

TRIBUTE (BROOKDALE) LIMITED

1101A/1105/1163 KINGSTON ROAD, CITY OF PICKERING TRAFFIC IMPACT STUDY

December 20, 2024





**1101A/1105/1163
KINGSTON ROAD,
CITY OF PICKERING
TRAFFIC IMPACT STUDY**

TRIBUTE (BROOKDALE) LIMITED

REPORT

PROJECT NO.: 221-12931-00

DATE: DECEMBER 20, 2024

WSP

150 COMMERCE VALLEY DRIVE WEST

THORNHILL, ON

CANADA L3T 7Z3

T: +1 905 882-1100

F: +1 905 882-0055

WSP.COM



December 20, 2024

TRIBUTE (BROOKDALE) LIMITED
c/o Stephen Deveaux
Executive Vice President, Land Development
1815 Ironstone Manner, Unit 1
Pickering, Ontario L1W 3W9

Dear Mr. Deveaux,

Subject: **Traffic Impact Study for Proposed Development at 1101A/1105/1163
Kingston Road, Pickering**

WSP Canada Inc. (WSP) is pleased to submit this traffic impact study to support the Official Plan Amendment (OPA) and Zoning By-Law Amendment (ZBA) applications for the proposed mixed-use development located at 1101A/1105/1163 Kingston Road in the City of Pickering.

Based on the enclosed study findings of this report, it is expected that the proposed development can be readily accommodated by the study area transportation network with some signal timing adjustments.

We thank you for the opportunity to undertake this study. Please do not hesitate to contact us if you have any questions or comments.

Sincerely,

Ismet Medic, B.A.Sc.
Technical Director
Transportation Planning and Science

Peter Yu, P.Eng., PMP
Senior Project Manager
Transportation Planning and Science



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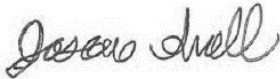
T: +1 905 882-1100
F: +1 905 882-0055
wsp.com

SIGNATURES

PREPARED BY



Sangave Gunajothy, EIT
Transportation Planner



Jason Small, EIT
Transportation Planner

APPROVED¹ BY *(must be reviewed for technical accuracy prior to approval)*



Ismet Medic, BA.Sc
Technical Director

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1 INTRODUCTION

WSP was retained by Tribute Communities to prepare a Transportation Impact Study (TIS) for the proposed mixed-use development located at 1101A/1105/1163 Kingston Road in the City of Pickering. The site location and study area are shown in **Figure 1-1**.

The site is currently occupied by a shopping centre with various retail tenants including Home Depot, Food Basics, and others. The proposed development will, upon the completion of all four phases, fully replace the existing shopping centre with multi-use blocks containing a total of 5,264 residential units and 6,585 m² of retail space. The site plan is shown in **Figure 1-2**.

The subject site is proposed to utilize existing connections to Kingston Road (both via Walnut Lane and a direct right-in/right-out access) and Dixie Road, as well as the City's proposed extension of Walnut Lane to Liverpool Road.

The main objective of this study is to evaluate if there are any adverse impacts on the local transportation network related to the proposed development and to evaluate the proposed parking and loading arrangements. Our study approach and findings are documented herein.



Figure 1-1

Site Location and Study Area

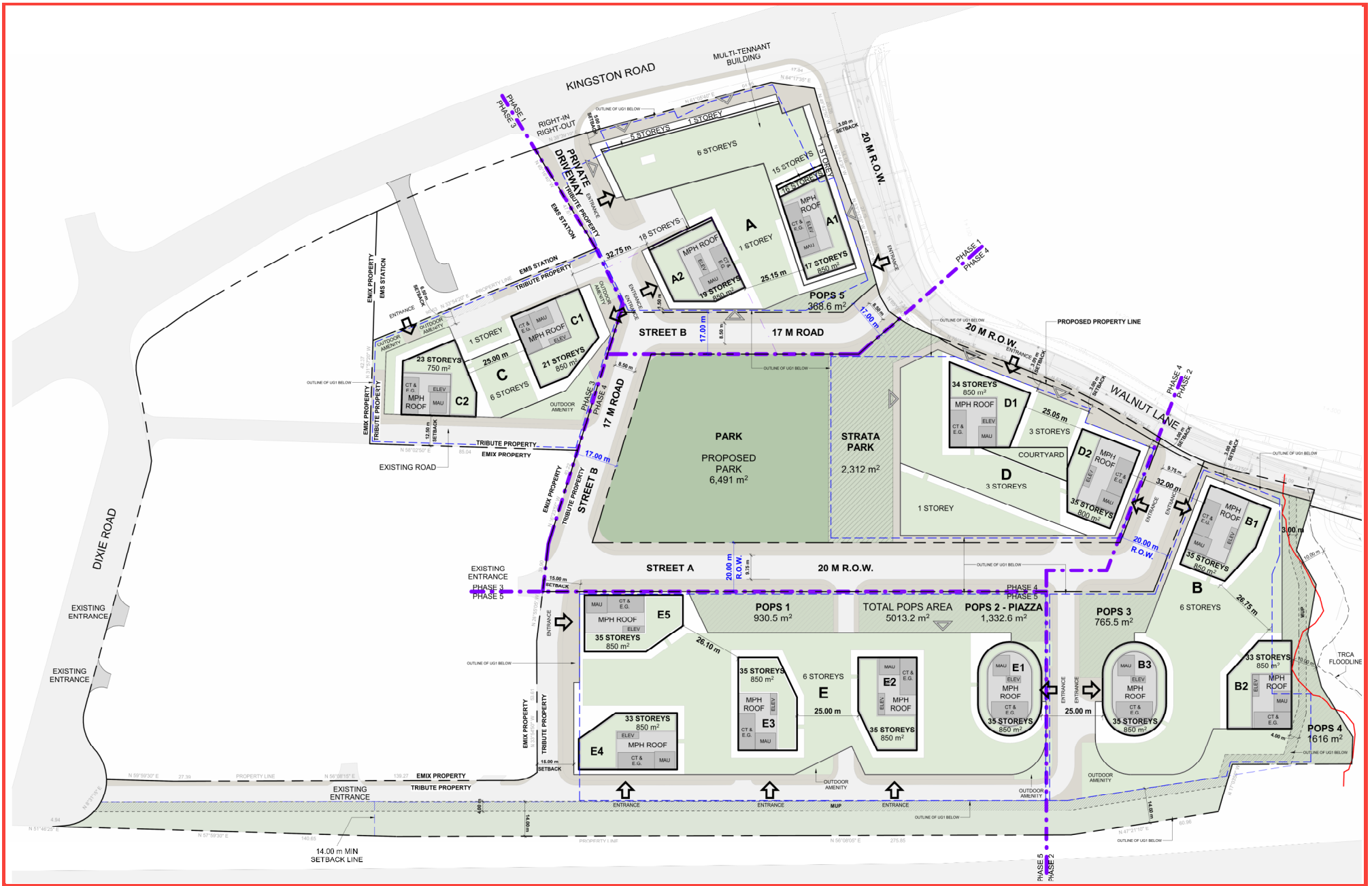


Figure 1-2

Site Plan



2 EXISTING CONDITIONS

This section of our assessment describes the existing road network and traffic conditions within the study area.

2.1 BOUNDARY ROADWAYS

The following roadways make up the boundary road network that surrounds the subject site:

Liverpool Road is a north-south type B arterial road under the jurisdiction of the Region Municipality of Durham with a speed limit of 50 km/h within the study area.

Pickering Parkway is an east-west type C arterial road under the jurisdiction of the City of Pickering with a speed limit of 50 km/h within the study area.

Kingston Road, which directly borders the site to the north, is an east-west type B arterial road under the jurisdiction of the Region Municipality of Durham with a speed limit of 60 km/h within the study area. Dedicated bus and bicycle lanes are provided within the portions of the study area west of Delta Boulevard and near Liverpool Road.

Walnut Lane, which directly borders the site to the northeast, is a north-south collector road under the jurisdiction of the City of Pickering with a speed limit of 40 km/h within the study area.

Dixie Road is a north-south type C arterial road under the jurisdiction of the City of Pickering with a speed limit of 60 km/h north of Kingston Road and 40 km/h south of Kingston Road.

Fairport Road is a north-south type C arterial road under the jurisdiction of the City of Pickering with a speed limit of 40 km/h within the study area.

Delta Boulevard is a north-south local road under the jurisdiction of the City of Pickering with a speed limit of 40 km/h within the study area.

Whites Road is a north-south type A arterial road under the jurisdiction of the Region Municipality of Durham with a speed limit of 60 km/h within the study area.

Highway 401 is an east-west freeway under the jurisdiction of the Ontario Ministry of Transportation with a speed limit of 100 km/h. It has eastbound on and off-ramps and westbound on-ramps at Whites Road, westbound on and off-ramps at Kingston Road (approximately 250 metres east of Delta Boulevard), and westbound on and off-ramps at Liverpool Road.

The study area includes the following intersections:

- Liverpool Road & Highway 401 Westbound Off-Ramp;
- Liverpool Road & Pickering Parkway;
- Liverpool Road & Kingston Road;
- Kingston Road & Walnut Lane;
- Kingston Road & Dixie Road;

- Kingston Road & Fairport Road;
- Kingston Road & Highway 401 WB Ramps;
- Kingston Road & Delta Boulevard;
- Kingston Road & Whites Road;
- Whites Road and Highway 401 Eastbound Off-Ramp;
- Dixie Road & Shopping Plaza Entrance.

The lane configurations at the study intersections are illustrated in **Figure 2-1**.

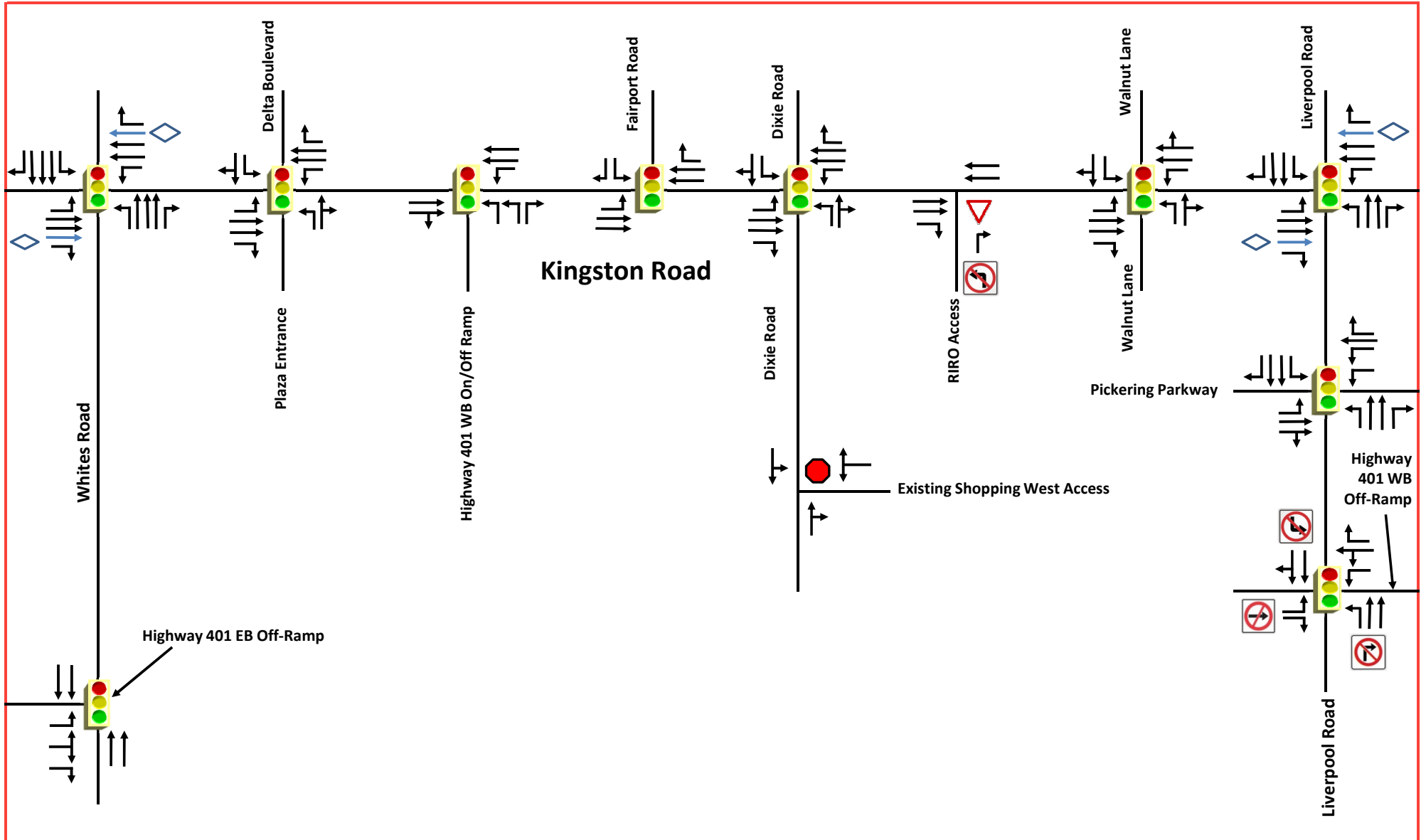


Figure 2-1
Existing Lane Configuration

2.2 TRANSIT SERVICES

The site is situated in an area that is very well-served by transit, with stops and stations connecting to various parts of the City and the region within 500 metres or less of the proposed development. Weekday and weekend minimum service levels range depending on bus type and location, with PULSE bus routes having 15-minute headways, base bus routes having 30-minute headways, and rural bus routes having 90-minute headways during weekday and weekend a.m. and p.m. peak periods. The site is serviced by the following Durham Region Transit (DRT) bus routes:

- The **900 PULSE** operates in an east-west direction along Kingston Road between Centennial College and Bond Street East and Ritson Road North. The route connects to several important destinations, such as the Oshawa Centre Terminal, Centennial College, and University of Toronto Scarborough. This bus route stops adjacent to the site at the intersection of Kingston Road & Walnut Lane. Overnight service along this corridor is provided by the **N1 Route**.
- The **920 Route** operates in an east-west direction along Kingston Road between Scarborough Town Center and Harmony Terminal. This bus route stops adjacent to the site at the intersection of Kingston Road & Walnut Lane.
- The **916 PULSE** operates in an east-west direction mostly along Rossland Road East between Pickering Parkway Terminal and Harmony Terminal. The bus route's nearest stop to the site is at the intersection of Kingston Road & Liverpool Road.
- The **917 Route** operates in an east-west direction mostly along Bayly Street between Pickering Parkway Terminal and Oshawa Centre Terminal. The route connects to several important destinations, such as Pickering Parkway Terminal, Pickering Station, Ajax Station, Whitby Station, Durham College, and Oshawa Centre Terminal. The bus route's nearest stop to the site is at the intersection of Kingston Road & Liverpool Road.
- The **110 Route** operates in an east-west direction mostly on Finch Avenue between Pickering Parkway Terminal and Sunbird Trail. The bus route's nearest stop to the site is at the intersection of Kingston Road & Liverpool Road.
- The **291 Route** operates in an east-west direction mostly along Kingston Road, then in a north-south direction mostly along Harwood Avenue South between Pickering Station and the intersection of Westney Road South & Harwood Avenue South. The bus route's nearest stop to the site is at the intersection of Kingston Road & Liverpool Road.
- The **103 Route** operates in an east-west direction between Pickering Parkway Terminal and the intersection of Altona Road & Pine Grove Avenue. The bus route's nearest stop to the site is at the intersection of Kingston Road & Liverpool Road.
- The **112 Route** operates in a north-south direction between Pickering Parkway Terminal and the intersection of Burkholder Drive & Belcourt Street. The bus route's nearest stop to the site is at the intersection of Kingston Road & Liverpool Road.

The site is also serviced by the following GO Transit regional bus routes:

















- The **41 Hamilton/Pickering** bus route operates primarily east-west between Hamilton and the Pickering GO Station. This bus route stops adjacent to the site at the intersection of Kingston Road & Walnut Lane.
- The **92 Oshawa/Yorkdale** bus route operates primarily east-west between the Oshawa GO station and the Yorkdale Bus Terminal. This bus route stops adjacent to the site at the intersection of Kingston Road & Walnut Lane.

The site is also located approximately 1 km away from the Pickering GO station, at which the Lakeshore East GO Train line provides all-day service between Union Station and Durham College Oshawa GO Station.

A map of the DRT transit routes and bus stops in the area is shown in **Figure 2-2**.

Figure 2-2: Existing Transit Routes

Legend

-  Operates at least every 20 minutes, weekdays, from AM peak through PM peak. Operates at least every 30 minutes at other times.
-  Operates at least every 30 minutes
-  Operates at least every 15 minutes during certain times, operates at least every 30 minute at other times.
-  Operates at least every 30 minutes
-  Operates at least every two hours
-  On Demand available at bus stops in these areas
-  On Demand is available at bus stops when scheduled service is not operating
-  Pedestrian bridge or tunnel
-  Route number
-  Branch
-  Direction of travel
-  Service Frequency
-  Hospital
-  Train station
-  Terminal
-  College / University



Source: Durham Region Transit System Map, Effective October 21, 2024

2.3 ACTIVE TRANSPORTATION NETWORK

Along Kingston Road, sidewalks of varying quality are provided along at least one side of the roadway within the portions of the study area west of Delta Boulevard and east of Dixie Road (including along the frontage of the site). Additionally, dedicated bicycle lanes are provided within the portions of the study area west of Delta Boulevard and near Liverpool Road.

All other boundary roadways have sidewalks on at least one side of the roadway.

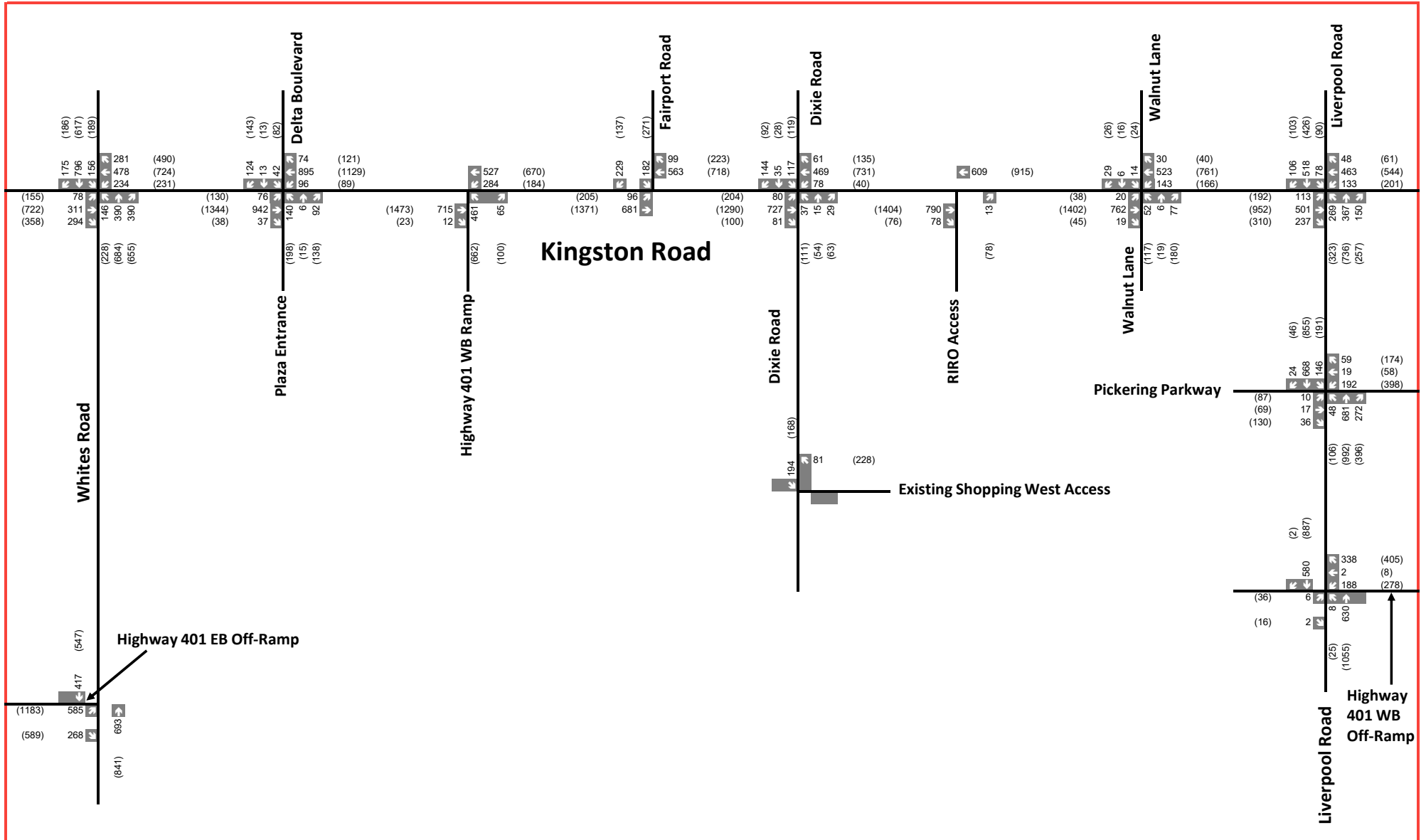
2.4 TRAFFIC DATA

Table 2-1 summarizes the list of turning movement counts collected for this study, as well as the source and date of the counts. Traffic data was collected during typical weekday a.m. and p.m. peak periods. The turning movement counts used are included in **Appendix A**.

Table 2-1: Traffic Data Information

Intersection	Count Date	Source
Liverpool Road & Highway 401 WB Off-Ramp	June 8, 2022	Spectrum Traffic Data Inc; Retrieved from 1786-1790 Liverpool Road TIS (BA Group)
Liverpool Road & Pickering Parkway	June 8, 2022	
Liverpool Road & Kingston Road	November 19, 2024	Horizon Data Services Limited
Kingston Road & Walnut Lane	January 10, 2023	
Kingston Road & Dixie Road	January 10, 2023	
Kingston Road & Fairport Road	December 6, 2022	Durham Region
Kingston Road & Highway 401 WB Ramps	December 6, 2022	
Kingston Road & Delta Boulevard	December 13, 2022	
Kingston Road & Whites Road	December 6, 2022	
Whites Road & Highway 401 EB Off-Ramp	December 6, 2022	

The weekday a.m. and p.m. peak hour volumes at the study intersections are illustrated in **Figure 2-3**.



Legend

xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes

Figure 2-3

Existing Traffic Volumes

2.5 EXISTING TRAFFIC CONDITIONS

To analyze existing traffic conditions in the study area, capacity analyses were undertaken using the Synchro 11 traffic analysis software. This software incorporates the methodology outlined in the Highway Capacity Manual (HCM), Transportation Research Board, 2000 and 2010. The signal timing plans for the study intersections were acquired from the Region and are provided in **Appendix A**.

The Synchro model has been established based on the Regional Municipality of Durham *Design Specifications for Traffic Control Devices, Pavement Markings, Signage and Roadside Protection* (Durham Region guidelines), dated April 2023. The bus blockage parameter has been applied on lane segments with a near-side bus stop to account for the presence of regular DRT and GO Transit bus services.

Per the Durham Region guidelines, the width of all lanes were coded as the actual lane widths, determined by measurements taken using Google satellite imagery.

For existing conditions, intersection peak hour factors were calculated from the 15-minute peak hour traffic counts. However, a PHF of 0.92 was assumed for all intersections in all future condition models in order to be consistent with the Durham Region guidelines.

The conflicting pedestrian, conflicting bicycles, and heavy vehicle percentages were also based on the traffic counts.

A lost time of zero was initially applied at all of the signalized intersections.

The existing “bus-only” lanes on Kingston Road were not counted as traffic lanes in the model.

All of the evaluation parameters are maintained from existing to future evaluations to allow “apples to apples” comparisons.

An intersection capacity analysis provides an indication of traffic operations based on calculations of volume-to-capacity (v/c) and delays for individual movements at an intersection. Level of Service (LOS). **Appendix B** provides the LOS definitions according to the HCM 2000 methodology.

Traffic operations were analyzed at the study intersections to determine the existing LOS during the weekday a.m. and p.m. peak hours. The results of the intersection capacity analysis under existing conditions with the above calibration are summarized in **Table 2-2**. Detailed intersection capacity analysis sheets are included in **Appendix C**.

Table 2-2: Existing Intersection Operations

Intersection	Weekday A.M. Peak Hour		Weekday P.M. Peak Hour	
	Overall LOS (Delay in Seconds)	Critical Movement (Volume/Capacity Ratio)	Overall LOS (Delay in Seconds)	Critical Movement (Volume/Capacity Ratio)
Signalized Intersections				
Liverpool Road & Highway 401 WB Off-Ramp	B (13)	--	C (23)	WB-R (0.99)
Liverpool Road & Pickering Parkway	B (15)	--	C (25)	SB-L (0.91)
Liverpool Road & Kingston Road	C (27)	--	C (34)	WB-L (0.96)
Kingston Road & Walnut Lane	A (7)	--	B (13)	--
Kingston Road & Dixie Road	B (16)	--	B (18)	--
Kingston Road & Fairport Road	B (15)	--	B (14)	--
Kingston Road & Highway 401 WB Ramps	C (21)	--	C (25)	NB-L (0.87)
Kingston Road & Delta Boulevard	C (22)	--	B (15)	NB-L (0.87)
Kingston Road & Whites Road	B (20)	--	C (28)	NB-R (0.90)
Whites Road & Highway 401 EB Off-Ramp	C (20)	--	C (26)	--
Unsignalized Intersections				
Dixie Road & Shopping Plaza Entrance	A (9)	--	A (10)	--

¹ For signalized intersections, the level of service is based on the overall delay of the intersection. Critical v/c ratios are only listed for through or shared through/turning movements with values over 0.85. Critical v/c ratios are only listed for exclusive movements with values over 0.90.

As shown in **Table 2-2**, the results presented above indicate that all study intersections operate within capacity. All intersections operate at an acceptable LOS of 'C' or better.

A queueing analysis for the study intersections was completed under existing conditions and is presented in **Table 2-3**. The 50th percentile queue lengths are shown only for movements with 95th percentile queue lengths exceeding the available storage. Detailed queue results for all intersections and individual movements are provided in **Appendix C**.

Table 2-3: Existing Intersection Queue Lengths

Intersection	Lane Movement	Available Storage (m)	95 th Percentile Queues (m) [50 th Percentile Queues (m)]	
			A.M. Peak Hour	P.M. Peak Hour
Liverpool Road & Highway 401 WB Off-Ramp	EBL	N/A	5	17
	EBR	N/A	0	0
	WBL	203	32	47
	WBT	203	33	48
	WBR	125	29	119
	NBL	27	3	7
	NBT	348	47	98
	SBT	138	54	46
Liverpool Road & Pickering Parkway	EBL	59	7	31
	EBT	59	8	17
	WBL	57	30	48
	WBT	305	10	19
	WBR	62	0	15
	NBL	54	7	13
	NBT	138	44	130
	NBR	76	5	6
	SBL	133	22	66
	SBT	234	62	107
	SBR	36	0	0
Liverpool Road & Kingston Road	EBL	189	25	49
	EBT	671	84	152
	EBR	98	56	66
	WBL	171	31	79
	WBT	372	63	71
	WBR	117	2	5
	NBL	186	59	70
	NBT	234	45	92
	NBR	52	15	25
	SBL	49	18	21
	SBT	327	64	52
SBR	61	12	11	

Intersection	Lane Movement	Available Storage (m)	95 th Percentile Queues (m) [50 th Percentile Queues (m)]	
			A.M. Peak Hour	P.M. Peak Hour
Kingston Road & Walnut Lane	EBL	26	3	8
	EBT	105	25	101
	EBR	26	1	3
	WBL	37	12	36
	WBT	671	19	40
	NBL	63	21	42
	NBT	101	14	29
	SBL	19	10	12
Kingston Road & Dixie Road	EBL	145	22	33
	EBT	872	116	188
	EBR	65	24	14
	WBL	51	8	5
	WBT	167	27	62
	WBR	80	3	3
	NBL	13	17 [9]	39 [27]
	NBT	100	12	28
	SBL	16	41 [28]	41 [28]
Kingston Road & Fairport Road	EBL	75	27	20
	EBT	400	113	203
	WBT	872	23	25
	WBR	19	5	8
	SBL	16	66 [46]	86 [63]
	SBR	261	21	15
Kingston Road & Highway 401 WB Ramps	EBT	245	60	140
	WBL	48	10	61 [27]
	WBT	400	12	75
	NBL	193	72	99
Kingston Road & Delta Boulevard	NBR	52	12	16
	EBL	52	13	12
	EBT	199	87	107
	EBR	149	4	0
	WBL	100	27	5
	WBT	245	137	116
	WBR	18	17	8
	NBL	107	54	74
	NBT	107	15	19
SBL	146	19	30	
SBT	146	18	19	

Intersection	Lane Movement	Available Storage (m)	95 th Percentile Queues (m) [50 th Percentile Queues (m)]	
			A.M. Peak Hour	P.M. Peak Hour
Kingston Road & Whites Road	EBL	127	21	33
	EBT	262	44	101
	EBR	123	44	59
	WBL	87	21	54
	WBT	199	28	51
	WBR	35	1	38 [8]
	NBL	72	33	53
	NBT	135	33	58
	NBR	35	40 [17]	194 [115]
	SBL	89	34	44
	SBT	361	71	54
Whites Road & Highway 401 EB Off-Ramp	SBR	47	15	16
	EBL	272	79	125
	EBR	225	19	114
	NBT	162	54	96
Dixie Road & Shopping Plaza Entrance	SBT	293	31	58
	WBL	193	2	7
	NBT	107	0	0
	SBT	44	3	3

The queueing analysis for existing conditions indicates that the 95th and 50th percentile queues are expected to be accommodated within the available storage lengths with the exception of the northbound left-turn and southbound left-turn movements at the intersection of Kingston Road & Dixie Road, the southbound left-turn movement at Kingston Road & Fairport Road, the westbound left-turn movement at Kingston Road & Highway 401 WB Ramps, and the northbound right-turn and westbound right-turn movements at Kingston Road & Whites Road.

For Kingston Road & Dixie Road, the northbound left-turn lane storage length is restricted by the close proximity of the existing site access located 20 metres south of the intersection. However, the south leg of Dixie Road primarily operates as a private local driveway servicing the retail developments south of Kingston Road and therefore, these queues do not impact traffic on Kingston Road. Moreover, there is an additional site access on Dixie Road and the driveway blockage is not a concern. The southbound left-turn movement at Kingston Road & Dixie Road experiences relatively high volumes for its short storage length (approximately 120 vehicles in both the a.m. and p.m. peak hours). The 50th and 95th percentile queues are expected to exceed the painted lane markings for the southbound left-turn lane; however, the queues are not expected to reach the adjacent upstream intersection (i.e. stop-controlled intersection at Dunbarton Road & Dixie Road) which is approximately 80 metres north of Kingston Road.

Through a review of video footage taken at the intersection of Kingston Road & Dixie Road during a.m. and p.m. peak period, it was observed that the northbound and

southbound left-turning queue issues present in the synchro analysis is consistent with what was viewed in the footage. In the footage, it was found that in the a.m. peak period the storage length of the northbound and southbound left-turn was exceeded occasionally and was exceeded more frequently in the p.m. peak period. This is consistent with the synchro results as it shows the 50th percentile queue exceeding the storage length for both the northbound and southbound left turn movements in the p.m. peak period, and only the southbound left-turn exceeding its storage length with the 50th percentile queue.

At the intersection of Kingston Road & Highway 401 Westbound Ramps, the westbound left-turn movement in the p.m. peak hour exceeds the storage length for 95th percentile queues. The 95th percentile queue lengths are typically reached only a few times during peak periods; therefore, the impact of the queues is limited as the 50th percentile (average) queue lengths are within the available storage lengths. Therefore, it is expected that these queues can be accommodated by the available storage length.

Similarly, at the intersection of Kingston Road & Whites Road, the westbound right-turn movement in the p.m. peak hour and the northbound right-turn movement in the a.m. peak hour exceed the storage length in the 95th percentile but remain within the storage length in the 50th percentile. Therefore, it is expected that these queues can be accommodated by the available storage length. For the northbound right-turn movement in the p.m. peak hour, it is expected that queues will exceed the storage length in the 50th percentile. This is mainly due to the short existing storage length, which is approximately 35 metres. Considering the high volume of vehicles turning northbound right, the existing storage length is insufficient. However, since the intersection has three northbound through lanes, spillover from the right turn lane is not expected to cause significant delays for the through movement.

At the intersection of Kingston Road & Fairport Road, the 50th percentile queues for the southbound left-turn movement exceeds the storage length in both the a.m. and p.m. peak hours. This is due to a short existing storage length of 16 metres. However, the adjacent through lane is more than 5.5 metres wide beyond the left turn lane allowing two car widths to be accommodated. Hence, spillover from the left turn queues does not impede vehicles trying to turn right.

3 FUTURE CONDITION ASSUMPTIONS

3.1 HORIZON YEARS

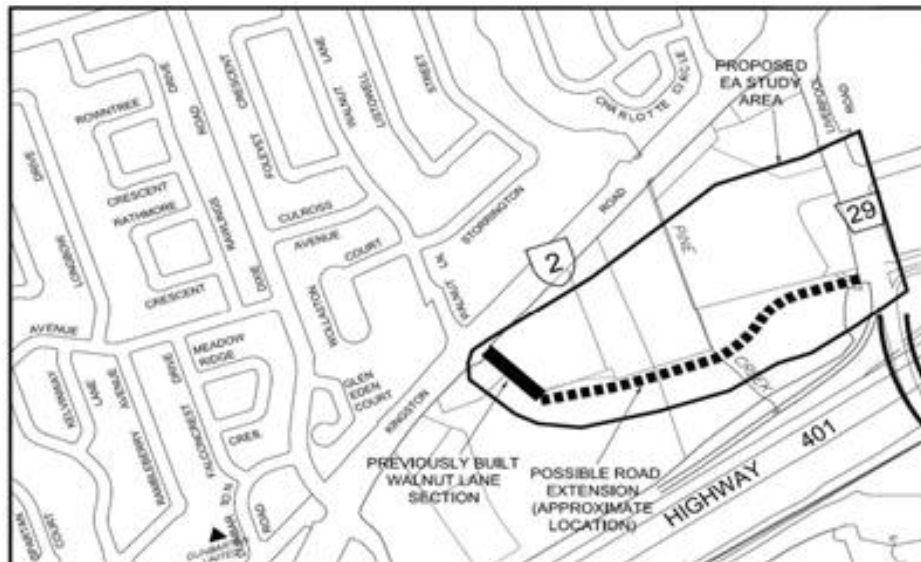
The traffic conditions for the following horizon years were assessed in this study per Durham Region TIS requirements:

- **2028:** Anticipated phase 1 build-out complete;
- **2033:** Anticipated full build-out of development;
- **2038:** 5-years after full build-out, and
- **2043:** 10-years after full build-out.

3.2 WALNUT LANE EXTENSION CLASS EA

The Walnut Lane Extension Class EA study dated October 2022 outlines the proposed extension of Walnut Lane from Kingston Road eastward to Liverpool Road, as shown in **Figure 3-1**. Walnut Lane is a two-lane road, and the extension is proposed to accommodate all road users (i.e. vehicles, public transit, cyclists, and pedestrians) as per the “Complete Streets” guidelines. The extension is anticipated to be built by the 2028 horizon year.

Figure 3-1: Walnut EA Lane Extension Class EA Study Area

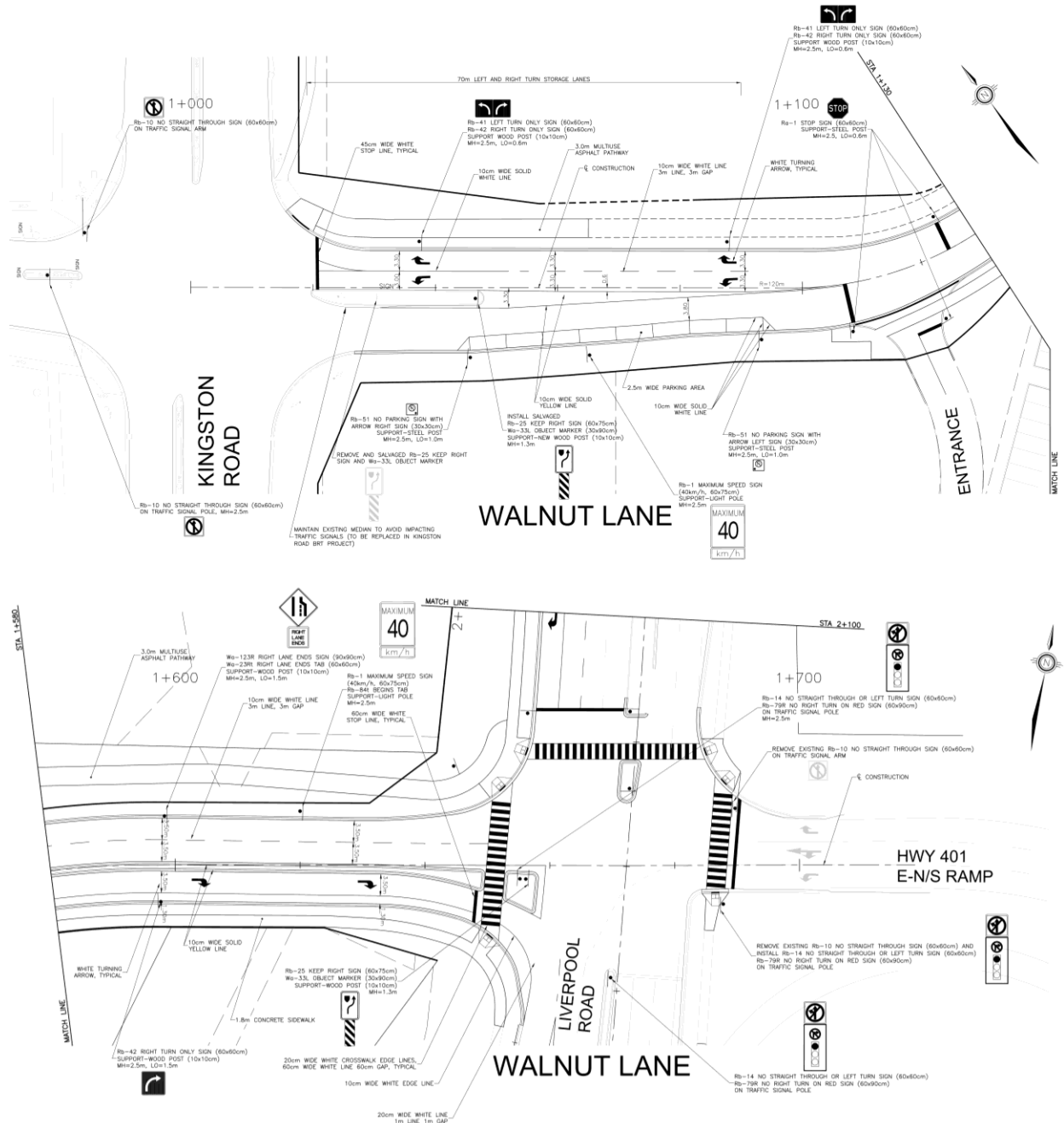


One of the concerns investigated in the Class EA study is that the extension could result in increased traffic infiltration through the existing Walnut Lane north of Kingston Road. The Class EA explored traffic calming measures to address current and anticipated future traffic infiltration concerns in the area. It was recommended that the northbound through movement be prohibited at the intersection of Walnut Lane & Kingston Road, as illustrated in **Figure 3-2**. This assumption was carried through in all future models, where any existing northbound through trips were reallocated to the northbound left

movement, and carried through westbound to Kingston Road & Dixie Road, where vehicles can turn right and continue north on Dixie Road.

The Class EA study explored three lane configurations at the intersection of Liverpool Road & Walnut Lane / Highway 401 Westbound Off-Ramp. The preferred design identified in the study suggests all movements would be permitted except for the eastbound through and eastbound-left turn movements, as illustrated in **Figure 3-2**.

