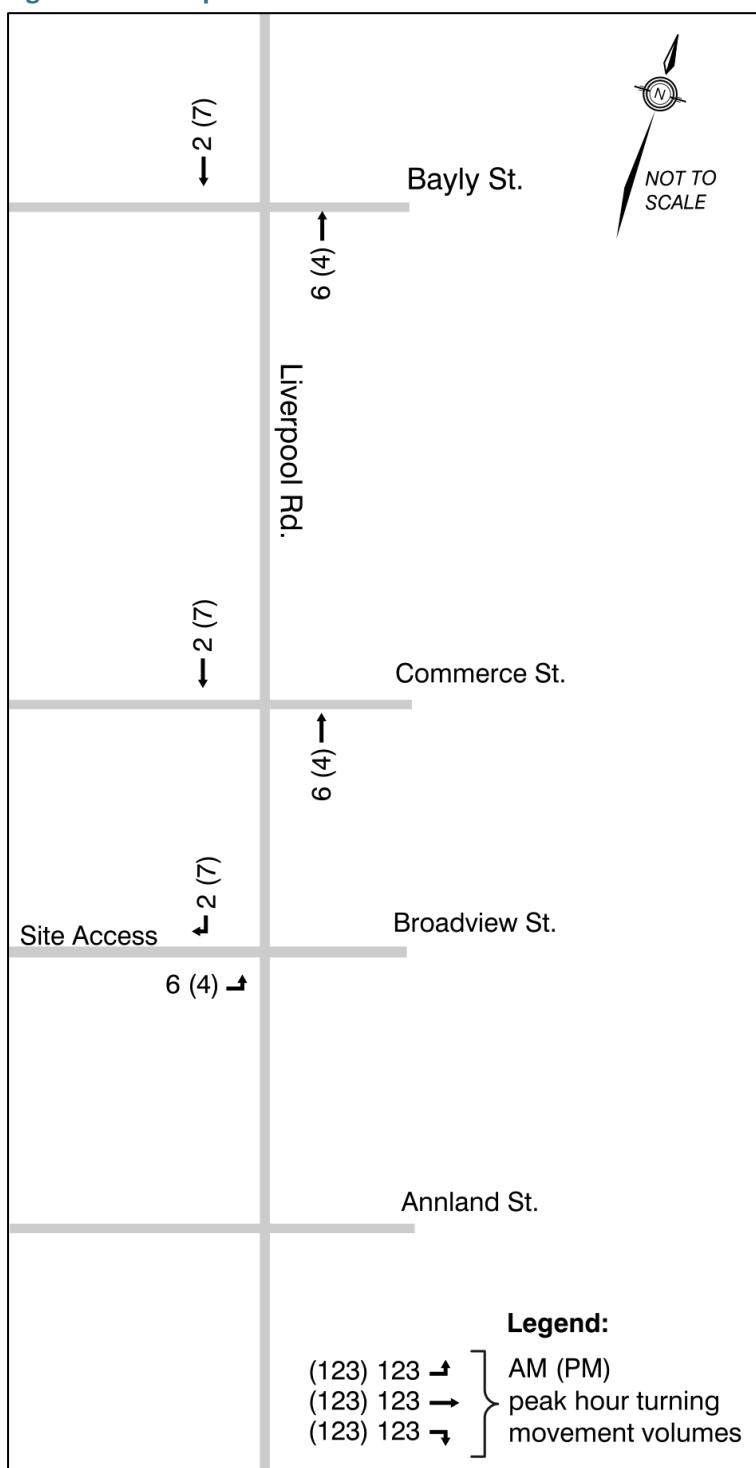
5.2 Impacts of Site Trips

Based on the ITE trip generation rates for townhouses, it is anticipated that the proposed development will generate 8 vehicle trips (2 inbound and 6 outbound) during the weekday AM peak hour and 11 vehicle trips (7 inbound and 4 outbound) during the weekday PM peak hour. This equates to one vehicle trip per direction every eight to thirty minutes on Liverpool Road.

Considering the minimal number of anticipated new vehicle trips, and that the intersections of Liverpool Road/Commerce Street and Liverpool Road/Annland Street are presently operating well with ample capacity, the proposed development is expected to have negligible impact on the previously mentioned intersections.

Further, the limited number of additional trips will also have minimal impact on Liverpool Road/Bayly Street. This intersection is designed to accommodate high volumes of traffic, therefore the maximum 7 directional peak hour trips produced by the proposed development is expected to have an insignificant impact on the performance of the intersection. No additional infrastructure or traffic control measures are required as a result of this proposed development.

Figure 6: Site Trips



6.0 Summary and Conclusions

6.1 Summary

Dillon was retained 6 Plaza Inc. to complete a transportation impact brief for a proposed residential development at 666, 668, 672, 678, and 682 Liverpool Road in Pickering, Ontario. The proposed development is for 21 condo townhouse units located on Liverpool Road between Commerce Street and Annland Street, opposite Broadview Street.

This transportation impact brief analyzed the following intersections:

- Liverpool Road / Bayly Street;
- Liverpool Road / Annland Street; and,
- Liverpool Road / Commerce Street.

The traffic analysis considered the impact of traffic generated by the proposed residential development during the AM and PM peak hours. The proposed development is anticipated to generate:

- 8 vehicle trips (2 inbound and 6 outbound) during the AM peak hour; and,
- 11 vehicle trips (7 inbound and 4 outbound) during the PM peak hour.

The proposed development will result in one additional trip per direction every eight to thirty minutes on average on Liverpool Road.

6.2 Conclusions

- The signalized intersection at Liverpool Road/Bayly Street presently operates acceptably. The additional trips from the proposed development are anticipated to have a negligible impact on the overall intersection performance.
- The stop-controlled intersections at Liverpool Road/Commerce Street and Liverpool Road/Annland Street presently operate well, and are anticipated to continue to operate well with the addition of traffic from the proposed development.
- The City may consider signal timing adjustments at Liverpool Road/Bayly Street to provide more green time to the movements with greater demand.
- It is logical to locate the proposed access opposite Broadview Street so that the intersection can operate as a four-leg intersection.
- Traffic volumes generated by the proposed development are low and will not have a significant impact on operations at this intersection.
- Ultimately, the anticipated trips generated by the proposed development at 666 Liverpool Road are not high enough to have a noticeable effect on the surrounding transportation network.

Appendix A

Traffic Count Data



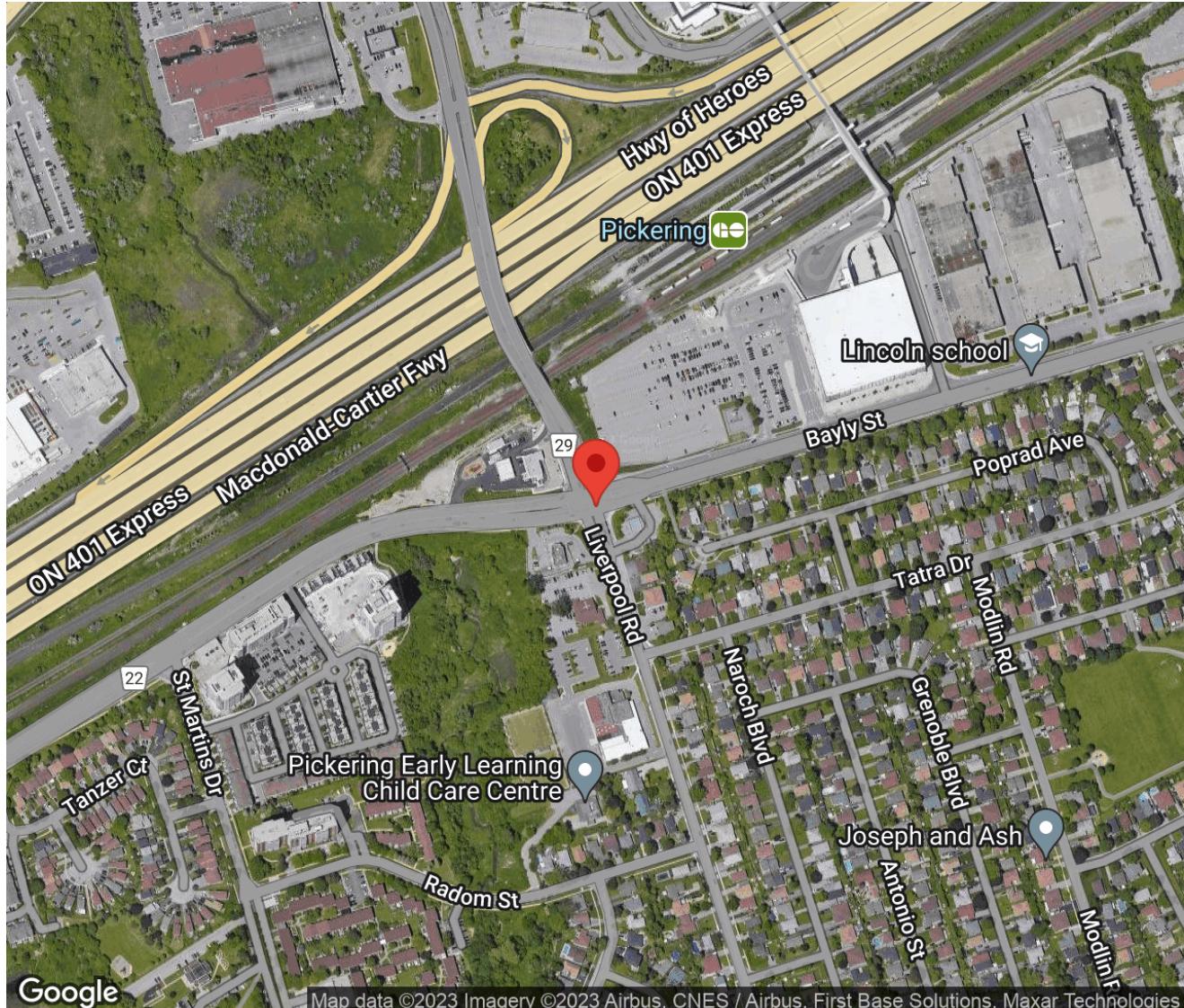
Project #23-286 - Dillon Consulting

Intersection Count Report

Intersection: Liverpool Rd & Bayly St
Municipality: Pickering
Count Date: Tuesday, Sep 12, 2023
Site Code: 2328600001
Count Categories: Cars, Trucks, Bicycles, Pedestrians
Count Period: 07:00-10:00, 11:30-13:30, 15:00-18:00
Weather: Clear
Comments:

Traffic Count Map

Intersection: Liverpool Rd & Bayly St
Site Code: 2328600001
Municipality: Pickering
Count Date: Sep 12, 2023





Traffic Count Summary

Intersection: Liverpool Rd & Bayly St
 Site Code: 2328600001
 Municipality: Pickering
 Count Date: Sep 12, 2023

Liverpool Rd - Traffic Summary

Hour	North Approach Totals						South Approach Totals						
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	Total
07:00 - 08:00	393	136	101	0	630	11	64	317	93	0	474	17	1104
08:00 - 09:00	339	269	204	0	812	10	107	383	145	0	635	22	1447
09:00 - 10:00	264	207	159	0	630	3	55	317	108	0	480	6	1110
BREAK													
11:30 - 12:00	155	162	109	0	426	6	25	126	64	0	215	19	641
12:00 - 13:00	299	334	216	1	850	5	49	330	117	0	496	12	1346
13:00 - 13:30	142	127	119	0	388	5	31	138	37	0	206	7	594
BREAK													
15:00 - 16:00	226	347	290	0	863	14	93	407	114	0	614	9	1477
16:00 - 17:00	301	413	311	0	1025	13	75	416	131	1	623	29	1648
17:00 - 18:00	323	402	311	0	1036	18	61	381	128	0	570	27	1606
GRAND TOTAL	2442	2397	1820	1	6660	85	560	2815	937	1	4313	148	10973



Traffic Count Summary

Intersection: Liverpool Rd & Bayly St
 Site Code: 2328600001
 Municipality: Pickering
 Count Date: Sep 12, 2023