Figure 3-2: Proposed Future Configuration of Walnut Lane Connections



3.3 PLANNED ROAD NETWORK IMPROVEMENTS

In addition to the extension of Walnut Lane (detailed in the prior section), the following future road improvements were included in this study:

- The Region is planning to widen Liverpool Road between Kingston Road and Highway 401 to a six-lane cross section. The future lane configuration of the intersections along this section of Liverpool Road is to be determined by a Liverpool Road Environmental Assessment. For the purpose of this study, it is assumed that these lane configuration changes will be present starting from 2033. The Region has provided the following lane configuration to be assumed:
 - Liverpool Road & Kingston Road
 - Southbound: 1 right; 2 through; 1 left
 - Northbound: 1 right; 2 through; 1 left
 - Eastbound: 1 right; 2 through; 1 left/U-turn; 1 median bus through
 - Westbound: 1 right; 2 through; 1 left/U-turn; 1 median bus through
 - Liverpool Road & Pickering Parkway / Private Access
 - Southbound: 1 right; 3 through; 1 left
 - Northbound: 1 right; 3 through; 1 left
 - Eastbound: 1 through/right; 1 through; 1 left
 - Westbound: 1 right; 1 through; 2 left
 - Liverpool Road & Highway 401 WB Ramp / Walnut Lane Extension
 - Southbound: 1 right; 3 through
 - Northbound: 3 through; 1 left
 - Eastbound: 1 right
 - Westbound: 1 right; 1 through/left; 1 left
- As part of the future Durham-Scarborough Bus Rapid Transit (BRT), Kingston Road from Altona Road to Notion Road is planned to be widened to allow for two-dedicated centre-median transit lanes. The project includes converting the existing curbside bus lanes to centre-median lanes. Metrolinx is currently in the preliminary design stage. The preliminary designs for Kingston Road are provided in **Appendix E** and were used in this study. The preliminary design drawings reveal that many of the existing exclusive right turn lanes along Kingston Road would need to be removed to accommodate the BRT. Shared through-right lanes along Kingston Road will likely take away auto traffic capacity on the corridor. According to the Region's TOR response, construction of sections from Dixie Road to Bainbridge Drive and Steeple Hill to Merriton Road, which encompass all of the study intersections along Kingston Road evaluated in this report, is expected to be complete by 2025. Therefore, the road network changes occurring due to the BRT are implemented in all future scenarios in all horizon years.

The future lane configuration for horizon years 2028, 2033, 2038 and 2043, which includes all the road improvements listed above, is illustrated in **Figure 3-3**.

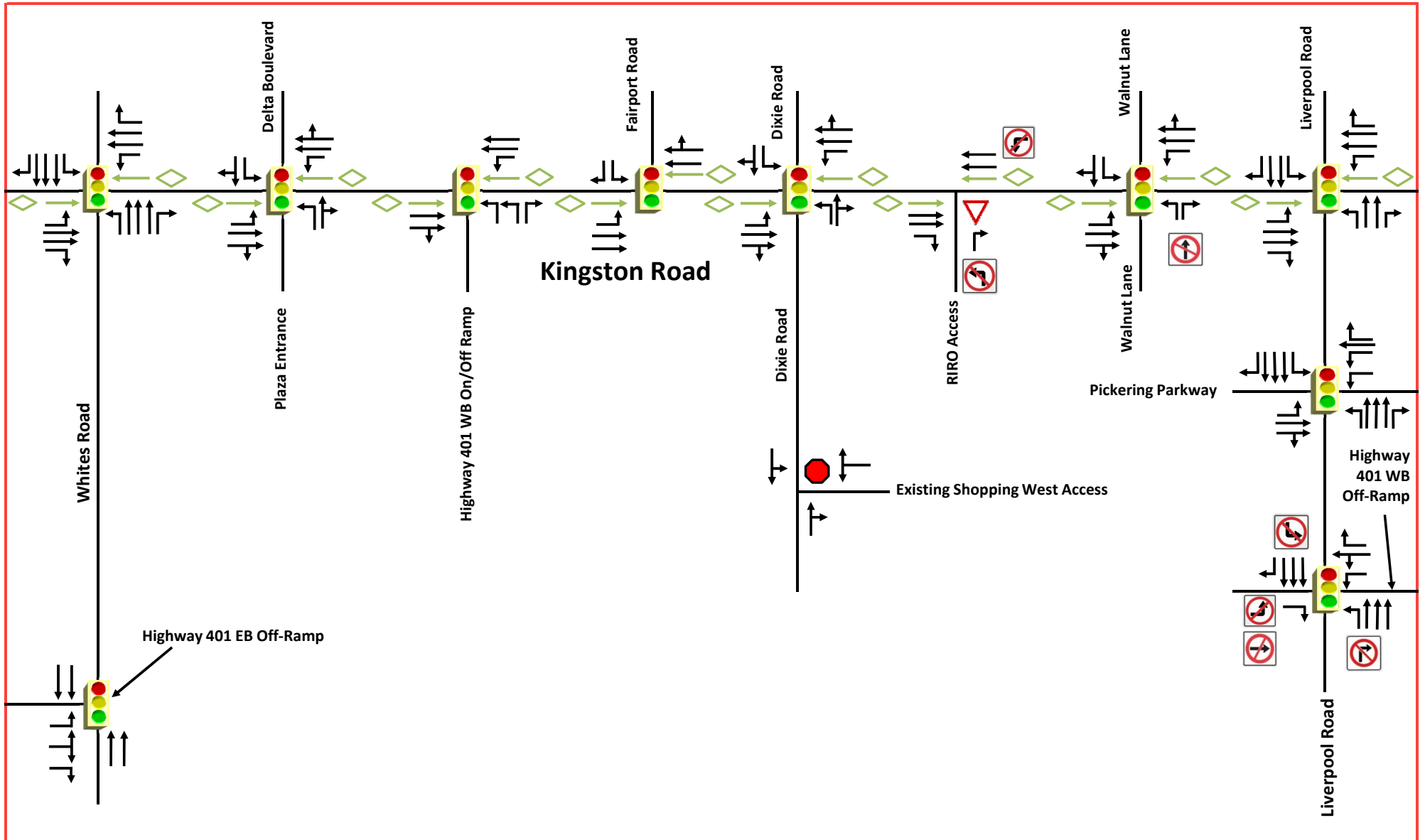


Figure 3-3
Future Lane Configuration

3.4 PLANNED TRANSIT NETWORK IMPROVEMENTS

Kingston Road was identified as a future rapid transit corridor in the *Durham Region Long Term Transit Strategy (LTTS) Final Report*, dated March 2010. As previously mentioned, Metrolinx is currently in the preliminary design stage of a future bus rapid transit (BRT) corridor along Kingston Road between Altona Road and Notion Road as part of their Durham-Scarborough BRT project. Upon completion, Kingston Road will be widened to accommodate two centre-median transit lanes and raised transit platforms on the far-side of signalized intersections.

The project aims to bring more frequent and reliable transit service to Durham Region and the City of Toronto and improve connections on both sides of the regional boundary. It is anticipated that two-way transit service will be provided every five minutes.

As previously discussed, the site is located in proximity to the Pickering GO station which is part of the Lakeshore East GO Line. Metrolinx announced improvements for the Lakeshore East GO Line to support future 15-minute two-way service between Union Station and Oshawa.

The future planned transit improvements are illustrated in **Figure 3-4**, which is taken from the 2017 Durham Region Transportation Master Plan – 2031 Transportation Networks.

Figure 3-4: Future Transit



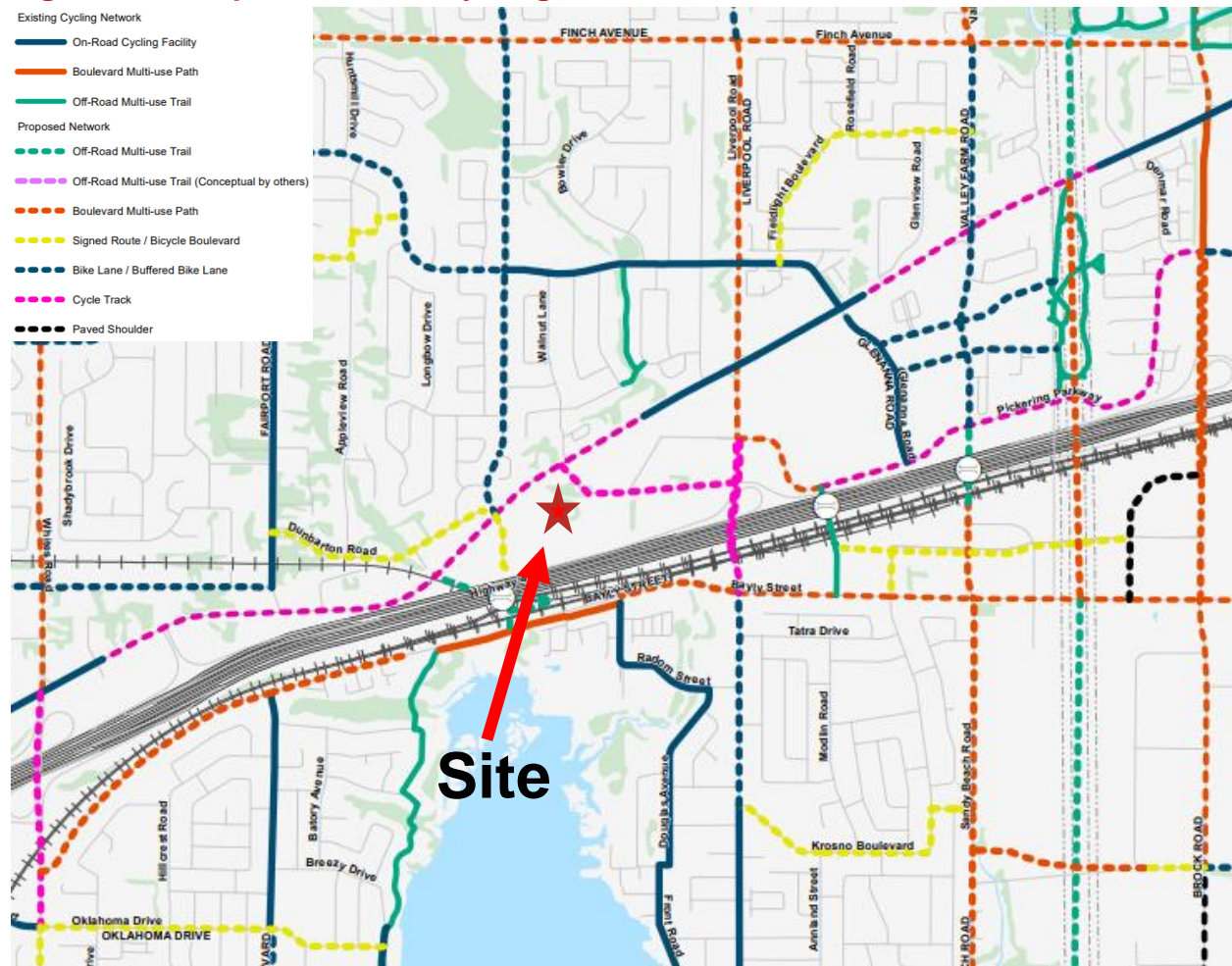
3.5 PLANNED ACTIVE TRANSPORTATION NETWORK IMPROVEMENTS

Durham Region’s Transportation Master Plan (2017) details the proposed widening of the Liverpool Road bridge over Highway 401 to accommodate cycling facilities beyond the year 2031. Liverpool Road has been identified as a future primary cycling network route by the Region.

The cycling network along Kingston Road is proposed to be expanded and is also planned as a primary cycling route. Upon completion of the median BRT on Kingston Road, cycle tracks and sidewalks will be constructed along both sides of the corridor from Altona Road to Notion Road. The preliminary design drawings in **Appendix E** show the proposed cycle tracks at all study intersections along Kingston Road.

Additionally, the City of Pickering’s Integrated Transportation Master Plan (2021), identifies that future cycling facilities are proposed along Walnut Lane (between Kingston Road and Liverpool Road), Dixie Road, and Dunbarton Road.

Figure 3-5: Proposed Future Cycling and Trail Network



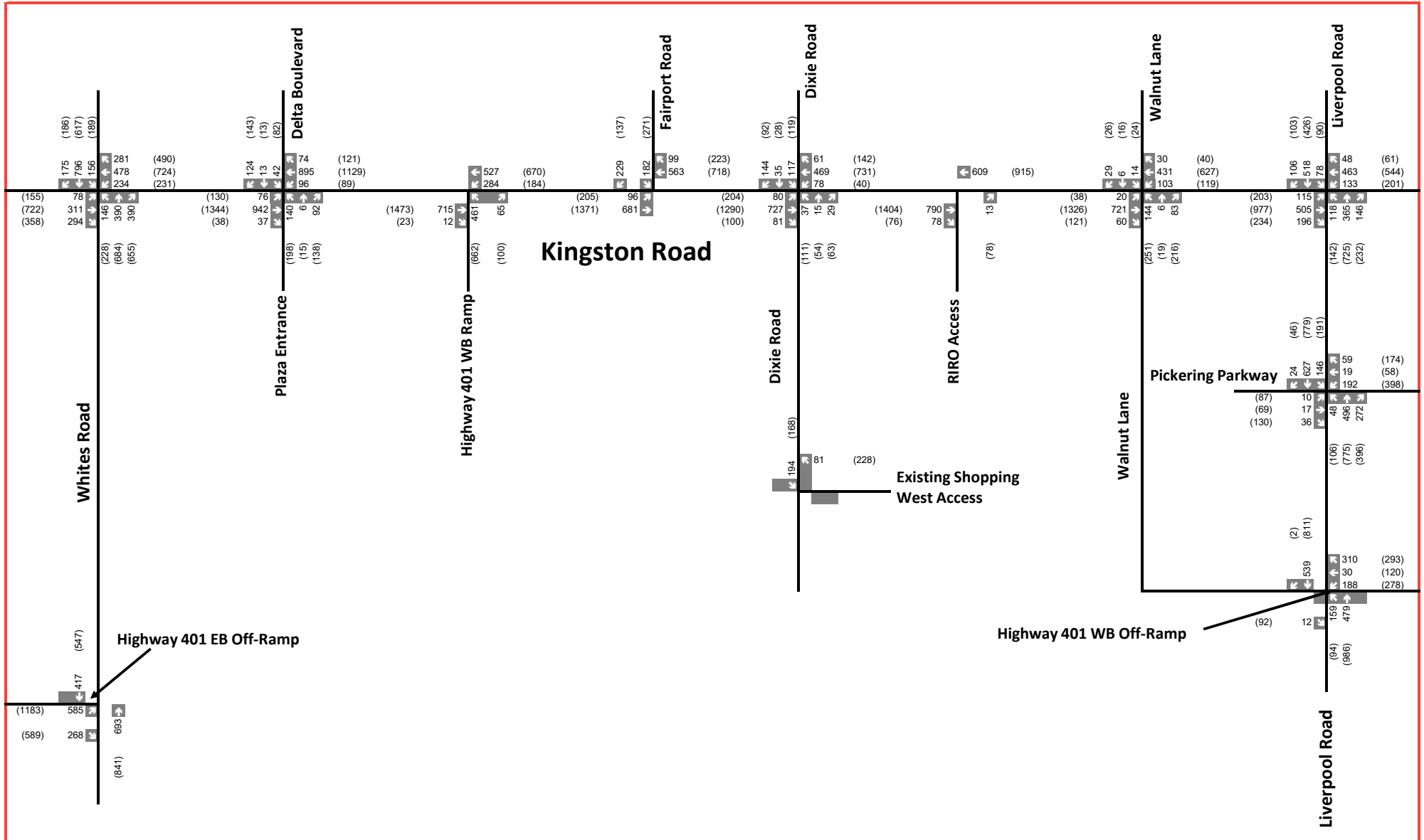
Source: Map 5, City of Pickering Integrated Transportation Master Plan (2021)

3.6 TRAFFIC ASSUMPTIONS

3.6.1 TRAFFIC DIVERSION WITH THE WALNUT LANE EXTENSION

The extension of Walnut Lane would provide motorists within the area with alternative routes and, therefore, it is expected that some of existing traffic in the area would redistribute with the extension in place. The Walnut Lane Extension EA study estimated redistributions in the p.m. peak hour turning movement volumes associated with the preferred option (found in Figures 16, 17, and 20 of Appendix A of the EA report).

To maintain consistency with the EA study, the same traffic volume redistributions were also applied in this study in the p.m. peak hour. The a.m. peak hour traffic redistributions were estimated by applying the ratio between the p.m. peak hour diversion volumes and the existing volumes to the a.m. peak hour counts. The redistributed traffic is presented in **Figure 3-6**. As discussed in Section 3.2, to maintain the northbound through movement prohibition at Kingston Road & Walnut Lane, any redistributed volumes using the northbound through movement were reallocated to the northbound left movement towards Dixie Road to allow vehicles to travel north via Dixie Road instead.



Legend

xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes

Figure 3-6

Redistributed Traffic (before growth)

3.6.2 FUTURE MODE SHARES

As assumed in the study for the Tribute Liverpool & Highway 401 development, non-auto mode shares in the study area are assumed to increase by 5% by the 2028 horizon year and 10% by the 2033, 2038, and 2043 horizon years. This assumption was based on existing and future mode share information from the Region's TMP. These increases are applied to the existing non-auto travel mode shares for the study area from the 2016 TTS data to develop non-auto mode share reductions to the site trip generation. The 2016 TTS mode shares are discussed in further detail in **Section 5.1**.

3.6.3 CORRIDOR TRAFFIC GROWTH

As stated in the TOR, a 0.5% annual growth rate was applied to the through movement volumes along Liverpool Road. It should be noted that, in some of the approved background TIS studies, no traffic growth along Liverpool Road was assumed. Hence, the application of the 0.5% growth rate represents a conservative approach.

No growth rate was applied on Kingston Road. Given the expected 10% increase in transit mode split due to the BRT, a reduction in existing traffic volumes along this corridor would be expected. Therefore, even applying a 0% growth rate represents a conservative assumption.

3.6.4 BACKGROUND DEVELOPMENTS

There are several proposed developments in the vicinity of the project site that will contribute additional traffic to the roads in the study area. The following background developments were included in this study:

- **1294 Kingston Road, 1848 Liverpool Road & 1852 Liverpool Road:** Proposed mixed-use development consisting of two buildings having heights of 25-storeys and 13-storeys.
- **1854 & 1858 Liverpool Road Ward 2:** Proposed 13-storey mixed-use apartment building containing 98 dwelling units with approximately 460 square metres of commercial space on the ground floor.
- **Expansion of the Development at 1355 Kingston Road:** Proposed retail expansion of 45,449 square feet GLA (expansion of the current Cineplex). Background traffic to be only included in the PM peak conditions.
- **Home Life Care Services at 1234 Kingston Road:** Proposed two-storey office building of 4,648 square feet in GFA.
- **Tribute Liverpool & Highway 401:** Proposed mixed-use development consisting of three buildings with 1,779 residential units, 6,265 ft² retail, and 6,168 ft² childcare centre
- **1786-1790 Liverpool Road:** Proposed mixed-use development consisting of 594 residential units and 190 m² GFA of ground-floor retail use

The traffic volumes generated by the background developments were taken from their corresponding traffic impact studies. However, a.m. peak hour site traffic volumes for

1234 Kingston Road were not available, therefore they were estimated using ITE trip rates. The background development volumes are provided in **Appendix D**.

It is assumed that all of these background developments would be constructed and operational by the 2028 horizon year.

3.6.5 FUTURE HEAVY VEHICLE PERCENTAGES

The Walnut Lane extension is planned to replace the existing west leg of the intersection of Liverpool Road & Highway 401 WB Off-Ramp, which currently experiences high heavy vehicle percentages on some movements in the a.m. peak hour. With the Walnut Lane extension expected to carry substantially higher volumes of vehicles than the current west leg (which serves a restaurant and a bank), it is expected that heavy vehicle percentages will lower to a level comparable with the other study intersections. Therefore, during the a.m. peak hour, the heavy vehicle percentages for some movements at this intersection were reduced to 5%, which is conservative relative to the existing percentages at other nearby intersections.

3.6.6 FUTURE SIGNAL TIMINGS

Given the future centre-median transit lanes along Kingston Road, all eastbound and westbound left-turns will need to be fully protected. Therefore, in the future models, protected eastbound and westbound left-turn phases were added for all study intersections along Kingston Road. **Table 3-1** shows the changes made to the left-turn phases to accommodate the future BRT.

Table 3-1: Existing and Future Left-Turn Types Along Kingston Rd

Intersection	Direction	Existing Left-Turn Type (Without BRT)		Future Left-Turn Type (With BRT)
		AM	PM	AM & PM
Liverpool Road & Kingston Road	EB	Protected-Permissive	Protected-Permissive	Protected
	WB	Protected-Permissive	Protected-Permissive	Protected
Kingston Road & Walnut Lane	EB	Permissive	Permissive	Protected
	WB	Permissive	Protected-Permissive	Protected
Kingston Road & Dixie Road	EB	Protected-Permissive	Protected-Permissive	Protected
	WB	Protected-Permissive	Protected-Permissive	Protected
Kingston Road & Fairport Road	EB	Protected-Permissive	Protected-Permissive	Protected
	WB (U-Turn)	N/A	N/A	Protected
Kingston Road & Highway 401 Westbound Ramps	WB	Protected-Permissive	Protected-Permissive	Protected
Kingston Road & Delta Boulevard	EB	Protected-Permissive	Protected-Permissive	Protected
	WB	Protected-Permissive	Protected-Permissive	Protected
Kingston Road & Whites Road	EB	Protected-Permissive	Protected-Permissive	Protected
	WB	Protected-Permissive	Protected-Permissive	Protected

With the future lane configuration at the intersection of Liverpool Road & Walnut Lane / Highway 401 WB Off-Ramp, it is assumed that split phasing will be provided for the eastbound and westbound movements, with the eastbound right-turn occurring in an

overlap phase with a northbound left-turn phase. In addition, it was assumed that the northbound left-turn phase be a protected-permissive phase.

All-red clearance times and pedestrian clearance times crossing Kingston Road were updated to reflect the preliminary drawings for the BRT included in **Appendix E** (detailed design drawings provided by the Region were used for the intersection of Kingston Road & Walnut Lane). Both calculations were based on the equations found in the Durham Region guidelines. All-red clearance times are determined by using a function of the width of the intersection (from the stopbar to the farthest edge of the crosswalk on the opposing side), the length of a standard vehicle, and the posted speed. The pedestrian clearance (i.e. Flashing Don't Walk – FDW) was calculated as the duration needed to cross the longest pedestrian crossing at a 1.0 m/s walk speed and was allowed to extend into the amber and all-red intervals.

In addition, as per Region comments, any fully protected left-turn phases were adjusted to have a minimum 2 second all-red clearance.

The following signal timing improvements were applied in the future models:

- In order to accommodate the combination of background traffic growth, lane configuration changes due to the BRT, and the addition of protected left-turn phases, the cycle length was increased to 130 seconds at all study intersections along Kingston Road during the p.m. peak hour and at the intersections along Kingston Road between Whites Road and Fairport Road during the a.m. peak hour;
- An eastbound right-turn phase (overlapping with the existing northbound left-turn phase) was added during the p.m. peak hour at the intersection of Kingston Road & Liverpool Road; and
- Various signal phase splits optimizations were made throughout the study network.

4 FUTURE BACKGROUND TRAFFIC CONDITIONS

The projected future background traffic volumes were developed by superimposing the traffic redistributions resulting from the Walnut Lane extension, general corridor growth along Liverpool Road, and the background development volumes onto the existing traffic volumes.

This section of the report documents the future background traffic assessments for each of the horizon years.

4.1 2028 FUTURE BACKGROUND

The background traffic operations were analyzed based on the resulting 2028 future background traffic forecasts shown **Figure 4-1**. The resulting levels of service are outlined in **Table 4-1** and the details related to intersection operations provided in **Appendix F-1**.

The Synchro results indicate that all of the intersections continue to operate at an overall acceptable LOS. However, even with the implementation of signal timing improvements, the westbound left-turn movement at Kingston Road & Walnut Lane, Kingston Road & Dixie Road and Kingston Road & Highway 401 WB Ramps, as well as the eastbound left-turn movement at Kingston Road & Whites Road are projected to operate over-capacity. This is largely due to the implementation of the BRT, which necessitated the conversion of the originally protected-permissive left-turn into a fully protected left-turn. A fully protected left-turn restricts vehicles from turning without an advanced left-turn arrow, reducing the capacity of the left turn movement and creating additional delay that was not present in the existing conditions. It is important to recognize that the analysis results are worse than how the study area intersections are expected to operate as future traffic volumes are overestimated due to the utilization of a peak hour factor of 0.92. When intersections operate close to capacity, the peak hour factor is typically close to 1.00; hence, the future traffic volumes are probably close to 8% overestimated. Therefore, a sensitivity analysis using a PHF of 1.00 for intersections with over-capacity movements is provided in **Table 4-2**. The results show that all movements operate within capacity. Additionally, the application of the annual traffic growth rate of 0.5% along Kingston Road represents a conservative approach that likely overestimated traffic volumes along this road.

Another over-capacity movement includes the northbound left-turn at Kingston Road & Walnut Lane. In addition to the implementation of the BRT, the northbound left turn movement currently acts as an exit for the existing shopping centre, which generates high volumes for this movement. The northbound left traffic from this intersection will have an option to exit the site via the northbound left movement at the Kingston Road and Dixie Road, which is expected to operate with significant residual capacity during the p.m. peak hour. Hence, this movement is not anticipated to cause issues in the future total scenarios as the high volumes exiting the existing site using the northbound left-turn movement would not be present with the proposed development.

Other over-capacity movements include the eastbound through movements at Kingston Road & Highway 401 WB Ramp and Liverpool Road & Kingston Road. These movements are most likely due to the addition of future eastbound and westbound traffic and the implementation of the BRT. As mentioned, the addition of the protected left-turn phase for the BRT reduces the available split for the eastbound direction. The reduced time coupled with the additional future trips causes stress on these movements.

Table 4-1: 2028 Future Background Intersection Operations

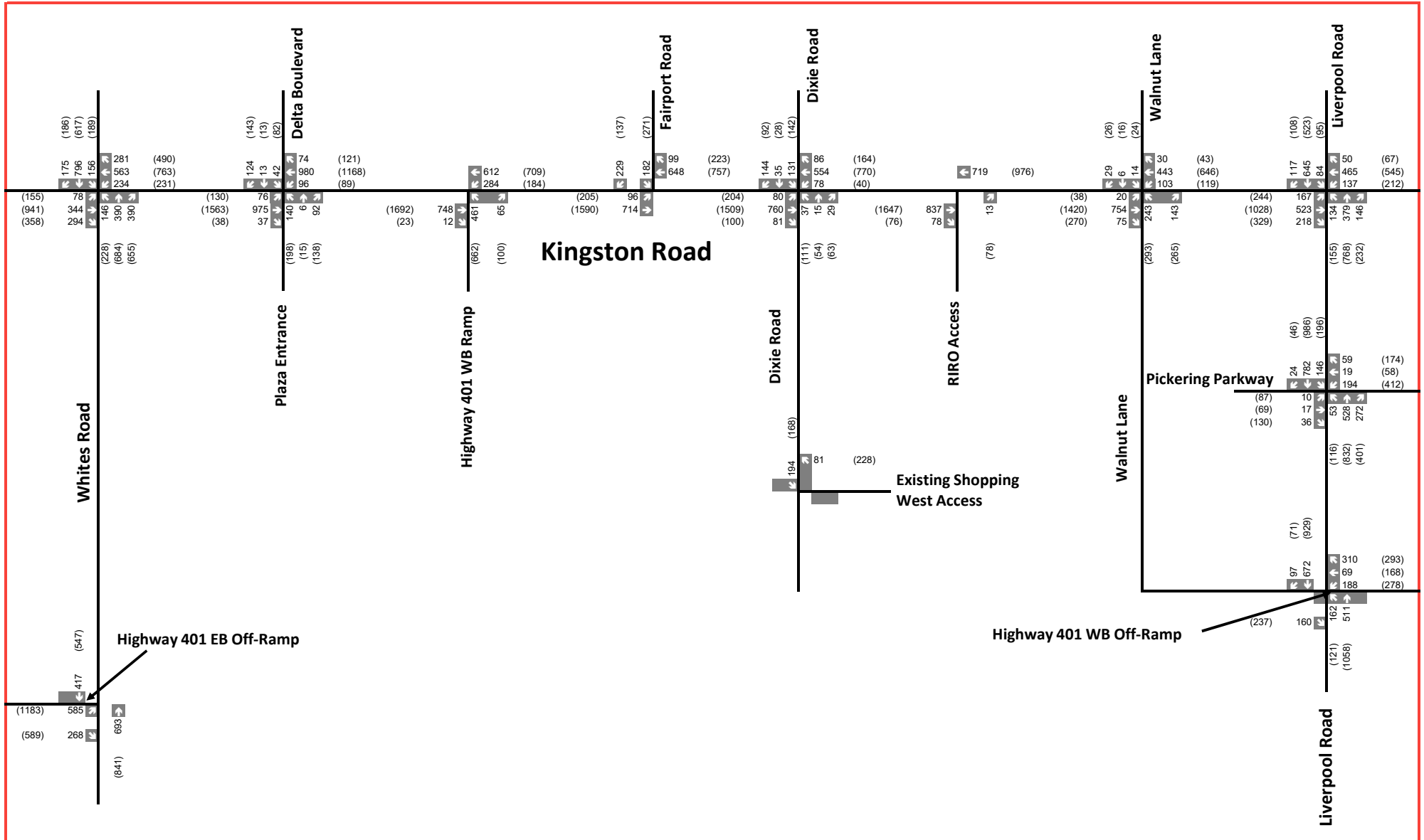
Intersection	Weekday A.M. Peak Hour		Weekday P.M. Peak Hour	
	Overall LOS (Delay in Seconds)	Critical Movement (Volume/Capacity Ratio)	Overall LOS (Delay in Seconds)	Critical Movement (Volume/Capacity Ratio)
Signalized Intersections				
Liverpool Road & Walnut Lane / Highway 401 WB Off-Ramp	B (16)	--	C (26)	--
Liverpool Road & Pickering Parkway	B (16)	--	C (28)	--
Liverpool Road & Kingston Road	C (33)	--	D (46)	EB-T (1.05)
Kingston Road & Walnut Lane	C (34)	--	D (43)	EB-TR (0.99) WB-L (1.00) NB-L (1.02)
Kingston Road & Dixie Road	C (27)	WB-L (1.04)	C (33)	EB-L (0.90)
Kingston Road & Fairport Road	B (18)	--	C (33)	EB-L (0.92)
Kingston Road & Highway 401 WB Ramps	C (29)	--	D (54)	EB-TR (1.04) WB-L (1.03)
Kingston Road & Delta Boulevard	C (33)	--	D (37)	EB-L (0.93) EB-T (0.91) WB-L (0.93) NB-L (0.93)
Kingston Road & Whites Road	C (32)	--	D (48)	EB-L (1.00) EB-T (1.02)
Whites Road & Highway 401 EB Off-Ramp	C (20)	--	C (26)	--
Unsignalized Intersections				
Dixie Road & Shopping Plaza Entrance	A (9)	WB-LR (0.08)	A (10)	WB-LR (0.24)

- 1 For signalized intersections, the level of service is based on the overall delay of the intersection. Critical v/c ratios are only listed for through or shared through/turning movements with values over 0.85. Critical v/c ratios are only listed for exclusive movements with values of 0.90.
- 2 For unsignalized intersections, the level of service is based on the critical movement, which is the movement with the highest delay.

Table 4-2: 2028 Future Background Intersection Operations – PHF Sensitivity Analysis

Intersection	Weekday A.M. Peak Hour		Weekday P.M. Peak Hour	
	Overall LOS (Delay in Seconds)	Critical Movement (Volume/Capacity Ratio)	Overall LOS (Delay in Seconds)	Critical Movement (Volume/Capacity Ratio)
Signalized Intersections				
Liverpool Road & Kingston Road	--	--	D (40)	EB-T (0.95)
Kingston Road & Walnut Lane	--	--	C (35)	EB-T (0.91) WB-L (0.92) NB-L (0.95)
Kingston Road & Dixie Road	C (25)	WB-L (0.95)	--	--
Kingston Road & Highway 401 WB Ramps	--	--	D (43)	EB-T (0.93) WB-L (0.95)
Kingston Road & Whites Road	--	--	D (40)	EB-L (0.92) EB-T (0.91)

- 1 For signalized intersections, the level of service is based on the overall delay of the intersection. Critical v/c ratios are only listed for through or shared through/turning movements with values over 0.85. Critical v/c ratios are only listed for exclusive movements with values of 0.90.
- 2 For unsignalized intersections, the level of service is based on the critical movement, which is the movement with the highest delay.



Legend

xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes

Figure 4-1

2028 Future Background Volumes

The queues at the study intersections were assessed under 2028 future background conditions. A queueing analysis for the study intersections is presented in **Table 4-3**. The 50th percentile queue lengths are shown only for movements with 95th percentile queue lengths exceeding the available storage. Detailed queue results for all intersections and individual movements are provided in **Appendix F-1**.

Table 4-3: 2028 Future Background Intersection Queue Lengths

Intersection	Lane Movement	Available Storage (m)	95 th Percentile Queues (m) [50 th Percentile Queues (m)]	
			A.M. Peak Hour	P.M. Peak Hour
Liverpool Road & Walnut Lane / Highway 401 WB Off-ramp	EBR	N/A	49	68
	WBL	203	44	63
	WBT	203	44	64
	WBR	125	23	66
	NBL	50	47	18
	NBT	348	25	87
	SBT	138	24	79
	SBR	38	2	7
Liverpool Road & Pickering Parkway	EBL	59	7	32
	EBT	59	8	17
	WBL	57	30	53
	WBT	305	10	19
	WBR	62	0	16
	NBL	54	6	36
	NBT	138	54	116
	NBR	76	20	54
	SBL	133	22	67
	SBT	234	74	155
Liverpool Road & Kingston Road	SBR	36	0	0
	EBL	221	69	61
	EBT	671	51	179
	EBR	98	28	76
	WBL	237	66	99
	WBT	372	73	94
	WBR	117	0	0
	NBL	186	32	43
	NBT	234	50	122
	NBR	52	15	37
	SBL	49	21	27
SBT	325	89	80	
SBR	61	8	9	

Intersection	Lane Movement	Available Storage (m)	95 th Percentile Queues (m) [50 th Percentile Queues (m)]	
			A.M. Peak Hour	P.M. Peak Hour
Kingston Road & Walnut Lane	EBL	107	12	0
	EBT	105	138 [101]	291 [130]
	WBL	159	45	76
	WBT	671	72	21
	NBL	63	82 [59]	143 [84]
	NBR	101	14	76
	SBL	19	7	13
Kingston Road & Dixie Road	EBL	184	44	88
	EBT	872	88	259
	WBL	129	54	25
	WBT	167	71	146
	NBL	13	17 [9]	46 [29]
	NBT	100	12	35
	SBL	16	47 [32]	57 [38]
Kingston Road & Fairport Road	EBL	238	47	50
	EBT	400	7	242
	WBT	872	86	33
	SBL	16	69 [49]	101 [73]
	SBR	256	21	17
Kingston Road & Highway 401 WB Ramps	EBT	245	46	328 [285]
	WBL	135	112	102
	WBT	400	71	6
	NBL	193	77	115
	NBR	52	12	20
Kingston Road & Delta Boulevard	EBL	39	41 [22]	40 [37]
	EBT	199	158	138
	WBL	121	43	48
	WBT	245	179	95
	NBL	107	57	99
	NBT	107	16	27
	SBL	146	21	36
SBT	146	21	24	

Intersection	Lane Movement	Available Storage (m)	95 th Percentile Queues (m) [50 th Percentile Queues (m)]	
			A.M. Peak Hour	P.M. Peak Hour
Kingston Road & Whites Road	EBL	153	43	89
	EBT	274	56	196
	EBR	123	67	89
	WBL	87	95 [68]	81 [61]
	WBT	199	93	80
	WBR	35	69 [36]	129 [43]
	NBL	72	50	83 [43]
	NBT	135	39	68
	NBR	35	53 [31]	189 [124]
	SBL	89	44	66
	SBT	361	81	62
SBR	47	20	17	
Whites Road & Highway 401 EB Off-Ramp	EBL	272	81	131
	EBR	225	19	124
	NBT	162	56	99
	SBT	293	32	60
Dixie Road & Shopping Plaza Entrance	WBL	193	2	7
	NBT	107	0	0
	SBT	44	3	3

As a result of background growth, changes in lane configurations, and changes in signal timings, some of the queues under 2028 future background conditions have increased in comparison to existing conditions, some of which have exceeded their available storage. However, many of the exceeding queues were already present in the existing conditions, including those movements at Kingston Road & Dixie Road, Kingston Road & Fairport Road, Kingston Road & Highway 401 WB Ramps, and Kingston Road & Whites Road.

There are some new queueing issues present, most notably at Kingston Road & Walnut Lane, where the eastbound through and northbound left-turn queues exceed the storage length. For the eastbound through movement, the storage length is considered to be the distance from the intersection to the nearest adjacent intersection. In this case, it was assumed to be the RIRO intersection for the existing site. This intersection is unsignalized with right turning vehicles yielding to the eastbound through movements. The blockage of this driveway could be mitigated by installing a 'do not block driveway' sign on the eastbound approach. Considering this, the storage length for the eastbound through movement would be much larger in reality as it would go all the way to Dixie Road, which is nearly 300 metres away. This storage length is more than enough to accommodate the 95th and 50th percentile queues. As discussed previously, the 95th percentile queue lengths are typically reached only a few times during peak periods; therefore, the impact of the queues would be limited as long as the 50th percentile (average) queue lengths are within the available storage lengths.

The northbound left-turn movements at Kingston Road & Walnut Lane exceeds the storage length in both the a.m. and p.m. peak hours, but it is only in the p.m. peak hour that the 50th percentile queues exceed the storage length. These queueing issues are most likely due to the short storage length available and the changes in signal timing caused by the new BRT.

Similarly, Kingston Road & Dixie Road and Kingston Road & Whites Road have queueing issues for the northbound left movements, where they're 95th percentile queue exceed their storage length. As mentioned, these issues are most likely due to the changes caused by the new BRT.

4.2 2033 FUTURE BACKGROUND

The background traffic operations were analyzed based on the resulting 2033 future background traffic forecasts shown **Figure 4-2**. The resulting levels of service are outlined in **Table 4-4** and the details related to the intersection operations provided in **Appendix F-2**.

The Synchro results indicate that all of the intersections continue to operate at an acceptable LOS. All movements operate within capacity with the exception of the westbound left-turn movement at Kingston Road & Walnut Lane in the a.m. peak hour and several movements in the p.m. peak hour, all of which were identified in the 2028 future background scenario as well.

The 2033 future background results are nearly the same as the 2028 future background results since no background growth was applied to Kingston Road. The only other difference between the two horizon years is along Liverpool Road, where the road widening has now been implemented, as discussed in **Section 3.3**.

Like the 2028 future background scenario, a PHF sensitivity analysis is shown in **Table 4-5** for any over-capacity movements. The results show that all movements can operate within capacity.

Table 4-4: 2033 Future Background Intersection Operations

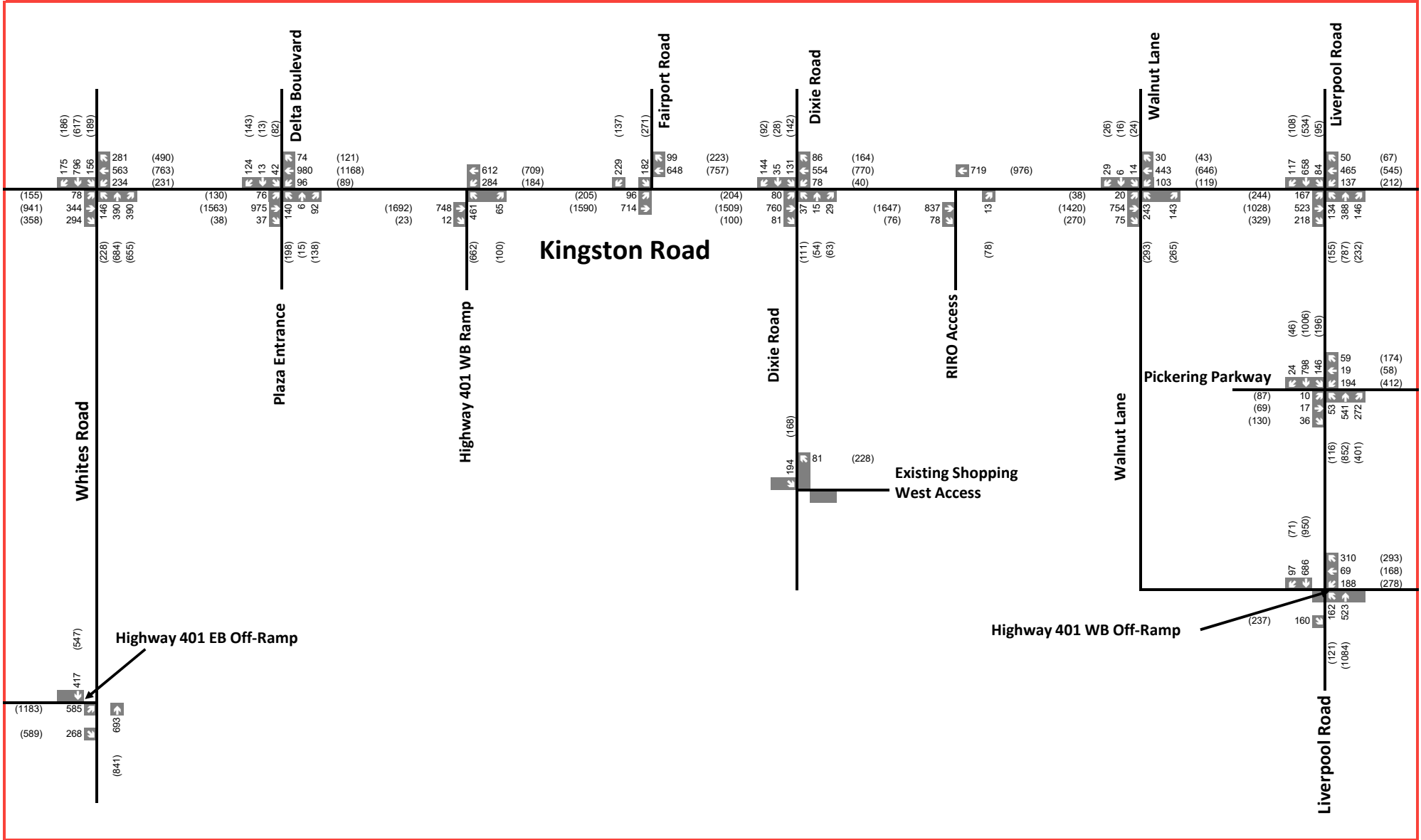
Intersection	Weekday A.M. Peak Hour		Weekday P.M. Peak Hour	
	Overall LOS (Delay in Seconds)	Critical Movement (Volume/Capacity Ratio)	Overall LOS (Delay in Seconds)	Critical Movement (Volume/Capacity Ratio)
Signalized Intersections				
Liverpool Road & Walnut Lane / Highway 401 WB Off-Ramp	B (16)	--	C (24)	--
Liverpool Road & Pickering Parkway	B (15)	--	C (25)	--
Liverpool Road & Kingston Road	C (34)	--	D (52)	EB-T (1.05)
Kingston Road & Walnut Lane	C (27)	--	D (43)	EB-TR (0.99) WB-L (1.00) NB-L (1.02)
Kingston Road & Dixie Road	C (24)	WB-L (1.04)	C (32)	EB-L (0.90)
Kingston Road & Fairport Road	B (19)	--	C (33)	EB-L (0.92)
Kingston Road & Highway 401 WB Ramps	C (29)	--	D (54)	EB-TR (1.04) WB-L (1.03)
Kingston Road & Delta Boulevard	C (34)	--	D (37)	EB-L (0.93) EB-T (0.91) WB-L (0.93) NB-L (0.93)
Kingston Road & Whites Road	C (32)	--	D (48)	EB-L (1.00) EB-T (1.02)
Whites Road & Highway 401 EB Off-Ramp	C (20)	--	C (26)	--
Unsignalized Intersections				
Dixie Road & Shopping Plaza Entrance	A (9)	WB-LR (0.08)	A (10)	WB-LR (0.24)

- 1 For signalized intersections, the level of service is based on the overall delay of the intersection. Critical v/c ratios are only listed for through or shared through/turning movements with values over 0.85. Critical v/c ratios are only listed for exclusive movements with values of 0.90.
- 2 For unsignalized intersections, the level of service is based on the critical movement, which is the movement with the highest delay.

Table 4-5: 2033 Future Background Intersection Operations – PHF Sensitivity Analysis

Intersection	Weekday A.M. Peak Hour		Weekday P.M. Peak Hour	
	Overall LOS (Delay in Seconds)	Critical Movement (Volume/Capacity Ratio)	Overall LOS (Delay in Seconds)	Critical Movement (Volume/Capacity Ratio)
Signalized Intersections				
Liverpool Road & Kingston Road	--	--	D (46)	EB-T (0.95)
Kingston Road & Walnut Lane	--	--	C (35)	EB-T (0.91) WB-L (0.92) NB-L (0.95)
Kingston Road & Dixie Road	C (22)	WB-L (0.95)	--	--
Kingston Road & Highway 401 WB Ramps	--	--	D (43)	EB-T (0.93) WB-L (0.95)
Kingston Road & Whites Road	--	--	D (40)	EB-L (0.92) EB-T (0.91)

- 1 For signalized intersections, the level of service is based on the overall delay of the intersection. Critical v/c ratios are only listed for through or shared through/turning movements with values over 0.85. Critical v/c ratios are only listed for exclusive movements with values of 0.90.
- 2 For unsignalized intersections, the level of service is based on the critical movement, which is the movement with the highest delay.



Legend

xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes

Figure 4-2

2033 Future Background Volumes

A queueing analysis for the study intersections is presented in **Table 4-6**. The 50th percentile queue lengths are shown only for movements with 95th percentile queue lengths exceeding the available storage. Detailed queue results for all intersections and individual movements are provided in **Appendix F-2**.

Table 4-6: 2033 Future Background Intersection Queue Lengths

Intersection	Lane Movement	Available Storage (m)	95 th Percentile Queues (m) [50 th Percentile Queues (m)]	
			A.M. Peak Hour	P.M. Peak Hour
Liverpool Road & Walnut Lane / Highway 401 WB Off-ramp	EBR	N/A	49	68
	WBL	203	44	63
	WBT	203	44	64
	WBR	125	23	66
	NBL	50	17	18
	NBT	348	17	52
	SBT	138	24	79
	SBR	38	2	11
Liverpool Road & Pickering Parkway	EBL	59	7	32
	EBT	59	8	17
	WBL	57	30	53
	WBT	305	10	19
	WBR	62	0	16
	NBL	54	6	34
	NBT	138	36	73
	NBR	76	20	54
	SBL	133	22	61
	SBT	234	47	84
	SBR	36	0	0
Liverpool Road & Kingston Road	EBL	221	69	74
	EBT	671	61	183
	EBR	98	34	77
	WBL	237	66	99
	WBT	372	73	94
	WBR	117	0	0
	NBL	186	32	43
	NBT	234	51	125
	NBR	52	15	38
	SBL	49	21	27
	SBT	325	90	81
	SBR	61	8	9

Intersection	Lane Movement	Available Storage (m)	95 th Percentile Queues (m) [50 th Percentile Queues (m)]	
			A.M. Peak Hour	P.M. Peak Hour
Kingston Road & Walnut Lane	EBL	107	13	0
	EBT	105	121 [85]	291 [130]
	WBL	159	43	76
	WBT	671	73	35
	NBL	63	81 [59]	143 [84]
	NBR	101	14	76
	SBL	19	7	13
Kingston Road & Dixie Road	EBL	184	44	88
	EBT	872	88	259
	WBL	129	53	25
	WBT	167	44	85
	NBL	13	17 [9]	46 [29]
	NBT	100	12	35
	SBL	16	47 [32]	57 [38]
Kingston Road & Fairport Road	EBL	238	43	50
	EBT	400	3	242
	WBT	872	86	36
	SBL	16	69 [49]	101 [73]
	SBR	256	21	17
Kingston Road & Highway 401 WB Ramps	EBT	245	47	328 [285]
	WBL	135	107	101
	WBT	400	81	6
	NBL	193	77	115
	NBR	52	12	20
Kingston Road & Delta Boulevard	EBL	39	41 [22]	40 [37]
	EBT	199	159	138
	WBL	121	45	48
	WBT	245	176	95
	NBL	107	57	99
	NBT	107	16	27
	SBL	146	21	36
SBT	146	21	24	

Intersection	Lane Movement	Available Storage (m)	95 th Percentile Queues (m) [50 th Percentile Queues (m)]	
			A.M. Peak Hour	P.M. Peak Hour
Kingston Road & Whites Road	EBL	153	43	89
	EBT	274	56	196
	EBR	123	67	89
	WBL	87	95 [62]	81 [61]
	WBT	199	96	80
	WBR	35	67	129 [43]
	NBL	72	50	83 [43]
	NBT	135	39	68
	NBR	35	53 [31]	189 [124]
	SBL	89	44	66
	SBT	361	81	62
Whites Road & Highway 401 EB Off-Ramp	SBR	47	20	17
	EBL	272	81	131
	EBR	225	19	124
	NBT	162	56	99
Dixie Road & Shopping Plaza Entrance	SBT	293	32	60
	WBL	193	2	7
	NBT	107	0	0
	SBT	44	3	3

The queueing analysis indicates that the queues do not change significantly between the 2033 future background scenario and 2028 future background scenario. The same queues exceeding their storage length in the 2028 future background scenario is present in the 2033 future background scenario with the exception of Kingston Road & Delta Boulevard. Although this movement exceeds the storage length of the 95th percentile, it is not expected to create significant delays for the through movement as there are two eastbound through lanes at this intersection.

As discussed, the 95th percentile queue lengths are typically reached only a few times during peak periods; therefore, the impact of the queues would be limited as long as the 50th percentile (average) queue lengths are within the available storage lengths.

4.3 2038 FUTURE BACKGROUND

The background traffic operations were analyzed based on the resulting 2038 future background traffic forecasts shown **Figure 4-3**. The resulting levels of service are outlined in **Table 4-7** and the details related to the intersection operations provided in **Appendix F-3**.

Synchro results indicate that all intersections continue to operate at an acceptable LOS. All movements operate within capacity with the exception of the westbound left-turn movement at Kingston Road & Walnut Lane in the a.m. peak hour and several

movements in the p.m. peak hour, which were identified in the 2028 and 2033 Future Background scenarios as well.

The 2038 future background results are nearly the same as the 2028 and 2033 future background results since no background growth was applied to Kingston Road.

As with the 2028 and 2033 future background scenarios, a PHF sensitivity analysis was done. The results continue to show that all movements can operate within capacity.

Table 4-7: 2038 Future Background Intersection Operations

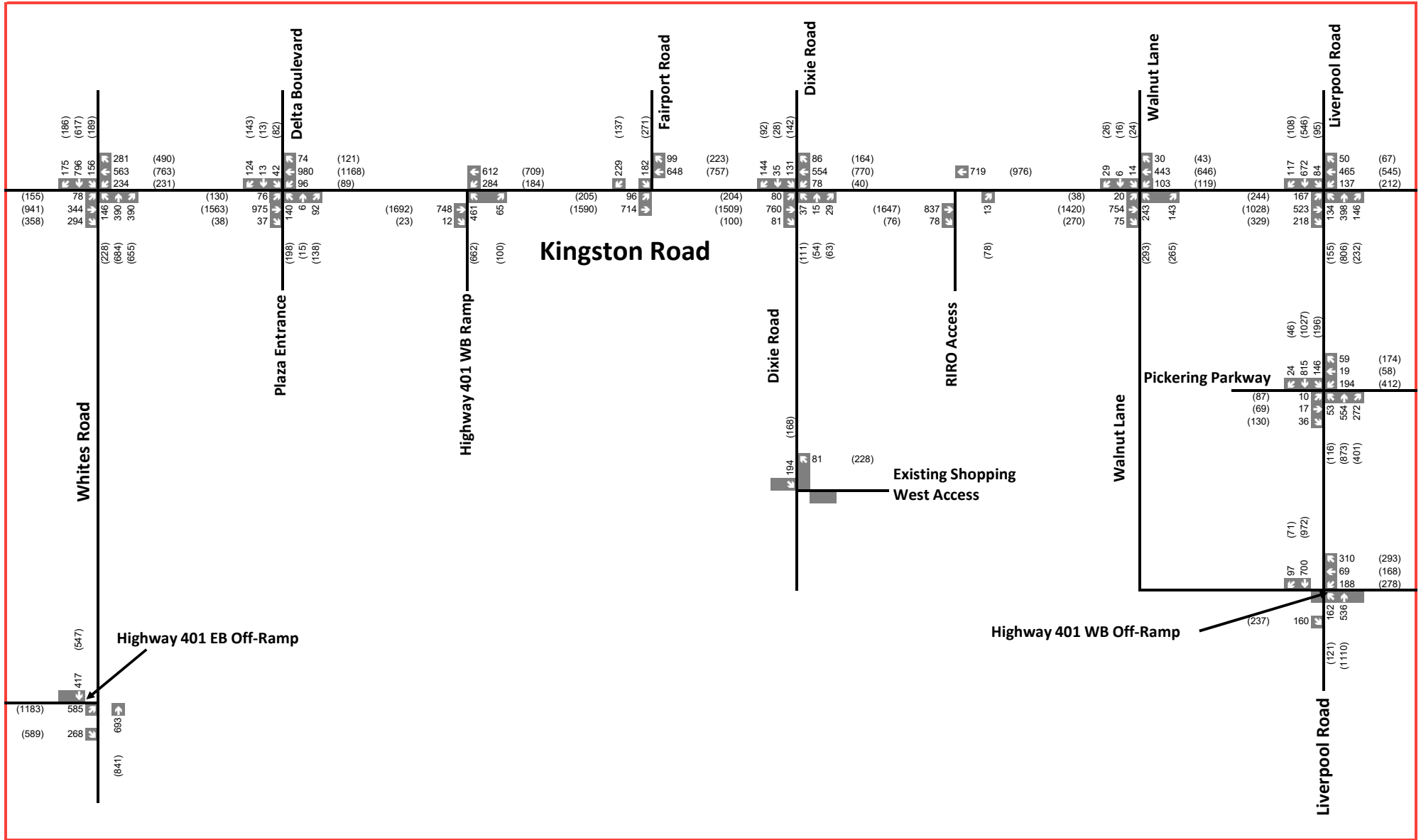
Intersection	Weekday A.M. Peak Hour		Weekday P.M. Peak Hour	
	Overall LOS (Delay in Seconds)	Critical Movement (Volume/Capacity Ratio)	Overall LOS (Delay in Seconds)	Critical Movement (Volume/Capacity Ratio)
Signalized Intersections				
Liverpool Road & Walnut Lane / Highway 401 WB Off-Ramp	B (16)	--	C (24)	--
Liverpool Road & Pickering Parkway	B (15)	--	C (25)	--
Liverpool Road & Kingston Road	C (34)	--	D (52)	EB-T (1.05)
Kingston Road & Walnut Lane	C (27)	--	D (43)	EB-TR (0.99) WB-L (1.00) NB-L (1.02)
Kingston Road & Dixie Road	C (24)	WB-L (1.04)	C (32)	EB-L (0.90)
Kingston Road & Fairport Road	B (19)	--	C (33)	EB-L (0.92)
Kingston Road & Highway 401 WB Ramps	C (29)	--	D (54)	EB-TR (1.04) WB-L (1.03)
Kingston Road & Delta Boulevard	C (34)	--	D (37)	EB-L (0.93) EB-T (0.91) WB-L (0.93) NB-L (0.93)
Kingston Road & Whites Road	C (32)	--	D (48)	EB-L (1.00) EB-T (1.02)
Whites Road & Highway 401 EB Off-Ramp	C (20)	--	C (26)	--
Unsignalized Intersections				
Dixie Road & Shopping Plaza Centre	A (9)	WB-LR (0.08)	A (10)	WB-LR (0.24)

- 1 For signalized intersections, the level of service is based on the overall delay of the intersection. Critical v/c ratios are only listed for through or shared through/turning movements with values over 0.85. Critical v/c ratios are only listed for exclusive movements with values of 0.90.
- 2 For unsignalized intersections, the level of service is based on the critical movement, which is the movement with the highest delay.

Table 4-8: 2038 Future Background Intersection Operations – PHF Sensitivity Analysis

Intersection	Weekday A.M. Peak Hour		Weekday P.M. Peak Hour	
	Overall LOS (Delay in Seconds)	Critical Movement (Volume/Capacity Ratio)	Overall LOS (Delay in Seconds)	Critical Movement (Volume/Capacity Ratio)
Signalized Intersections				
Liverpool Road & Kingston Road	--	--	D (46)	EB-T (0.95)
Kingston Road & Walnut Lane	--	--	C (35)	EB-T (0.91) WB-L (0.92) NB-L (0.95)
Kingston Road & Dixie Road	C (22)	WB-L (0.95)	--	--
Kingston Road & Highway 401 WB Ramps	--	--	D (43)	EB-T (0.93) WB-L (0.95)
Kingston Road & Whites Road	--	--	D (40)	EB-L (0.92) EB-T (0.91)

- 1 For signalized intersections, the level of service is based on the overall delay of the intersection. Critical v/c ratios are only listed for through or shared through/turning movements with values over 0.85. Critical v/c ratios are only listed for exclusive movements with values of 0.90.
- 2 For unsignalized intersections, the level of service is based on the critical movement, which is the movement with the highest delay.



Legend

xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes

Figure 4-3

2038 Future Background Volumes

A queueing analysis for the study intersections is presented in **Table 4-9**. The 50th percentile queue lengths are shown only for movements with 95th percentile queue lengths exceeding the available storage. Detailed queue results for all intersections and individual movements are provided in **Appendix F-3**.

Table 4-9: 2038 Future Background Intersection Queue Lengths

Intersection	Lane Movement	Available Storage (m)	95 th Percentile Queues (m) [50 th Percentile Queues (m)]	
			A.M. Peak Hour	P.M. Peak Hour
Liverpool Road & Walnut Lane / Highway 401 WB Off-Ramp	EBR	N/A	49	68
	WBL	203	44	63
	WBT	203	44	64
	WBR	125	23	66
	NBL	50	17	18
	NBT	348	17	54
	SBT	138	24	81
	SBR	38	2	11
Liverpool Road & Pickering Parkway	EBL	59	7	32
	EBT	59	8	17
	WBL	57	30	53
	WBT	305	10	19
	WBR	62	0	16
	NBL	54	6	35
	NBT	138	37	75
	NBR	76	20	55
	SBL	133	22	62
	SBT	234	48	86
SBR	36	0	0	
Liverpool Road & Kingston Road	EBL	221	69	74
	EBT	671	61	183
	EBR	98	34	77
	WBL	237	66	99
	WBT	372	73	94
	WBR	117	0	0
	NBL	186	32	43
	NBT	234	53	129
	NBR	52	15	39
	SBL	49	21	27
	SBT	325	93	83
SBR	61	8	9	

Intersection	Lane Movement	Available Storage (m)	95 th Percentile Queues (m) [50 th Percentile Queues (m)]	
			A.M. Peak Hour	P.M. Peak Hour
Kingston Road & Walnut Lane	EBL	107	13	0
	EBT	105	121 [85]	291 [130]
	WBL	159	43	76
	WBT	671	73	35
	NBL	63	81 [59]	143 [84]
	NBR	101	14	76
	SBL	19	7	13
Kingston Road & Dixie Road	EBL	184	44	88
	EBT	872	88	259
	WBL	129	53	25
	WBT	167	44	85
	NBL	13	17 [9]	46 [29]
	NBT	100	12	35
	SBL	16	47 [32]	57 [38]
Kingston Road & Fairport Road	EBL	238	43	50
	EBT	400	3	242
	WBT	872	86	36
	SBL	16	69 [49]	101 [73]
	SBR	256	21	17
Kingston Road & Highway 401 WB Ramps	EBT	245	47	328 [285]
	WBL	135	107	101
	WBT	400	81	6
	NBL	193	77	115
	NBR	52	12	20
Kingston Road & Delta Boulevard	EBL	39	41 [22]	40 [37]
	EBT	199	159	138
	WBL	121	45	48
	WBT	245	176	95
	NBL	107	57	99
	NBT	107	16	27
	SBL	146	21	36
SBT	146	21	24	

Intersection	Lane Movement	Available Storage (m)	95 th Percentile Queues (m) [50 th Percentile Queues (m)]	
			A.M. Peak Hour	P.M. Peak Hour
Kingston Road & Whites Road	EBL	153	43	89
	EBT	274	56	196
	EBR	123	67	89
	WBL	87	95 [62]	81 [61]
	WBT	199	96	80
	WBR	35	67	129 [43]
	NBL	72	50	83 [43]
	NBT	135	39	68
	NBR	35	53 [31]	189 [124]
	SBL	89	44	66
	SBT	361	81	62
Whites Road & Highway 401 EB Off-Ramp	SBR	47	20	17
	EBL	272	81	131
	EBR	225	19	124
	NBT	162	56	99
Dixie Road & Shopping Plaza Entrance	SBT	293	32	60
	WBL	193	2	7
	NBT	107	0	0
	SBT	44	3	3

The queueing analysis indicates that the queues do not change significantly between the 2038 future background scenario and the 2028 and 2033 future background scenarios. The same queues exceeding their storage length in the 2033 future background scenario is present in the 2038 future background scenario.

As discussed, the 95th percentile queue lengths are typically reached only a few times during peak periods; therefore, the impact of the queues would be limited as long as the 50th percentile (average) queue lengths are within the available storage lengths.

4.4 2043 FUTURE BACKGROUND

The background traffic operations were analyzed based on the resulting 2043 future background traffic forecasts shown in **Figure 4-4**. The resulting levels of service are outlined in **Table 4-10** and the details related to the intersection operations provided in **Appendix F-4**.

Synchro results indicate that all intersections continue to operate at an acceptable LOS. All movements operate within capacity with the exception of the westbound left-turn movement at Kingston Road & Walnut Lane in the a.m. peak hour and several movements in the p.m. peak hour, which was identified in the 2028, 2033 and 2038 future background scenarios as well.

The 2043 future background results are nearly the same as the 2028, 2033 and 2038 future background results since no background growth was applied to Kingston Road. As with the 2028, 2033, and 2038 future background scenarios, the PHF sensitivity results show that all movements continue to operate within capacity.

Table 4-10: 2043 Future Background Intersection Operations

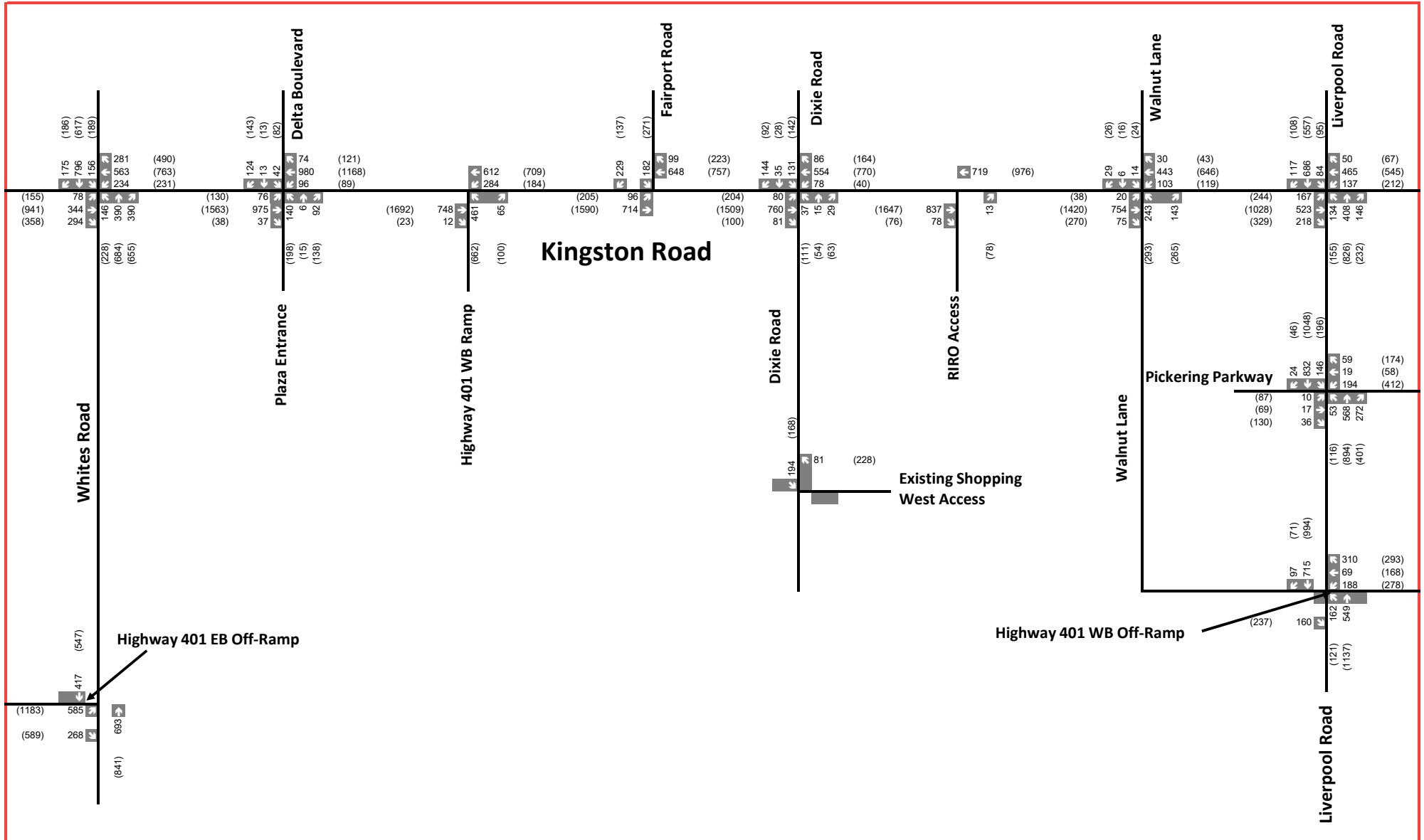
Intersection	Weekday A.M. Peak Hour		Weekday P.M. Peak Hour	
	Overall LOS (Delay in Seconds)	Critical Movement (Volume/Capacity Ratio)	Overall LOS (Delay in Seconds)	Critical Movement (Volume/Capacity Ratio)
Signalized Intersections				
Liverpool Road & Walnut Lane / Highway 401 WB Off-Ramp	B (16)	--	C (24)	--
Liverpool Road & Pickering Parkway	B (15)	--	C (25)	--
Liverpool Road & Kingston Road	C (34)	--	D (52)	EB-T (1.05)
Kingston Road & Walnut Lane	C (27)	--	D (43)	EB-TR (0.99) WB-L (1.00) NB-L (1.02)
Kingston Road & Dixie Road	C (24)	WB-L (1.04)	C (32)	EB-L (0.90)
Kingston Road & Fairport Road	B (19)	--	C (33)	EB-L (0.92)
Kingston Road & Highway 401 WB Ramps	C (29)	--	D (54)	EB-TR (1.04) WB-L (1.03)
Kingston Road & Delta Boulevard	C (34)	--	D (37)	EB-L (0.93) EB-T (0.91) WB-L (0.93) NB-L (0.93)
Kingston Road & Whites Road	C (32)	--	D (48)	EB-L (1.00) EB-T (1.02)
Whites Road & Highway 401 EB Off-Ramp	C (20)	--	C (26)	--
Unsignalized				
Dixie Road & Shopping Plaza Entrance	A (9)	WB-LR (0.08)	A (10)	WB-LR (0.24)

- 1 For signalized intersections, the level of service is based on the overall delay of the intersection. Critical v/c ratios are only listed for through or shared through/turning movements with values over 0.85. Critical v/c ratios are only listed for exclusive movements with values of 0.90.
- 2 For unsignalized intersections, the level of service is based on the critical movement, which is the movement with the highest delay.

Table 4-11: 2043 Future Background Intersection Operations – PHF Sensitivity Analysis

Intersection	Weekday A.M. Peak Hour		Weekday P.M. Peak Hour	
	Overall LOS (Delay in Seconds)	Critical Movement (Volume/Capacity Ratio)	Overall LOS (Delay in Seconds)	Critical Movement (Volume/Capacity Ratio)
Signalized Intersections				
Liverpool Road & Kingston Road	--	--	D (46)	EB-T (0.95)
Kingston Road & Walnut Lane	--	--	C (35)	EB-T (0.91) WB-L (0.92) NB-L (0.95)
Kingston Road & Dixie Road	C (22)	WB-L (0.95)	--	--
Kingston Road & Highway 401 WB Ramps	--	--	D (43)	EB-T (0.93) WB-L (0.95)
Kingston Road & Whites Road	--	--	D (40)	EB-L (0.92) EB-T (0.91)

- 1 For signalized intersections, the level of service is based on the overall delay of the intersection. Critical v/c ratios are only listed for through or shared through/turning movements with values over 0.85. Critical v/c ratios are only listed for exclusive movements with values of 0.90.
- 2 For unsignalized intersections, the level of service is based on the critical movement, which is the movement with the highest delay.



Legend

xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes

Figure 4-4

2043 Future Background Volumes

A queueing analysis for the study intersections is presented in **Table 4-12**. The 50th percentile queue lengths are shown only for movements with 95th percentile queue lengths exceeding the available storage. Detailed queue results for all intersections and individual movements are provided in **Appendix F-4**.

Table 4-12: 2043 Future Background Intersection Queue Lengths

Intersection	Lane Movement	Available Storage (m)	95 th Percentile Queues (m) [50 th Percentile Queues (m)]	
			A.M. Peak Hour	P.M. Peak Hour
Liverpool Road & Walnut Lane / Highway 401 WB Off-Ramp	EBR	N/A	49	68
	WBL	203	44	63
	WBT	203	44	64
	WBR	125	24	66
	NBL	50	17	18
	NBT	348	17	56
	SBT	138	25	83
	SBR	38	2	11
Liverpool Road & Pickering Parkway	EBL	59	7	32
	EBT	59	8	17
	WBL	57	30	53
	WBT	305	10	19
	WBR	62	0	16
	NBL	54	6	36
	NBT	138	38	77
	NBR	76	20	56
	SBL	133	22	63
	SBT	234	49	89
SBR	36	0	0	
Liverpool Road & Kingston Road	EBL	221	69	74
	EBT	671	61	183
	EBR	98	34	78
	WBL	237	66	99
	WBT	372	73	94
	WBR	117	0	0
	NBL	186	32	43
	NBT	234	54	133
	NBR	52	15	40
	SBL	49	21	27
	SBT	325	95	85
SBR	61	8	9	

Intersection	Lane Movement	Available Storage (m)	95 th Percentile Queues (m) [50 th Percentile Queues (m)]	
			A.M. Peak Hour	P.M. Peak Hour
Kingston Road & Walnut Lane	EBL	107	13	0
	EBT	105	121 [85]	291 [130]
	WBL	159	43	76
	WBT	671	73	35
	NBL	63	81 [59]	143 [84]
	NBR	101	14	76
	SBL	19	7	13
Kingston Road & Dixie Road	EBL	184	44	88
	EBT	872	88	259
	WBL	129	53	25
	WBT	167	44	85
	NBL	13	17 [9]	46 [29]
	NBT	100	12	35
	SBL	16	47 [32]	57 [38]
Kingston Road & Fairport Road	EBL	238	43	50
	EBT	400	3	242
	WBT	872	86	36
	SBL	16	69 [49]	101 [73]
	SBR	256	21	17
Kingston Road & Highway 401 WB Ramps	EBT	245	47	328 [285]
	WBL	135	107	101
	WBT	400	81	6
	NBL	193	77	115
	NBR	52	12	20
Kingston Road & Delta Boulevard	EBL	39	41 [22]	40 [37]
	EBT	199	159	138
	WBL	121	45	48
	WBT	245	176	95
	NBL	107	57	99
	NBT	107	16	27
	SBL	146	21	36
SBT	146	21	24	

Intersection	Lane Movement	Available Storage (m)	95 th Percentile Queues (m) [50 th Percentile Queues (m)]	
			A.M. Peak Hour	P.M. Peak Hour
Kingston Road & Whites Road	EBL	153	43	89
	EBT	274	56	196
	EBR	123	67	89
	WBL	87	95 [62]	81 [61]
	WBT	199	96	80
	WBR	35	67	129 [43]
	NBL	72	50	83 [43]
	NBT	135	39	68
	NBR	35	53 [31]	189 [124]
	SBL	89	44	66
	SBT	361	81	62
SBR	47	20	17	
Whites Road & Highway 401 EB Off-Ramp	EBL	272	81	131
	EBR	225	19	124
	NBT	162	56	99
	SBT	293	32	60
Dixie Road & Shopping Plaza Centre	WBL	193	2	7
	NBT	107	0	0
	SBT	44	3	3

The queueing analysis indicates that the queues do not change significantly between the 2043 future background scenario and the 2028, 2033 and 2043 future background scenarios. The same queues exceeding their storage length in the previous future background scenarios are present in the 2043 future background scenario.

As discussed, the 95th percentile queue lengths are typically reached only a few times during peak periods; therefore, the impact of the queues would be limited as long as the 50th percentile (average) queue lengths are within the available storage lengths.

5 SITE GENERATED TRAFFIC

5.1 TRIP GENERATION

The vehicle trips generated by the proposed development during the weekday a.m. and p.m. peak hours were estimated using the trip generation rates outlined in the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 11th Edition*.

The following adjustments were applied to the base ITE generated trips to calculate vehicle trips:

- **Internal Trip Capture:**

It is intended that the proposed 70,877 sq. ft. of retail GFA will be mainly servicing the proposed residential use and other nearby residents. Hence, it is anticipated that the proposed retail use will not generate many new trips. However, as a conservative approach, we accounted for the potential new trips generated by the retail use, and accordingly applied a multi-use share factor to determine the number of internally captured trips. The multi-use share factor was calculated using the methodology for internal trip capture estimation for mixed-use developments from *NCHRP Project 8-51*. The multi-use adjustment factors calculations can be found in **Appendix G**.

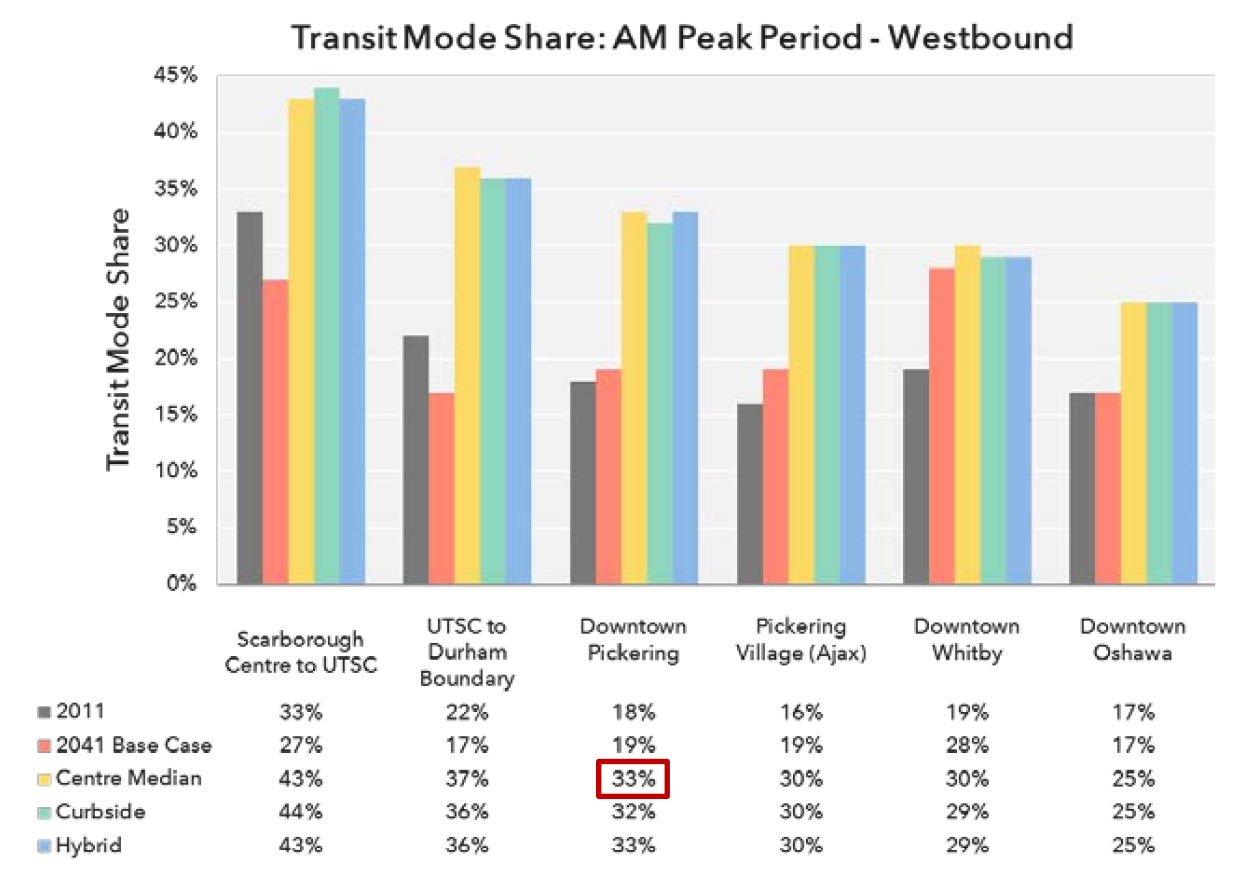
- **Mode Split:**

As noted in the ITE's *Trip Generation Handbook*, the ITE trip generation rates include a modest (0 to 5%) transit split and are generally taken in a fairly suburban context. Therefore, the site trips initially estimated using the ITE rate were adjusted based on the TTS data to reflect the existing mode splits in the study area. The TTS mode splits for residential and retail trips in the study area traffic analysis zones (TAZ 1039, 1040, 1041, and 1043) are shown in **Table 5-1** and **Table 5-2**, respectively. The TTS mode share data is provided in **Appendix G**. As shown, a large portion of the transit related trips in the area are GO train trips as the Pickering GO Station is located in proximity to the site.

However, when the BRT is anticipated to be operational, there will likely be a shift from auto to transit trips in the area. As discussed in **Section 3.6.2**, it is assumed that non-auto mode shares in the study area will increase by 5% by 2028 and 10% by 2033/2038/2043. These increases are applied to the existing non-auto travel mode shares for the study area from the 2016 TTS data to develop non-auto mode share reductions to the site trip generation.

As a comparison, Metrolinx's *Durham Scarborough Bus Rapid Transit Study Initial Business Case Report* (2018) forecasted that the a.m. peak period transit mode share in Downtown Pickering would be 33% when the center median BRT is in operation, as shown in **Figure 5-1**. In comparison to the existing a.m. peak hour transit mode share (i.e. 22%), the BRT is forecasted to increase transit mode share by 11%, which is comparable to the 10% transit mode increase assumed in this study.

Figure 5-1: Future Transit Mode Share with Durham-Scarborough BRT



Source: *Durham Scarborough Bus Rapid Transit Study Initial Business Case Report* (Metrolinx, 2018)

Table 5-1: Existing Mode Share – Residential Trips

Primary Travel Mode	Modal Split Percentage			
	A.M. Peak Hour		P.M. Peak Hour	
	Inbound	Outbound	Inbound	Outbound
Auto – Driver	79%	56%	65%	83%
Auto – Passenger	4%	17%	12%	13%
Transit	0%	8%	4%	4%
Rail Transit	0%	14%	15%	0%
Walking and Cycling	17%	5%	4%	0%

Table 5-2: Existing Mode Share – Retail Trips

Primary Travel Mode	Modal Split Percentage			
	A.M. Peak Hour		P.M. Peak Hour	
	Inbound	Outbound	Inbound	Outbound
Auto – Driver	79%	80%	93%	88%
Auto – Passenger	21%	20%	7%	11%
Transit	0%	0%	0%	0%
Rail Transit	0%	0%	0%	0%
Walking and Cycling	0%	0%	0%	1%

It is our opinion that this future non-auto mode share reduction is conservative as the TMP's auto mode share targets apply to the entire Region, and areas immediately adjacent to the rapid transit service are expected to have much higher non-auto rates. For example, based on the 2016 TTS data, the non-auto mode split in the York Region is 14%, while the areas along Yonge Street served by the VIVA rapid transit service have a non-auto mode split above 35%. It should be noted that at that time the VIVA Blue BRT route was operating in mixed traffic operations with headways between 10 to 12 minutes and that all these zones were located more than 400 metres of walking distance from bus stops. Additionally, the TTS zones 2125 and 2126 around Promenade Mall in Vaughan with high-density development land uses have a combined non-auto mode split of around 40%. Therefore, given the proximity of the Kingston BRT and Pickering GO Station to the site, as well as the increased DRT and GO train service in the future, it is expected that many of the auto site trips will switch to transit trips.

The resulting site trip generation for horizon years 2028 and 2033/2038/2043 are presented in **Table 5-3** and **Table 5-4**, respectively.