Bayly St - Traffic Summary

Hour	East Approach Totals						West Approach Totals						
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	Total
07:00 - 08:00	43	199	316	0	558	36	114	488	49	0	651	15	1209
08:00 - 09:00	60	239	311	0	610	16	187	523	117	0	827	17	1437
09:00 - 10:00	53	197	310	0	560	14	208	385	96	0	689	4	1249
BREAK													
11:30 - 12:00	40	92	207	0	339	17	111	164	51	0	326	9	665
12:00 - 13:00	75	202	413	0	690	19	246	293	107	0	646	16	1336
13:00 - 13:30	28	113	178	0	319	8	109	170	36	0	315	10	634
BREAK													
15:00 - 16:00	88	321	530	3	942	15	274	448	144	0	866	24	1808
16:00 - 17:00	107	394	597	3	1101	44	281	599	173	0	1053	33	2154
17:00 - 18:00	108	436	641	1	1186	37	302	644	192	0	1138	33	2324
GRAND TOTAL	602	2193	3503	7	6305	206	1832	3714	965	0	6511	161	12816



Traffic Count Data

Intersection: Liverpool Rd & Bayly St
 Site Code: 2328600001
 Municipality: Pickering
 Count Date: Sep 12, 2023

North Approach - Liverpool Rd

Start Time	Cars				Trucks				Bicycles				Total Peds				
	⬅	⬆	➡	➡➡	⬅	⬆	➡	➡➡	⬅	⬆	➡	➡➡	⬅	⬆	➡	➡➡	
	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	
07:00	79	20	16	0	115	4	1	0	0	5	0	0	0	0	0	0	3
07:15	96	37	22	0	155	5	1	0	0	6	0	0	0	0	0	0	2
07:30	100	30	19	0	149	2	1	0	0	3	0	0	0	0	0	0	2
07:45	103	46	43	0	192	4	0	1	0	5	0	0	0	0	0	0	4
08:00	86	70	39	0	195	7	3	1	0	11	0	0	0	0	0	0	2
08:15	76	76	46	0	198	12	2	1	0	15	0	0	0	0	0	0	2
08:30	74	58	55	0	187	4	2	1	0	7	0	0	0	0	0	0	3
08:45	71	57	60	0	188	9	1	1	0	11	0	0	0	0	0	0	3
09:00	66	61	50	0	177	5	0	1	0	6	0	0	0	0	0	0	0
09:15	70	39	26	0	135	6	0	0	0	6	0	0	0	0	0	0	1
09:30	54	59	43	0	156	2	0	0	0	2	0	0	0	0	0	0	2
09:45	59	48	38	0	145	2	0	1	0	3	0	0	0	0	0	0	0
SUBTOTAL	934	601	457	0	1992	62	11	7	0	80	0	0	0	0	0	0	24



Traffic Count Data

Intersection: Liverpool Rd & Bayly St
 Site Code: 2328600001
 Municipality: Pickering
 Count Date: Sep 12, 2023

North Approach - Liverpool Rd

Start Time	Cars				Total	Trucks				Total	Bicycles				Total	Total Peds
	↖	↑	↗	↙		↖	↑	↗	↙		↖	↑	↗	↙		
11:30	64	59	58	0	181	3	0	1	0	4	0	0	0	0	0	4
11:45	84	102	49	0	235	4	1	1	0	6	0	0	0	0	0	2
12:00	63	80	50	0	193	3	3	0	0	6	0	0	0	0	0	1
12:15	64	85	50	0	199	4	1	1	0	6	0	0	0	0	0	2
12:30	73	97	53	0	223	6	1	1	0	8	0	0	0	0	0	2
12:45	81	66	61	1	209	5	1	0	0	6	0	0	0	0	0	0
13:00	66	60	58	0	184	3	0	0	0	3	0	0	0	0	0	3
13:15	69	67	61	0	197	4	0	0	0	4	0	0	0	0	0	2
SUBTOTAL	564	616	440	1	1621	32	7	4	0	43	0	0	0	0	0	16

Traffic Count Data

Intersection: Liverpool Rd & Bayly St
 Site Code: 2328600001
 Municipality: Pickering
 Count Date: Sep 12, 2023

North Approach - Liverpool Rd

Start Time	Cars				Total	Trucks				Total	Bicycles				Total	Total Peds
	↖	↑	↗	↙		↖	↑	↗	↙		↖	↑	↗	↙		
15:00	46	85	70	0	201	2	0	0	0	2	0	0	0	0	0	4
15:15	52	82	81	0	215	5	1	0	0	6	0	0	0	0	0	2
15:30	50	92	75	0	217	4	2	0	0	6	0	1	0	0	1	7
15:45	64	83	64	0	211	3	1	0	0	4	0	0	0	0	0	1
16:00	74	101	78	0	253	3	0	0	0	3	0	0	0	0	0	3
16:15	78	102	71	0	251	2	1	1	0	4	0	0	0	0	0	2
16:30	74	102	84	0	260	2	1	0	0	3	0	0	0	0	0	7
16:45	65	106	77	0	248	3	0	0	0	3	0	0	0	0	0	1
17:00	74	72	86	0	232	3	1	0	0	4	0	0	0	0	0	4
17:15	79	101	81	0	261	2	0	0	0	2	0	0	0	0	0	5
17:30	84	120	73	0	277	1	0	0	0	1	0	0	0	0	0	4
17:45	79	107	71	0	257	1	1	0	0	2	0	0	0	0	0	5
SUBTOTAL	819	1153	911	0	2883	31	8	1	0	40	0	1	0	0	1	45
GRAND TOTAL	2317	2370	1808	1	6496	125	26	12	0	163	0	1	0	0	1	85

Traffic Count Data

Intersection: Liverpool Rd & Bayly St
 Site Code: 2328600001
 Municipality: Pickering
 Count Date: Sep 12, 2023

South Approach - Liverpool Rd

Start Time	Cars				Trucks				Bicycles				Total Peds		
	↖	↑	↗	↘	↖	↑	↗	↘	↖	↑	↗	↘			
07:00	10	60	19	0	89	0	0	1	0	1	0	0	0	0	2
07:15	9	78	32	0	119	1	2	0	0	3	0	0	0	0	4
07:30	16	80	30	0	126	1	2	0	0	3	0	0	0	0	5
07:45	26	94	10	0	130	1	1	1	0	3	0	0	0	0	6
08:00	17	76	44	0	137	0	0	0	0	0	0	0	0	0	7
08:15	25	109	36	0	170	2	4	3	0	9	0	0	0	0	6
08:30	33	103	27	0	163	2	0	0	0	2	0	0	0	0	7
08:45	26	88	34	0	148	2	3	1	0	6	0	0	0	0	2
09:00	18	74	30	0	122	0	2	0	0	2	0	0	0	0	2
09:15	15	94	21	0	130	0	0	2	0	2	0	0	0	0	1
09:30	11	62	26	0	99	0	3	0	0	3	0	0	0	0	3
09:45	11	80	28	0	119	0	2	1	0	3	0	0	0	0	0
SUBTOTAL	217	998	337	0	1552	9	19	9	0	37	0	0	0	0	45

Traffic Count Data

Intersection: Liverpool Rd & Bayly St
 Site Code: 2328600001
 Municipality: Pickering
 Count Date: Sep 12, 2023

South Approach - Liverpool Rd

Start Time	Cars				Total	Trucks				Total	Bicycles				Total	Total Peds
	↖	↑	↗	↙		↖	↑	↗	↙		↖	↑	↗	↙		
11:30	14	62	34	0	110	1	1	0	0	2	0	0	0	0	0	6
11:45	10	61	29	0	100	0	2	1	0	3	0	0	0	0	0	13
12:00	8	87	32	0	127	2	2	0	0	4	0	0	0	0	0	3
12:15	11	79	19	0	109	1	0	0	0	1	0	0	0	0	0	3
12:30	10	76	35	0	121	0	1	1	0	2	0	0	0	0	0	5
12:45	17	84	27	0	128	0	1	3	0	4	0	0	0	0	0	1
13:00	16	69	19	0	104	0	1	2	0	3	0	0	0	0	0	3
13:15	14	65	16	0	95	1	1	0	0	2	0	2	0	0	2	4
SUBTOTAL	100	583	211	0	894	5	9	7	0	21	0	2	0	0	2	38

Traffic Count Data

Intersection: Liverpool Rd & Bayly St
 Site Code: 2328600001
 Municipality: Pickering
 Count Date: Sep 12, 2023

South Approach - Liverpool Rd

Start Time	Cars				Total	Trucks				Total	Bicycles				Total	Total Peds
	⬅	⬆	➡	➡➡		⬅	⬆	➡	➡➡		⬅	⬆	➡	➡➡		
15:00	13	99	24	0	136	0	5	0	0	5	0	0	0	0	0	1
15:15	33	124	20	0	177	1	0	0	0	1	0	0	0	0	0	1
15:30	24	82	38	0	144	1	2	0	0	3	0	0	0	0	0	2
15:45	21	93	31	0	145	0	2	1	0	3	0	0	0	0	0	5
16:00	15	116	33	0	164	1	2	1	0	4	0	0	0	0	0	9
16:15	16	93	28	0	137	0	1	0	0	1	0	0	0	0	0	10
16:30	15	112	27	1	155	0	0	0	0	0	0	0	0	0	0	4
16:45	28	92	41	0	161	0	0	1	0	1	0	0	0	0	0	6
17:00	13	109	30	0	152	1	1	0	0	2	0	0	0	0	0	7
17:15	16	93	35	0	144	0	0	0	0	0	0	0	0	0	0	5
17:30	12	83	26	0	121	0	1	0	0	1	0	0	0	0	0	5
17:45	19	94	37	0	150	0	0	0	0	0	0	0	0	0	0	10
SUBTOTAL	225	1190	370	1	1786	4	14	3	0	21	0	0	0	0	0	65
GRAND TOTAL	542	2771	918	1	4232	18	42	19	0	79	0	2	0	0	2	148

Traffic Count Data

Intersection: Liverpool Rd & Bayly St
 Site Code: 2328600001
 Municipality: Pickering
 Count Date: Sep 12, 2023

East Approach - Bayly St

Start Time	Cars				Trucks				Bicycles				Total Peds		
	⬅	⬆	➡	➡➡	⬅	⬆	➡	➡➡	⬅	⬆	➡	➡➡			
	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	Total	
07:00	3	47	66	0	116	0	3	4	0	7	0	0	0	0	5
07:15	15	37	72	0	124	1	3	7	0	11	0	0	0	0	8
07:30	11	55	69	0	135	0	2	6	0	8	0	0	0	0	11
07:45	13	48	80	0	141	0	4	12	0	16	0	0	0	0	12
08:00	13	59	61	0	133	1	6	8	0	15	0	0	0	0	5
08:15	16	45	72	0	133	0	4	11	0	15	0	23	0	0	23
08:30	11	42	63	0	116	1	1	13	0	15	0	0	0	0	4
08:45	18	56	74	0	148	0	3	9	0	12	0	0	0	0	3
09:00	8	46	75	0	129	1	6	12	0	19	0	0	0	0	5
09:15	15	52	72	0	139	1	4	7	0	12	0	0	0	0	2
09:30	16	38	73	0	127	0	5	7	0	12	0	0	0	0	4
09:45	12	41	59	0	112	0	5	5	0	10	0	0	0	0	3
SUBTOTAL	151	566	836	0	1553	5	46	101	0	152	0	23	0	0	66

Traffic Count Data

Intersection: Liverpool Rd & Bayly St
 Site Code: 2328600001
 Municipality: Pickering
 Count Date: Sep 12, 2023

East Approach - Bayly St

Start Time	Cars				Total	Trucks				Total	Bicycles				Total	Total Peds
	↖	↑	↗	↙		↖	↑	↗	↙		↖	↑	↗	↙		
11:30	21	43	82	0	146	0	2	12	0	14	0	0	0	0	0	9
11:45	19	44	108	0	171	0	3	5	0	8	0	0	0	0	0	8
12:00	16	49	92	0	157	1	3	12	0	16	0	0	0	0	0	5
12:15	22	52	90	0	164	0	2	15	0	17	0	0	0	0	0	5
12:30	13	44	104	0	161	0	3	11	0	14	0	0	0	0	0	8
12:45	20	43	80	0	143	3	6	9	0	18	0	0	0	0	0	1
13:00	17	62	83	0	162	0	0	4	0	4	0	0	0	0	0	3
13:15	10	45	85	0	140	1	6	6	0	13	0	0	0	0	0	5
SUBTOTAL	138	382	724	0	1244	5	25	74	0	104	0	0	0	0	0	44