Table 5-3: Site Generated Trips (Horizon Year 2028)

Land Use (ITE Code)	Basis/Parameter	A.M. Peak Hour		P.M. Peak Hour	
		In	Out	In	Out
Multifamily Housing (High-Rise) (222) 583 units	ITE Trip Rate (per unit)	0.27		0.32	
	ITE Splits	26%	74%	62%	38%
	Base Trips	41	116	116	71
	Internal Trips	-1	-1	-53	-25
	Non-Auto Trips	-9	-37	-17	-4
	Auto Trips	31	78	45	42
Shopping Plaza (821) 51,351 sq. ft. GFA	ITE Trips Rate (per 1000 sq.ft.)	3.53		T = 7.67X + 118.86	
	ITE Splits	62%	38%	48%	52%
	Base Trips	112	69	246	267
	Internal Trips	-1	-1	-25	-53
	Non-Auto Trips	-6	-3	-11	-13
	Auto Trips	106	65	210	201
Total Auto Trips:		137	143	255	243

Table 5-4: Site Generated Trips (Horizon Years 2033, 2038, and 2043)

Land Use (ITE Code)	Basis/Parameter	A.M. Peak Hour		P.M. Peak Hour	
		In	Out	In	Out
Multifamily Housing (High-Rise) (222) 5,264 units	ITE Trip Rate (per unit)	0.27		0.32	
	ITE Splits	26%	74%	62%	38%
	Base Trips	370	1052	1044	640
	Internal Trips	-7	-11	-90	-32
	Non-Auto Trips	-98	-385	-315	-85
	Auto Trips	264	656	640	523
Shopping Plaza (821) 70,877 sq. ft. GFA	ITE Trip Rate (per 1000 sq.ft.)	0.84		T = 7.67X + 118.86	
	ITE Splits	62%	38%	48%	52%
	Base Trips	155	95	318	344
	Internal Trips	-11	-7	-32	-90
	Non-Auto Trips	-14	-9	-29	-28
	Auto Trips	130	79	258	227
Total Auto Trips:		395	735	897	750

5.2 TRIP DISTRIBUTION AND ASSIGNMENT

To inform the trip assignment of the proposed development, information about the general trip distribution is required. The distribution represents the proportion of trips to and away from the site in any given direction. In this assessment, trip distribution was calculated using the TTS trip origin and destination data. Trips are grouped under cardinal directions based on the relative angle between trip origin and destination.

Trip distribution data for the site’s home-based TAZ’s (1039, 1040, 1041, and 1043) are summarized in **Table 5-5**. A summary of the TTS queries can be found in **Appendix G**.

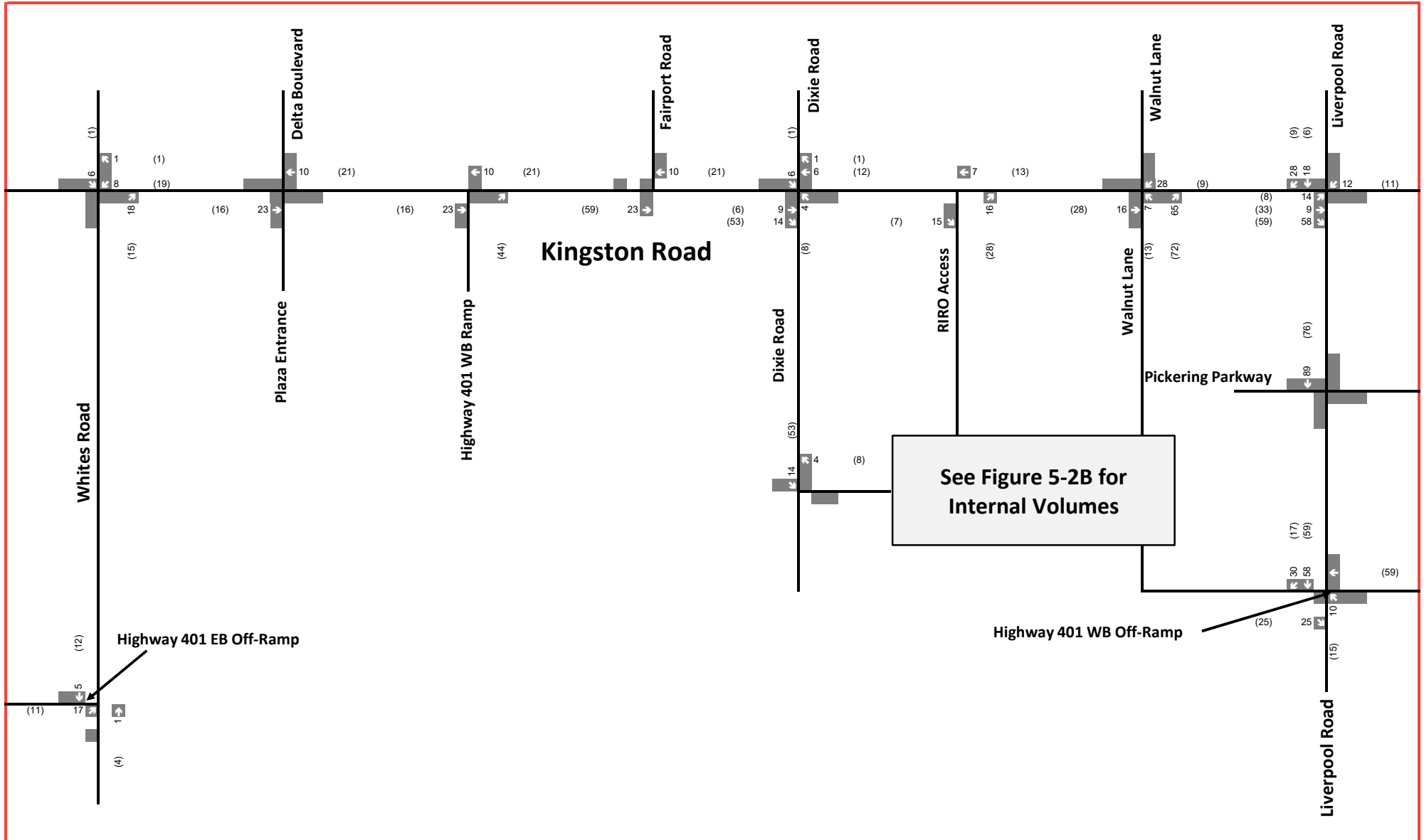
Note that ‘internal’ refers to local trips within the home planning district (i.e. City of Pickering – PD 20 in the TTS), while ‘external’ refers to trips made outside the home planning district.

Table 5-5: TTS Trip Distribution

Time Period	NW	N	NE	E	SE	S	SW	W
Internal								
AM (IN)	0.0%	59.4%	0.0%	7.0%	11.2%	0.0%	0.0%	0.0%
AM (OUT)	0.0%	10.6%	1.3%	0.3%	6.2%	3.6%	5.0%	3.3%
PM (IN)	0.0%	6.5%	0.3%	1.5%	7.8%	1.4%	2.7%	1.9%
PM (OUT)	0.0%	6.3%	1.3%	12.5%	12.8%	11.6%	3.9%	3.3%
External								
AM (IN)	0.0%	0.0%	0.0%	22.5%	0.0%	0.0%	0.0%	0.0%
AM (OUT)	14.3%	0.0%	9.0%	10.3%	0.0%	0.0%	8.9%	27.4%
PM (IN)	20.1%	0.0%	3.1%	8.3%	0.0%	0.0%	5.9%	40.5%
PM (OUT)	0.0%	0.0%	7.1%	27.2%	0.0%	0.0%	9.1%	5.1%

Using the TTS trip distribution data above, in conjunction with the most logical path for vehicles to travel based on the future lane configuration, the site generated trips were assigned to the road network.

The resulting assignment for the 2028 horizon site traffic volumes is shown in **Figure 5-2**. The resulting assignment for the 2033, 2038 and 2043 horizon site traffic volumes is shown in **Figure 5-3**.

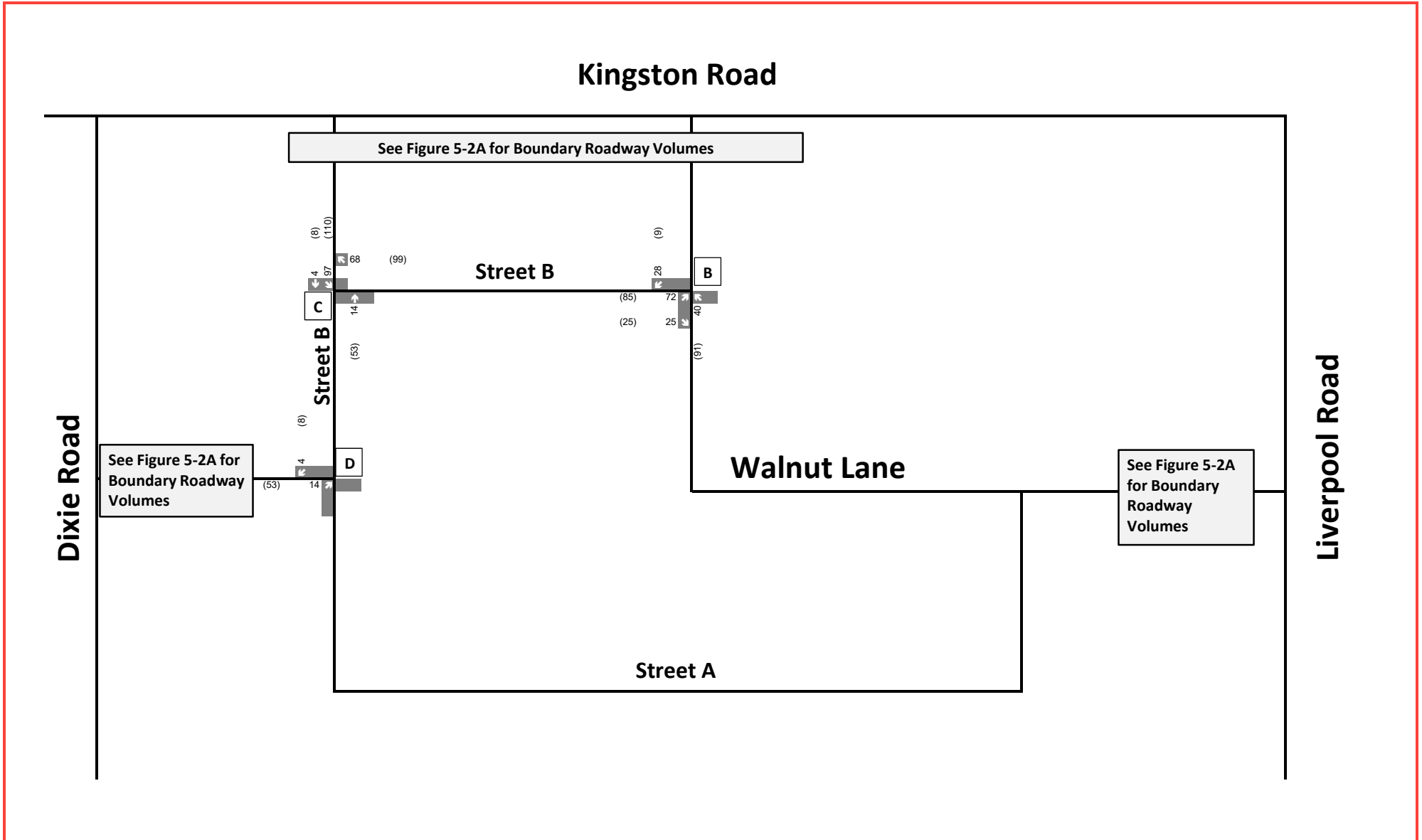


Legend

xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes

Figure 5-2A

2028 Site Traffic Volumes (Boundary Roadways)

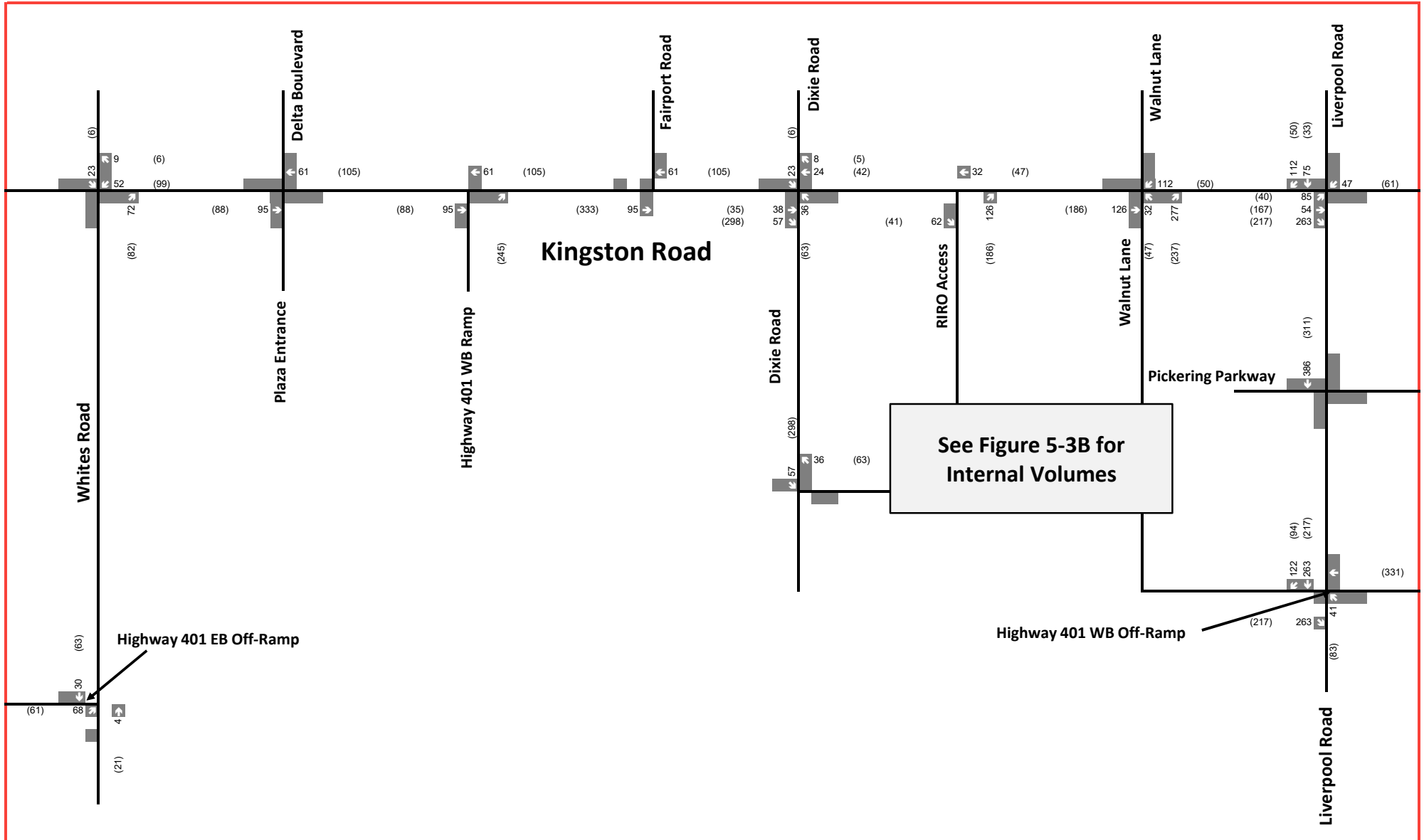


Legend

xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes

Figure 5-2B

2028 Site Traffic Volumes (Internal Volumes)

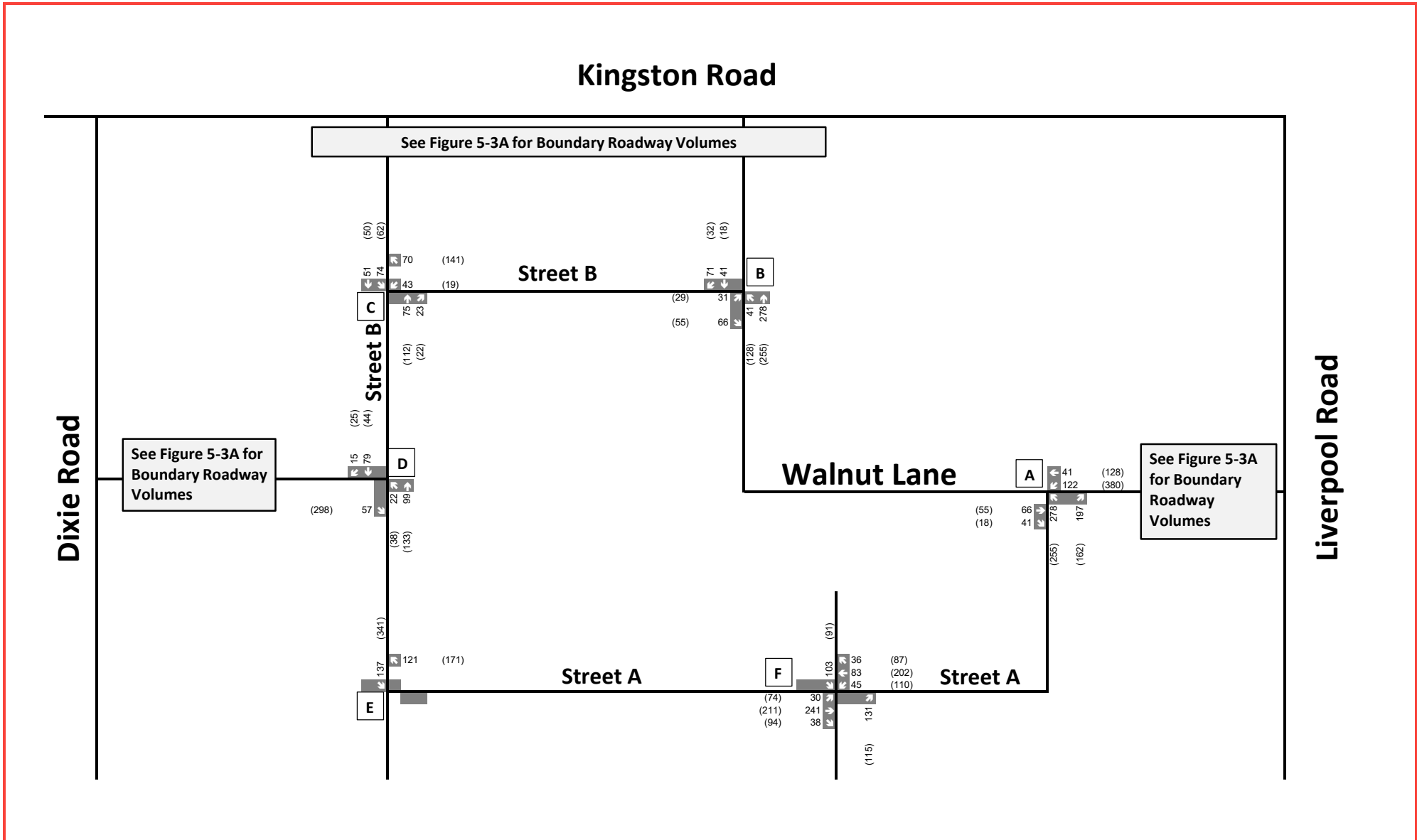


Legend

xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes

Figure 5-3A

2033, 2038 and 2043 Site Traffic Volumes (Boundary Roadways)



Legend

xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes

Figure 5-3B

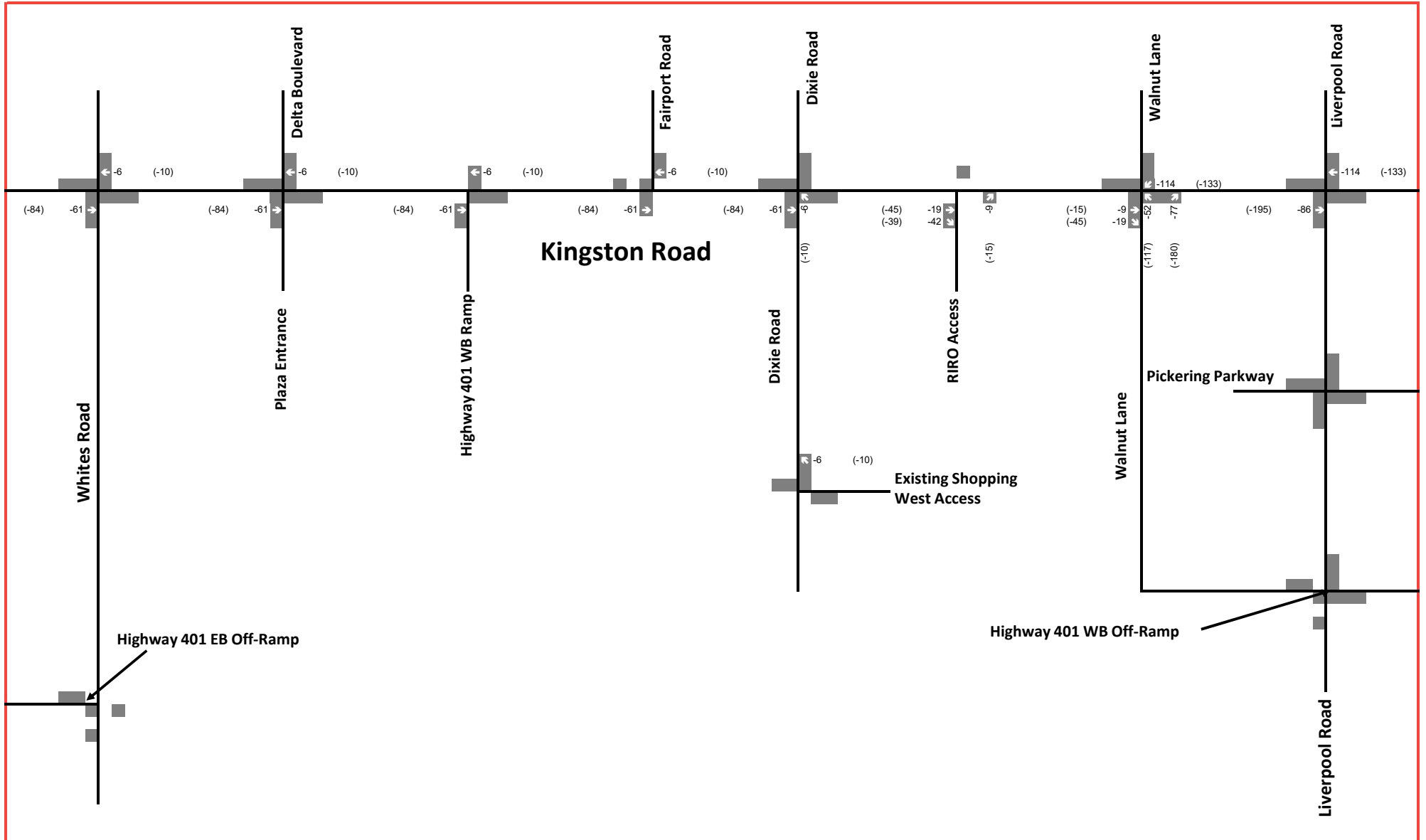
2033, 2038 and 2043 Site Traffic Volumes (Internal Roadways)

5.3 EXISTING SITE TRAFFIC

As mentioned previously, the site is currently occupied by a shopping centre with various retail tenants. With the construction of the proposed development, the current land uses will be removed. To account for this removal, the existing traffic associated with the current land uses need to be removed from the traffic analysis as well. The existing site trips to be removed from the 2028 (phase 1) horizon year were estimated based on an approximate trip generation of the removed buildings. The existing site trips to be removed from the 2033 (full-build out) horizon year and forward were determined from the traffic counts at the existing driveway accesses. The resulting net site traffic with the removal of existing site traffic is summarized in **Table 5-6**. The existing site traffic is presented in **Figure 5-4**. The net site traffic between the site generated site traffic and the existing site traffic is presented in **Figure 5-5** for the 2028 horizon and **Figure 5-6** for the 2033, 2038, and 2043 horizons.

Table 5-6: Existing Site Trips

	A.M. Peak Hour		P.M. Peak Hour	
	Inbound	Outbound	Inbound	Outbound
Existing Site Trips	238	164	327	424
2028 Site Trips	137	143	255	243
2033/2038/2043 Site Trips	395	735	897	750
2028 Net Site Trips	97	117	160	147
2033/2038/2043 Net Site Trips	157	571	570	326

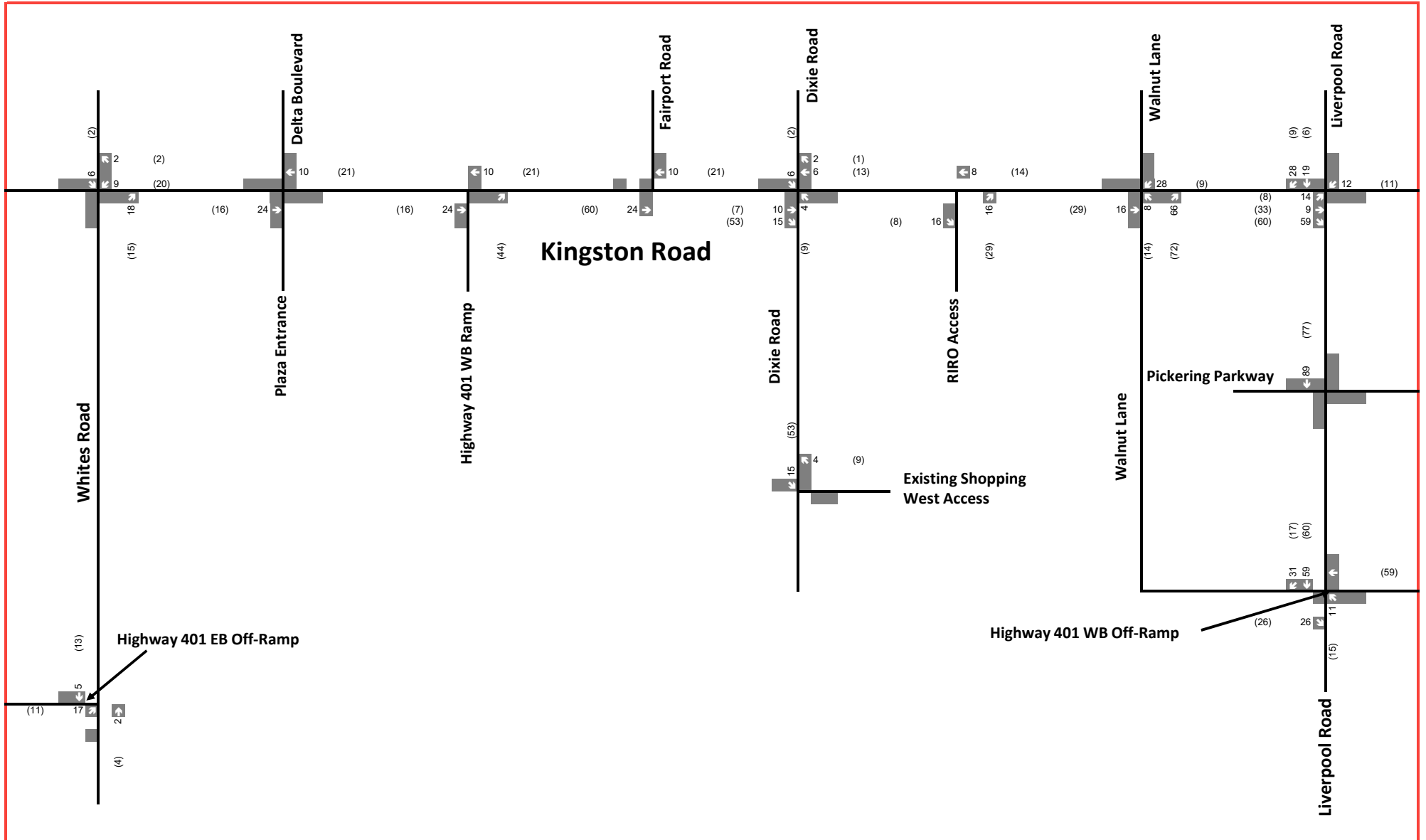


Legend

xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes

Figure 5-4

Existing Site Traffic (to be removed)

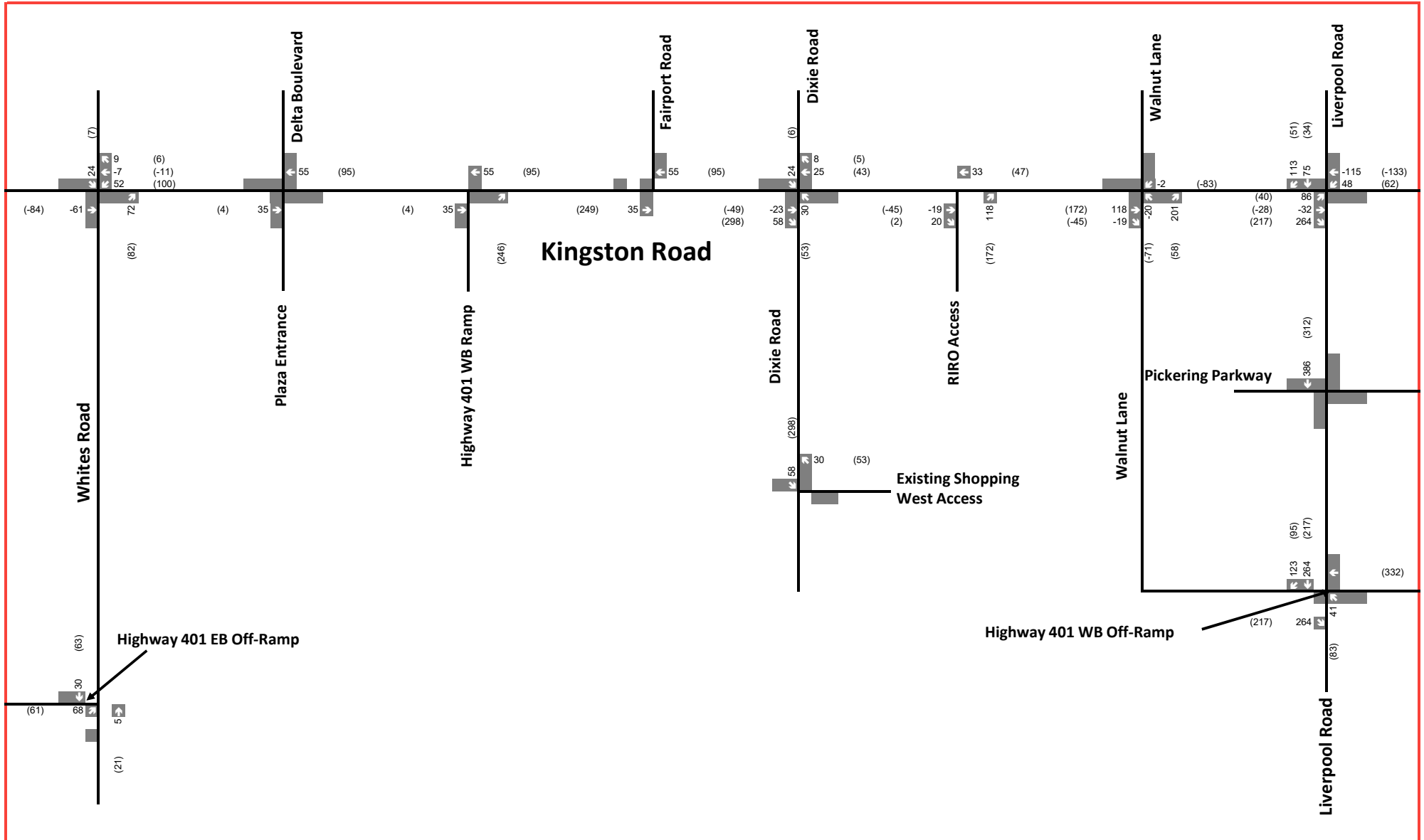


Legend

xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes

Figure 5-5

2028 Net Site Traffic



Legend

xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes

Figure 5-6

2033, 2038 and 2043 Net Site Traffic

6 PROPOSED SITE LAYOUT

6.1 PUBLIC ROADS

The proposed site plan includes two public roads within the site:

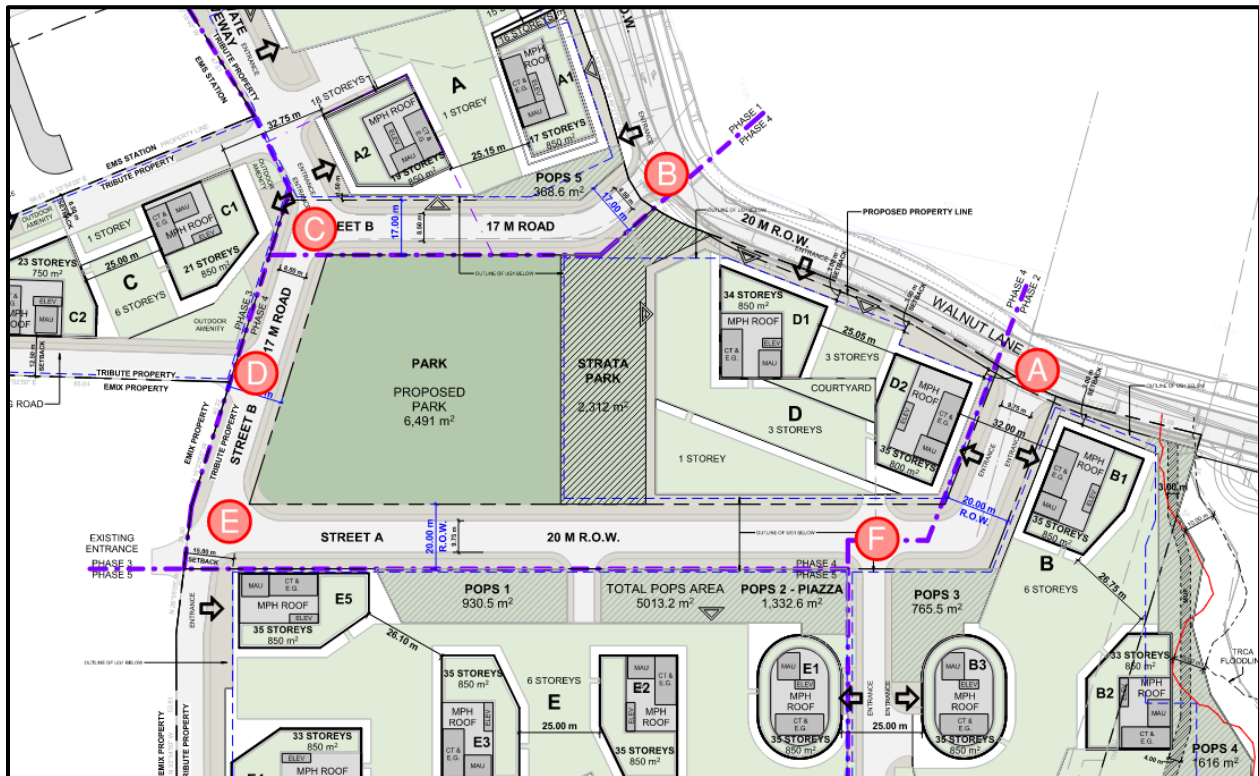
- Street A, which has a right-of-way (ROW) width of 20 metres; and
- Street B, which has a ROW width of 17 metres.

With a wider ROW, Street A is intended to accommodate the functions of a new primary street per the City’s Draft Urban Design Guidelines for the area. It is expected that this road will be further extended to the west (up to Dixie Road) upon the redevelopment of the adjacent property. Street A can also be extended northeast of Walnut Lane in order to serve as an access to the lands on the other side of Walnut Lane when they are redeveloped.

6.2 INTERNAL INTERSECTION CONTROLS

There are several internal intersections within the proposed site plan. The six internal intersections have been identified as intersections A to F, as shown in **Figure 6-1**. The estimated volumes of these internal intersections under 2043 future total conditions are provided in **Figure 7-4**.

Figure 6-1: Internal Intersections



To determine the control type of the internal intersections, the all-way stop warrant methodology outlined in Ontario Traffic Manual (OTM) Book 5 was used. According to OTM Book 5, an all-way stop is warranted at the intersection of two local roads under three conditions. Firstly, the total number of vehicles at all intersection approaches must be greater than 200 vehicles. Secondly, the minor street volumes must be greater than 75 vehicles. Finally, the volume split between the minor and major street volumes must be at least 30 to 70, or 25 to 75 for 3-legged intersections. Based on these three conditions, the internal intersections were assessed. The results are presented in **Table 6-1**.

Table 6-1: Internal Intersection All-Way Stop Warrant

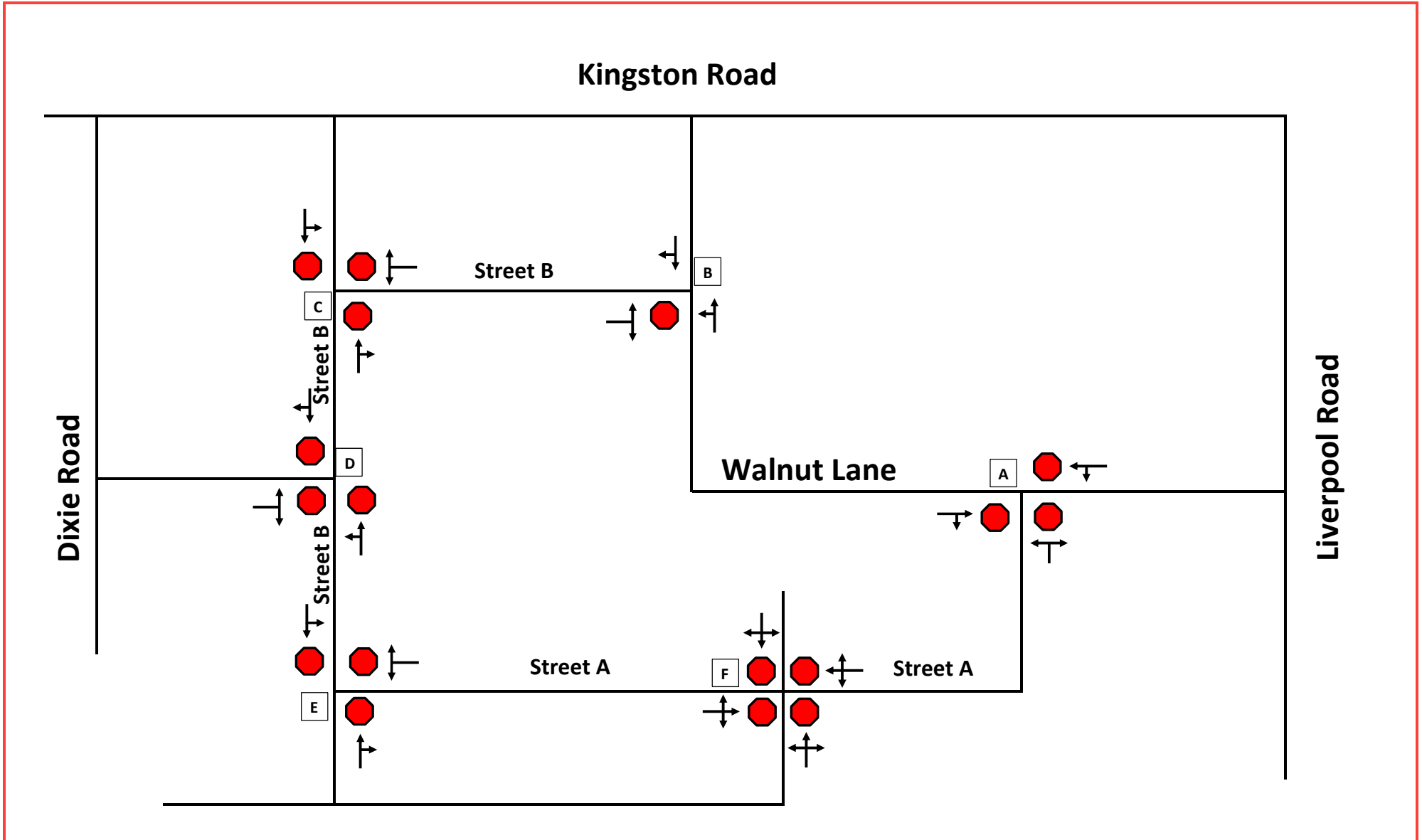
Internal Intersection	Condition 1 (Total Volume)	Condition 2 (Minor Street Volume)	Condition 3 (Volume Split)	All-way Stop warranted?
A	Yes	Yes	Yes	Yes
B	Yes	Yes	No	No
C	Yes	Yes	Yes	Yes
D	Yes	Yes	Yes	Yes
E	Yes	Yes	Yes	Yes
F	Yes	Yes	Yes	Yes

As shown in **Table 6-1**, all of the internal intersections except for intersection B are warranted for all-way stop control. Therefore, intersection B is recommended to be a two-way stop-controlled intersection, while the remaining internal intersections were initially assessed as all-way stop-controlled intersections.

As indicated in **Section 7.2**, intersection A operates above capacity as an all-way stop control intersection under future total 2033 conditions. As such, the signalization of this intersection was considered. Based on the favourable traffic operations of this location as a signalized intersection, it is recommended that intersection A be signalized. This intersection is approximately 220 metres from the signalized intersection of Kingston Road & Walnut Lane, which is an acceptable intersection spacing for signalization on a minor road. Additionally, the signalized intersection can also serve the future redevelopment of the properties northeast of the intersection.

Figure 6-2 illustrates the recommended control type for the internal intersections.

Given the recommended provision of all-way stop control at almost all of the internal intersections and the short distances between the intersections, mid-block pedestrian crossings are not recommended at any location within the development.



Stop-controlled Intersection



Lane Configuration

Figure 6-2
Full Build out Internal Lane Configurations

6.3 SITE PLAN REVIEW

This section reviews the ability for fire trucks, waste collection vehicles, and loading trucks to access each of the buildings. The phasing plans dated December 10, 2024 and ground floor site plan dated December 17, 2024 were used in the site plan review. The proposed site was reviewed using AutoTURN 11.0 turning template software to simulate the required design vehicles.