Traffic Count Data

Intersection: Liverpool Rd & Bayly St
 Site Code: 2328600001
 Municipality: Pickering
 Count Date: Sep 12, 2023

East Approach - Bayly St

Start Time	Cars					Trucks					Bicycles					Total Peds				
	⬅	⬆	➡	➡➡	Total	⬅	⬆	➡	➡➡	Total	⬅	⬆	➡	➡➡	Total	⬅	⬆	➡	➡➡	Total
15:00	17	89	152	1	259	0	4	7	0	11	0	0	0	0	0					6
15:15	25	69	113	1	208	1	2	10	0	13	0	0	0	0	0					3
15:30	21	73	129	0	223	0	4	4	0	8	0	0	0	0	0					4
15:45	23	79	111	1	214	1	1	4	0	6	0	0	0	0	0					2
16:00	32	96	174	1	303	0	2	6	0	8	0	0	0	0	0					12
16:15	22	80	116	0	218	1	2	2	0	5	0	0	0	0	0					12
16:30	27	133	165	0	325	0	0	4	0	4	0	0	0	0	0					13
16:45	24	80	125	2	231	1	1	5	0	7	0	0	0	0	0					7
17:00	30	134	169	0	333	0	0	4	0	4	0	0	0	0	0					9
17:15	27	124	154	0	305	1	2	7	0	10	0	0	0	0	0					12
17:30	25	110	161	0	296	0	3	3	0	6	0	0	0	0	0					7
17:45	23	63	138	1	225	2	0	5	0	7	0	0	0	0	0					9
SUBTOTAL	296	1130	1707	7	3140	7	21	61	0	89	0	0	0	0	0					96
GRAND TOTAL	585	2078	3267	7	5937	17	92	236	0	345	0	23	0	0	23					206

Traffic Count Data

Intersection: Liverpool Rd & Bayly St
 Site Code: 2328600001
 Municipality: Pickering
 Count Date: Sep 12, 2023

West Approach - Bayly St

Start Time	Cars				Trucks				Bicycles				Total Peds	
	↖	↑	↗	↘	↖	↑	↗	↘	↖	↑	↗	↘		
07:00	18	95	5	0	118	0	2	0	0	0	0	0	0	4
07:15	31	105	9	0	145	1	0	1	0	2	0	0	0	3
07:30	22	146	12	0	180	1	1	0	0	2	0	0	0	4
07:45	41	134	21	0	196	0	5	1	0	6	0	0	0	4
08:00	46	145	22	0	213	1	3	0	0	4	0	0	0	5
08:15	41	121	19	0	181	1	3	0	0	4	0	0	0	6
08:30	42	125	33	0	200	0	6	0	0	6	0	0	0	2
08:45	55	113	42	0	210	1	7	1	0	9	0	0	0	4
09:00	54	132	33	0	219	0	11	1	0	12	0	0	0	1
09:15	52	85	20	0	157	1	2	1	0	4	0	0	0	2
09:30	49	72	19	0	140	2	4	0	0	6	0	0	0	1
09:45	48	75	22	0	145	2	4	0	0	6	0	0	0	0
SUBTOTAL	499	1348	257	0	2104	10	48	5	0	63	0	0	0	36

Traffic Count Data

Intersection: Liverpool Rd & Bayly St
 Site Code: 2328600001
 Municipality: Pickering
 Count Date: Sep 12, 2023

West Approach - Bayly St

Start Time	Cars				Total	Trucks				Total	Bicycles				Total	Total Peds
	↖	↑	↗	↙		↖	↑	↗	↙		↖	↑	↗	↙		
11:30	53	72	27	0	152	1	6	2	0	9	0	0	0	0	0	4
11:45	57	82	21	0	160	0	4	1	0	5	0	0	0	0	0	5
12:00	57	66	21	0	144	1	7	2	0	10	0	0	0	0	0	9
12:15	68	72	33	0	173	0	4	0	0	4	0	0	0	0	0	1
12:30	56	59	20	0	135	1	2	1	0	4	0	0	0	0	0	5
12:45	63	75	30	0	168	0	8	0	0	8	0	0	0	0	0	1
13:00	52	81	20	0	153	2	5	0	0	7	0	0	0	0	0	3
13:15	55	81	16	0	152	0	3	0	0	3	0	0	0	0	0	7
SUBTOTAL	461	588	188	0	1237	5	39	6	0	50	0	0	0	0	0	35

Traffic Count Data

Intersection: Liverpool Rd & Bayly St
 Site Code: 2328600001
 Municipality: Pickering
 Count Date: Sep 12, 2023

West Approach - Bayly St

Start Time	Cars				Total	Trucks				Total	Bicycles				Total	Total Peds
	↖	↑	↗	↘		↖	↑	↗	↘		↖	↑	↗	↘		
15:00	51	90	29	0	170	0	5	0	0	5	0	0	0	0	0	4
15:15	72	94	50	0	216	1	3	0	0	4	0	0	0	0	0	6
15:30	68	115	32	0	215	3	3	2	0	8	0	0	0	0	0	8
15:45	77	133	31	0	241	2	5	0	0	7	0	0	0	0	0	6
16:00	55	127	51	0	233	0	11	0	0	11	0	0	0	0	0	11
16:15	83	151	38	0	272	0	5	1	0	6	0	0	0	0	0	13
16:30	72	132	43	0	247	0	7	0	0	7	0	0	0	0	0	6
16:45	69	161	40	0	270	2	5	0	0	7	0	0	0	0	0	3
17:00	72	177	48	0	297	0	3	0	0	3	0	0	0	0	0	8
17:15	83	143	46	0	272	0	4	0	0	4	0	0	0	0	0	3
17:30	64	141	46	0	251	0	4	0	0	4	0	0	0	0	0	10
17:45	82	168	52	0	302	1	4	0	0	5	0	0	0	0	0	12
SUBTOTAL	848	1632	506	0	2986	9	59	3	0	71	0	0	0	0	0	90
GRAND TOTAL	1808	3568	951	0	6327	24	146	14	0	184	0	0	0	0	0	161

Intersection: Liverpool Rd & Bayly St
Site Code: 2328600001
Count Date: Sep 12, 2023

Peak Hour Diagram

Specified Period

From: 07:00:00
 To: 10:00:00

One Hour Peak

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

Weather conditions: Clear

** Signalized Intersection **

Major Road: Bayly St runs E/W

North Approach

	Out	In	Total
🚗	768	830	1598
🚚	44	51	95
🚲	0	0	0
	812	881	1693

Liverpool Rd

	Out	In	Total
🚗	0	0	0
🚚	4	8	32
🚲	200	261	307
	Totals	204	269
		339	0

East Approach

	Out	In	Total
🚗	530	952	1482
🚚	57	55	112
🚲	23	0	23
	Totals	610	1007
			1617

Bayly St

	🚲	🚚	🚗	Totals
0	0	0	0	0
0	3	184	187	
0	19	504	523	
0	1	116	117	

West Approach

	Out	In	Total
🚗	804	503	1307
🚚	23	24	47
🚲	0	23	23
	827	550	1377

Peds: 10



Peds: 17

Peds: 16

Peds: 22

Bayly St

	Totals	🚗	🚚	🚲
⟳	0	0	0	0
↑	311	270	41	0
←	239	202	14	23
↓	60	58	2	0

South Approach

	Out	In	Total
🚗	618	435	1053
🚚	17	11	28
🚲	0	0	0
	635	446	1081

⟳ - Cars

↑ - Trucks

↔ - Bicycles

Comments

Peak Hour Summary

Intersection: Liverpool Rd & Bayly St
 Site Code: 2328600001
 Count Date: Sep 12, 2023
 Period: 07:00 - 10:00

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

Start Time	North Approach Liverpool Rd						South Approach Liverpool Rd						East Approach Bayly St						West Approach Bayly St						Total Vehicles
	⬅	⬆	➡	⬇	Peds	Total	⬅	⬆	➡	⬇	Peds	Total	⬅	⬆	➡	⬇	Peds	Total	⬅	⬆	➡	⬇	Peds	Total	
08:00	93	73	40	0	2	206	17	76	44	0	7	137	14	65	69	0	5	148	47	148	22	0	5	217	708
08:15	88	78	47	0	2	213	27	113	39	0	6	179	16	72	83	0	4	171	42	124	19	0	6	185	748
08:30	78	60	56	0	3	194	35	103	27	0	7	165	12	43	76	0	4	131	42	131	33	0	2	206	696
08:45	80	58	61	0	3	199	28	91	35	0	2	154	18	59	83	0	3	160	56	120	43	0	4	219	732
Grand Total	339	269	204	0	10	812	107	383	145	0	22	635	60	239	311	0	16	610	187	523	117	0	17	827	2884
Approach %	41.7	33.1	25.1	0	-	-	16.9	60.3	22.8	0	-	-	9.8	39.2	51	0	-	-	22.6	63.2	14.1	0	-	-	-
Totals %	11.8	9.3	7.1	0	28.2	22	3.7	13.3	5	0	22	21.2	2.1	8.3	10.8	0	21.2	6.5	18.1	4.1	0	28.7	-	-	
PHF	0.91	0.86	0.84	0	0.95		0.76	0.85	0.82	0	0.89		0.83	0.83	0.94	0	0.89		0.83	0.88	0.68	0	0.94	0.96	
Cars	307	261	200	0	768	768	101	376	141	0	618	618	58	202	270	0	530	184	504	116	0	804	2720		
% Cars	90.6	97	98	0	94.6	94.6	94.4	98.2	97.2	0	97.3	97.3	96.7	84.5	86.8	0	86.9	98.4	96.4	99.1	0	97.2	94.3		
Trucks	32	8	4	0	44	44	6	7	4	0	17	17	2	14	41	0	57	3	19	1	0	23	141		
% Trucks	9.4	3	2	0	5.4	5.4	5.6	1.8	2.8	0	2.7	2.7	3.3	5.9	13.2	0	9.3	1.6	3.6	0.9	0	2.8	4.9		
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	23	0	0	23	0	0	0	0	0	0	23	
% Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	9.6	0	0	3.8	0	0	0	0	0	0	0.8	
Peds						10					22						16						17	-	65
% Peds						15.4					33.8						24.6						26.2	-	-

Intersection: Liverpool Rd & Bayly St
Site Code: 2328600001
Count Date: Sep 12, 2023

Peak Hour Diagram

Specified Period

From: 11:30:00
 To: 13:30:00

One Hour Peak

From: 11:45:00
 To: 12:45:00

Weather conditions: Clear

** Signalized Intersection **

Major Road: Bayly St runs E/W

North Approach

	Out	In	Total
🚗	850	935	1785
🚚	26	50	76
🚲	0	0	0
	876	985	1861

Liverpool Rd

	Out	In	Total
🚗	0	0	0
🚚	3	6	17
🚲	202	364	284
	Totals	205	370
		301	0

East Approach

	Out	In	Total
🚗	653	678	1331
🚚	55	36	91
🚲	0	0	0
	Totals	708	714
			1422

Bayly St

🚲	🚚	🚗	Totals
0	0	0	0
0	2	238	240
0	17	279	296
0	4	95	99

Peds: 7



Peds: 20

Peds: 26

Peds: 24

West Approach

	Out	In	Total
🚗	612	430	1042
🚚	23	17	40
🚲	0	0	0
	635	447	1082

➡️ - Cars

➡️ - Trucks

➡️ - Bicycles

Liverpool Rd

	Totals	➡️	➡️	➡️	➡️
🚗	39	303	115	0	0
🚚	3	5	2	0	0
🚲	0	0	0	0	0
	Totals	42	308	117	0

South Approach

	Out	In	Total
🚗	457	529	986
🚚	10	11	21
🚲	0	0	0
	Totals	467	540
			1007

Comments

Peak Hour Summary

Intersection: Liverpool Rd & Bayly St
 Site Code: 2328600001
 Count Date: Sep 12, 2023
 Period: 11:30 - 13:30

Peak Hour Data (11:45 - 12:45)

Start Time	North Approach Liverpool Rd							South Approach Liverpool Rd							East Approach Bayly St							West Approach Bayly St							Total Vehicles
	↖	↑	↗	↘	Peds	Total	↖	↑	↗	↘	Peds	Total	↖	↑	↗	↘	Peds	Total	↖	↑	↗	↘	Peds	Total	↖	↑			
11:45	88	103	50	0	2	241	10	63	30	0	13	103	19	47	113	0	8	179	57	86	22	0	5	165	688				
12:00	66	83	50	0	1	199	10	89	32	0	3	131	17	52	104	0	5	173	58	73	23	0	9	154	657				
12:15	68	86	51	0	2	205	12	79	19	0	3	110	22	54	105	0	5	181	68	76	33	0	1	177	673				
12:30	79	98	54	0	2	231	10	77	36	0	5	123	13	47	115	0	8	175	57	61	21	0	5	139	668				
Grand Total	301	370	205	0	7	876	42	308	117	0	24	467	71	200	437	0	26	708	240	296	99	0	20	635	2686				
Approach %	34.4	42.2	23.4	0	-	-	9	66	25.1	0	-	-	10	28.2	61.7	0	-	-	37.8	46.6	15.6	0	-	-	-				
Totals %	11.2	13.8	7.6	0	32.6	32.6	1.6	11.5	4.4	0	17.4	17.4	2.6	7.4	16.3	0	26.4	26.4	8.9	11	3.7	0	23.6	23.6					
PHF	0.86	0.9	0.95	0	0.91	0.91	0.88	0.87	0.81	0	0.89	0.89	0.81	0.93	0.95	0	0.98	0.98	0.88	0.86	0.75	0	0.9	0.98					
Cars	284	364	202	0	850	850	39	303	115	0	457	457	70	189	394	0	653	653	238	279	95	0	612	2572					
% Cars	94.4	98.4	98.5	0	97	97	92.9	98.4	98.3	0	97.9	97.9	98.6	94.5	90.2	0	92.2	92.2	99.2	94.3	96	0	96.4	95.8					
Trucks	17	6	3	0	26	26	3	5	2	0	10	10	1	11	43	0	55	55	2	17	4	0	23	114					
% Trucks	5.6	1.6	1.5	0	3	3	7.1	1.6	1.7	0	2.1	2.1	1.4	5.5	9.8	0	7.8	7.8	0.8	5.7	4	0	3.6	4.2					
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
% Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					
Peds					7	-					24	-					26	-					20	-	77				
% Peds					9.1	-					31.2	-					33.8	-					26	-					

Intersection: Liverpool Rd & Bayly St
Site Code: 2328600001
Count Date: Sep 12, 2023

Peak Hour Diagram

Specified Period

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

One Hour Peak

From: 16:30:00
 To: 17:30:00

Weather conditions: Clear

** Signalized Intersection **

Major Road: Bayly St runs E/W

North Approach

	Out	In	Total
🚗	1001	1315	2316
🚚	12	23	35
🚲	0	0	0
	1013	1338	2351

Liverpool Rd

	Out	In	Total
🚗	0	0	0
🚚	0	2	10
🚗	328	381	292
	Totals	328	383
		302	0

East Approach

	Out	In	Total
🚗	1194	1040	2234
🚚	25	30	55
🚲	0	0	0
	Totals	1219	1070
		2289	

Bayly St

🚲	🚚	🚗	Totals
0	0	0	0
0	2	296	298
0	19	613	632
0	0	177	177

Peds: 17



Peds: 41

Peds: 22

West Approach

	Out	In	Total
🚗	1086	871	1957
🚚	21	4	25
🚲	0	0	0
	Totals	1107	875
		1982	

➡ - Cars

➡ - Trucks

➡ - Bicycles

Liverpool Rd

	Totals	73	407	134	1
🚗	72	406	133	1	
🚚	1	1	1	0	
🚲	0	0	0	0	

South Approach

	Out	In	Total
🚗	612	667	1279
🚚	3	4	7
🚲	0	0	0
	Totals	615	671
		1286	

Comments

Peak Hour Summary

Intersection: Liverpool Rd & Bayly St
 Site Code: 2328600001
 Count Date: Sep 12, 2023
 Period: 15:00 - 18:00

Peak Hour Data (16:30 - 17:30)

Start Time	North Approach Liverpool Rd						South Approach Liverpool Rd						East Approach Bayly St						West Approach Bayly St						Total Vehicles	
	↖	↑	↗	↙	Peds	Total	↖	↑	↗	↙	Peds	Total	↖	↑	↗	↙	Peds	Total	↖	↑	↗	↙	Peds	Total		
16:30	76	103	84	0	7	263	15	112	27	1	4	155	27	133	169	0	13	329	72	139	43	0	6	254	1001	
16:45	68	106	77	0	1	251	28	92	42	0	6	162	25	81	130	2	7	238	71	166	40	0	3	277	928	
17:00	77	73	86	0	4	236	14	110	30	0	7	154	30	134	173	0	9	337	72	180	48	0	8	300	1027	
17:15	81	101	81	0	5	263	16	93	35	0	5	144	28	126	161	0	12	315	83	147	46	0	3	276	998	
Grand Total	302	383	328	0	17	1013	73	407	134	1	22	615	110	474	633	2	41	1219	298	632	177	0	20	1107	3954	
Approach %	29.8	37.8	32.4	0	-	-	11.9	66.2	21.8	0.2	-	-	9	38.9	51.9	0.2	-	-	26.9	57.1	16	0	-	-	-	
Totals %	7.6	9.7	8.3	0	25.6	1.8	10.3	3.4	0	15.6	2.8	12	16	0.1	30.8	7.5	16	4.5	0	28	-	-	-	-	-	
PHF	0.93	0.9	0.95	0	0.96	0.65	0.91	0.8	0.25	0.95	0.92	0.88	0.91	0.25	0.9	0.9	0.88	0.92	0	0.92	0.96	-	-	-		
Cars	292	381	328	0	1001	72	406	133	1	612	108	471	613	2	1194	296	613	177	0	1086	3893	-	-	-	-	-
% Cars	96.7	99.5	100	0	98.8	98.6	99.8	99.3	100	99.5	98.2	99.4	96.8	100	97.9	99.3	97	100	0	98.1	98.5	-	-	-	-	-
Trucks	10	2	0	0	12	1	1	1	0	3	2	3	20	0	25	2	19	0	0	21	61	-	-	-	-	-
% Trucks	3.3	0.5	0	0	1.2	1.4	0.2	0.7	0	0.5	1.8	0.6	3.2	0	2.1	0.7	3	0	0	1.9	1.5	-	-	-	-	-
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bicycles	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
Peds	17						22						41						20						100	
% Peds	17						22						41						20						-	



Project #23-286 - Dillon Consulting

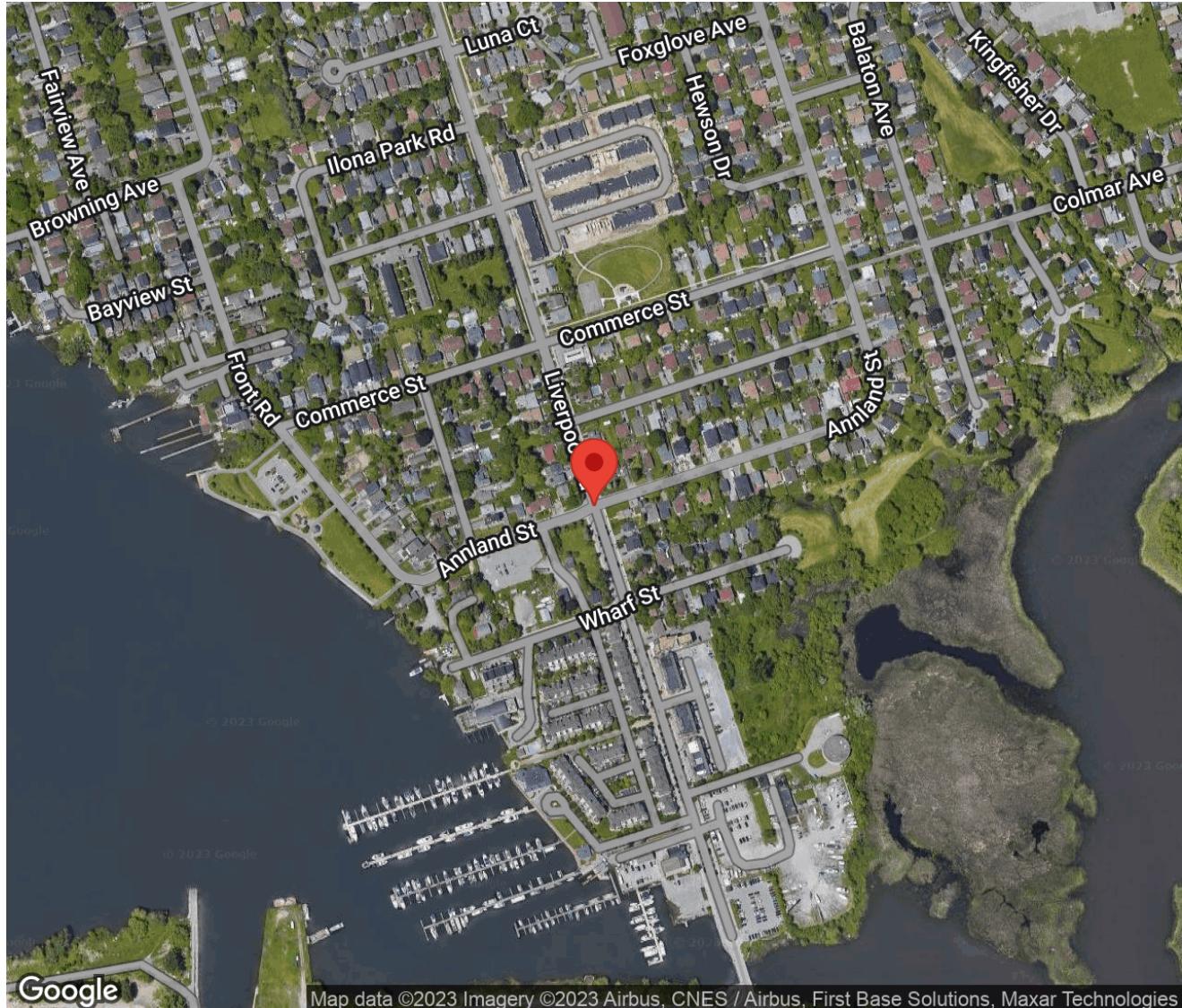
Intersection Count Report

Intersection: Liverpool Rd & Annland St
Municipality: Pickering
Count Date: Tuesday, Sep 12, 2023
Site Code: 2328600003
Count Categories: Cars, Trucks, Bicycles, Pedestrians
Count Period: 07:00-10:00, 11:30-13:30, 15:00-18:00
Weather: Clear
Comments:



Traffic Count Map

Intersection: Liverpool Rd & Annland St
Site Code: 2328600003
Municipality: Pickering
Count Date: Sep 12, 2023





Traffic Count Summary

Intersection: Liverpool Rd & Annland St
 Site Code: 2328600003
 Municipality: Pickering
 Count Date: Sep 12, 2023

Liverpool Rd - Traffic Summary

Hour	North Approach Totals						South Approach Totals						
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	Total
07:00 - 08:00	4	26	3	1	34	4	2	51	0	0	53	4	87
08:00 - 09:00	6	76	3	0	85	1	1	79	4	0	84	1	169
09:00 - 10:00	1	74	4	0	79	0	1	57	1	0	59	1	138
BREAK													
11:30 - 12:00	7	53	2	0	62	0	2	27	2	0	31	2	93
12:00 - 13:00	2	90	4	0	96	0	7	73	2	0	82	5	178
13:00 - 13:30	4	30	9	0	43	0	7	29	3	0	39	0	82
BREAK													
15:00 - 16:00	8	102	6	0	116	0	6	107	2	0	115	1	231
16:00 - 17:00	16	108	7	1	132	0	6	106	1	0	113	4	245
17:00 - 18:00	9	116	7	0	132	0	6	84	4	1	95	3	227
GRAND TOTAL	57	675	45	2	779	5	38	613	19	1	671	21	1450