6.3.1 FIRE ROUTE ASSESSMENT

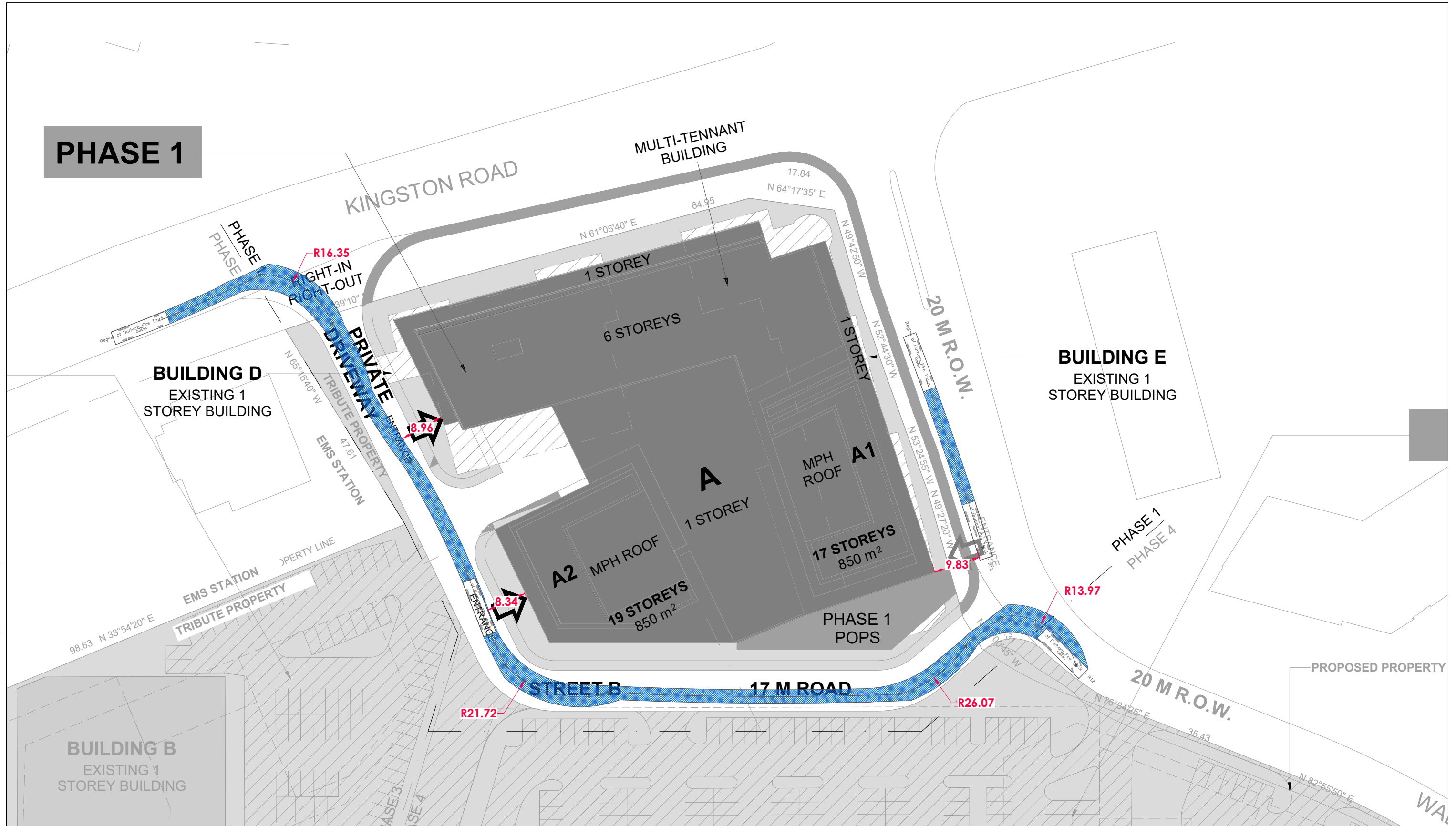
A fire route assessment was completed for each phase. As stated within the Fire Code Article 3.2.5.4., the space between the fire truck and the primary access to the building must be no less than 3 metres and no more than 15 metres.

A standard City of Pickering fire truck was used to test the fire truck maneuvers. As illustrated in **Figure 6-3** to **Figure 6-7**, the fire truck is able to maneuver to and from locations that are within the acceptable distance range to the primary entrances for each building.

6.3.2 LOADING SPACE REVIEW

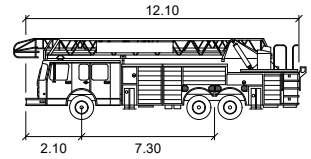
Each of the loading spaces that are intended to be used for waste collection were tested using Durham Region's front-loader and rear-packer garbage trucks. **Figure 6-8** to **Figure 6-13** illustrate the maneuvers of the front-loader garbage truck, while **Figure 6-14** to **Figure 6-19** illustrate the maneuvers of the rear-packer garbage truck.

To assess the ability for the loading spaces to be used for moving and deliveries, each of them were tested using either a TAC medium single unit (MSU) truck or a TAC light single unit (LSU) truck, depending on the dimensions of the loading space. **Figure 6-20** to **Figure 6-27** illustrate the maneuvers of the MSU truck, while **Figure 6-28** to **Figure 6-34** illustrate the maneuvers of the LSU truck.



Source: "2024-12-10_22122P01-ARCH-TF-XX-WIP-Sheet - RZ171 - PHASING PLAN-PHASE 1.dwg" received on December 10, 2024.

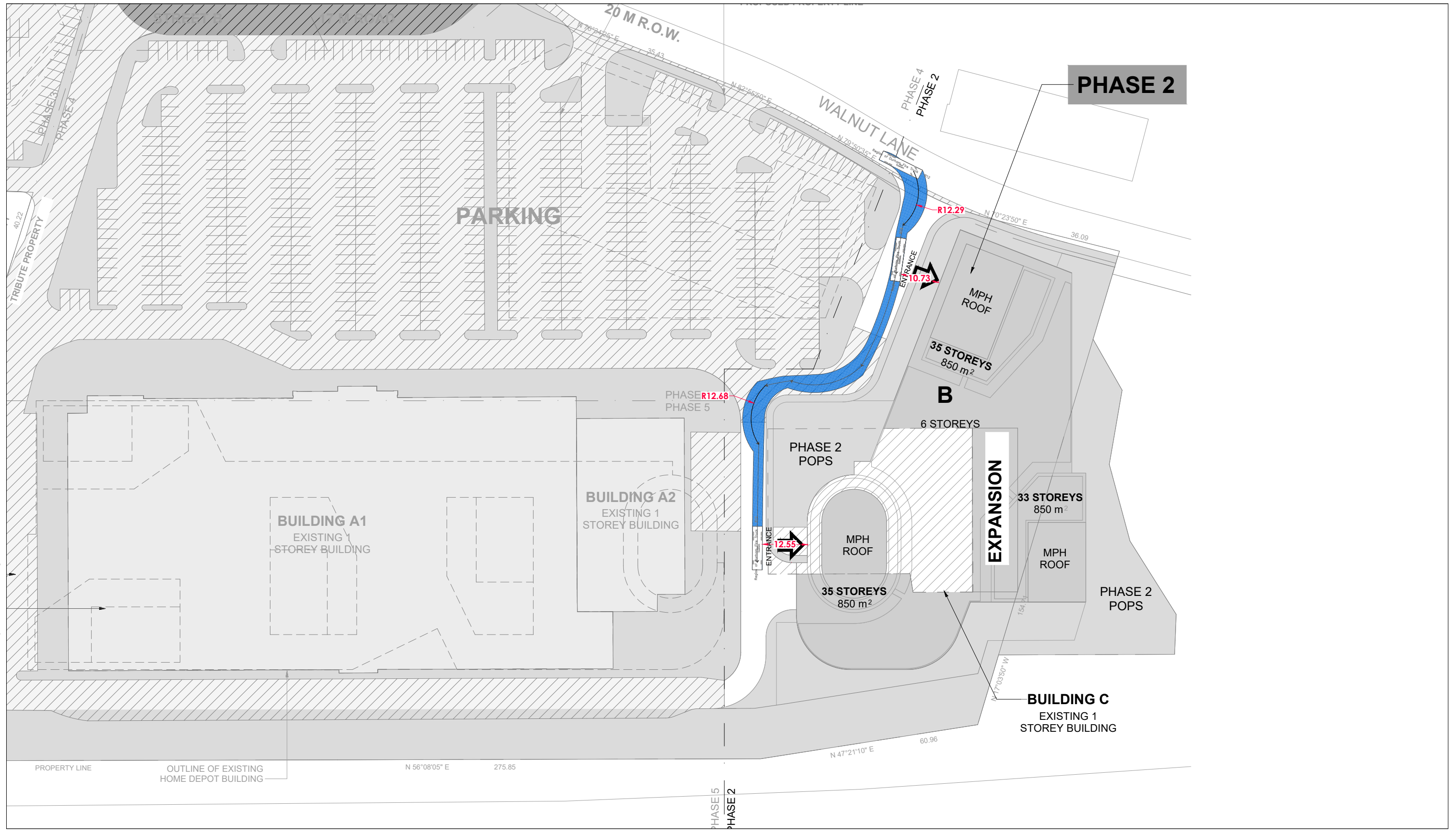
Scale: 1:750



Region of Durham Fire Truck - R12

	metres
Width	: 2.75
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 37.5

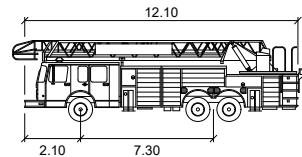
Figure 6-3
Fire Truck Circulation - Phase 1
1105-1163 Kingston Road, Pickering



C:\Users\cafo132301\OneDrive - WSP\0365\Desktop\Projects\1105-1163 Kingston Rd\CAD

Source: "2024-12-10_22122P01-ARCH-TF-XX-WIP-Sheet - RZ172 - PHASING PLAN-PHASE 2.dwg" received on December 10, 2024.

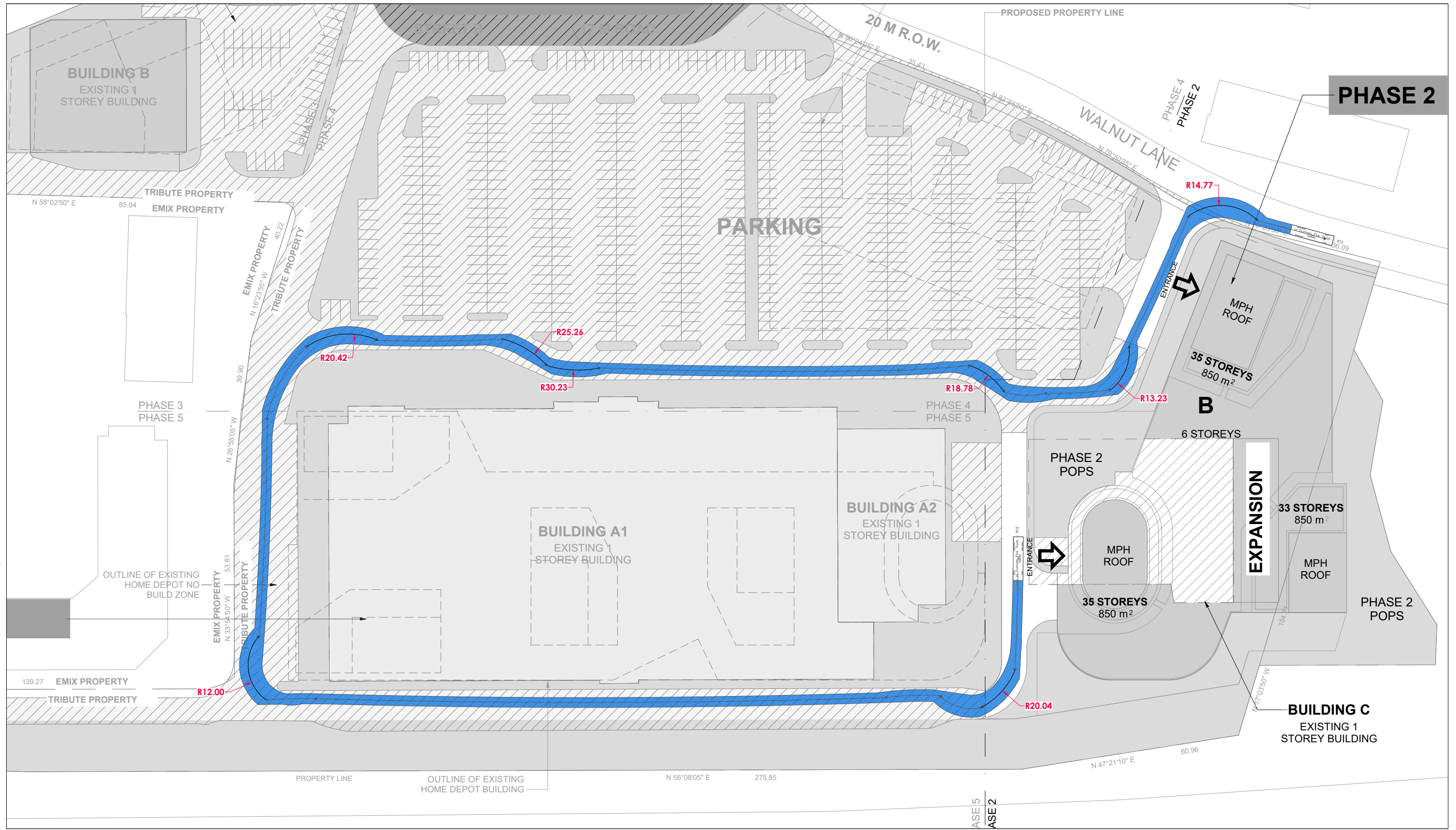
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Region of Durham Fire Truck - R12

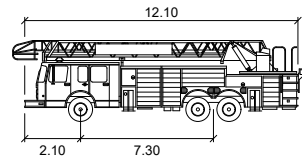
	units
Width	: 2.75 meters
Track	: 2.50 meters
Lock to Lock Time	: 6.0 seconds
Steering Angle	: 37.5 degrees

Figure 6-4A
Fire Truck Circulation - Phase 2 - Inbound
1105-1163 Kingston Road, Pickering



Source: "2024-12-10_22122P01-ARCH-TF-XX-WIP-Sheet - RZ172 - PHASING PLAN-PHASE 2.dwg" received on December 10, 2024.

Scale: 1:850



Region of Durham Fire Truck - R12

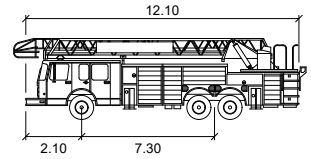
	units
Width	: 2.75 meters
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 37.5

Figure 6-4B
Fire Truck Circulation - Phase 2 - Outbound
1105-1163 Kingston Road, Pickering



Source: "2024-12-10_22122P01-ARCH-TF-XX-WIP-Sheet - RZ173 - PHASING PLAN-PHASE 3.dwg" received on December 10, 2024.

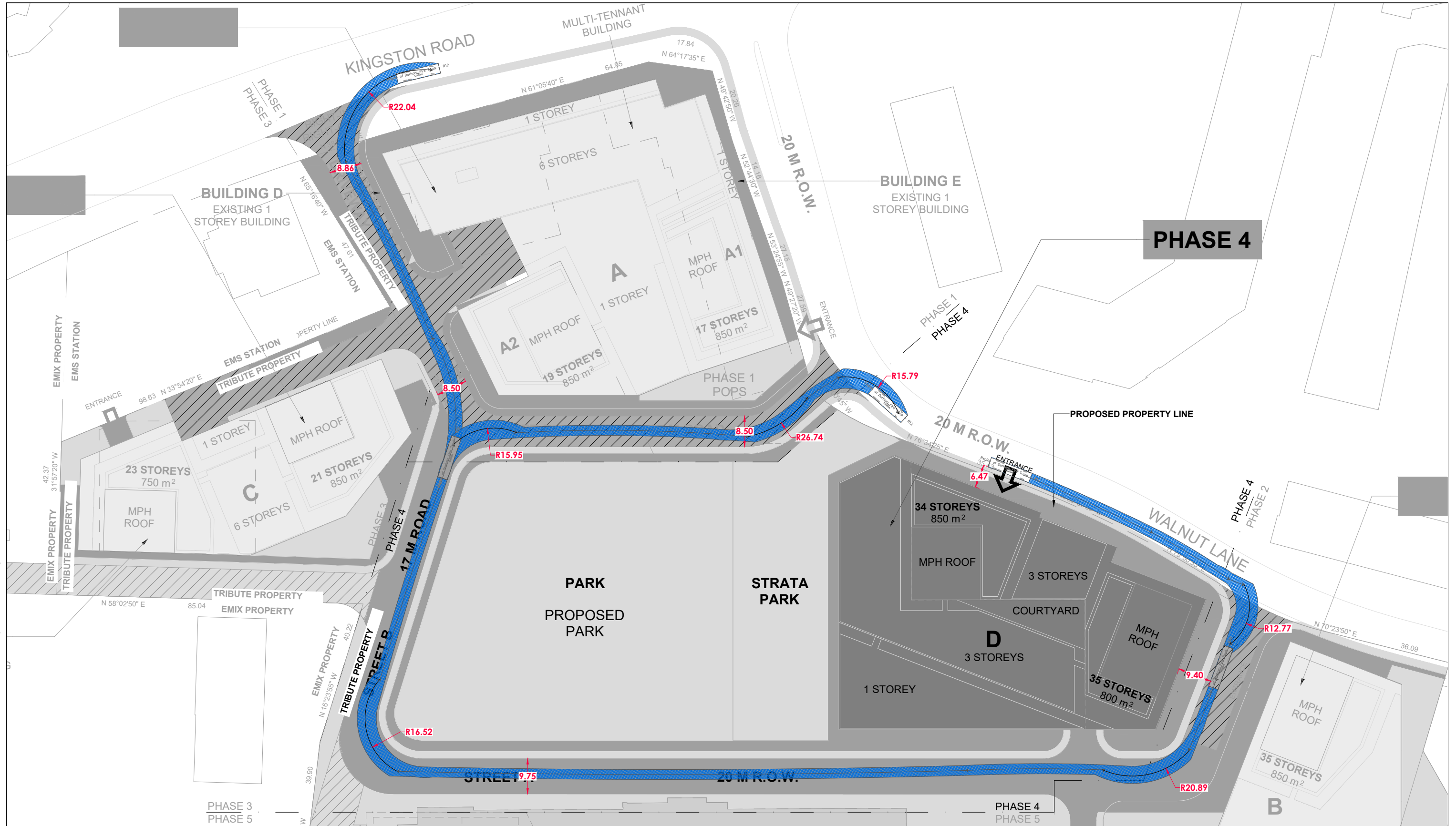
Scale: 1:1000



Region of Durham Fire Truck - R12

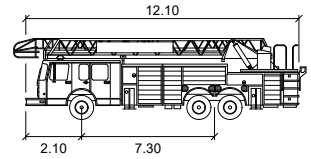
	meters
Width	: 2.75
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 37.5

Figure 6-5
Fire Truck Circulation - Phase 3
1105-1163 Kingston Road, Pickering



Source: "2024-12-10_22122P01-ARCH-TF-XX-WIP-Sheet - RZ174 - PHASING PLAN-PHASE 4.dwg" received on December 10, 2024.

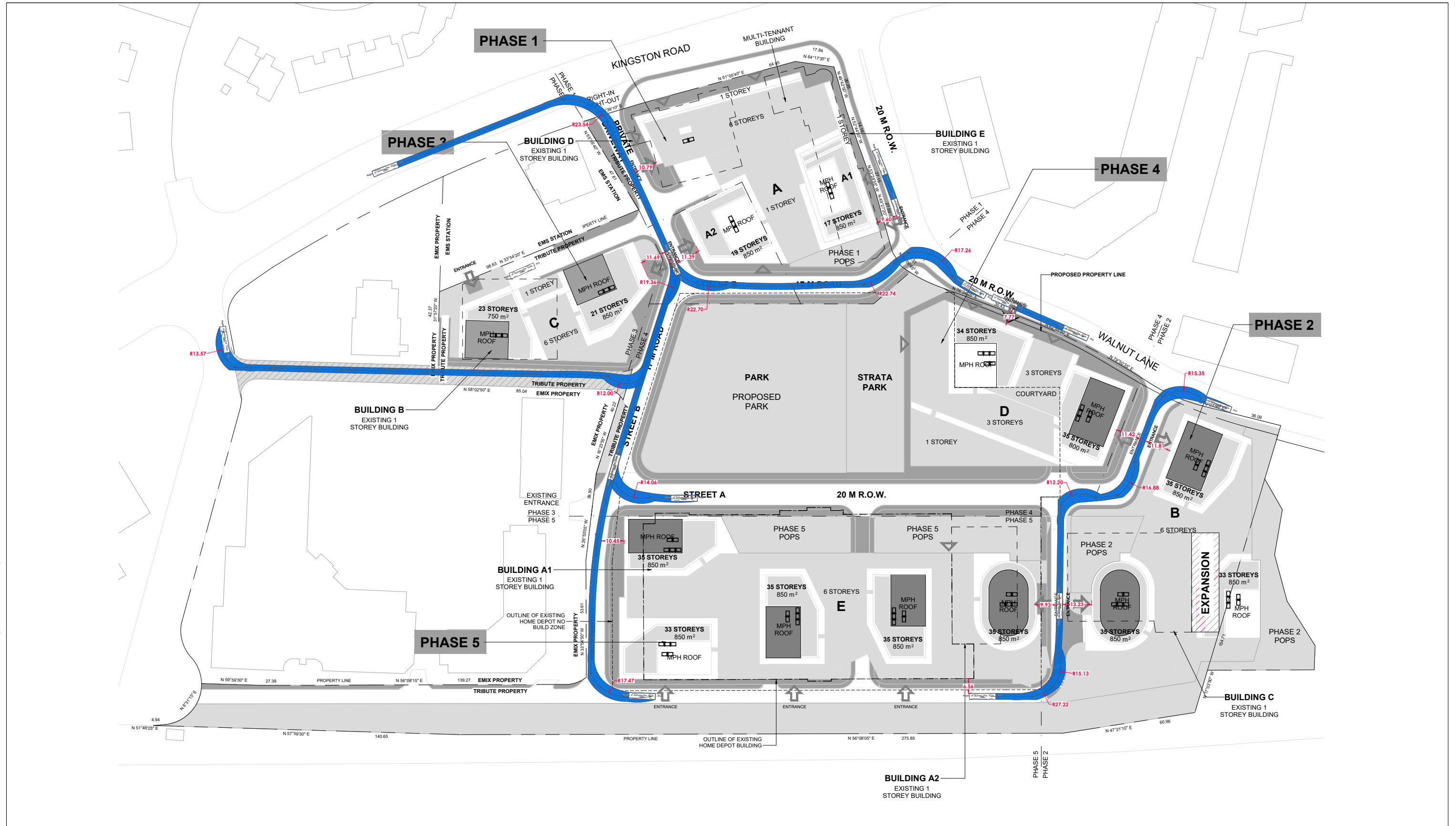
Scale: 1:1000



Region of Durham Fire Truck - R12

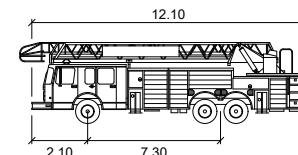
	meters
Width	: 2.75
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 37.5

Figure 6-6
Fire Truck Circulation - Phase 4
1105-1163 Kingston Road, Pickering



Source: "2024-12-10_22122P01-ARCH-TF-XX-WIP-Sheet - RZ176 - PHASING PLAN-ULTIMATE PHASE.dwg" received on December 10, 2024.

Scale: 1:1650



Region of Durham Fire Truck - R12

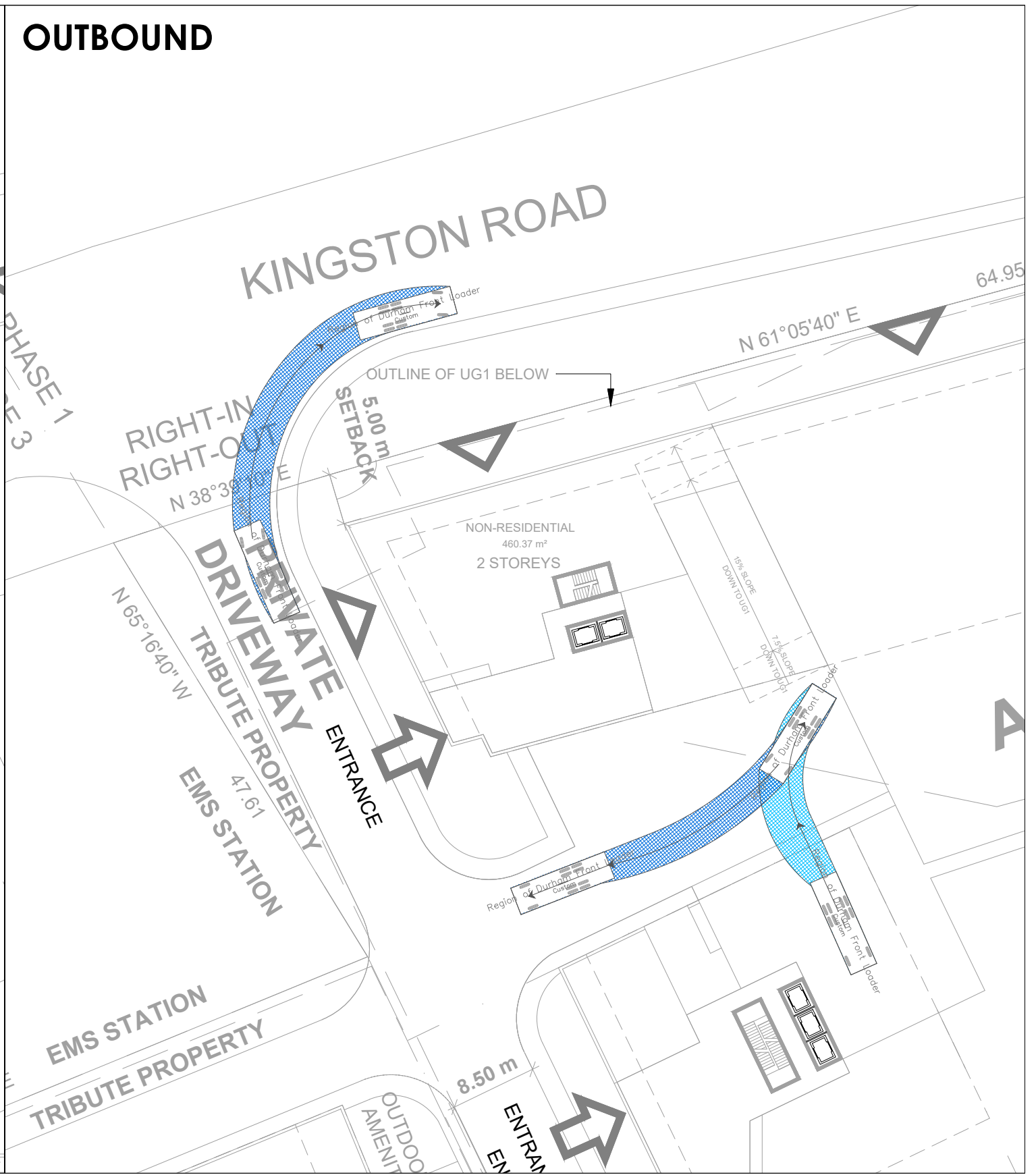
	units
Width	: 2.75 meters
Track	: 2.50 meters
Lock to Lock Time	: 6.0 seconds
Steering Angle	: 37.5 degrees

Figure 6-7
 Fire Truck Circulation - Ultimate
 1105-1163 Kingston Road, Pickering

INBOUND

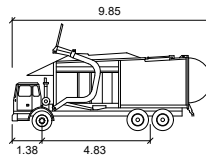


OUTBOUND



Source: "2024-12-17_22122P01-ARCH-TF-XX-WIP-Sheet - RZ151 - FLOOR 01.dwg" received on December 17, 2024.

Scale: 1:500



Region of Durham Front Loader	
	meters
Width	: 2.77
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 24.8

Figure 6-8
Front Loader Garbage Truck Turning Maneuver - Building A
1105-1163 Kingston Road, Pickering

INBOUND

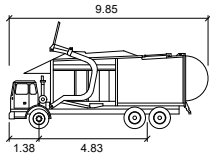
OUTBOUND



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Source: "2024-12-17_22122P01-ARCH-TF-XX-WIP-Sheet - RZ151 - FLOOR 01.dwg" received on December 17, 2024.

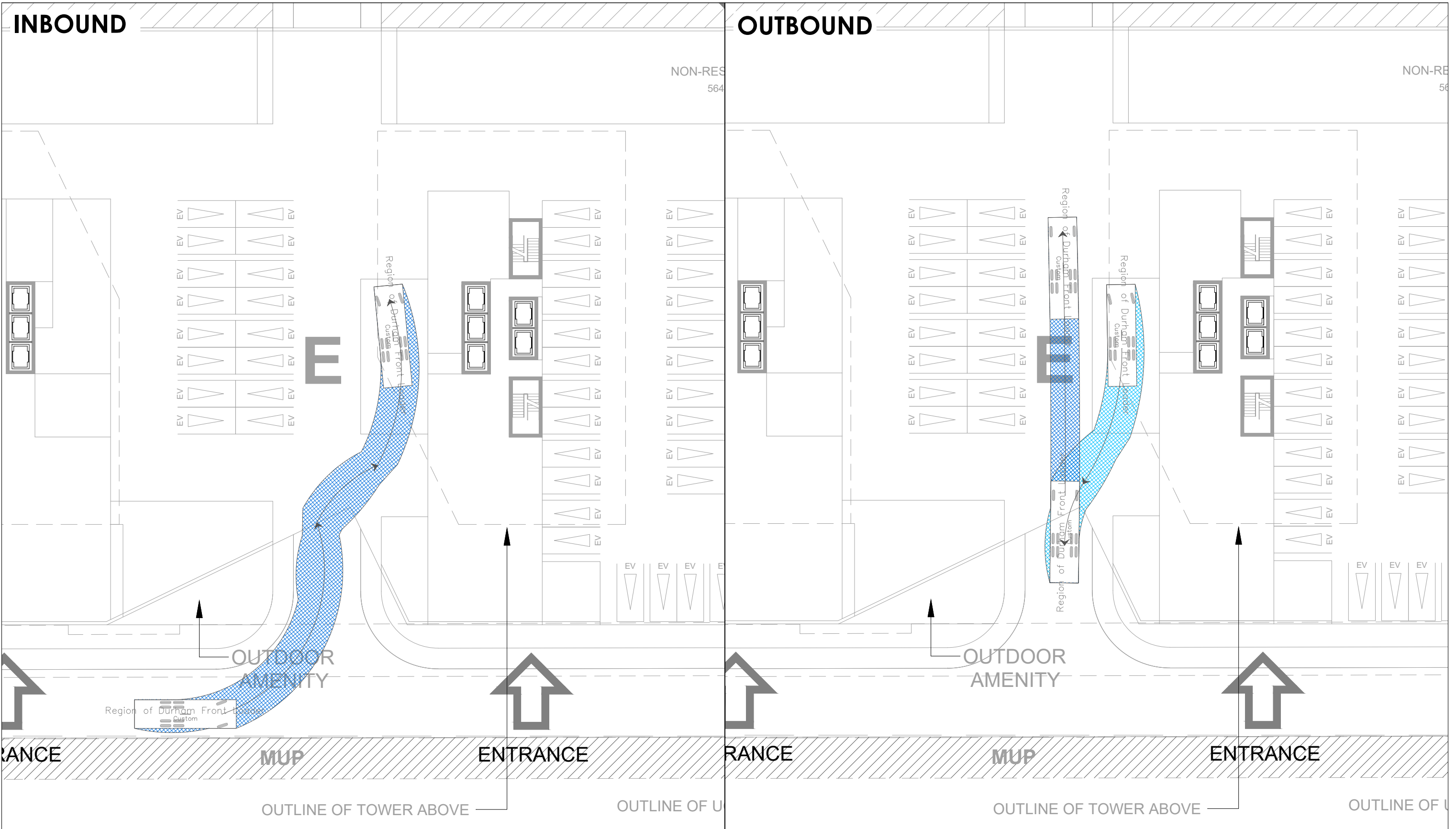
Scale: 1:350



Region of Durham Front Loader

Width	: 2.77
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 24.8

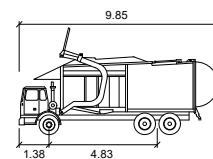
Figure 6-9
 Front Loader Garbage Truck Turning Maneuver - Building C
 1105-1163 Kingston Road, Pickering



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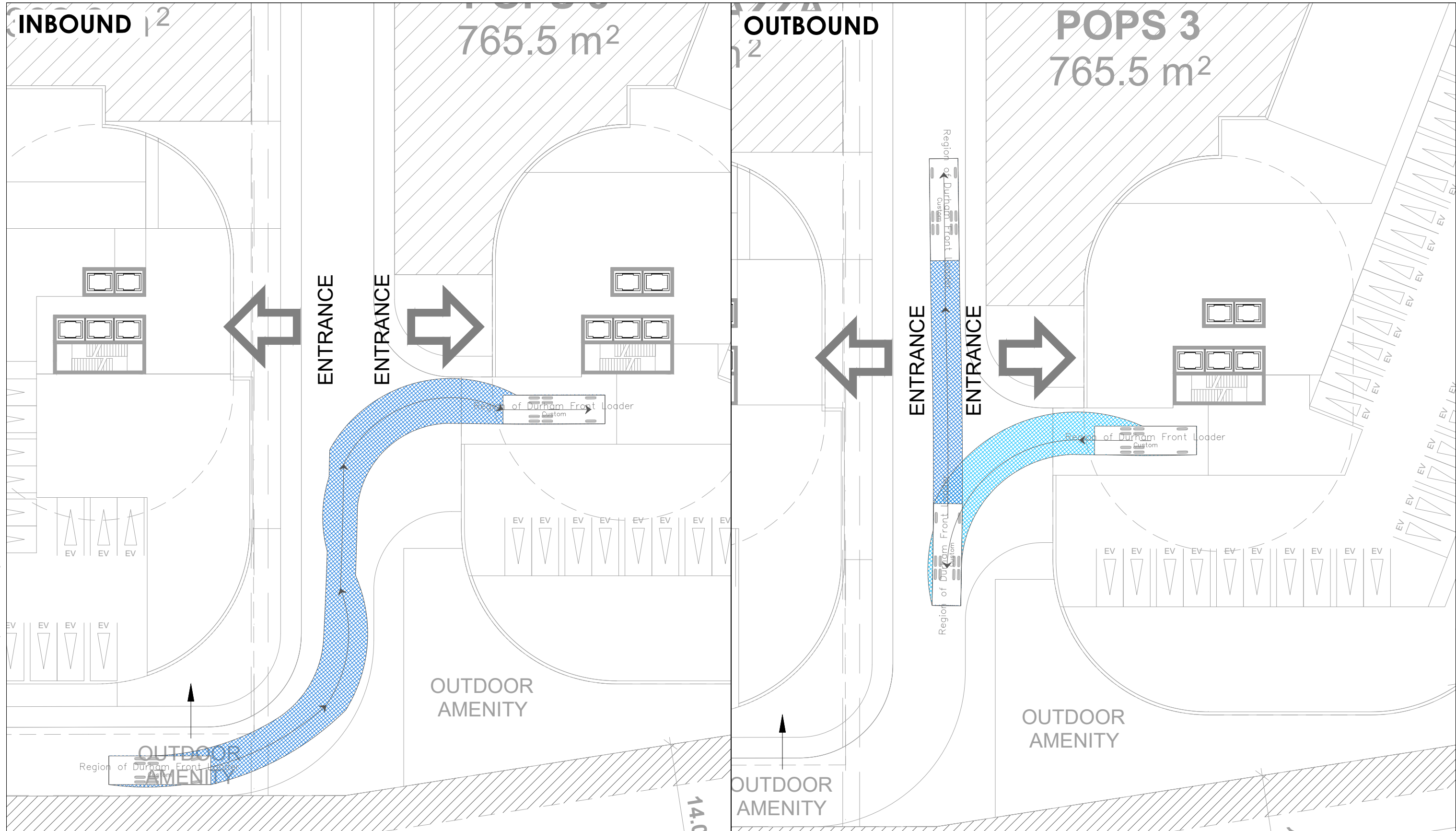
Source: "2024-12-17_22122P01-ARCH-TF-XX-WIP-Sheet - RZ151 - FLOOR 01.dwg" received on December 17, 2024.

Scale: 1:350



Region of Durham Front Loader	
	meters
Width	: 2.77
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 24.8

Figure 6-10
 Front Loader Garbage Truck Turning Maneuver - Building E
 1105-1163 Kingston Road, Pickering



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Source: "2024-12-17_22122P01-ARCH-TF-XX-WIP-Sheet - RZ151 - FLOOR 01.dwg" received on December 17, 2024.

Scale: 1:350

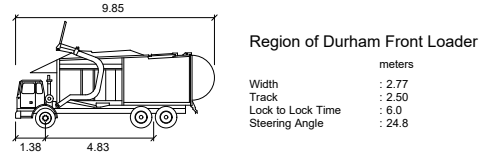
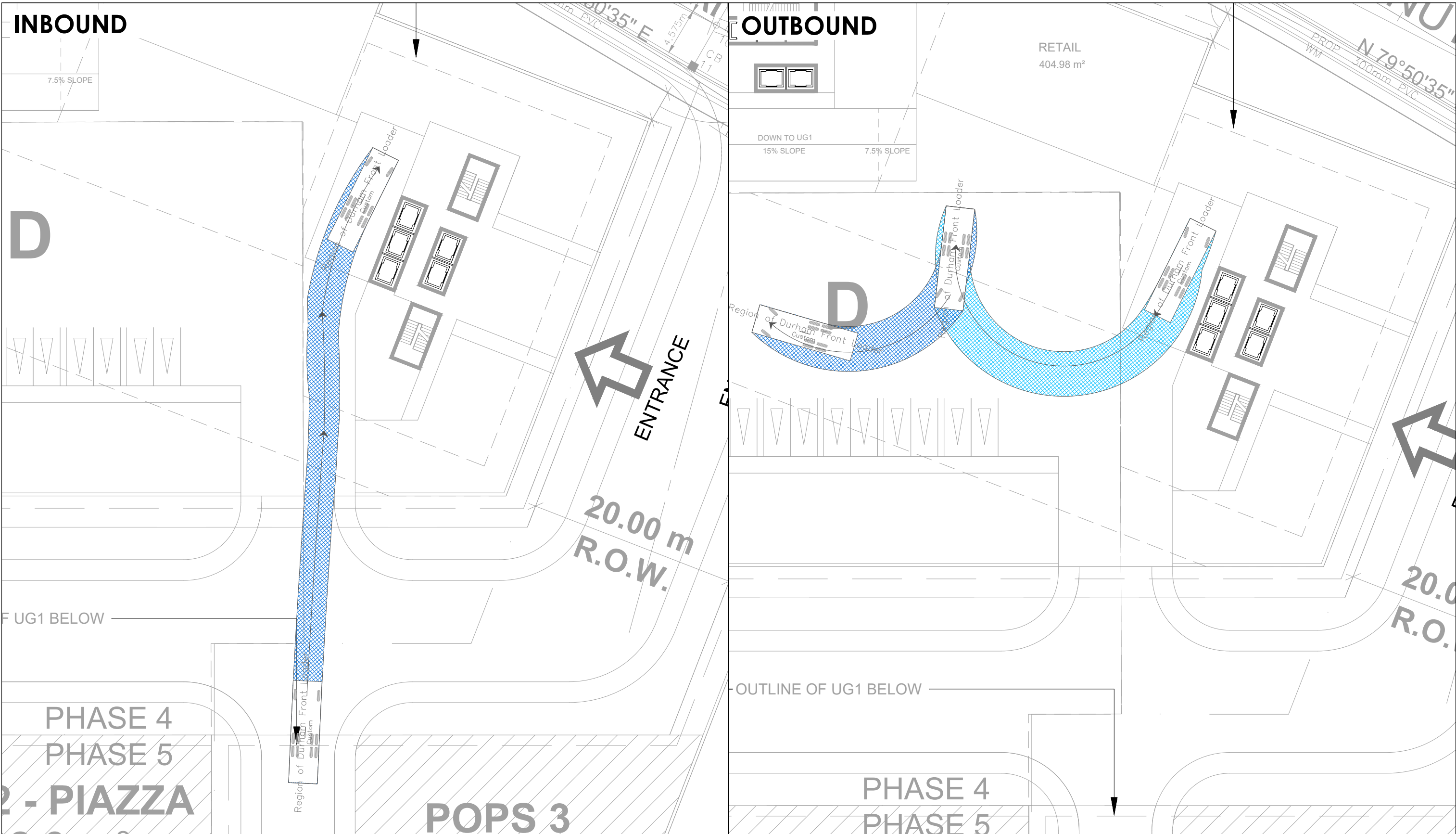


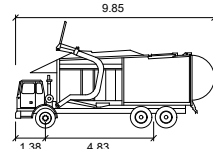
Figure 6-11
 Front Loader Garbage Truck Turning Maneuver - Building B
 1105-1163 Kingston Road, Pickering



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Source: "2024-12-17_22122P01-ARCH-TF-XX-WIP-Sheet - RZ151 - FLOOR 01.dwg" received on December 17, 2024.