Traffic Count Summary

Intersection: Liverpool Rd & Annland St
Site Code: 2328600003
Municipality: Pickering
Count Date: Sep 12, 2023

Annland St - Traffic Summary

Hour	East Approach Totals						West Approach Totals						
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
Hour	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	Total
07:00 - 08:00	0	0	6	0	6	7	1	0	2	0	3	8	9
08:00 - 09:00	2	1	13	0	16	7	7	1	5	0	13	3	29
09:00 - 10:00	3	0	6	0	9	2	2	0	1	0	3	0	12
BREAK													
11:30 - 12:00	0	1	8	0	9	2	3	1	1	0	5	5	14
12:00 - 13:00	8	1	6	0	15	52	3	1	2	0	6	10	21
13:00 - 13:30	0	0	1	0	1	47	3	1	6	0	10	5	11
BREAK													
15:00 - 16:00	9	4	9	0	22	8	6	3	6	0	15	9	37
16:00 - 17:00	1	1	8	0	10	4	5	0	9	0	14	7	24
17:00 - 18:00	3	1	10	0	14	13	3	2	7	0	12	22	26
GRAND TOTAL	26	9	67	0	102	142	33	9	39	0	81	69	183

Traffic Count Data

Intersection: Liverpool Rd & Annland St
 Site Code: 2328600003
 Municipality: Pickering
 Count Date: Sep 12, 2023

North Approach - Liverpool Rd

Start Time	Cars				Total	Trucks				Total	Bicycles				Total	Total Peds
	↖	↑	↗	↙		↖	↑	↗	↙		↖	↑	↗	↙		
11:30	4	25	1	0	30	0	0	0	0	0	0	0	0	0	0	0
11:45	3	27	1	0	31	0	1	0	0	1	0	0	0	0	0	0
12:00	0	21	1	0	22	0	1	0	0	1	0	0	0	0	0	0
12:15	0	22	1	0	23	0	1	0	0	1	0	0	0	0	0	0
12:30	0	21	2	0	23	0	1	0	0	1	0	0	0	0	0	0
12:45	2	22	0	0	24	0	1	0	0	1	0	0	0	0	0	0
13:00	3	15	5	0	23	0	0	1	0	1	0	0	0	0	0	0
13:15	1	15	3	0	19	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	13	168	14	0	195	0	5	1	0	6	0	0	0	0	0	0

Traffic Count Data

Intersection: Liverpool Rd & Annland St
 Site Code: 2328600003
 Municipality: Pickering
 Count Date: Sep 12, 2023

North Approach - Liverpool Rd

Start Time	Cars				Total	Trucks				Total	Bicycles				Total	Total Peds
	↖	↑	↗	↘		↖	↑	↗	↘		↖	↑	↗	↘		
15:00	0	18	2	0	20	0	0	0	0	0	0	1	0	0	1	0
15:15	3	15	1	0	19	0	0	0	0	0	0	0	0	0	0	0
15:30	2	32	3	0	37	1	0	0	0	1	0	0	0	0	0	0
15:45	1	36	0	0	37	1	0	0	0	1	0	0	0	0	0	0
16:00	3	29	0	0	32	0	0	0	0	0	0	0	0	0	0	0
16:15	4	31	4	1	40	0	1	0	0	1	0	0	0	0	0	0
16:30	6	22	2	0	30	0	0	0	0	0	0	0	1	0	1	0
16:45	3	25	0	0	28	0	0	0	0	0	0	0	0	0	0	0
17:00	2	23	4	0	29	0	0	0	0	0	0	2	0	0	2	0
17:15	3	29	1	0	33	0	0	0	0	0	0	0	0	0	0	0
17:30	1	29	2	0	32	0	0	0	0	0	0	0	0	0	0	0
17:45	3	33	0	0	36	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	31	322	19	1	373	2	1	0	0	3	0	3	1	0	4	0
GRAND TOTAL	54	661	43	2	760	3	11	1	0	15	0	3	1	0	4	5

Traffic Count Data

Intersection: Liverpool Rd & Annland St
 Site Code: 2328600003
 Municipality: Pickering
 Count Date: Sep 12, 2023

South Approach - Liverpool Rd

Start Time	Cars					Trucks					Bicycles					Total Peds				
	↖	↑	↗	↘	Total	↖	↑	↗	↘	Total	↖	↑	↗	↘	Total					
07:00	0	9	0	0	9	0	0	0	0	0	0	0	0	0	0	0	1			
07:15	0	12	0	0	12	0	1	0	0	1	0	0	0	0	0	0	2			
07:30	1	13	0	0	14	0	1	0	0	1	0	0	0	0	0	0	1			
07:45	1	15	0	0	16	0	0	0	0	0	0	0	0	0	0	0	0			
08:00	0	14	0	0	14	0	0	0	0	0	0	0	0	0	0	0	0			
08:15	0	17	0	0	17	0	0	0	0	0	0	0	0	0	0	0	0			
08:30	0	32	2	0	34	0	1	0	0	1	0	0	0	0	0	0	0			
08:45	1	15	2	0	18	0	0	0	0	0	0	0	0	0	0	0	1			
09:00	0	11	0	0	11	0	0	0	0	0	0	0	0	0	0	0	0			
09:15	0	14	0	0	14	0	0	0	0	0	0	0	0	0	0	0	0			
09:30	1	14	1	0	16	0	3	0	0	3	0	0	0	0	0	0	1			
09:45	0	15	0	0	15	0	0	0	0	0	0	0	0	0	0	0	0			
SUBTOTAL	4	181	5	0	190	0	6	0	0	6	0	0	0	0	0	0	6			

Traffic Count Data

Intersection: Liverpool Rd & Annland St
 Site Code: 2328600003
 Municipality: Pickering
 Count Date: Sep 12, 2023

South Approach - Liverpool Rd

Start Time	Cars					Trucks					Bicycles					Total Peds	
	↖	↑	↗	↘	Total	↖	↑	↗	↘	Total	↖	↑	↗	↘	Total		
11:30	1	13	0	0	14	0	0	0	0	0	0	0	0	0	0	0	1
11:45	1	13	2	0	16	0	1	0	0	1	0	0	0	0	0	0	1
12:00	2	11	0	0	13	0	0	0	0	0	0	0	0	0	0	0	2
12:15	1	25	0	0	26	0	1	0	0	1	0	0	0	0	0	0	1
12:30	2	23	1	0	26	0	1	0	0	1	0	0	0	0	0	0	1
12:45	2	11	1	0	14	0	1	0	0	1	0	0	0	0	0	0	1
13:00	2	17	2	0	21	0	1	0	0	1	0	0	0	0	0	0	0
13:15	5	11	1	0	17	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	16	124	7	0	147	0	5	0	0	5	0	0	0	0	0	0	7

Traffic Count Data

Intersection: Liverpool Rd & Annland St
 Site Code: 2328600003
 Municipality: Pickering
 Count Date: Sep 12, 2023

South Approach - Liverpool Rd

Start Time	Cars				Total	Trucks				Total	Bicycles				Total	Total Peds
	↖	↑	↗	↘		↖	↑	↗	↘		↖	↑	↗	↘		
15:00	2	16	1	0	19	0	0	0	0	0	0	2	0	0	2	1
15:15	0	21	0	0	21	0	1	0	0	1	0	0	0	0	0	0
15:30	1	29	0	0	30	0	0	0	0	0	0	0	0	0	0	0
15:45	3	38	1	0	42	0	0	0	0	0	0	0	0	0	0	0
16:00	2	33	0	0	35	0	0	0	0	0	0	0	0	0	0	1
16:15	3	27	0	0	30	0	0	0	0	0	0	0	0	0	0	2
16:30	0	22	1	0	23	0	0	0	0	0	0	0	0	0	0	1
16:45	1	24	0	0	25	0	0	0	0	0	0	0	0	0	0	0
17:00	2	18	1	0	21	0	0	0	0	0	0	0	0	0	0	0
17:15	3	18	0	0	21	0	0	0	0	0	0	0	1	0	1	3
17:30	1	24	1	0	26	0	0	0	0	0	0	0	0	0	0	0
17:45	0	24	1	1	26	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	18	294	6	1	319	0	1	0	0	1	0	2	1	0	3	8
GRAND TOTAL	38	599	18	1	656	0	12	0	0	12	0	2	1	0	3	21

Traffic Count Data

Intersection: Liverpool Rd & Annland St
 Site Code: 2328600003
 Municipality: Pickering
 Count Date: Sep 12, 2023

East Approach - Annland St

Start Time	Cars					Trucks					Bicycles					Total Peds				
	↖	↑	↗	↙	Total	↖	↑	↗	↙	Total	↖	↑	↗	↙	Total					
07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1			
07:15	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	4			
07:30	0	0	1	0	1	0	0	1	0	1	0	0	0	0	0	0	2			
07:45	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0			
08:00	0	0	3	0	3	0	0	0	0	0	0	0	0	0	0	0	0			
08:15	0	0	1	0	1	0	0	1	0	1	0	0	0	0	0	0	5			
08:30	0	0	7	0	7	0	0	0	0	0	0	0	1	0	1	0	1			
08:45	2	1	0	0	3	0	0	0	0	0	0	0	0	0	0	0	1			
09:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
09:15	1	0	2	0	3	0	0	0	0	0	0	0	0	0	0	0	0			
09:30	2	0	4	0	6	0	0	0	0	0	0	0	0	0	0	0	1			
09:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1			
SUBTOTAL	5	1	22	0	28	0	0	2	0	2	0	0	1	0	1	0	16			

Traffic Count Data

Intersection: Liverpool Rd & Annland St
 Site Code: 2328600003
 Municipality: Pickering
 Count Date: Sep 12, 2023

East Approach - Annland St

Start Time	Cars					Trucks					Bicycles					Total Peds				
	↖	↑	↗	↙	Total	↖	↑	↗	↙	Total	↖	↑	↗	↙	Total					
11:30	0	1	4	0	5	0	0	0	0	0	0	0	0	0	0	0	1			
11:45	0	0	4	0	4	0	0	0	0	0	0	0	0	0	0	0	1			
12:00	2	0	5	0	7	0	0	0	0	0	0	0	0	0	0	0	4			
12:15	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	3			
12:30	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	42			
12:45	2	1	1	0	4	0	0	0	0	0	0	0	0	0	0	0	3			
13:00	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0		
13:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	47			
SUBTOTAL	8	2	15	0	25	0	0	0	0	0	0	0	0	0	0	0	101			



Traffic Count Data

Intersection: Liverpool Rd & Annland St
 Site Code: 2328600003
 Municipality: Pickering
 Count Date: Sep 12, 2023

East Approach - Annland St

Start Time	Cars				Total	Trucks				Total	Bicycles				Total	Total Peds
	⬅	⬆	➡	➡➡		⬅	⬆	➡	➡➡		⬅	⬆	➡	➡➡		
15:00	2	0	2	0	4	0	0	0	0	0	0	1	0	0	1	5
15:15	4	2	2	0	8	0	0	0	0	0	0	0	0	0	0	3
15:30	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
15:45	2	1	4	0	7	0	0	0	0	0	0	0	1	0	1	0
16:00	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	1
16:15	1	0	2	0	3	0	0	0	0	0	0	0	0	0	0	1
16:30	0	0	4	0	4	0	0	0	0	0	0	0	0	0	0	1
16:45	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	1
17:00	1	0	1	0	2	0	0	0	0	0	0	0	0	0	0	5
17:15	1	0	2	0	3	0	0	0	0	0	0	0	0	0	0	1
17:30	0	1	2	0	3	0	0	0	0	0	0	0	0	0	0	4
17:45	1	0	5	0	6	0	0	0	0	0	0	0	0	0	0	3
SUBTOTAL	13	5	26	0	44	0	0	0	0	0	0	1	1	0	2	25
GRAND TOTAL	26	8	63	0	97	0	0	2	0	2	0	1	2	0	3	142



Traffic Count Data

Intersection: Liverpool Rd & Annland St
Site Code: 2328600003
Municipality: Pickering
Count Date: Sep 12, 2023

West Approach - Annland St

Traffic Count Data

Intersection: Liverpool Rd & Annland St
 Site Code: 2328600003
 Municipality: Pickering
 Count Date: Sep 12, 2023

West Approach - Annland St

Start Time	Cars				Total	Trucks				Total	Bicycles				Total	Total Peds
	↖	↑	↗	↙		↖	↑	↗	↙		↖	↑	↗	↙		
11:30	2	0	0	0	2	0	0	0	0	0	0	0	0	0	0	3
11:45	1	1	1	0	3	0	0	0	0	0	0	0	0	0	0	2
12:00	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	2
12:15	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
12:30	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	3
12:45	1	0	1	0	2	0	1	0	0	1	0	0	0	0	0	3
13:00	2	1	3	0	6	0	0	0	0	0	0	0	0	0	0	2
13:15	1	0	3	0	4	0	0	0	0	0	0	0	0	0	0	3
SUBTOTAL	9	2	9	0	20	0	1	0	0	1	0	0	0	0	0	20



Traffic Count Data

Intersection: Liverpool Rd & Annland St
 Site Code: 2328600003
 Municipality: Pickering
 Count Date: Sep 12, 2023

West Approach - Annland St

Start Time	Cars				Trucks				Bicycles				Total Peds				
	⬅	⬆	➡	➡➡	⬅	⬆	➡	➡➡	⬅	⬆	➡	➡➡	⬅	⬆	➡	➡➡	
15:00	3	0	2	0	5	0	0	0	0	0	0	0	0	0	0	0	0
15:15	1	1	1	0	3	0	0	0	0	0	0	0	0	0	0	0	0
15:30	0	1	2	0	3	0	0	0	0	0	0	0	0	0	0	0	2
15:45	2	1	1	0	4	0	0	0	0	0	0	0	0	0	0	0	7
16:00	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0
16:15	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0
16:30	1	0	5	0	6	0	0	0	0	0	0	0	0	0	0	0	6
16:45	1	0	2	0	3	0	0	0	0	0	0	0	0	0	0	0	1
17:00	1	0	2	0	3	0	0	0	0	0	0	0	0	0	0	0	3
17:15	1	0	1	0	2	0	0	0	0	0	0	2	0	0	0	2	6
17:30	1	0	2	0	3	0	0	0	0	0	0	0	0	0	0	0	9
17:45	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	4
SUBTOTAL	14	3	22	0	39	0	0	0	0	0	0	0	2	0	0	2	38
GRAND TOTAL	33	6	39	0	78	0	1	0	0	1	0	2	0	0	2	0	69

Peak Hour Diagram

Specified Period

From: 07:00:00
To: 10:00:00

One Hour Peak

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

Intersection: Liverpool Rd & Annland St
Site Code: 2328600003
Count Date: Sep 12, 2023

Weather conditions: Clear

**** Unsignalized Intersection ****

Major Road: Liverpool Rd runs N/S

North Approach

	Out	In	Total
🚗	83	96	179
🚚	2	2	4
🚲	0	1	1
	85	99	184

Liverpool Rd

	Out	In	Total
🚗	0	0	0
🚚	0	1	1
🚲	3	75	5
	3	76	6
Totals	3	76	6

East Approach

	Out	In	Total
🚗	14	10	24
🚚	1	1	2
🚲	1	0	1
	16	11	27

Annland St

🚲	🚚	🚗	Totals
0	0	0	0
0	0	7	7
0	0	1	1
0	0	5	5

Peds: 3

Peds: 1

Peds: 7

Peds: 1

West Approach

	Out	In	Total
🚗	13	5	18
🚚	0	0	0
🚲	0	0	0
	13	5	18

➡ - Cars

➡ - Trucks

➡ - Bicycles

South Approach

	Out	In	Total
🚗	83	82	165
🚚	1	1	2
🚲	0	0	0
	84	83	167

Liverpool Rd

Comments

Peak Hour Summary

Intersection: Liverpool Rd & Annland St
 Site Code: 2328600003
 Count Date: Sep 12, 2023
 Period: 07:00 - 10:00

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

Start Time	North Approach Liverpool Rd						South Approach Liverpool Rd						East Approach Annland St						West Approach Annland St						Total Vehicles	
	⬅	⬆	➡	⬇	Peds	Total	⬅	⬆	➡	⬇	Peds	Total	⬅	⬆	➡	⬇	Peds	Total	⬅	⬆	➡	⬇	Peds	Total		
08:00	2	13	0	0	0	15	0	14	0	0	0	14	0	0	3	0	0	3	1	0	1	0	0	2	34	
08:15	0	15	0	0	1	15	0	17	0	0	0	17	0	0	2	0	5	2	3	0	0	0	0	1	3	37
08:30	1	32	2	0	0	35	0	33	2	0	0	35	0	0	8	0	1	8	2	0	2	0	1	4	82	
08:45	3	16	1	0	0	20	1	15	2	0	1	18	2	1	0	0	1	3	1	1	2	0	1	4	45	
Grand Total	6	76	3	0	1	85	1	79	4	0	1	84	2	1	13	0	7	16	7	1	5	0	3	13	198	
Approach %	7.1	89.4	3.5	0	-	-	1.2	94	4.8	0	-	-	12.5	6.3	81.3	0	-	-	53.8	7.7	38.5	0	-	-	-	
Totals %	3	38.4	1.5	0	42.9	42.4	0.5	39.9	2	0	42.4	1	0.5	6.6	0	8.1	3.5	0.5	2.5	0	6.6	-	-	-	-	
PHF	0.5	0.59	0.38	0	0.61	0.25	0.6	0.5	0	0.6	0.25	0.25	0.41	0	0.5	0.58	0.25	0.63	0	0.81	0.6	-	-	-		
Cars	5	75	3	0	83	1	78	4	0	83	2	1	11	0	14	7	1	5	0	13	193	-	-	-	-	
% Cars	83.3	98.7	100	0	97.6	100	98.7	100	0	98.8	100	100	84.6	0	87.5	100	100	100	0	100	97.5	-	-	-	-	
Trucks	1	1	0	0	2	0	1	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0	4	-	
% Trucks	16.7	1.3	0	0	2.4	0	1.3	0	0	1.2	0	0	7.7	0	6.3	0	0	0	0	0	0	0	0	2	-	
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1	-	
% Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	7.7	0	6.3	0	0	0	0	0	0	0	0	0.5	-	
Peds				1	-				1	-				7	-				3	-	12					
% Peds				8.3	-				8.3	-				58.3	-				25	-						

Intersection: Liverpool Rd & Annland St
Site Code: 2328600003
Count Date: Sep 12, 2023

Peak Hour Diagram

Specified Period

From: 11:30:00
 To: 13:30:00

One Hour Peak

From: 11:45:00
 To: 12:45:00

Weather conditions: Clear

** Unsignalized Intersection **

Major Road: Liverpool Rd runs N/S

North Approach

	Out	In	Total
🚗	99	84	183
🚚	4	3	7
🚲	0	0	0
	103	87	190

Liverpool Rd

	Out	In	Total
🚗	0	0	0
🚚	0	4	0
🚲	5	91	3
	5	95	3
Totals	5	95	3
			0

East Approach

	Out	In	Total
🚗	15	7	22
🚚	0	0	0
🚲	0	0	0
	15	7	22

Annland St

🚲	🚚	🚗	Totals
0	0	0	0
0	0	3	3
0	0	1	1
0	0	2	2

Peds: 9

Peds: 0

Peds: 50

Peds: 5

West Approach

	Out	In	Total
🚗	6	11	17
🚚	0	0	0
🚲	0	0	0
	6	11	17

➡ - Cars

➡ - Trucks

➡ - Bicycles

Liverpool Rd

	Totals	Out	In	Right Turn	Left Turn
🚗	6	6	72	3	0
🚚	0	0	3	0	0
🚲	0	0	0	0	0
	6	6	75	3	0
Totals	6	6	75	3	0

South Approach

	Out	In	Total
🚗	81	99	180
🚚	3	4	7
🚲	0	0	0
	84	103	187

Comments

Peak Hour Summary

Intersection: Liverpool Rd & Annland St
 Site Code: 2328600003
 Count Date: Sep 12, 2023
 Period: 11:30 - 13:30

Peak Hour Data (11:45 - 12:45)

Start Time	North Approach Liverpool Rd						South Approach Liverpool Rd						East Approach Annland St						West Approach Annland St						Total Vehicles
	⬅	⬆	➡	⬇	Peds	Total	⬅	⬆	➡	⬇	Peds	Total	⬅	⬆	➡	⬇	Peds	Total	⬅	⬆	➡	⬇	Peds	Total	
11:45	3	28	1	0	0	32	1	14	2	0	1	17	0	0	4	0	1	4	1	1	1	0	2	3	56
12:00	0	22	1	0	0	23	2	11	0	0	2	13	2	0	5	0	4	7	0	0	1	0	2	1	44
12:15	0	23	1	0	0	24	1	26	0	0	1	27	1	0	0	0	3	1	1	0	0	0	2	1	53
12:30	0	22	2	0	0	24	2	24	1	0	1	27	3	0	0	0	42	3	1	0	0	0	3	1	55
Grand Total	3	95	5	0	0	103	6	75	3	0	5	84	6	0	9	0	50	15	3	1	2	0	9	6	208
Approach %	2.9	92.2	4.9	0	0	-	7.1	89.3	3.6	0	-	-	40	0	60	0	-	-	50	16.7	33.3	0	-	-	-
Totals %	1.4	45.7	2.4	0	0	49.5	2.9	36.1	1.4	0	0	40.4	2.9	0	4.3	0	0	7.2	1.4	0.5	1	0	0	0	2.9
PHF	0.25	0.85	0.63	0	0	0.8	0.75	0.72	0.38	0	0.78	0.5	0	0.45	0	0.54	0.75	0.25	0.5	0	0.5	0.93			
Cars	3	91	5	0	0	99	6	72	3	0	0	81	6	0	9	0	0	15	3	1	2	0	0	6	201
% Cars	100	95.8	100	0	0	96.1	100	96	100	0	0	96.4	100	0	100	0	0	100	100	100	100	0	0	100	96.6
Trucks	0	4	0	0	0	4	0	3	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	7
% Trucks	0	4.2	0	0	0	3.9	0	4	0	0	0	3.6	0	0	0	0	0	0	0	0	0	0	0	0	3.4
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bicycles	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
Peds					0	-					5	-					50	-				9	-	64	
% Peds					0	-					7.8	-					78.1	-				14.1	-		

Intersection: Liverpool Rd & Annland St
Site Code: 2328600003
Count Date: Sep 12, 2023

Peak Hour Diagram

Specified Period

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

One Hour Peak

From: 15:30:00
 To: 16:30:00

Weather conditions: Clear

**** Unsignalized Intersection ****

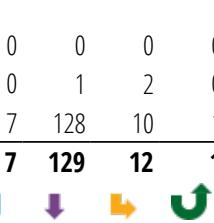
Major Road: Liverpool Rd runs N/S

North Approach

	Out	In	Total
🚗	146	140	286
🚚	3	0	3
🚲	0	1	1
	149	141	290

Liverpool Rd

	Out	In	Total
🚗	0	0	0
🚚	0	1	1
🚲	7	128	10
	Totals	7	129
		12	1



East Approach

	Out	In	Total
🚗	13	13	26
🚚	0	2	2
🚲	1	0	1
	Totals	14	15
			29

Annland St

🚲	🚚	🚗	Totals
0	0	0	0
0	0	5	5
0	0	2	2
0	0	5	5

Peds: 9

Peds: 0

Peds: 2

Peds: 3

West Approach

	Out	In	Total
🚗	12	18	30
🚚	0	0	0
🚲	0	0	0
	Totals	12	18
			30

トラック - Trucks

自転車 - Bicycles

Liverpool Rd

South Approach

	Out	In	Total
🚗	137	137	274
🚚	0	1	1
🚲	0	0	0
	Totals	137	138
			275

Comments

車 - Cars

トラック - Trucks

自転車 - Bicycles

Peak Hour Summary

Intersection: Liverpool Rd & Annland St
 Site Code: 2328600003
 Count Date: Sep 12, 2023
 Period: 15:00 - 18:00