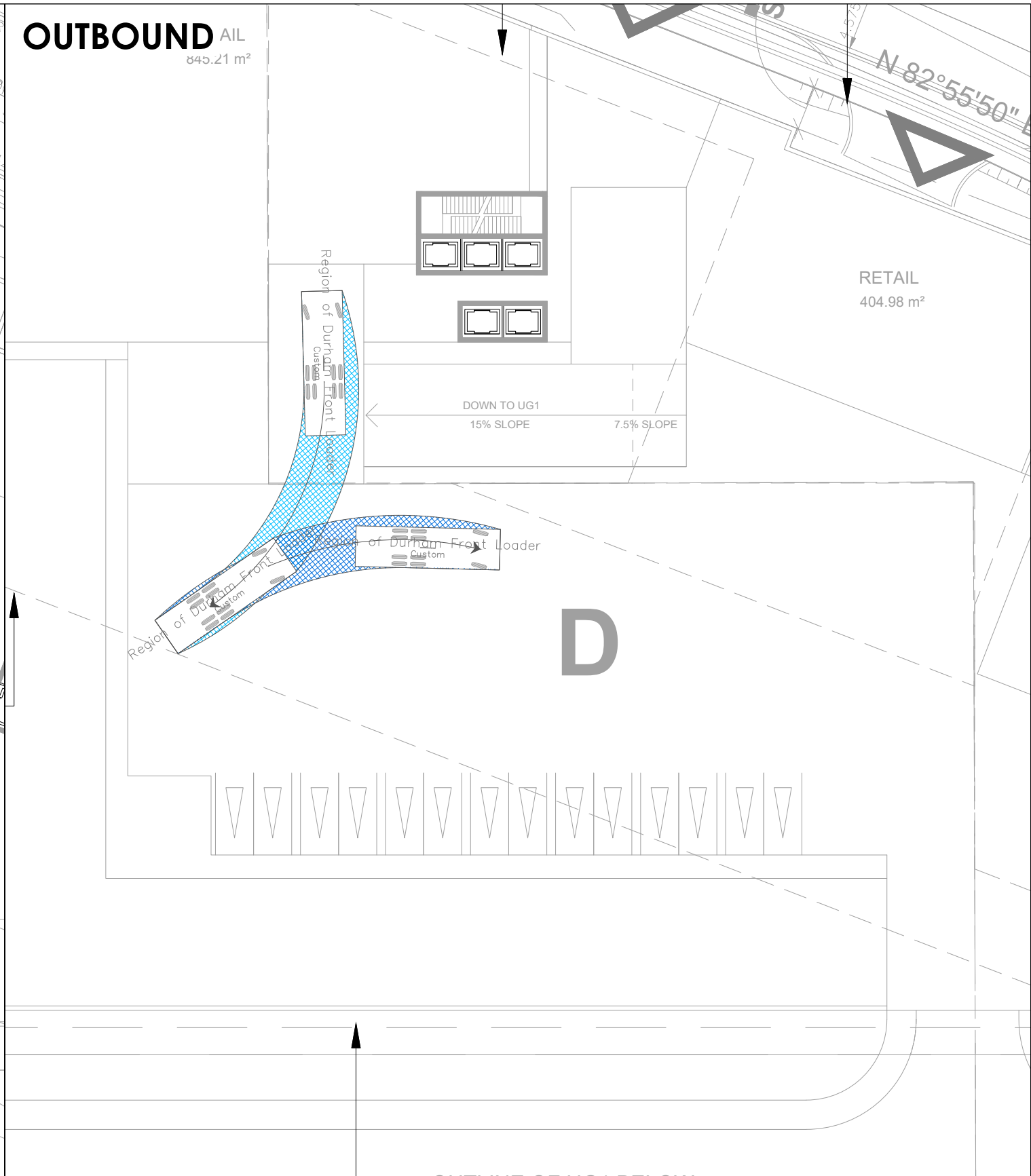
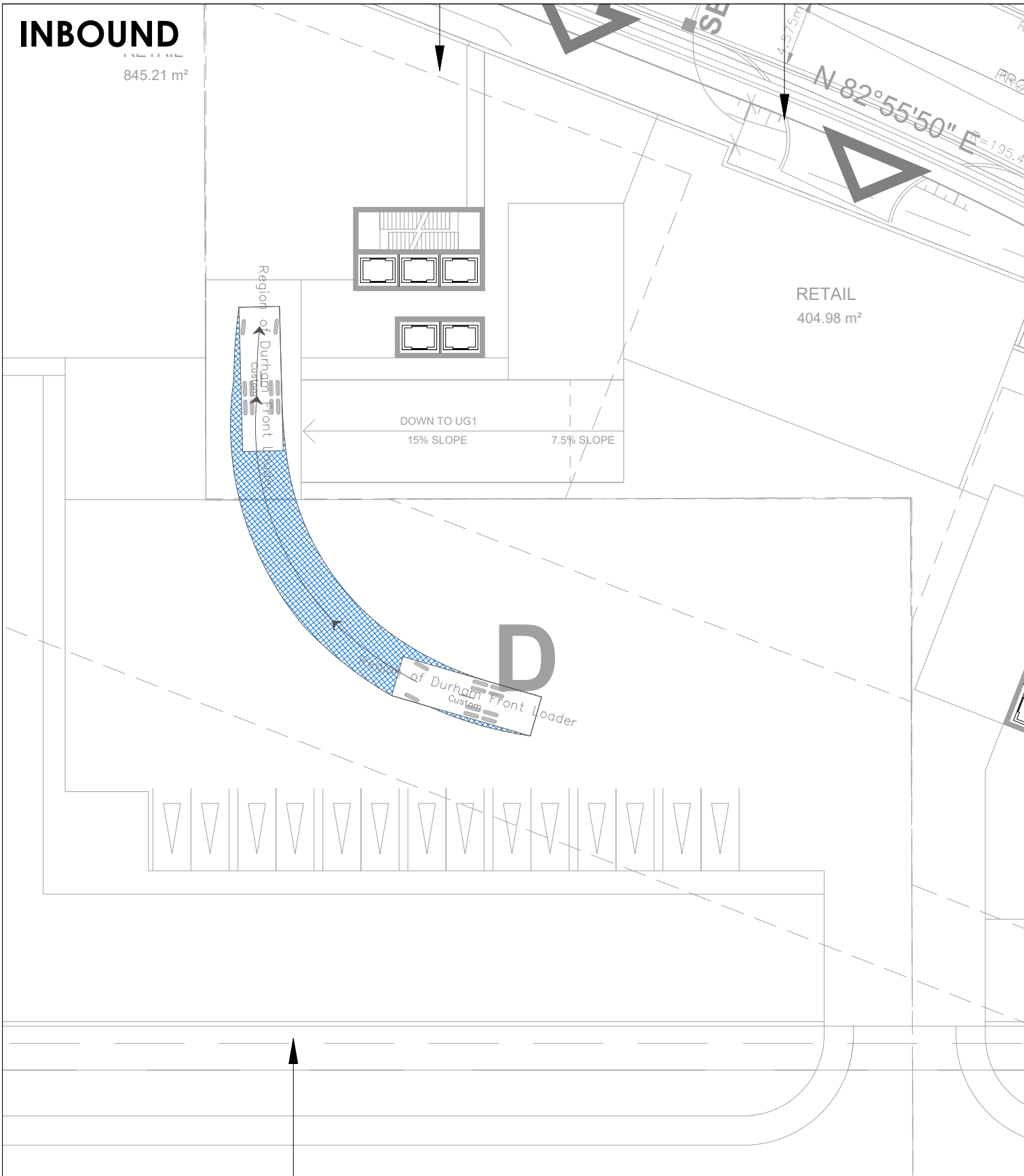
Scale: 1:350



Region of Durham Front Loader

	units
Width	: 2.77 meters
Track	: 2.50 meters
Lock to Lock Time	: 6.0 seconds
Steering Angle	: 24.8 degrees

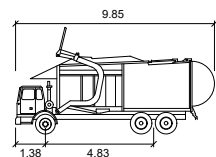
Figure 6-12
 Front Loader Garbage Truck Turning Maneuver - Building D - Loading space 1
 1105-1163 Kingston Road, Pickering



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Source: "2024-12-17_22122P01-ARCH-TF-XX-WIP-Sheet - RZ151 - FLOOR 01.dwg" received on December 17, 2024.

Scale: 1:350



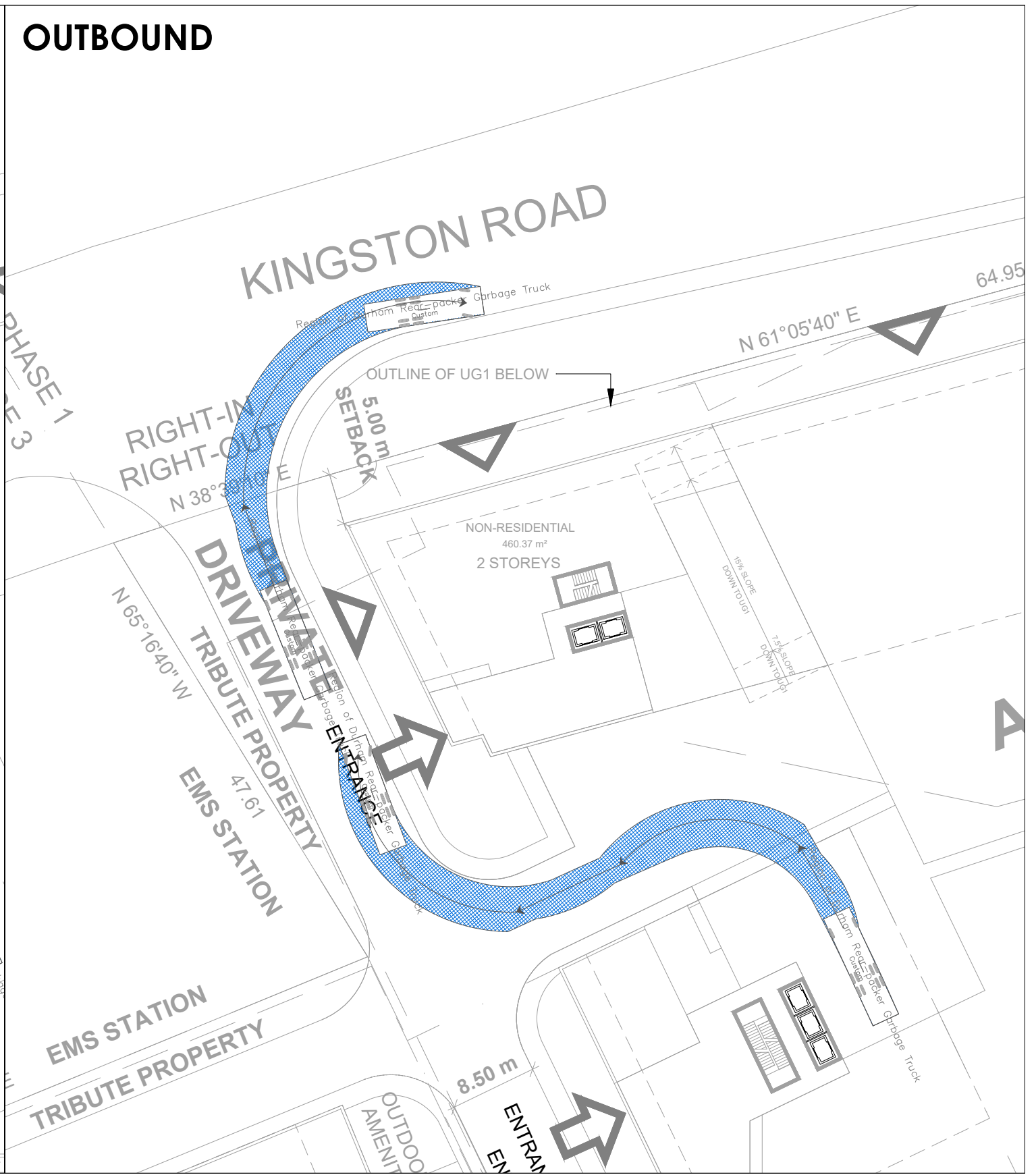
Region of Durham Front Loader	
	meters
Width	: 2.77
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 24.8

Figure 6-13
 Front Loader Garbage Truck Turning Maneuver - Building D - Loading space 2
 1105-1163 Kingston Road, Pickering

INBOUND

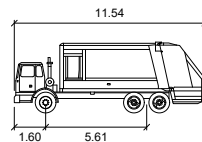


OUTBOUND



Source: "2024-12-17_22122P01-ARCH-TF-XX-WIP-Sheet - RZ151 - FLOOR 01.dwg" received on December 17, 2024.

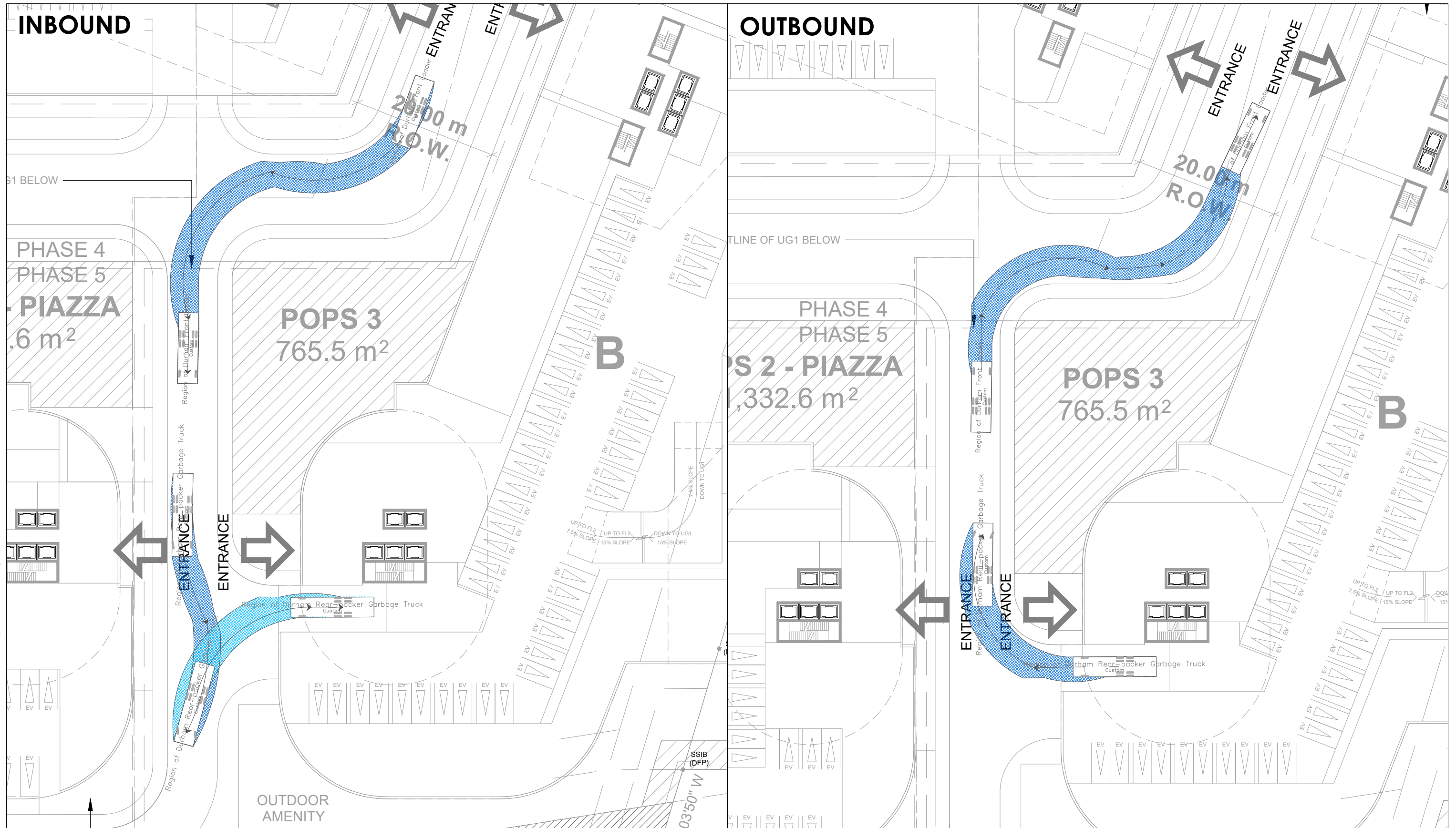
Scale: 1:500



Region of Durham Rear-packer Garbage Truck

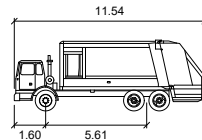
	meters
Width	: 2.77
Track	: 2.77
Lock to Lock Time	: 6.0
Steering Angle	: 25.6

Figure 6-14
Rear Packer Garbage Truck Turning Maneuver - Building A
1105-1163 Kingston Road, Pickering



Source: "2024-12-17_22122P01-ARCH-TF-XX-WIP-Sheet - RZ151 - FLOOR 01.dwg" received on December 17, 2024.

Scale: 1:500



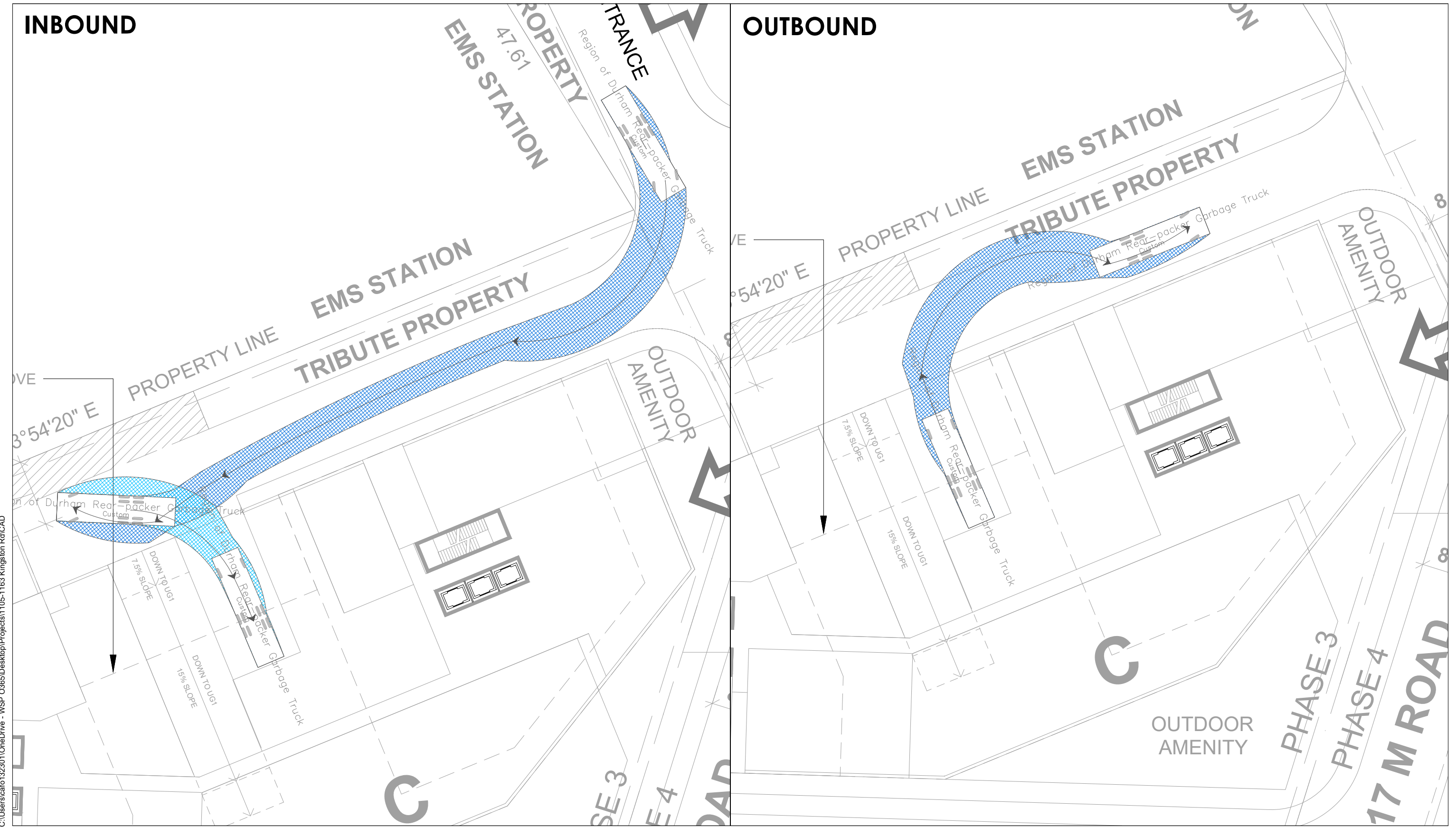
Region of Durham Rear-packer Garbage Truck

	meters
Width	: 2.77
Track	: 2.77
Lock to Lock Time	: 6.0
Steering Angle	: 25.6

Figure 6-15
Rear Packer Garbage Truck Turning Maneuver - Building B
1105-1163 Kingston Road, Pickering

INBOUND

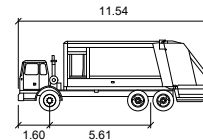
OUTBOUND



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Source: "2024-12-17_22122P01-ARCH-TF-XX-WIP-Sheet - RZ151 - FLOOR 01.dwg" received on December 17, 2024.

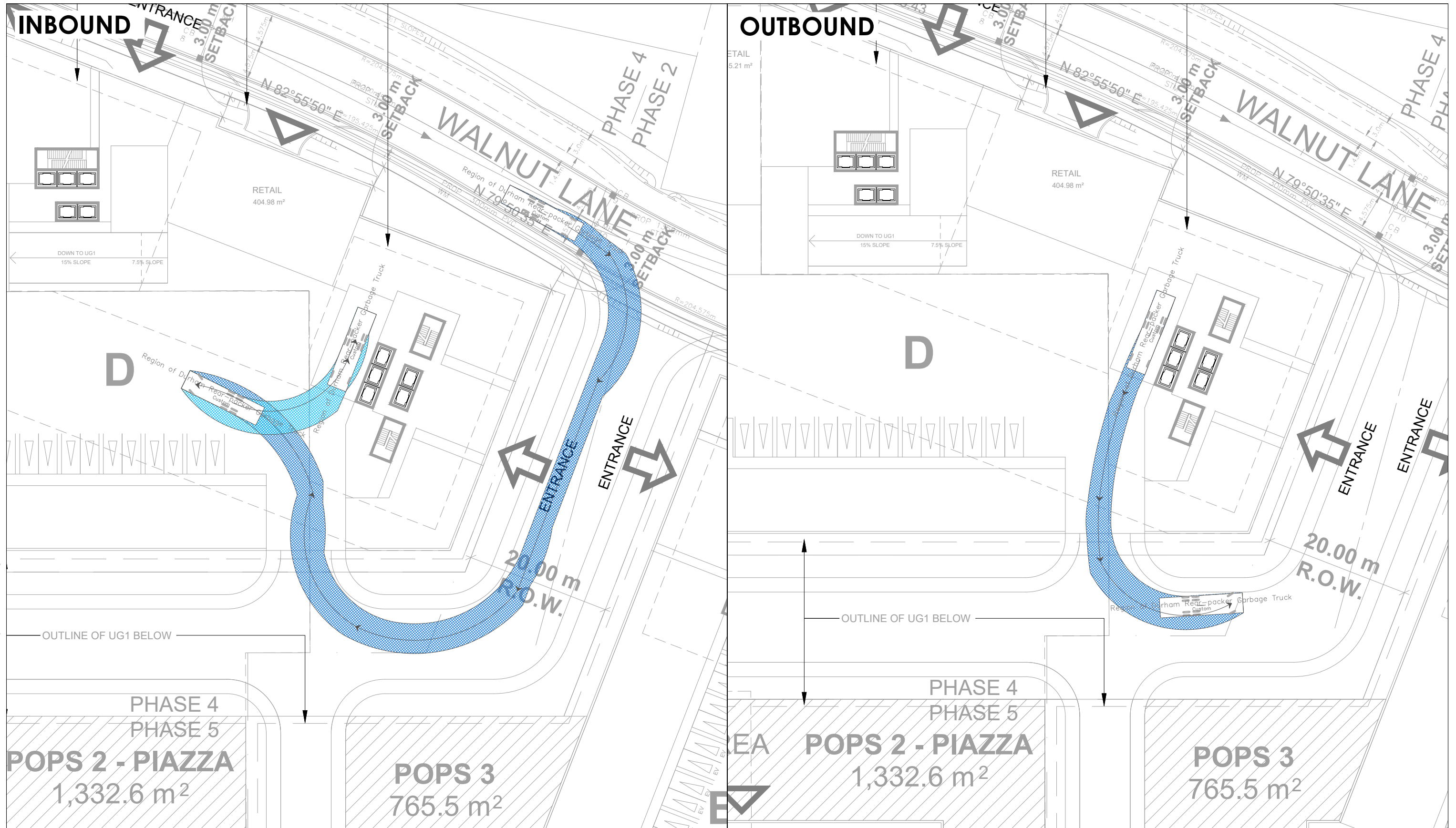
Scale: 1:350



Region of Durham Rear-packer Garbage Truck

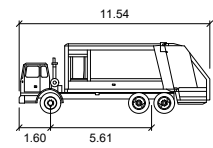
	meters
Width	: 2.77
Track	: 2.77
Lock to Lock Time	: 6.0
Steering Angle	: 25.6

Figure 6-16
Rear Packer Garbage Truck Turning Maneuver - Building C
1105-1163 Kingston Road, Pickering



Source: "2024-12-17_22122P01-ARCH-TF-XX-WIP-Sheet - RZ151 - FLOOR 01.dwg" received on December 17, 2024.

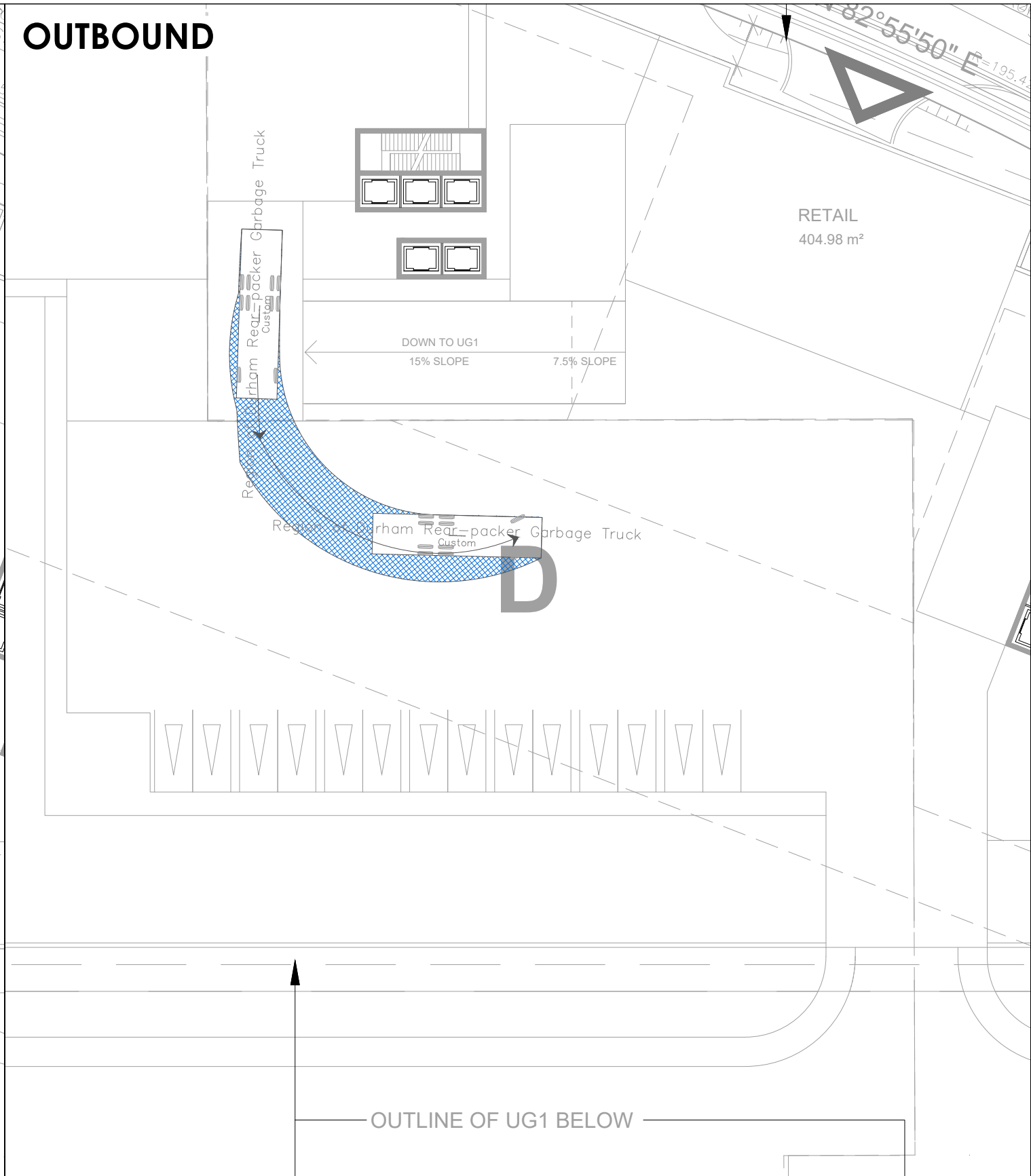
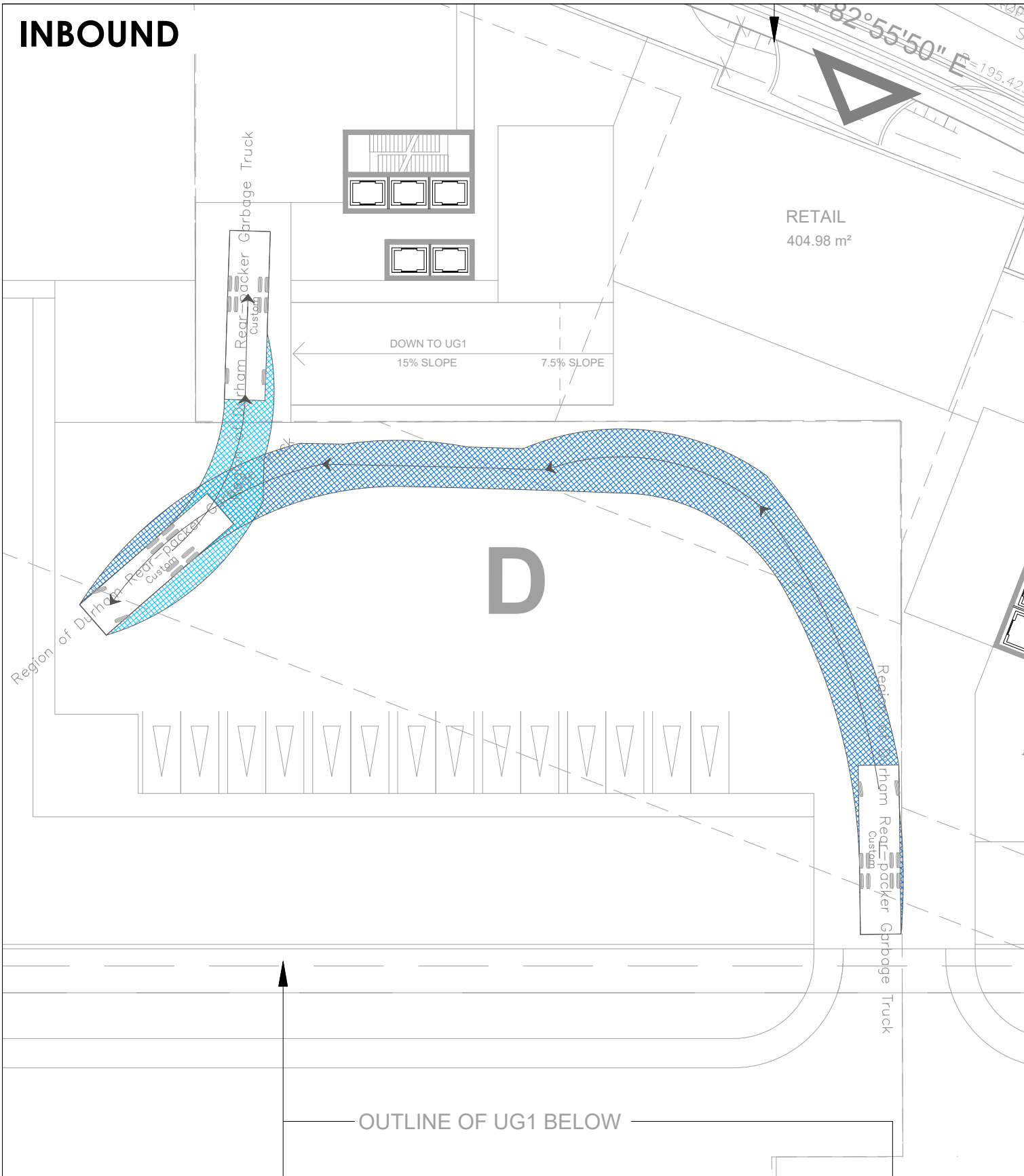
Scale: 1:500



Region of Durham Rear-packer Garbage Truck

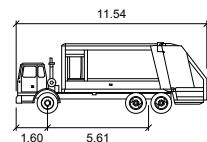
	meters
Width	: 2.77
Track	: 2.77
Lock to Lock Time	: 6.0
Steering Angle	: 25.6

Figure 6-17
 Rear Packer Garbage Truck Turning Maneuver - Building D - Loading Space 1
 1105-1163 Kingston Road, Pickering



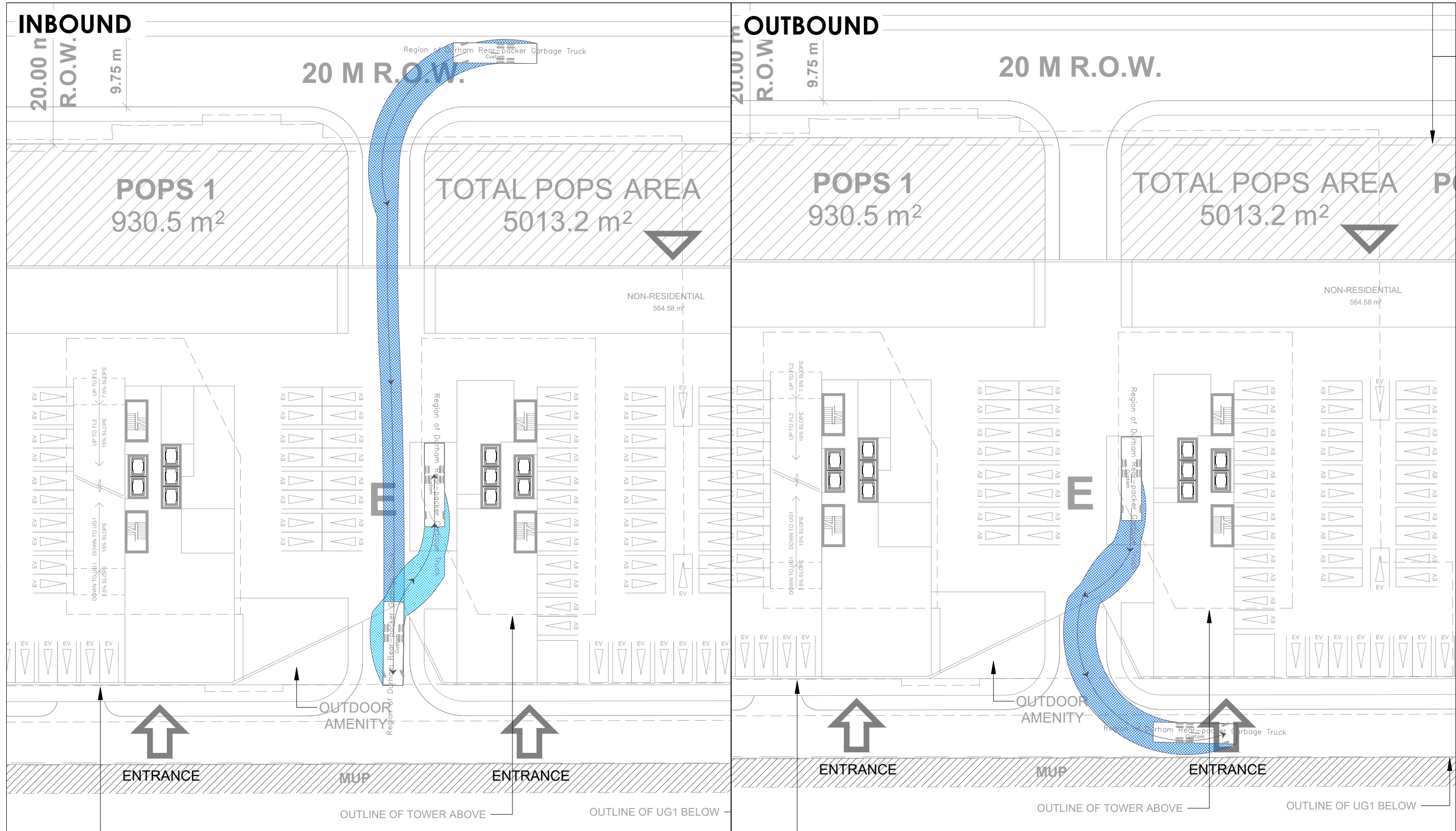
Source: "2024-12-17_22122P01-ARCH-TF-XX-WIP-Sheet - RZ151 - FLOOR 01.dwg" received on December 17, 2024.

Scale: 1:350



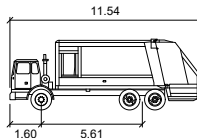
Region of Durham Rear-packer Garbage Truck	
	meters
Width	: 2.77
Track	: 2.77
Lock to Lock Time	: 6.0
Steering Angle	: 25.6

Figure 6-18
Rear Packer Garbage Truck Turning Maneuver - Building D - Loading Space 2
1105-1163 Kingston Road, Pickering



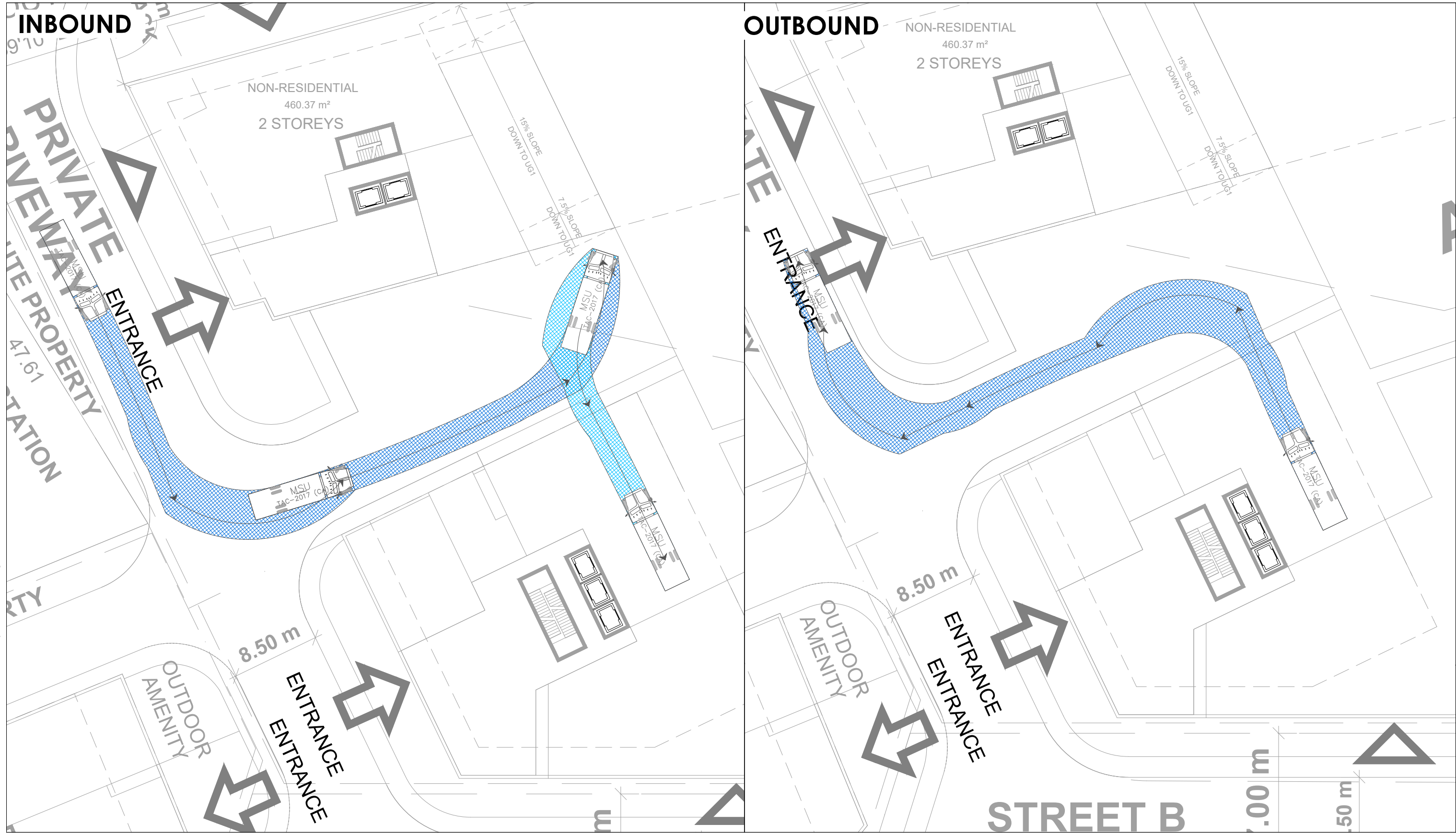
Source: "2024-12-17_22122P01-ARCH-TF-XX-WIP-Sheet - RZ151 - FLOOR 01.dwg" received on December 17, 2024.