Peak Hour Data (15:30 - 16:30)

Start Time	North Approach Liverpool Rd						South Approach Liverpool Rd						East Approach Annland St						West Approach Annland St						Total Vehicles
	⬅	⬆	➡	⬇	Peds	Total	⬅	⬆	➡	⬇	Peds	Total	⬅	⬆	➡	⬇	Peds	Total	⬅	⬆	➡	⬇	Peds	Total	
15:30	3	32	3	0	0	38	1	29	0	0	0	30	1	0	0	0	0	1	0	1	2	0	2	3	72
15:45	2	36	0	0	0	38	3	38	1	0	0	42	2	1	5	0	0	8	2	1	1	0	7	4	92
16:00	3	29	0	0	0	32	2	33	0	0	1	35	0	1	1	0	1	2	0	0	2	0	0	2	71
16:15	4	32	4	1	0	41	3	27	0	0	2	30	1	0	2	0	1	3	3	0	0	0	0	3	77
Grand Total	12	129	7	1	0	149	9	127	1	0	3	137	4	2	8	0	2	14	5	2	5	0	9	12	312
Approach %	8.1	86.6	4.7	0.7	-		6.6	92.7	0.7	0	-		28.6	14.3	57.1	0	-		41.7	16.7	41.7	0	-	-	
Totals %	3.8	41.3	2.2	0.3	47.8		2.9	40.7	0.3	0	43.9		1.3	0.6	2.6	0	4.5		1.6	0.6	1.6	0	3.8		
PHF	0.75	0.9	0.44	0.25	0.91		0.75	0.84	0.25	0	0.82		0.5	0.5	0.4	0	0.44		0.42	0.5	0.63	0	0.75	0.85	
Cars	10	128	7	1	146		9	127	1	0	137		4	2	7	0	13		5	2	5	0	12	308	
% Cars	83.3	99.2	100	100	98		100	100	100	0	100		100	100	87.5	0	92.9		100	100	100	0	100	98.7	
Trucks	2	1	0	0	3		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	3	
% Trucks	16.7	0.8	0	0	2		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	1	
Bicycles	0	0	0	0	0		0	0	0	0	0		0	0	1	0	1		0	0	0	0	0	1	
% Bicycles	0	0	0	0	0		0	0	0	0	0		0	0	12.5	0	7.1		0	0	0	0	0	0.3	
Peds					0	-				3	-					2	-				9	-	14		
% Peds					0	-				21.4	-					14.3	-				64.3	-			

Ontario Traffic Inc.

Mid-day Peak Diagram

Specified Period

From: 11:00:00

To: 13:00:00

One Hour Peak

From: 12:00:00

To: 13:00:00

Municipality: Pickering

Site #: 1500600008

Intersection: Liverpool Rd & Commerce St

TFR File #: 11

Count date: 20-May-15

Weather conditions:

Person(s) who counted:

** Non-Signalized Intersection **

Major Road: Liverpool Rd runs N/S

North Leg Total: 279

North Entering: 155

North Peds:

Peds Cross: ☒

Heavys 0 0 0 0

Trucks 0 2 0 2

Cars 21 124 8 153

Totals 21 126 8

East Leg Total: 20

East Entering: 9

East Peds: 9

Peds Cross: ☒

Heavys Trucks Cars Totals

0 0 27 27

Commerce St

Heavys Trucks Cars Totals

0 0 18 18

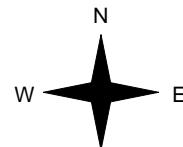
0 0 2 2

0 0 8 8

0 0 28 28



Liverpool Rd



Cars Trucks Heavys Totals

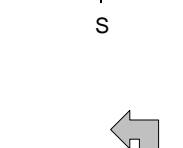
4 1 0 5

4 0 0 4

0 0 0 0

8 1 0

Liverpool Rd



Commerce St

Commerce St

Cars Trucks Heavys Totals

11 0 0 11

Peds Cross: ☒

West Peds: 7

West Entering: 28

West Leg Total: 55

Cars 132

Trucks 2

Heavys 0

Totals 134

Cars 2 98 1 101

Trucks 0 3 0 3

Heavys 0 0 0 0

Totals 2 101 1

Peds Cross: ☒

South Peds: 0

South Entering: 104

South Leg Total: 238

Comments

Ontario Traffic Inc.

Afternoon Peak Diagram

Specified Period

From: 14:00:00

To: 18:00:00

One Hour Peak

From: 16:30:00

To: 17:30:00

Municipality: Pickering

Site #: 1500600008

Intersection: Liverpool Rd & Commerce St

TFR File #: 11

Count date: 20-May-15

Weather conditions:

Person(s) who counted:

** Non-Signalized Intersection **

Major Road: Liverpool Rd runs N/S

North Leg Total: 401

North Entering: 215

North Peds:

Peds Cross: 

Heavys	0	0	0	0
--------	---	---	---	---

Trucks	0	1	0	1
--------	---	---	---	---

Cars	24	168	22	214
------	----	-----	----	-----

Totals	24	169	22	
--------	----	-----	----	--

Heavys 0

Trucks 3

Cars 183

Totals 186

East Leg Total: 46

East Entering: 18

East Peds: 12

Peds Cross: 

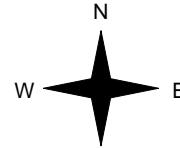
Heavys	Trucks	Cars	Totals
0	0	29	29



Liverpool Rd

Commerce St

Heavys	Trucks	Cars	Totals
0	0	16	16
0	0	4	4
0	0	0	0
0	0	20	20



Cars	Trucks	Heavys	Totals
14	1	0	15
2	0	0	2
1	0	0	1
17	1	0	

Commerce St



Peds Cross: 

West Peds: 20

West Entering: 20

West Leg Total: 49

Cars	169
Trucks	1
Heavys	0
Totals	170



Liverpool Rd

Cars	153	1	157
Trucks	0	2	3
Heavys	0	0	0
Totals	3	155	2

Peds Cross: 

South Peds: 0

South Entering: 160

South Leg Total: 330

Comments

Ontario Traffic Inc.

Total Count Diagram

Municipality: Pickering
Site #: 1500600008
Intersection: Liverpool Rd & Commerce St
TFR File #: 11
Count date: 20-May-15

Weather conditions:

Person(s) who counted:

**** Non-Signalized Intersection ****

Major Road: Liverpool Rd runs N/S

North Leg Total: 2179

North Entering: 1148

North Peds: 19

Peds Cross: ☒

	Heavys	Cars	Trucks	Totals
0	0	0	0	0
3	125	919	1	1129
19	85			
128	934	86		

	Heavys	Cars	Trucks	Totals
0	0	0	0	0
31	1000			1031
19				

	East Leg Total:	222
East Entering:	95	
East Peds:	117	
Peds Cross:	☒	

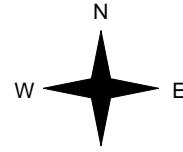
Heavys Trucks Cars Totals
0 6 155 161



Liverpool Rd

Commerce St

Heavys Trucks Cars Totals
0 0 103 103
0 2 21 23
0 0 14 14
0 2 138



	Cars	Trucks	Heavys	Totals
65	7	0	0	72
17	2	0	0	19
4	0	0	0	4
86	9	0	0	

Commerce St



	Cars	Trucks	Heavys	Totals
123	4	0	0	127

Peds Cross: ☒
West Peds: 53
West Entering: 140
West Leg Total: 301

Cars 937
Trucks 15
Heavys 0
Totals 952

	Cars	Trucks	Heavys	Totals
13	832	17	0	862
1	24	1	0	26
0	0	0	0	0
14	856	18		

	Peds Cross:	☒
South Peds:	8	
South Entering:	888	
South Leg Total:	1840	

Comments

Ontario Traffic Inc.

Traffic Count Summary

Intersection: Liverpool Rd & Commerce St

Count Date: 20-May-15

Municipality: Pickering

North Approach Totals					North/South Total Approaches	South Approach Totals					
Hour Ending	Includes Cars, Trucks, & Heavys					Hour Ending	Includes Cars, Trucks, & Heavys				
	Left	Thru	Right	Grand Total			Left	Thru	Right	Grand Total	
7:00:00	0	1	0	1	0	1	7:00:00	0	0	0	
8:00:00	12	40	3	55	1	121	8:00:00	0	65	1	
9:00:00	1	71	6	78	3	158	9:00:00	0	74	6	
11:00:00	0	0	2	2	0	4	11:00:00	0	2	0	
12:00:00	4	111	15	130	4	223	12:00:00	1	91	1	
13:00:00	8	126	21	155	0	259	13:00:00	2	101	1	
14:00:00	1	11	1	13	0	22	14:00:00	0	9	0	
15:00:00	7	134	13	154	1	289	15:00:00	4	130	1	
16:00:00	16	135	19	170	7	295	16:00:00	0	122	3	
17:00:00	16	138	21	175	2	338	17:00:00	5	155	3	
18:00:00	21	167	27	215	1	325	18:00:00	2	106	2	
Totals:	86	934	128	1148	19	2035		14	855	18	
									887	8	

East Approach Totals					East/West Total Approaches	West Approach Totals					
Hour Ending	Includes Cars, Trucks, & Heavys					Hour Ending	Includes Cars, Trucks, & Heavys				
	Left	Thru	Right	Grand Total			Left	Thru	Right	Grand Total	
7:00:00	0	0	0	0	0	0	7:00:00	0	0	0	
8:00:00	1	0	11	12	8	21	8:00:00	8	0	1	
9:00:00	0	2	16	18	11	40	9:00:00	15	7	0	
11:00:00	0	0	1	1	1	1	11:00:00	0	0	0	
12:00:00	0	3	6	9	3	21	12:00:00	10	2	0	
13:00:00	0	4	5	9	9	37	13:00:00	18	2	8	
14:00:00	0	1	1	2	0	3	14:00:00	1	0	0	
15:00:00	0	2	3	5	10	19	15:00:00	10	3	1	
16:00:00	2	2	7	11	40	29	16:00:00	13	3	2	
17:00:00	0	3	14	17	20	34	17:00:00	14	2	1	
18:00:00	1	2	8	11	15	30	18:00:00	14	4	1	
Totals:	4	19	72	95	117	235		103	23	14	
								140	53		

Calculated Values for Traffic Crossing Major Street

Hours Ending:	8:00	9:00	12:00	13:00	15:00	16:00	17:00	18:00
Crossing Values:	10	25	18	22	15	31	19	20

Ontario Traffic Inc.

Count Date: 20-May-15 Site #: 1500600008

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Ontario Traffic Inc.