Scale: 1:350



Region of Durham Rear-packer Garbage Truck	
	metres
Width	: 2.77
Track	: 2.77
Lock to Lock Time	: 6.0
Steering Angle	: 25.6

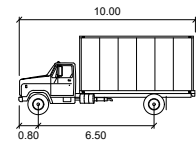
Figure 6-19
Rear Packer Garbage Truck Turning Maneuver - Building E
1105-1163 Kingston Road, Pickering



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Source: "2024-12-17_22122P01-ARCH-TF-XX-WIP-Sheet - RZ151 - FLOOR 01.dwg" received on December 17, 2024.

Scale: 1:350



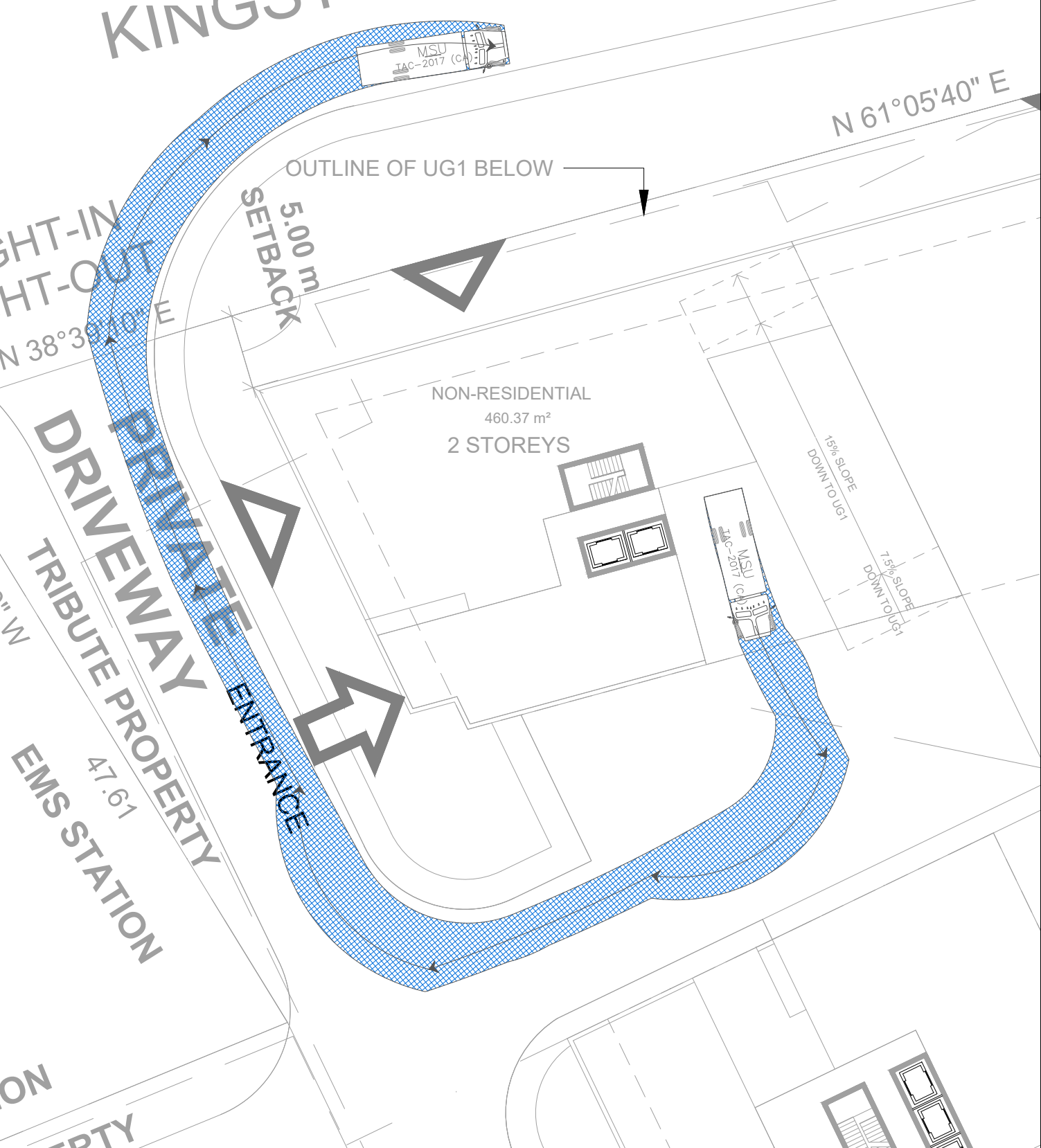
MSU		units
Width	: 2.60	meters
Track	: 2.60	meters
Lock to Lock Time	: 6.0	seconds
Steering Angle	: 40.2	degrees

Figure 6-20
MSU Loading Truck Turning Maneuver - Building A
1105-1163 Kingston Road, Pickering

INBOUND

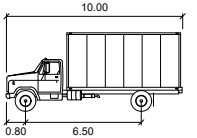


OUTBOUND



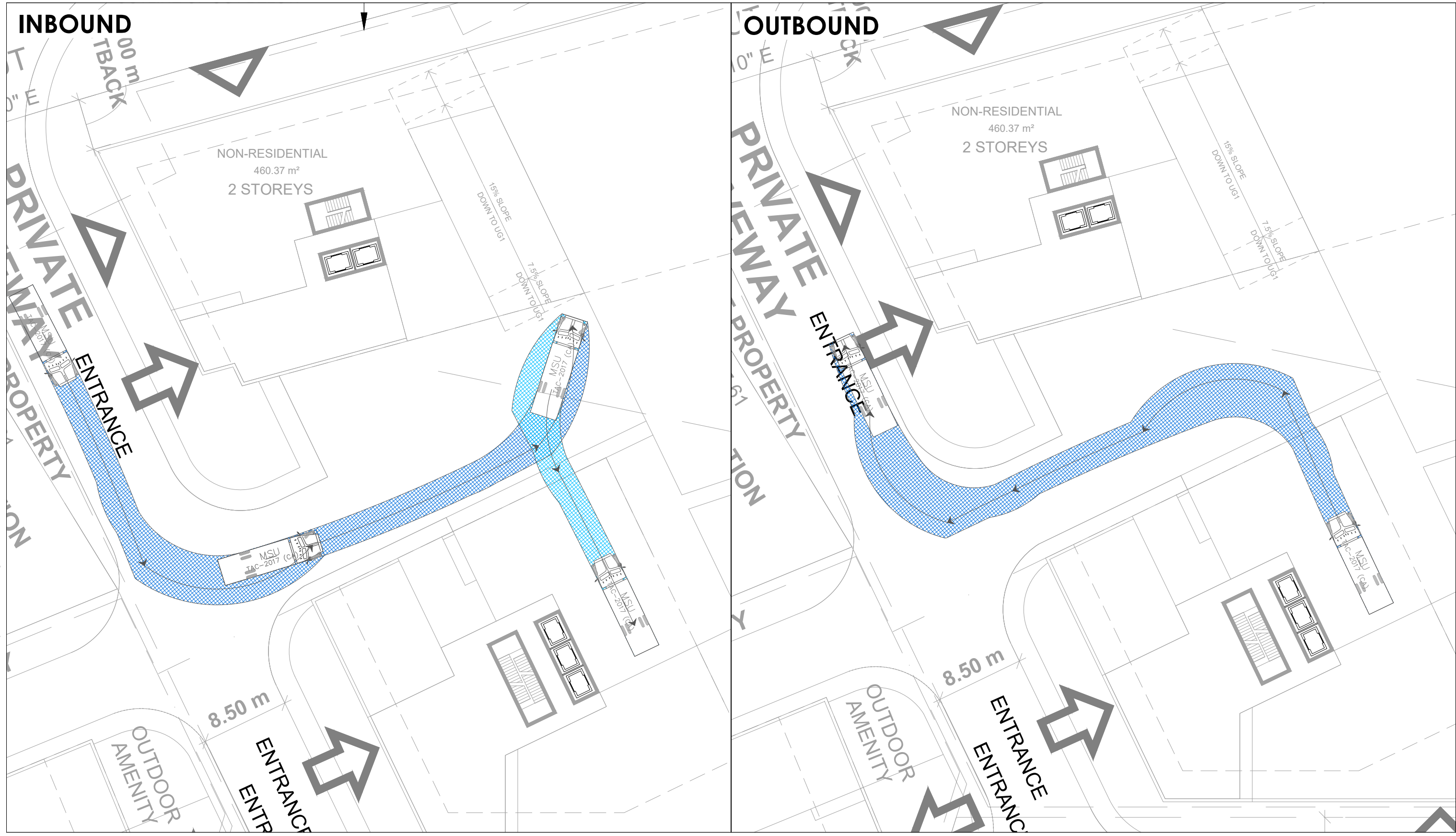
Source: "2024-12-17_22122P01-ARCH-TF-XX-WIP-Sheet - RZ151 - FLOOR 01.dwg" received on December 17, 2024.

Scale: 1:350



MSU	
Width	2.60
Track	2.60
Lock to Lock Time	6.0
Steering Angle	40.2

Figure 6-21
 MSU Loading Truck Turning Maneuver - Building A - Retail Space 1
 1105-1163 Kingston Road, Pickering



Source: "2024-12-17_22122P01-ARCH-TF-XX-WIP-Sheet - RZ151 - FLOOR 01.dwg" received on December 17, 2024.

Scale: 1:350

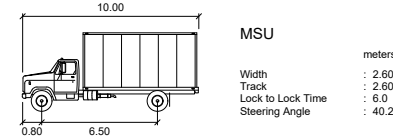
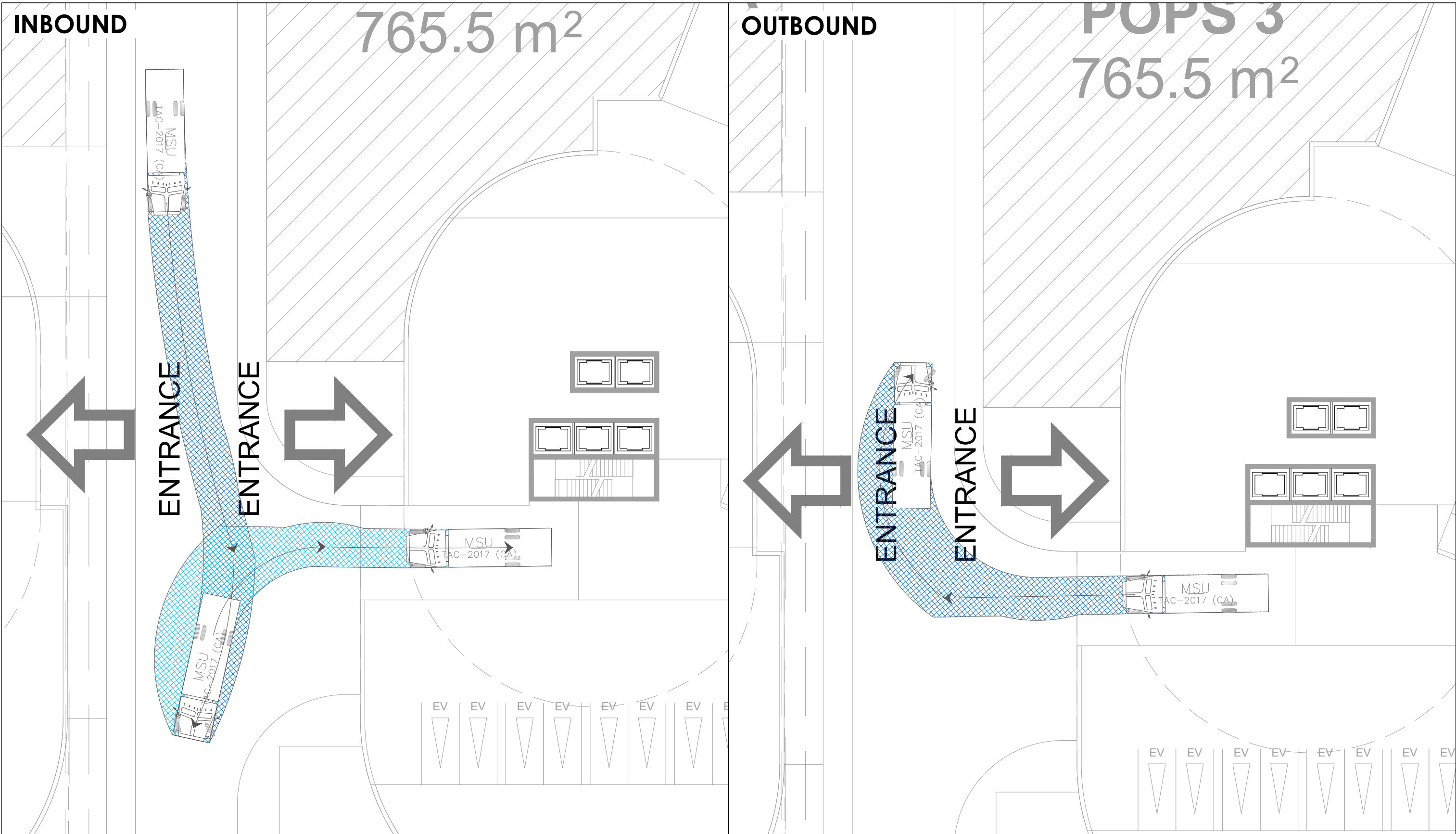


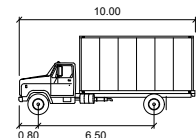
Figure 6-22
MSU Loading Truck Turning Maneuver - Building A - Retail Space 2
1105-1163 Kingston Road, Pickering



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Source: "2024-12-17_22122P01-ARCH-TF-XX-WIP-Sheet - RZ151 - FLOOR 01.dwg" received on December 17, 2024.

Scale: 1:250

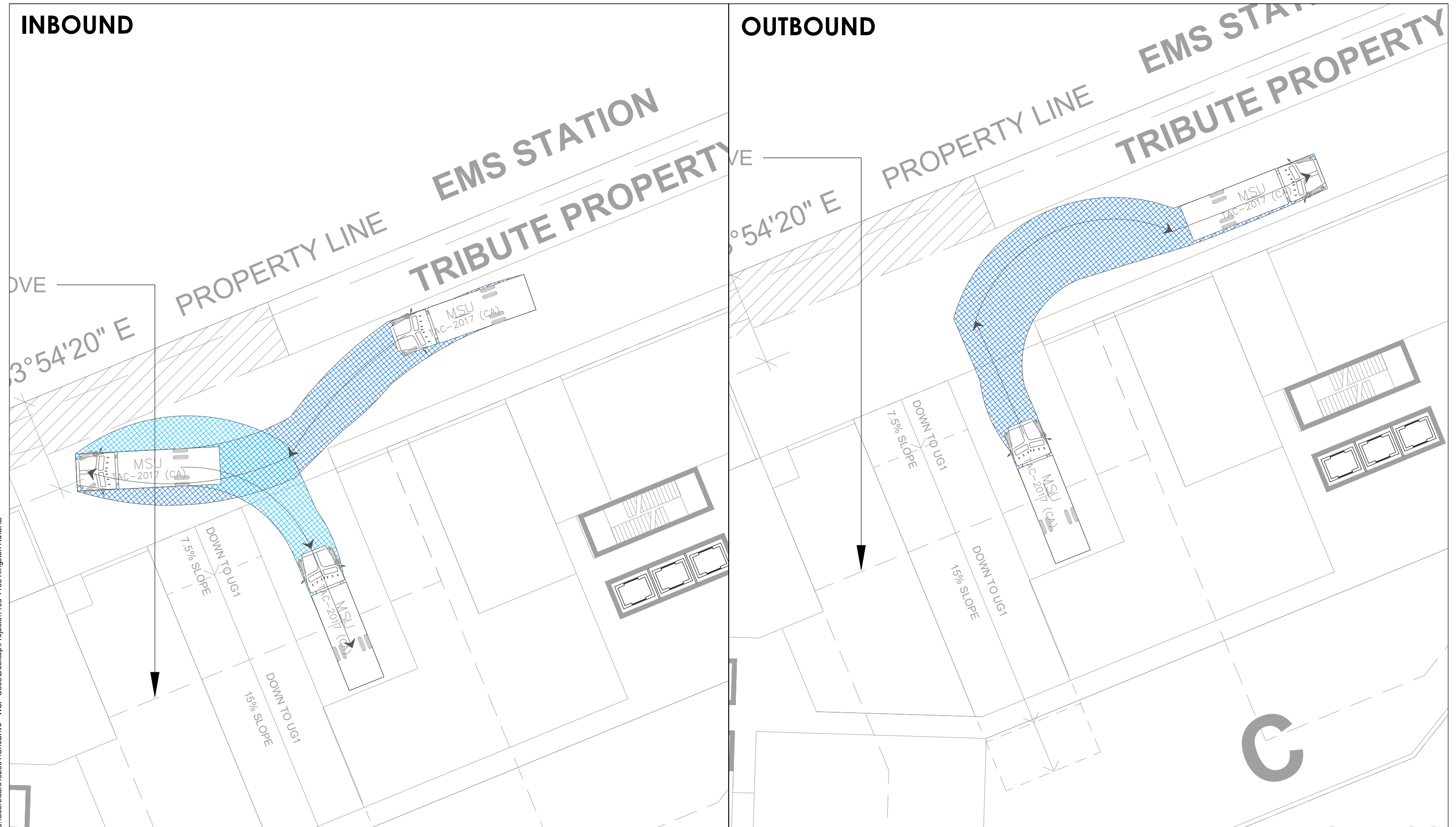


MSU
 Width : 2.60
 Track : 2.60
 Lock to Lock Time : 6.0
 Steering Angle : 40.2

Figure 6-23
 MSU Loading Truck Turning Maneuver - Building B
 1105-1163 Kingston Road, Pickering

INBOUND

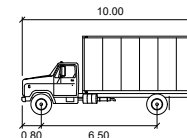
OUTBOUND



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Source: "2024-12-17_22122P01-ARCH-TF-XX-WIP-Sheet - RZ151 - FLOOR 01.dwg" received on December 17, 2024.

Scale: 1:250

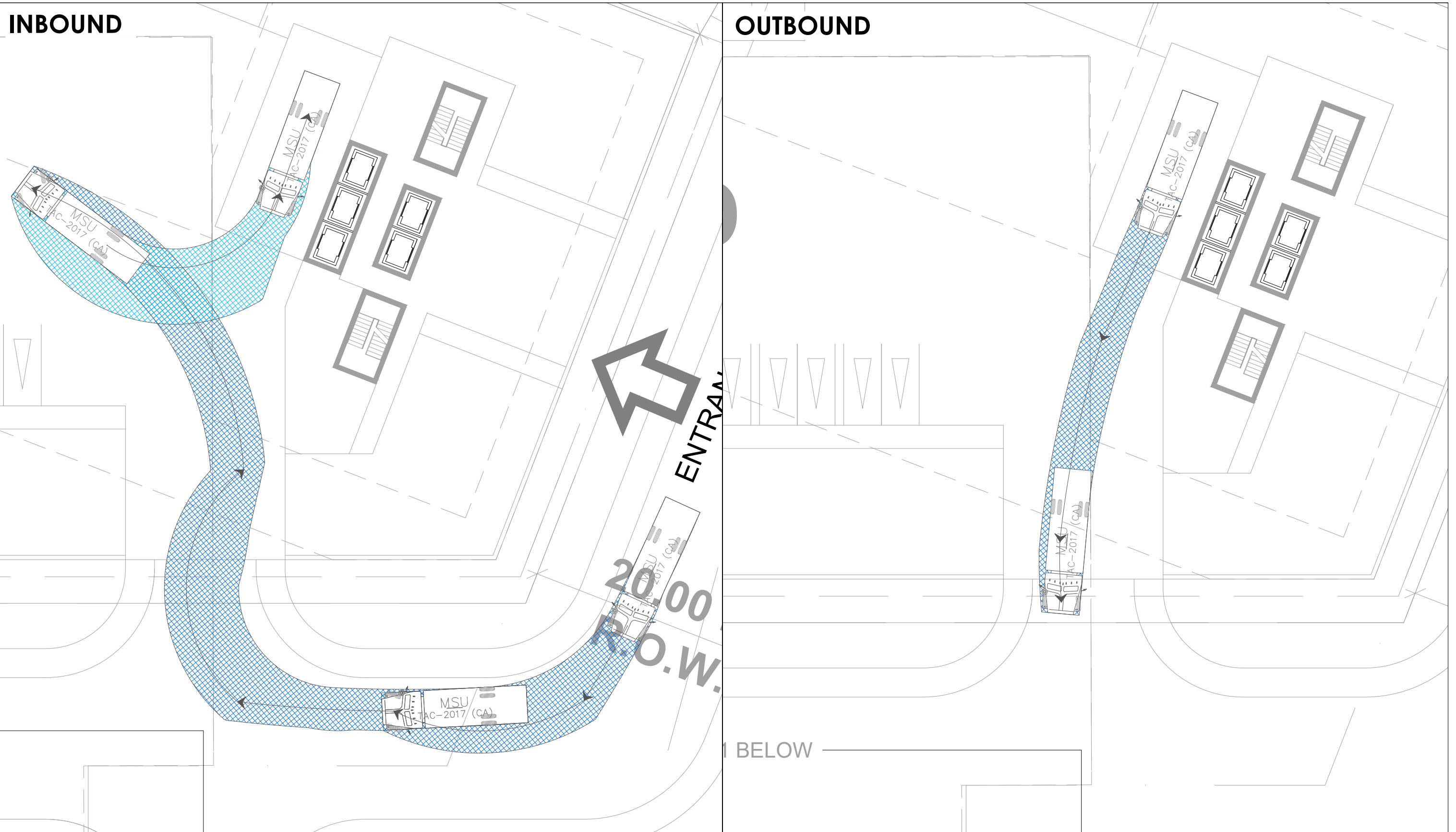


MSU
 meters
 Width : 2.60
 Track : 2.60
 Lock to Lock Time : 6.0
 Steering Angle : 40.2

Figure 6-24
 MSU Loading Truck Turning Maneuver - Building C
 1105-1163 Kingston Road, Pickering

INBOUND

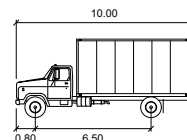
OUTBOUND



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Source: "2024-12-17_22122P01-ARCH-TF-XX-WIP-Sheet - RZ151 - FLOOR 01.dwg" received on December 17, 2024.

Scale: 1:250

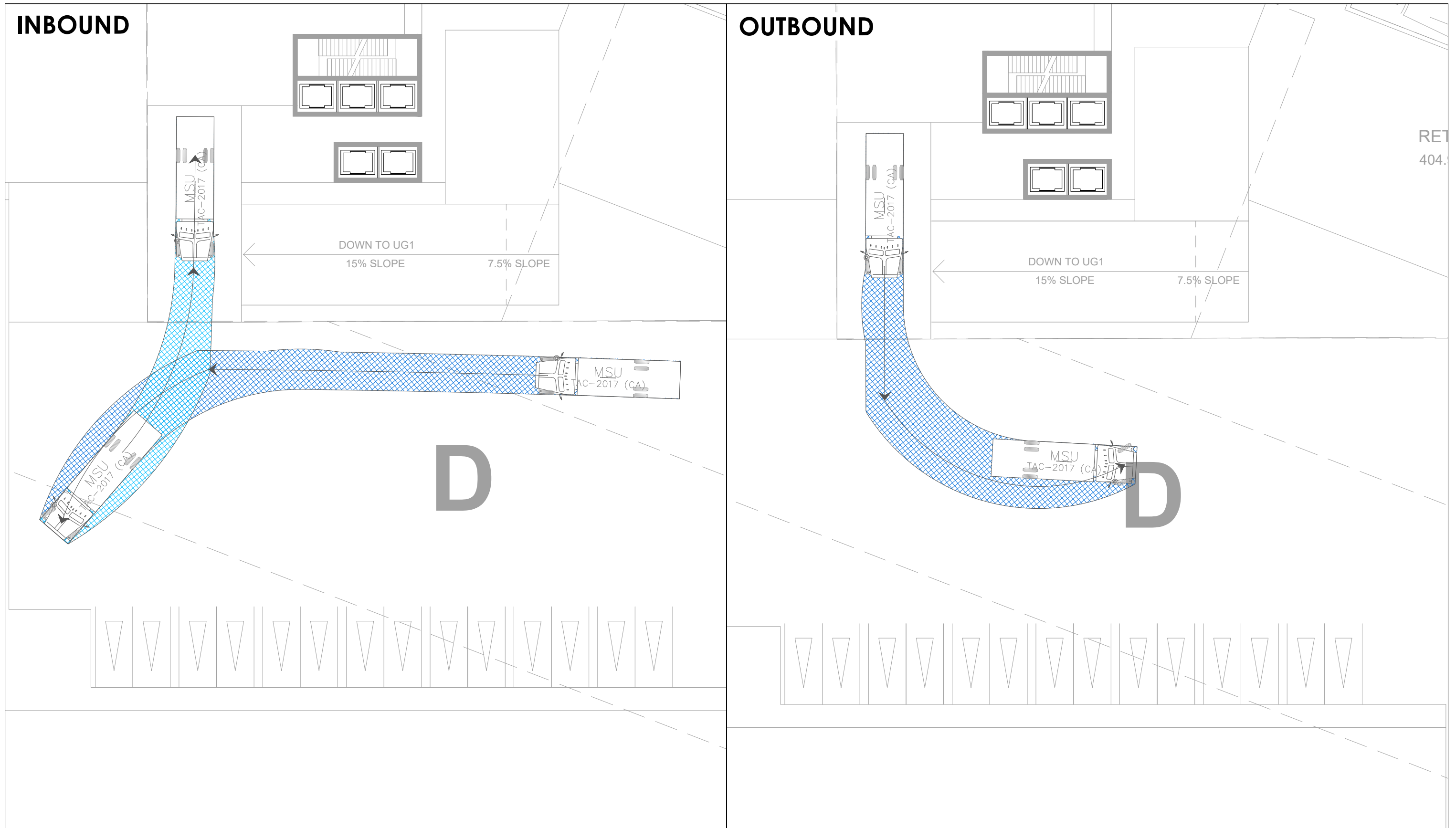


MSU	
Width	: 2.60
Track	: 2.60
Lock to Lock Time	: 6.0
Steering Angle	: 40.2

Figure 6-25
MSU Loading Truck Turning Maneuver - Building D - Loading Space 1
1105-1163 Kingston Road, Pickering

INBOUND

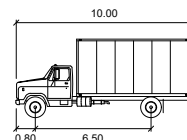
OUTBOUND



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Source: "2024-12-17_22122P01-ARCH-TF-XX-WIP-Sheet - RZ151 - FLOOR 01.dwg" received on December 17, 2024.

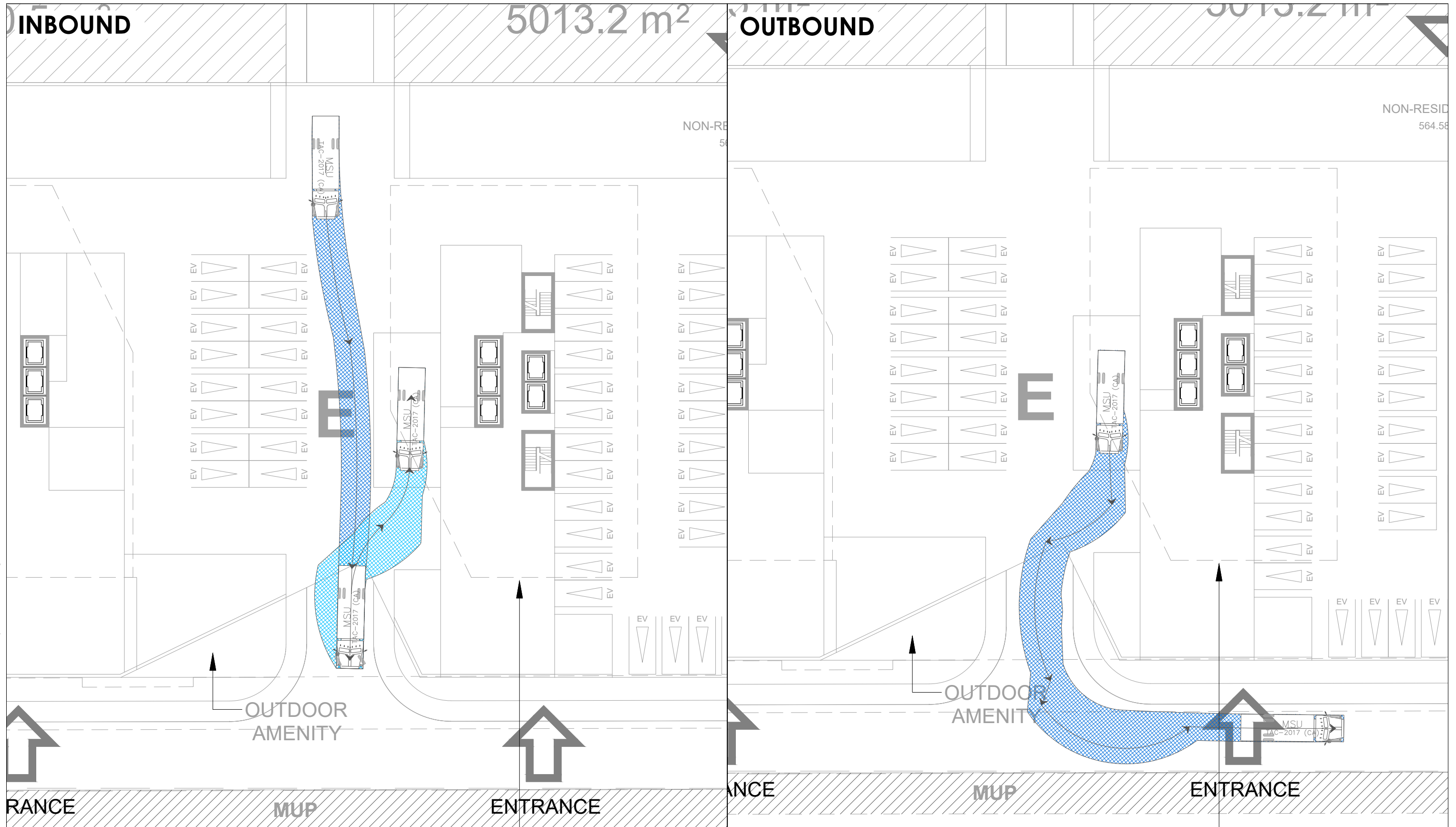
Scale: 1:250



MSU

Width	: 2.60
Track	: 2.60
Lock to Lock Time	: 6.0
Steering Angle	: 40.2

Figure 6-26
MSU Loading Truck Turning Maneuver - Building D - Loading Space 2
1105-1163 Kingston Road, Pickering



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Source: "2024-12-17_22122P01-ARCH-TF-XX-WIP-Sheet - RZ151 - FLOOR 01.dwg" received on December 17, 2024.

Scale: 1:350

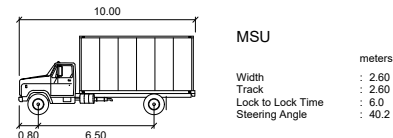
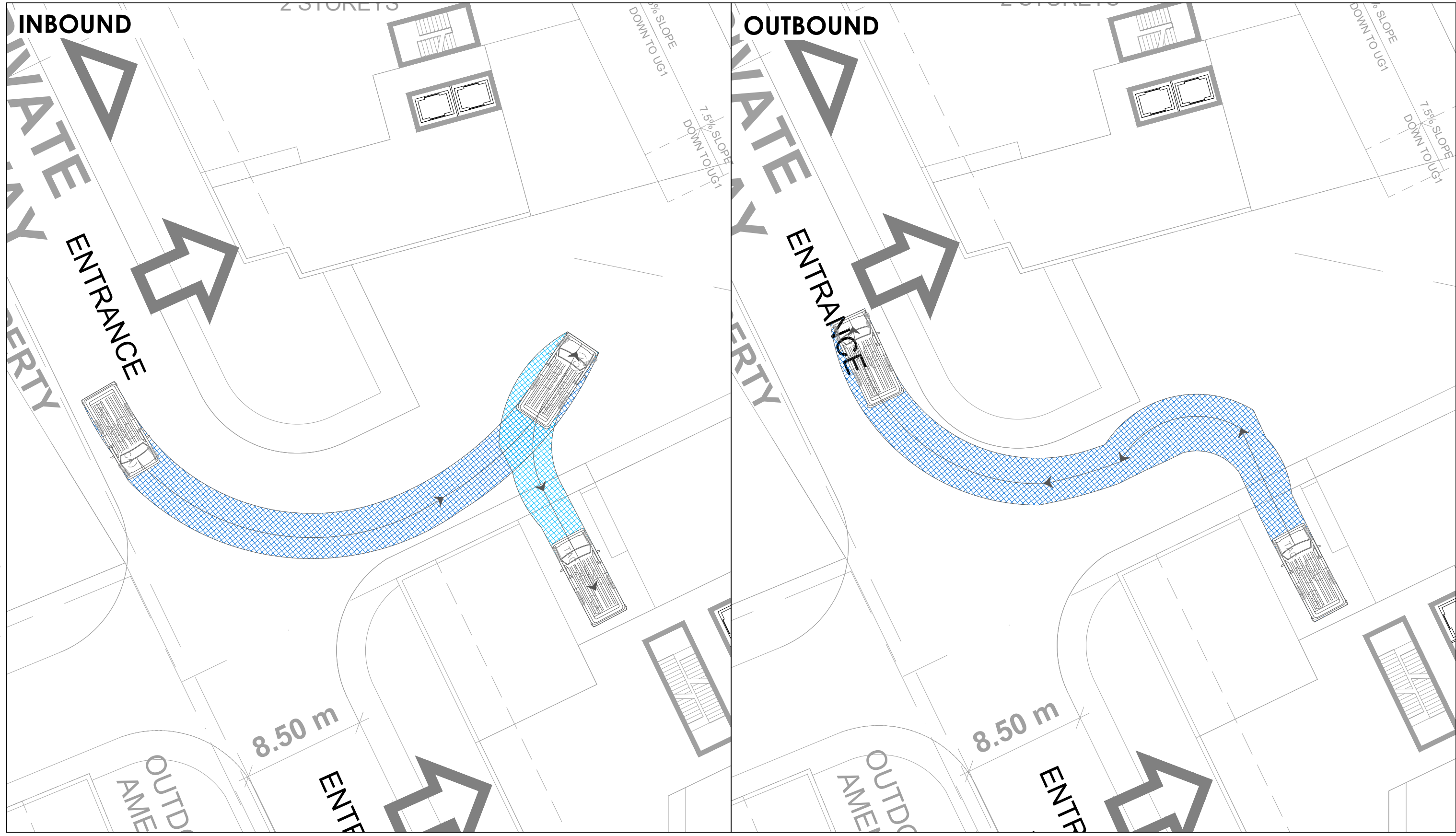
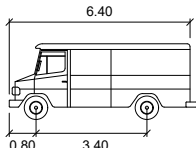


Figure 6-27
MSU Loading Truck Turning Maneuver - Building E
1105-1163 Kingston Road, Pickering



Source: "2024-12-17_22122P01-ARCH-TF-XX-WIP-Sheet - RZ151 - FLOOR 01.dwg" received on December 17, 2024.

Scale: 1:250

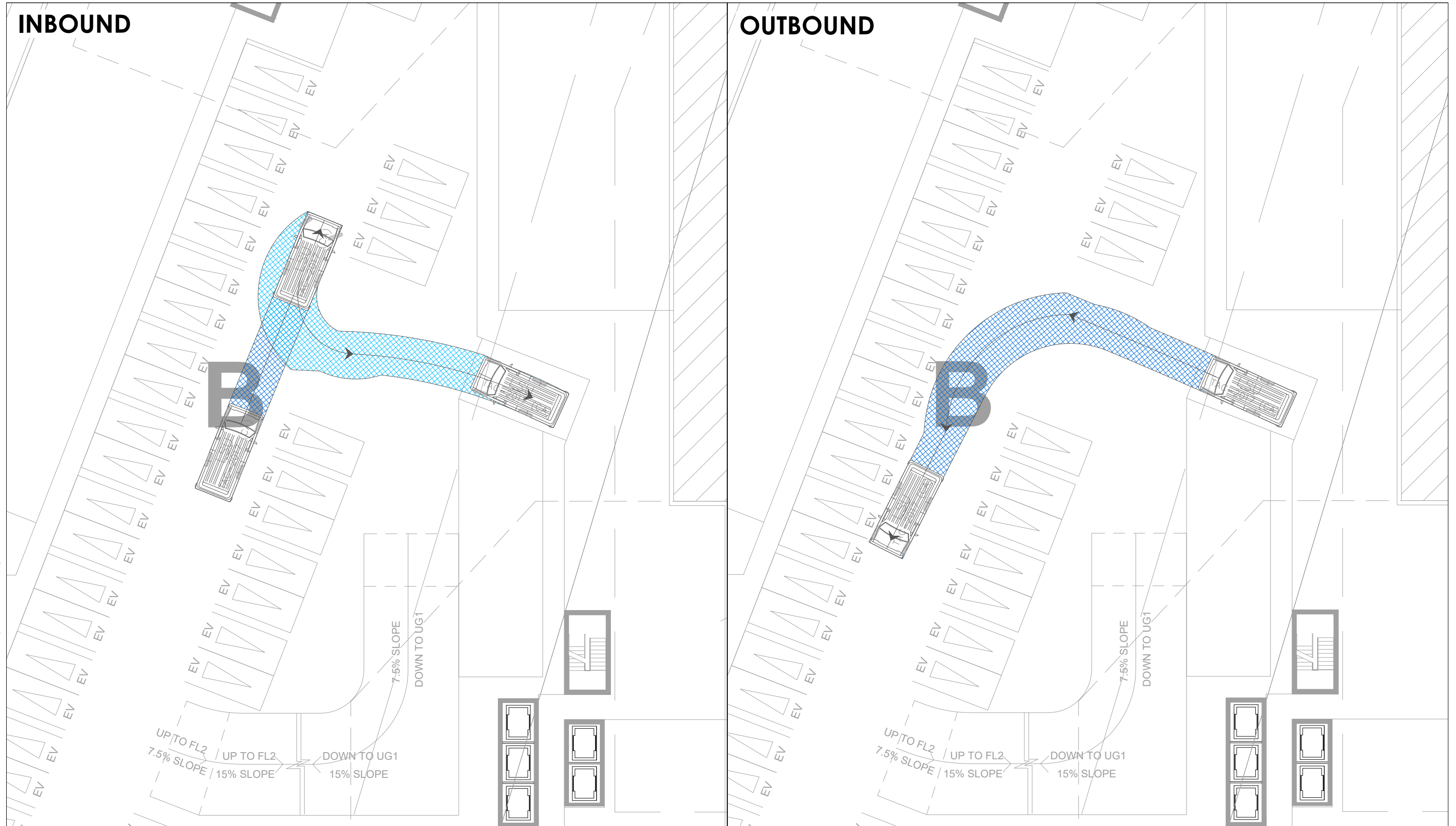


LSU	
Width	: 2.60 meters
Track	: 2.60
Lock to Lock Time	: 6.0
Steering Angle	: 40.3

Figure 6-28
 LSU Loading Truck Turning Maneuver - Building A
 1105-1163 Kingston Road, Pickering

INBOUND

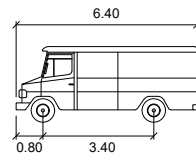
OUTBOUND



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Source: "2024-12-17_22122P01-ARCH-TF-XX-WIP-Sheet - RZ151 - FLOOR 01.dwg" received on December 17, 2024.