Count Date: 20-May-15 Site #: 1500600008

Appendix B

Traffic Signal Timings

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

Synchro Analysis Worksheets

HCM Signalized Intersection Capacity Analysis

10: Liverpool Rd & Bayly Street

Existing Conditions

AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑	↑	↑	↑↑	↑	↑	↑↑		↑	↑↑	↑
Traffic Volume (vph)	188	526	118	60	240	313	108	385	146	341	270	205
Future Volume (vph)	188	526	118	60	240	313	108	385	146	341	270	205
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	0.92	1.00	1.00	0.98	1.00	0.98		1.00	1.00	0.96
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
Fr _t	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)	1748	3471	1476	1745	3406	1403	1684	3320		1648	3505	1527
Flt Permitted	0.60	1.00	1.00	0.26	1.00	1.00	0.58	1.00		0.29	1.00	1.00
Satd. Flow (perm)	1098	3471	1476	472	3406	1403	1027	3320		509	3505	1527
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)	196	548	123	62	250	326	112	401	152	355	281	214
RTOR Reduction (vph)	0	0	98	0	0	84	0	39	0	0	0	102
Lane Group Flow (vph)	196	548	25	63	250	242	113	514	0	355	281	112
Confl. Peds. (#/hr)	18		21	21		18	18		35	35		18
Heavy Vehicles (%)	2%	4%	1%	3%	6%	13%	6%	2%	3%	9%	3%	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		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)	348	715	304	219	701	653	415	906		582	1587	798
v/s Ratio Prot	c0.04	c0.16		0.02	0.07	0.10	0.02	0.15		c0.16	0.08	0.01
v/s Ratio Perm	0.12		0.02	0.06		0.08	0.07			c0.18		0.06
v/c Ratio	0.56	0.77	0.08	0.29	0.36	0.37	0.27	0.57		0.61	0.18	0.14
Uniform Delay, d1	29.6	37.4	32.1	27.6	34.0	17.2	22.4	31.3		13.2	16.3	12.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	6.5	7.7	0.5	3.3	1.4	1.6	1.6	2.6		4.7	0.2	0.4
Delay (s)	36.1	45.1	32.6	30.9	35.4	18.8	24.1	33.8		17.9	16.5	12.6
Level of Service	D	D	C	C	D	B	C	C		B	B	B
Approach Delay (s)		41.3			26.5			32.2			16.1	
Approach LOS		D			C			C			B	
Intersection Summary												
HCM 2000 Control Delay		29.1								C		
HCM 2000 Volume to Capacity ratio		0.67										
Actuated Cycle Length (s)		100.0								19.1		
Intersection Capacity Utilization		78.0%								D		
Analysis Period (min)		15										
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis
30: Liverpool Rd & Commerce Street

Existing Conditions
AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	8	0	0	0	17	0	92	7	1	85	7
Future Volume (Veh/h)	18	8	0	0	0	17	0	92	7	1	85	7
Sign Control	Stop				Stop			Free			Free	
Grade	0%				0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	20	9	0	0	0	18	0	100	8	1	92	8
Pedestrians	17				16			22			10	
Lane Width (m)	3.6				3.6			3.6			3.6	
Walking Speed (m/s)	1.2				1.2			1.2			1.2	
Percent Blockage	1				1			2			1	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	247	239	135	244	239	130	117			124		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	247	239	135	244	239	130	117			124		
tC, single (s)	7.1	6.5	6.2	7.1	6.6	6.3	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.1	3.4	2.3			2.2		
p0 queue free %	97	99	100	100	100	98	100			100		
cM capacity (veh/h)	662	640	887	663	637	872	1426			1443		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	29	18	108	101								
Volume Left	20	0	0	1								
Volume Right	0	18	8	8								
cSH	655	872	1426	1443								
Volume to Capacity	0.04	0.02	0.00	0.00								
Queue Length 95th (m)	1.1	0.5	0.0	0.0								
Control Delay (s)	10.7	9.2	0.0	0.1								
Lane LOS	B	A		A								
Approach Delay (s)	10.7	9.2	0.0	0.1								
Approach LOS	B	A										
Intersection Summary												
Average Delay			1.9									
Intersection Capacity Utilization		26.6%			ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
40: Liverpool Rd & Annland Street

Existing Conditions
AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	1	5	2	1	13	1	79	4	6	76	3
Future Volume (Veh/h)	7	1	5	2	1	13	1	79	4	6	76	3
Sign Control	Stop				Stop			Free			Free	
Grade	0%				0%			0%			0%	
Peak Hour Factor	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60
Hourly flow rate (vph)	12	2	8	3	2	22	2	132	7	10	127	5
Pedestrians	3				7			1			1	
Lane Width (m)	3.6				3.6			3.6			3.6	
Walking Speed (m/s)	1.2				1.2			1.2			1.2	
Percent Blockage	0				1			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	316	302	134	306	302	144	135			146		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	316	302	134	306	302	144	135			146		
tC, single (s)	7.1	6.5	6.2	7.1	6.6	6.2	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.1	3.3	2.2			2.4		
p0 queue free %	98	100	99	100	100	98	100			99		
cM capacity (veh/h)	613	603	918	630	591	903	1458			1341		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	22	27	141	142								
Volume Left	12	3	2	10								
Volume Right	8	22	7	5								
cSH	696	831	1458	1341								
Volume to Capacity	0.03	0.03	0.00	0.01								
Queue Length 95th (m)	0.8	0.8	0.0	0.2								
Control Delay (s)	10.3	9.5	0.1	0.6								
Lane LOS	B	A	A	A								
Approach Delay (s)	10.3	9.5	0.1	0.6								
Approach LOS	B	A										
Intersection Summary												
Average Delay			1.8									
Intersection Capacity Utilization		18.8%			ICU Level of Service				A			
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis
10: Liverpool Rd & Bayly Street

Existing Conditions
PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑	↑	↑	↑↑	↑	↑	↑↑		↑	↑↑	↑
Traffic Volume (vph)	299	635	178	111	476	636	73	409	135	304	385	330
Future Volume (vph)	299	635	178	111	476	636	73	409	135	304	385	330
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	0.92	1.00	1.00	0.98	1.00	0.98		1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	0.99	1.00	1.00	0.99	1.00		0.99	1.00	1.00
Fr _t	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)	1782	3505	1486	1760	3574	1533	1757	3373		1742	3574	1565
Flt Permitted	0.32	1.00	1.00	0.30	1.00	1.00	0.44	1.00		0.29	1.00	1.00
Satd. Flow (perm)	598	3505	1486	555	3574	1533	822	3373		529	3574	1565
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)	311	661	185	116	496	662	76	426	141	317	401	344
RTOR Reduction (vph)	0	0	130	0	0	58	0	33	0	0	0	223
Lane Group Flow (vph)	311	661	55	116	496	605	76	534	0	317	401	121
Confl. Peds. (#/hr)	17		22	22		17	20		41	41		20
Heavy Vehicles (%)	1%	3%	0%	2%	1%	3%	2%	1%	1%	3%	1%	0%
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)	367	1037	439	265	914	699	551	819		476	868	552
v/s Ratio Prot	c0.09	0.19		0.03	0.14	c0.17	0.03	0.16		0.13	0.11	0.02
v/s Ratio Perm	c0.24		0.04	0.11		0.22	0.03			c0.16		0.05
v/c Ratio	0.85	0.64	0.12	0.44	0.54	0.87	0.14	0.65		0.67	0.46	0.22
Uniform Delay, d1	24.1	30.5	25.7	24.6	32.1	24.5	16.3	34.1		19.5	32.3	22.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	20.9	3.0	0.6	5.2	2.3	13.6	0.5	4.0		7.2	1.8	0.9
Delay (s)	44.9	33.5	26.3	29.7	34.5	38.0	16.8	38.1		26.7	34.0	23.6
Level of Service	D	C	C	C	C	D	B	D		C	C	C
Approach Delay (s)		35.5			35.9			35.6			28.5	
Approach LOS		D			D			D			C	
Intersection Summary												
HCM 2000 Control Delay		33.8								C		
HCM 2000 Volume to Capacity ratio		0.82										
Actuated Cycle Length (s)		100.0							19.1			
Intersection Capacity Utilization		86.3%								E		
Analysis Period (min)		15										
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis
30: Liverpool Rd & Commerce Street

Existing Conditions
PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	19	5	0	1	2	17	4	136	2	26	148	29
Future Volume (Veh/h)	19	5	0	1	2	17	4	136	2	26	148	29
Sign Control	Stop				Stop			Free			Free	
Grade	0%				0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	21	5	0	1	2	18	4	148	2	28	161	32
Pedestrians	6				3			2			1	
Lane Width (m)	3.6				3.6			3.6			3.6	
Walking Speed (m/s)	1.2				1.2			1.2			1.2	
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	416	400	185	398	415	153	199			153		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	416	400	185	398	415	153	199			153		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.3	4.1			4.3		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.4	2.2			2.4		
p0 queue free %	96	99	100	100	100	98	100			98		
cM capacity (veh/h)	522	525	857	547	515	875	1379			1338		
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	26	21	154	221								
Volume Left	21	1	4	28								
Volume Right	0	18	2	32								
cSH	522	799	1379	1338								
Volume to Capacity	0.05	0.03	0.00	0.02								
Queue Length 95th (m)	1.3	0.6	0.1	0.5								
Control Delay (s)	12.3	9.6	0.2	1.1								
Lane LOS	B	A	A	A								
Approach Delay (s)	12.3	9.6	0.2	1.1								
Approach LOS	B	A										
Intersection Summary												
Average Delay			1.9									
Intersection Capacity Utilization		37.5%			ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

40: Liverpool Rd & Annland Street

Existing Conditions

PM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	2	5	4	2	8	9	129	1	12	130	7
Future Volume (Veh/h)	5	2	5	4	2	8	9	129	1	12	130	7
Sign Control	Stop				Stop			Free			Free	
Grade	0%				0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	6	2	6	5	2	9	11	152	1	14	153	8
Pedestrians	6				3			1			1	
Lane Width (m)	3.6				3.6			3.6			3.6	
Walking Speed (m/s)	1.2				1.2			1.2			1.2	
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	376	369	164	370	372	156	167				156	
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	376	369	164	370	372	156	167				156	
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1				4.3	
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2				2.4	
p0 queue free %	99	100	99	99	100	99	99				99	
cM capacity (veh/h)	562	549	881	571	547	891	1416				1334	
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	14	16	164	175								
Volume Left	6	5	11	14								
Volume Right	6	9	1	8								
cSH	663	711	1416	1334								
Volume to Capacity	0.02	0.02	0.01	0.01								
Queue Length 95th (m)	0.5	0.6	0.2	0.3								
Control Delay (s)	10.5	10.2	0.6	0.7								
Lane LOS	B	B	A	A								
Approach Delay (s)	10.5	10.2	0.6	0.7								
Approach LOS	B	B										
Intersection Summary												
Average Delay			1.4									
Intersection Capacity Utilization			21.7%			ICU Level of Service					A	
Analysis Period (min)			15									

Appendix D

Level of Service Definitions

LEVEL OF SERVICE¹

Level of Service (LOS) is defined as a qualitative measure describing operational conditions within a traffic stream, and their perception by motorists and/or passengers. This concept was introduced in the 1965 *Highway Capacity Manual* as a criteria for interrupted flow conditions. The 2000 *Highway Capacity Manual* changed the basis for measuring Level of Service at intersections to control delay².

Six Levels of Service are defined with LOS A representing the best operating conditions, and LOS F the worst (briefly described below). It should be noted that there is often significant variability in the amount of delay experienced by individual drivers.

LOS A: This Level of Service describes the highest quality of traffic flow and is referred to as free flow. The approach appears open, turning movements are easily made and drivers have freedom of operation. Control delay is less than 10 seconds/vehicle.

LOS B: This Level of Service is referred to as a stable flow. Drivers feel somewhat restricted and occasionally may have to wait to complete the minor movement. Control delay is 10-15 seconds/vehicle for unsignalized intersections and 10-20 seconds/vehicle for signalized intersections.

LOS C: At this level, the operation is stable. Drivers feel more restricted and may have to wait, with queues developing for short periods. Control delay is 15-25 seconds/vehicle at unsignalized intersections and 20-35 seconds/vehicle at signalized intersections.

LOS D: At this level, traffic is approaching unstable flow. The motorist experiences increasing restriction and instability of flow. There are substantial delays to approaching vehicles during short peaks within the peak period, but there are enough gaps to lower demand to permit occasional clearance of developing queues and prevent excessive back-ups. Control delay is 25-35 seconds/vehicle at unsignalized intersections and 35-55 seconds/vehicle at signalized intersections.

LOS E: At this level capacity occurs. Long queues of vehicles exist and delays to vehicles may extend. Control delay is 35-50 seconds/vehicle at unsignalized intersections and 55-80 seconds/vehicle at signalized intersections.

LOS F: At this Level of Service, the intersection has failed. Capacity of the intersection has been exceeded. Control delay exceeds 50 seconds/vehicle at unsignalized intersections and exceeds 80 seconds/vehicle at signalized intersections.

¹

Transportation Research Board: *Highway Capacity Manual* 1965, 2000

²

Control delay is defined as the component of delay that results when a control signal causes a lane group to reduce speed or to stop; it is measured by comparison with the uncontrolled condition.