Scale: 1:250



LSU	
Width	: 2.60
Track	: 2.60
Lock to Lock Time	: 6.0
Steering Angle	: 40.3

Figure 6-29
 LSU Loading Truck Turning Maneuver - Building B - Loading Space 1
 1105-1163 Kingston Road, Pickering

INBOUND

OUTBOUND

3.00

3.00 m

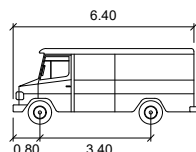
B

B

SSIE
(1370

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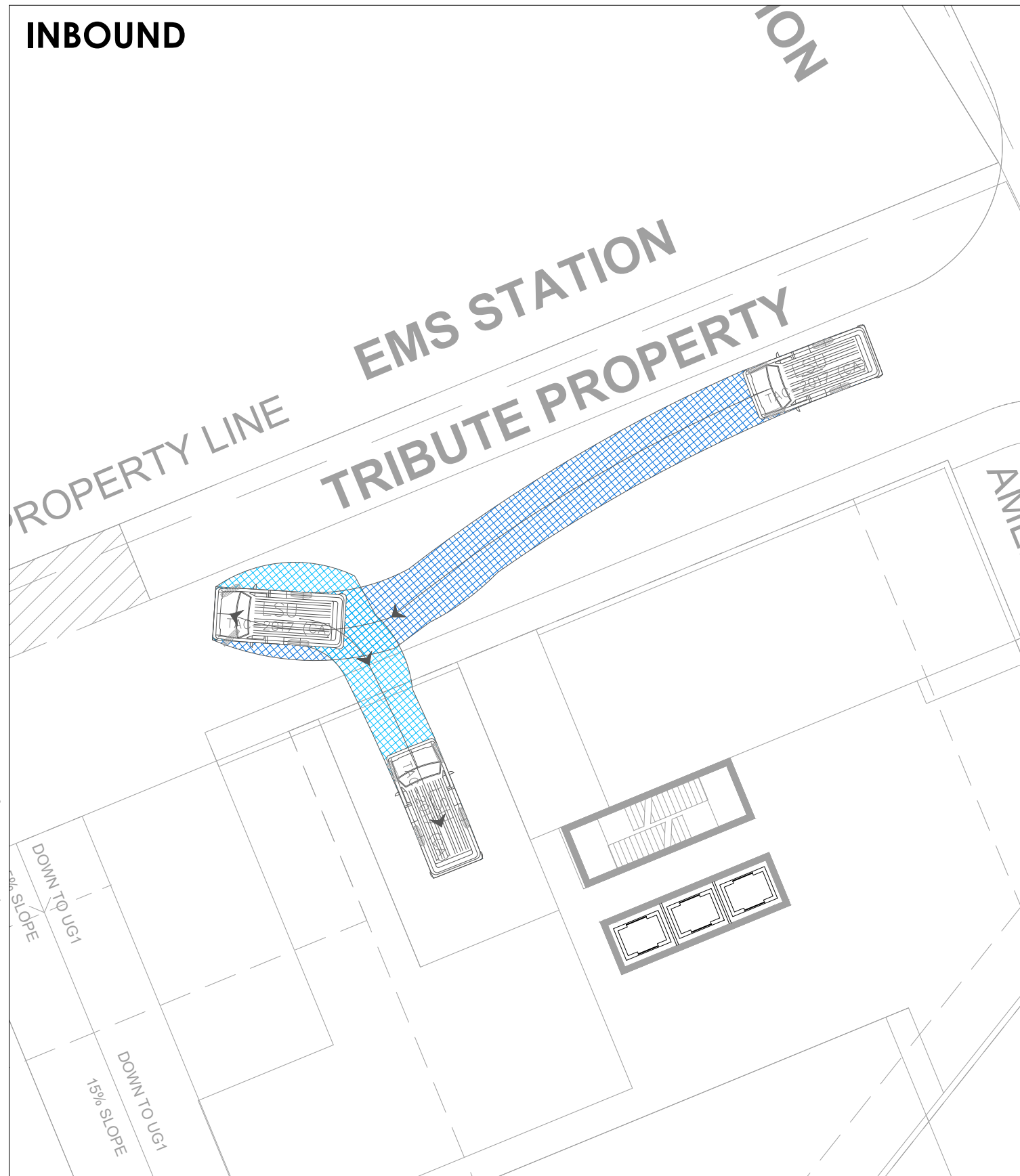


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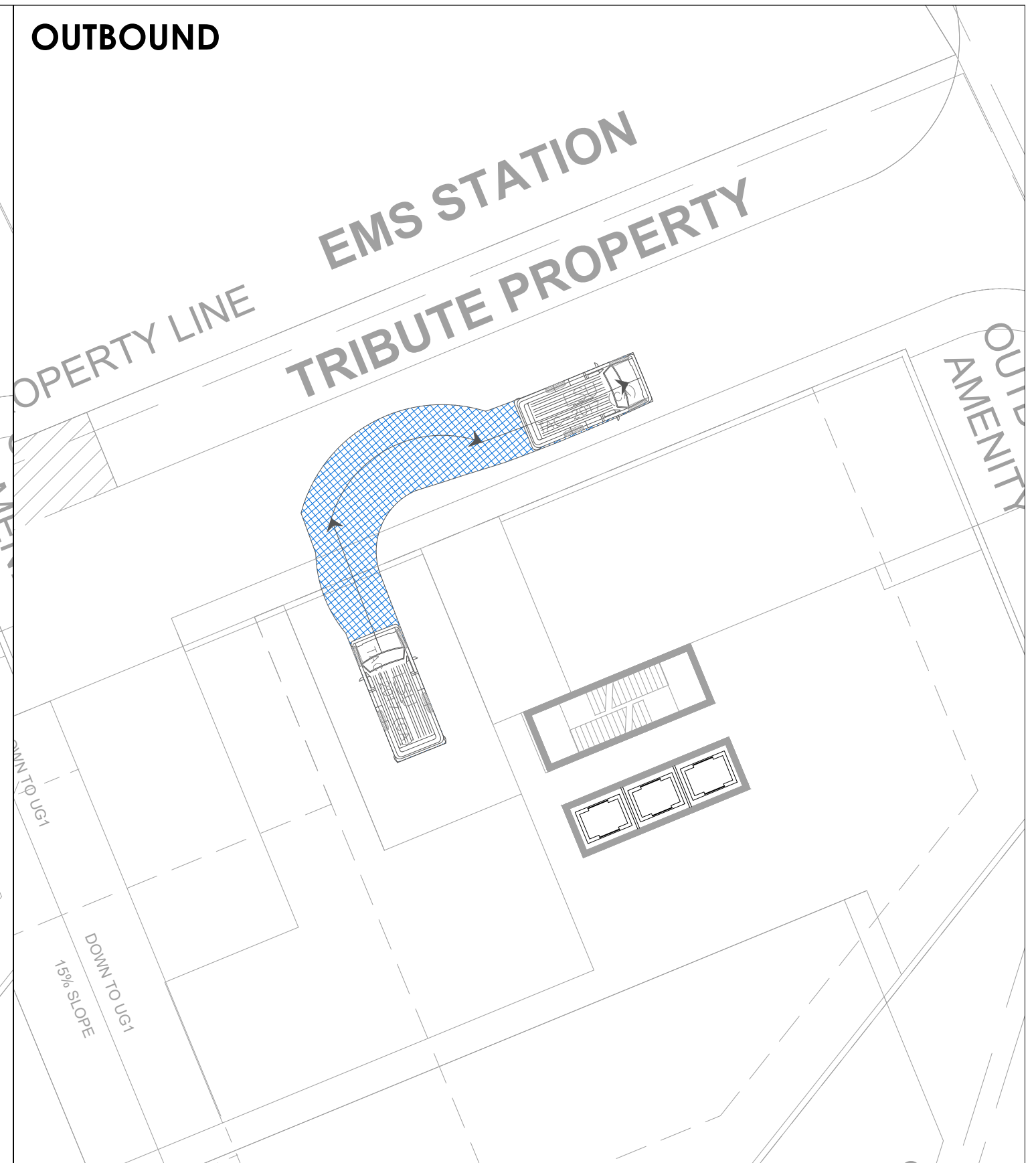
- Width : 2.60 meters
- Track : 2.60
- Lock to Lock Time : 6.0
- Steering Angle : 40.3

Figure 6-30
LSU Loading Truck Turning Maneuver - Building B - Loading Space 2
1105-1163 Kingston Road, Pickering

INBOUND



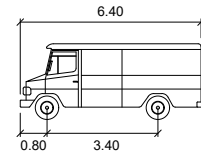
OUTBOUND



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Source: "2024-12-17_22122P01-ARCH-TF-XX-WIP-Sheet - RZ151 - FLOOR 01.dwg" received on December 17, 2024.

Scale: 1:250



LSU

Width	: 2.60	meters
Track	: 2.60	
Lock to Lock Time	: 6.0	
Steering Angle	: 40.3	

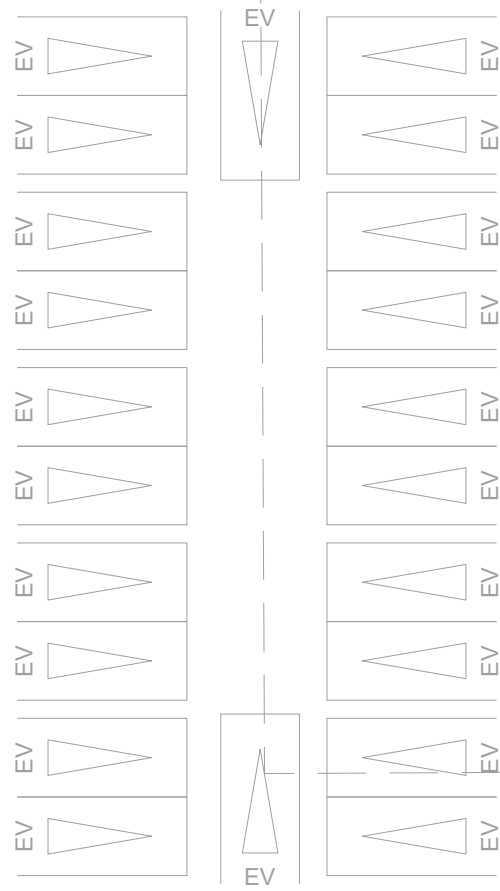
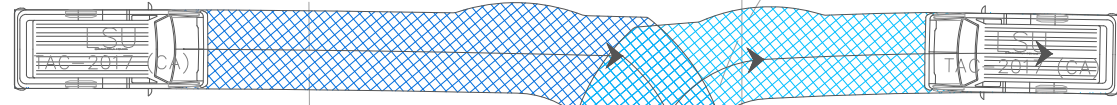
Figure 6-31
 LSU Loading Truck Turning Maneuver - Building C
 1105-1163 Kingston Road, Pickering

INBOUND



NON-RESIDENTIAL

564.58 m²

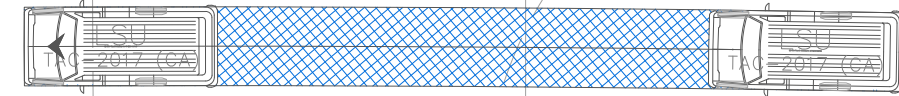


OUTBOUND



NON-RESIDENTIAL

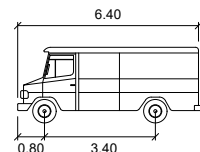
564.58 m²



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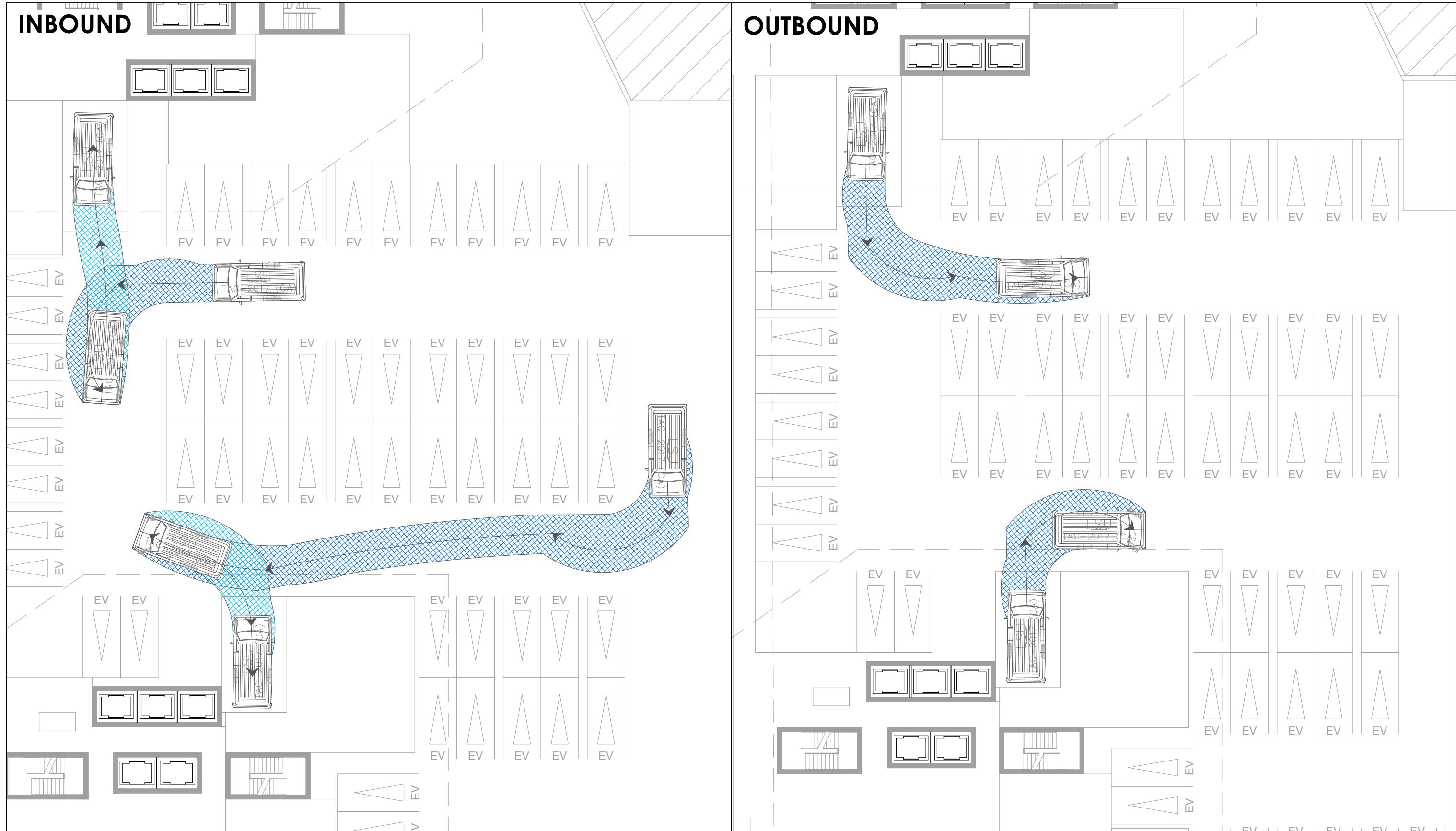
Scale: 1:250



LSU

Width : 2.60
Track : 2.60
Lock to Lock Time : 6.0
Steering Angle : 40.3

Figure 6-32
LSU Loading Truck Turning Maneuver - Building E - Loading Space 1
1105-1163 Kingston Road, Pickering



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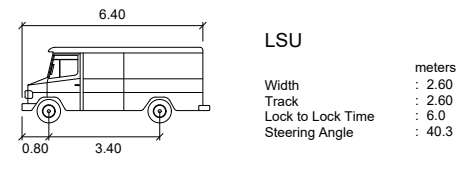
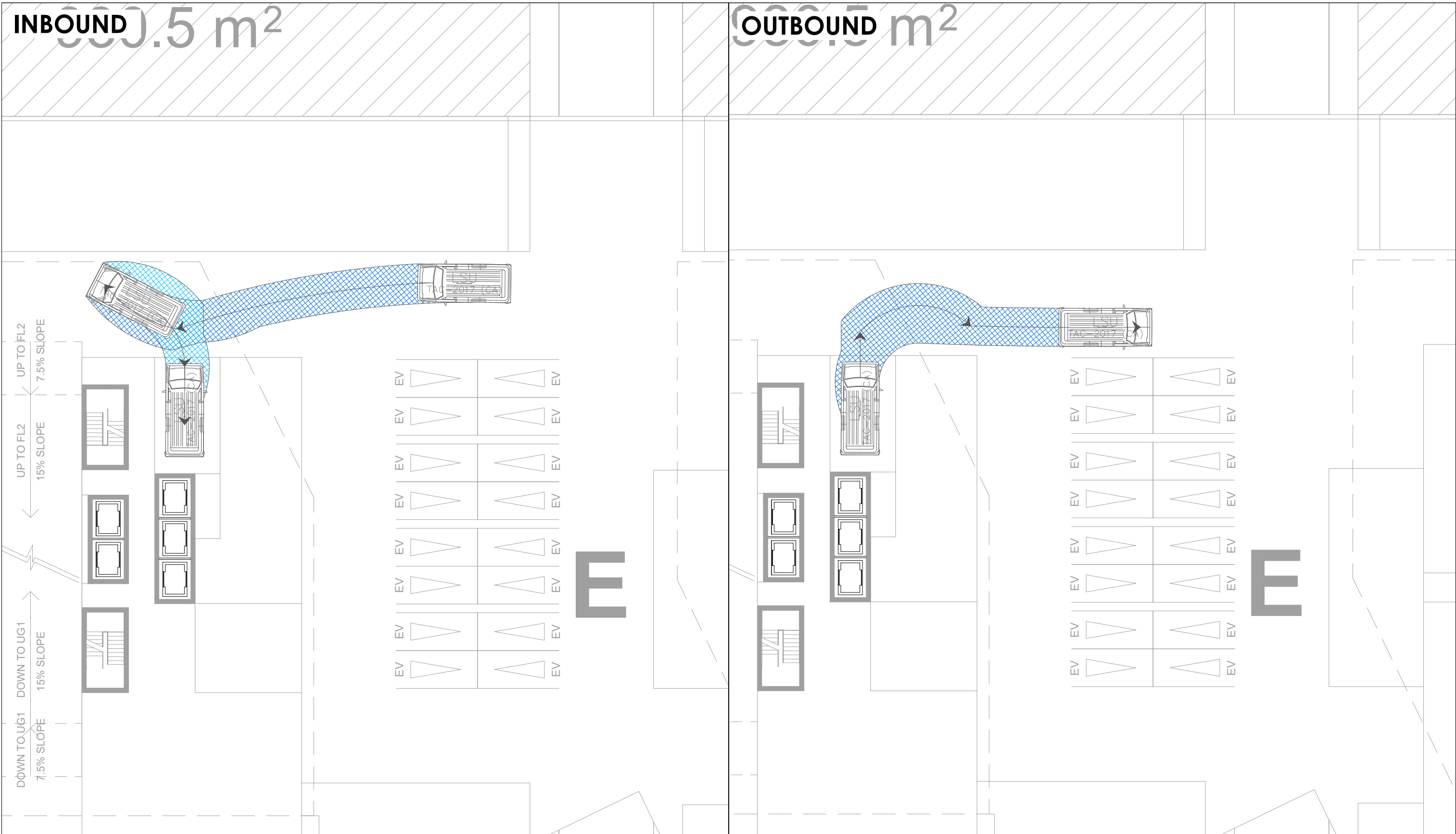


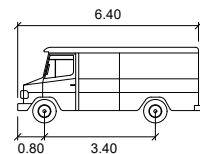
Figure 6-33
 LSU Loading Truck Turning Maneuver - Building E - Loading Spaces 2 and 3
 1105-1163 Kingston Road, Pickering



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Source: "2024-12-17_22122P01-ARCH-TF-XX-WIP-Sheet - RZ151 - FLOOR 01.dwg" received on December 17, 2024.

Scale: 1:250



LSU	
Width	: 2.60 meters
Track	: 2.60
Lock to Lock Time	: 6.0
Steering Angle	: 40.3

Figure 6-34
 LSU Loading Truck Turning Maneuver - Building E - Loading Space 4
 1105-1163 Kingston Road, Pickering

7 FUTURE TOTAL TRAFFIC CONDITIONS

The future total traffic volumes were developed by superimposing the corresponding future background volumes and site-generated traffic volumes.

This section of the report documents the future total traffic assessments for each of the horizon years.

7.1 2028 FUTURE TOTAL

The traffic operations were analyzed based on the resulting 2028 future total traffic forecasts shown in **Figure 7-1**. The resulting levels of service are outlined in **Table 7-1** and the details related to intersection operations provided in **Appendix H-1**.

The results indicate that the 2028 future total conditions slightly changed from the future background conditions as a result of the additional site traffic, with all intersections continuing to operate at an acceptable LOS. It should be noted that, by the 2028 horizon year, the proposed development is only partially complete (phase 1 only), where the full build out will occur for the 2033 horizon year,

There are also several movements operating at critical or over-capacity. This is expected considering that these movements were critical and approaching capacity in the future background scenarios. To resolve these over-capacity movements, a PHF sensitivity scenario was analyzed in **Table 7-2**, for any intersections with over-capacity movements. In 2028 future total, this includes Liverpool Road & Kingston Road, Kingston Road & Walnut Lane, Kingston Road & Dixie Road, Kingston Road & Highway 401 WB Ramps and Kingston Road & Whites Road. It should also be noted that some of the critical and over-capacity movements are expected to improve once the existing site trips are fully removed when the development is fully built in the 2033 horizon year.

The RIRO site driveway access at Kingston Road and the site access at Dixie Road both operate well within capacity and with an acceptable LOS during both peak hours.

Table 7-1: 2028 Future Total Intersection Operations

Intersection	Weekday A.M. Peak Hour		Weekday P.M. Peak Hour	
	Overall LOS (Delay in Seconds)	Critical Movement (Volume/Capacity Ratio)	Overall LOS (Delay in Seconds)	Critical Movement (Volume/Capacity Ratio)
Signalized Intersections				
Liverpool Road & Walnut Lane / Highway 401 WB Off-Ramp	B (17)	--	C (27)	--
Liverpool Road & Pickering Parkway	B (16)	--	C (30)	--
Liverpool Road & Kingston Road	C (34)	--	D (50)	EB-T (1.09) WB-L (0.90)
Kingston Road & Walnut Lane	C (35)	--	D (49)	EB-T (1.01) WB-L (1.08) NB-L (1.07)
Kingston Road & Dixie Road	C (27)	WB-L (1.04)	C (34)	EB-L (0.90)
Kingston Road & Fairport Road	B (18)	--	C (33)	EB-L (0.92)
Kingston Road & Highway 401 WB Ramps	C (29)	--	D (55)	EB-TR (1.05) WB-L (1.03)
Kingston Road & Delta Boulevard	C (33)	--	D (38)	EB-L (0.93) EB-TR (0.92) WB-L (0.93) NB-L (0.93)
Kingston Road & Whites Road	C (32)	--	D (50)	EB-L (1.00) EB-T (1.04) NB-R (0.90)
Whites Road & Highway 401 EB Off-Ramp	C (21)	--	C (27)	--
Unsignalized Intersections				
Street B & Kingston Road (RIRO Site Access)	A (10)	NB-R (0.04)	B (12)	NB-R (0.18)
Dixie Road & Shopping Plaza Entrance	A (9)	WB-LR (0.09)	A (10)	WB-LR (0.25)

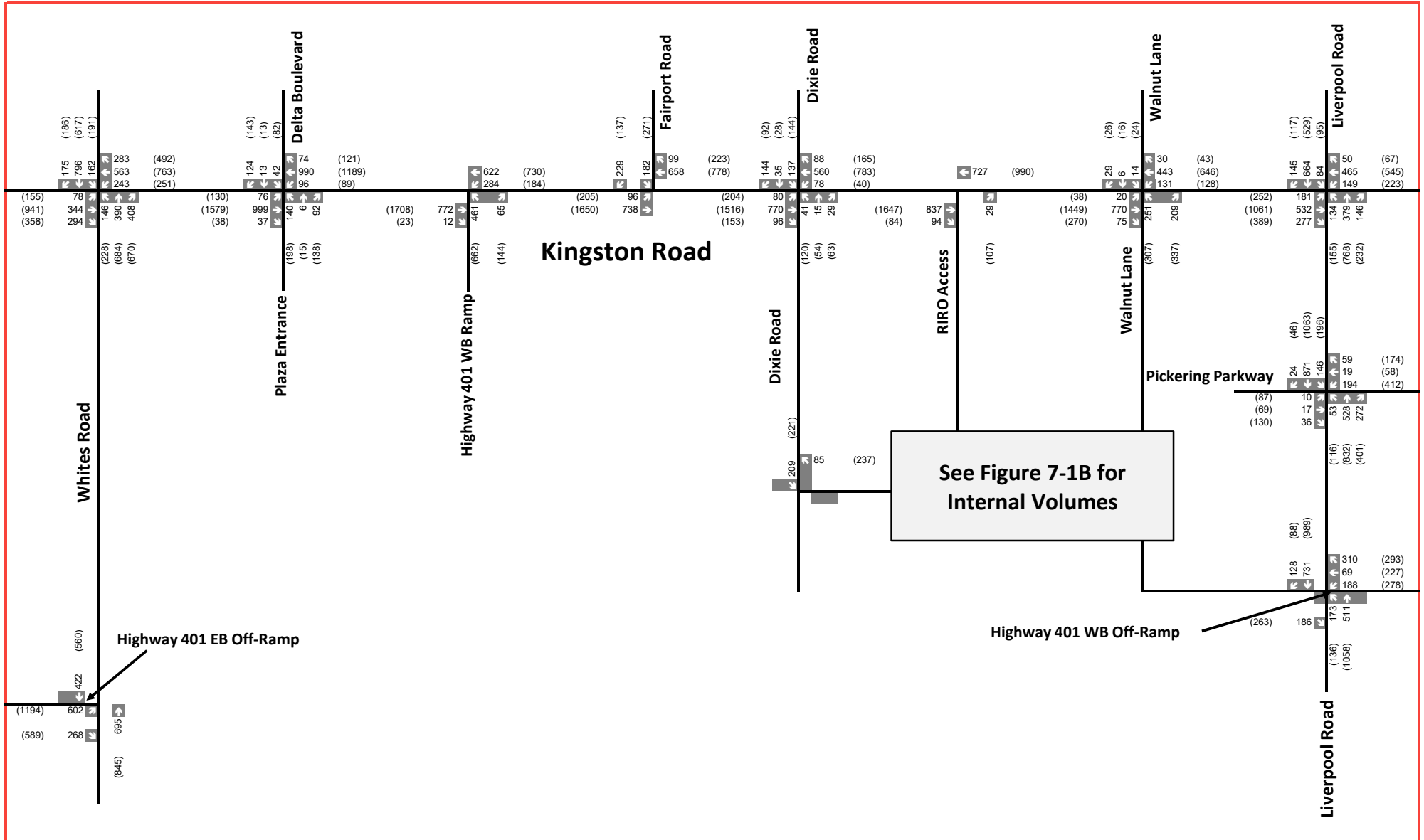
Intersection	Weekday A.M. Peak Hour		Weekday P.M. Peak Hour	
	Overall LOS (Delay in Seconds)	Critical Movement (Volume/Capacity Ratio)	Overall LOS (Delay in Seconds)	Critical Movement (Volume/Capacity Ratio)
Intersection B (Walnut Lane & Street B)	B (13)	EB-LR (0.20)	C (24)	EB-LR (0.39)
Intersection C (Street B)	A (8)	SB-TL (0.13)	A (8)	SB-LT (0.16)
Intersection D (Street B & Shopping Plaza Entrance)	A (7)	NB-TL (0.02)	A (8)	EB-LR (0.17)
Intersection E (Street B & Street A)	A (7)	SB-TL (0.05)	A (7)	SB-TL (0.05)

- 1 For signalized intersections, the level of service is based on the overall delay of the intersection. Critical v/c ratios are only listed for through or shared through/turning movements with values over 0.85. Critical v/c ratios are only listed for exclusive movements with values of 0.90.
- 2 For unsignalized intersections, the level of service is based on the critical movement, which is the movement with the highest delay.

Table 7-2: 2028 Future Total Intersection Operations – PHF Sensitivity Analysis

Intersection	Weekday A.M. Peak Hour		Weekday P.M. Peak Hour	
	Overall LOS (Delay in Seconds)	Critical Movement (Volume/Capacity Ratio)	Overall LOS (Delay in Seconds)	Critical Movement (Volume/Capacity Ratio)
Signalized Intersections				
Liverpool Road & Kingston Road	--	--	D (42)	EB-T (0.99)
Kingston Road & Walnut Lane	--	--	D (39)	EB-T (0.93) WB-L (0.99) NB-L (0.98)
Kingston Road & Dixie Road	C (25)	WB-L (0.95)	C (34)	EB-T (0.94) WB-L (0.95)
Kingston Road & Highway 401 WB Ramps	--	--	D (42)	EB-T (0.95) WB-L (0.95)
Kingston Road & Whites Road	--	--	D (41)	EB-L (0.92) WB-T (0.94)

- 1 For signalized intersections, the level of service is based on the overall delay of the intersection. Critical v/c ratios are only listed for through or shared through/turning movements with values over 0.85. Critical v/c ratios are only listed for exclusive movements with values of 0.90.
- 2 For unsignalized intersections, the level of service is based on the critical movement, which is the movement with the highest delay.

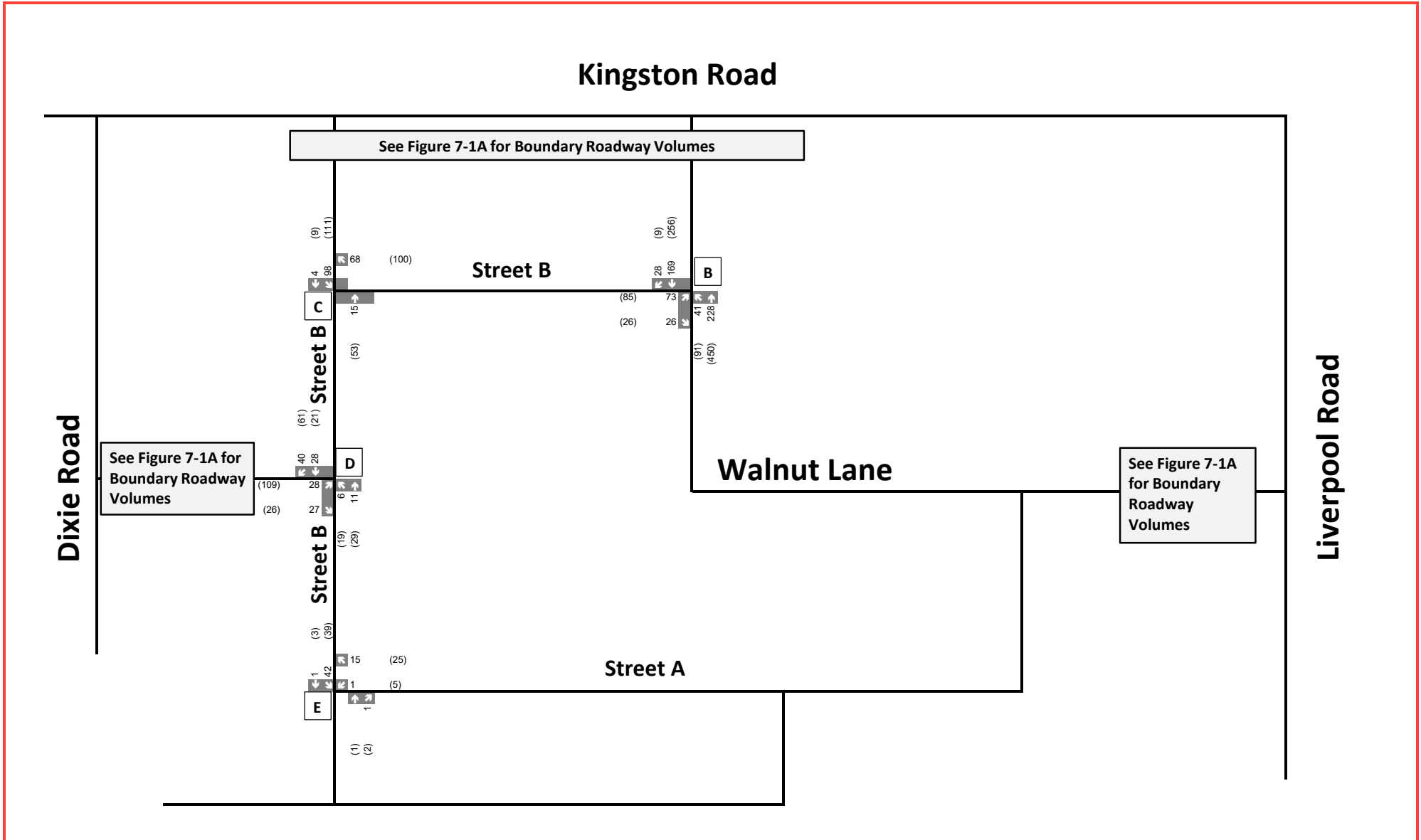


Legend

xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes

Figure 7-1A

2028 Future Total Traffic Volumes (Boundary Roadways)



Legend

xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes

Figure 7-1B

2028 Future Total Traffic Volumes (Internal Volumes)

A queueing analysis for the study intersections is presented in **Table 7-3**. The 50th percentile queue lengths are shown only for movements with 95th percentile queue lengths exceeding the available storage. Detailed queue results for all intersections and individual movements are provided in **Appendix H-1**.

Table 7-3: 2028 Future Total Intersection Queue Lengths

Intersection	Lane Movement	Available Storage (m)	50 th Percentile Queues (m) [95 th Percentile Queues (m)]	
			A.M. Peak Hour	P.M. Peak Hour
Liverpool Road & Walnut Lane / Highway 401 WB Off-Ramp	EBR	N/A	54	75
	WBL	203	44	71
	WBT	203	44	73
	WBR	125	23	66
	NBL	50	18	20
	NBT	348	25	87
	SBT	138	33	86
	SBR	38	2	9
Liverpool Road & Pickering Parkway	EBL	59	7	32
	EBT	59	8	17
	WBL	57	30	53
	WBT	305	10	19
	WBR	62	0	16
	NBL	54	6	41
	NBT	138	54	116
	NBR	76	20	54
	SBL	133	22	67
	SBT	234	85	173
SBR	36	0	0	
Liverpool Road & Kingston Road	EBL	221	76	62
	EBT	671	54	186
	EBR	98	37	87
	WBL	237	74	106
	WBT	372	73	94
	WBR	117	0	0
	NBL	186	32	43
	NBT	234	50	122
	NBR	52	15	37
	SBL	49	21	27
	SBT	325	91	81
SBR	61	14	11	

Intersection	Lane Movement	Available Storage (m)	50 th Percentile Queues (m) [95 th Percentile Queues (m)]	
			A.M. Peak Hour	P.M. Peak Hour
Kingston Road & Walnut Lane	EBL	107	12	15
	EBT	105	140 [112]	301 [154]
	WBL	159	61	83
	WBT	671	70	22
	NBL	63	82 [61]	153 [94]
	NBR	101	17	116 [69]
	SBL	19	7	13
Kingston Road & Dixie Road	EBL	184	44	84
	EBT	872	92	284
	WBL	129	53	24
	WBT	167	72	146
	NBL	13	19 [10]	49 [32]
	NBT	100	12	35
	SBL	16	50 [34]	58 [39]
Kingston Road & Fairport Road	EBL	238	48	51
	EBT	400	7	249
	WBT	872	88	35
	SBL	16	69 [49]	101 [73]
	SBR	256	21	17
Kingston Road & Highway 401 WB Ramps	EBT	245	55	333 [290]
	WBL	135	112	101
	WBT	400	73	6
	NBL	193	77	115
	NBR	52	12	25
Kingston Road & Delta Boulevard	EBL	39	40 [22]	39 [37]
	EBT	199	162	138
	WBL	121	43	48
	WBT	245	181	103
	NBL	107	57	99
	NBT	107	16	27
	SBL	146	21	36
SBT	146	21	24	

Intersection	Lane Movement	Available Storage (m)	50 th Percentile Queues (m) [95 th Percentile Queues (m)]	
			A.M. Peak Hour	P.M. Peak Hour
Kingston Road & Whites Road	EBL	153	43	89
	EBT	274	56	196
	EBR	123	67	91
	WBL	87	101 [71]	96 [66]
	WBT	199	93	81
	WBR	35	70 [37]	134 [42]
	NBL	72	50	83 [43]
	NBT	135	39	68
	NBR	35	58 [46]	207 [129]
	SBL	89	46	68
	SBT	361	81	62
Whites Road & Highway 401 EB Off-Ramp	SBR	47	20	17
	EBL	272	83	133
	EBR	225	19	125
	NBT	162	58	100
Street B & Kingston Road (RIRO Site Access)	SBT	293	33	61
	EBT	191	0	0
	WBT	129	0	0
Dixie Road & Shopping Plaza Entrance	NBR	97	1	19
	WBL	193	2	10
	NBT	107	0	0
	SBT	44	4	8

As a result of adding the phase 1 site traffic, some of the queues under 2028 future total conditions have increased in comparison to the future background conditions. A majority of the movements where the queues exceeding their storage length were present in the future background scenarios with the exception of one movement, the northbound right turn at Kingston Road & Walnut Lane in the p.m. peak hour.

For the northbound right-turn at Kingston Road & Walnut Lane in the p.m. peak hours, it is expected that queues will exceed the storage length in the 95th percentile queues, but not in the 50th percentile queues. As discussed, the 95th percentile queue lengths are typically reached only a few times during peak periods; therefore, the impact of the queues would be limited as long as the 50th percentile (average) queue lengths are within the available storage lengths.

7.2 2033 FUTURE TOTAL

The traffic operations were analyzed based on the resulting 2033 future total traffic forecasts shown in **Figure 7-2**. The resulting levels of service are outlined in **Table 7-4** and the details related to the intersection operations provided in **Appendix H-2**.

By 2033, it is expected that the entire proposed development will be built and operational. Therefore, when compared to the 2028 future total, the volumes are higher, and conditions are more constrained. The Synchro results for 2033 future total scenario indicate that all intersections operate at an acceptable LOS, with some critical movements in the a.m. peak hour and several critical and over-capacity movements in the p.m. peak hour. These capacity issues will be resolved in a PHF sensitivity scenario analyzed in **Table 7-5**. The PHF scenario continues to show that all movements can operate within capacity.

For Walnut Lane & Street A (Intersection A), the results show that the intersection is operating at well above capacity with all-way stop control. Therefore, this intersection was also assessed as a signalized intersection. Signalization improves the operation of the intersection movements significantly, where all movements can now operate within capacity. Therefore, it is recommended that this intersection be signalized. This intersection is approximately 220 metres from the signalized intersection of Kingston Road & Walnut Lane, which is an acceptable intersection spacing for signalization on a minor road. Additionally, the signalized intersection can also serve the future redevelopment of the properties northeast of the intersection.

Table 7-4: 2033 Future Total Intersection Operations

Intersection	Weekday A.M. Peak Hour		Weekday P.M. Peak Hour	
	Overall LOS (Delay in Seconds)	Critical Movement (Volume/Capacity Ratio)	Overall LOS (Delay in Seconds)	Critical Movement (Volume/Capacity Ratio)
Signalized Intersections				
Liverpool Road & Walnut Lane / Highway 401 WB Off-Ramp	C (27)	EB-R (0.91) SB-T (0.89)	D (48)	EB-R (1.04) WB-T (1.05) SB-T (1.03)
Liverpool Road & Pickering Parkway	B (16)	--	C (26)	--
Liverpool Road & Kingston Road	D (44)	EB-L (0.99) EB-R (0.98) WB-L (1.02)	E (56)	EB-T (1.05) EB-R (0.96) WB-L (1.07)

Intersection	Weekday A.M. Peak Hour		Weekday P.M. Peak Hour	
	Overall LOS (Delay in Seconds)	Critical Movement (Volume/Capacity Ratio)	Overall LOS (Delay in Seconds)	Critical Movement (Volume/Capacity Ratio)
Kingston Road & Walnut Lane	C (27)	--	D (37)	EB-T (0.96)
Kingston Road & Dixie Road	C (25)	WB-L (1.04)	D (38)	EB-L (0.90) EB-T (0.96)
Kingston Road & Fairport Road	B (18)	--	C (34)	EB-L (0.92) EB-T (0.88)
Kingston Road & Highway 401 WB Ramps	C (29)	--	D (52)	EB-TR (1.04) WB-L (1.03)
Kingston Road & Delta Boulevard	C (33)	--	D (37)	EB-L (0.93) EB-TR (0.91) WB-L (0.93) NB-L (0.93)
Kingston Road & Whites Road	C (32)	WB-L (0.94)	D (52)	EB-L (1.00) EB-T (0.99) WB-L (1.08) NB-R (0.97)
Whites Road & Highway 401 EB Off-Ramp	C (21)	--	C (28)	--
Intersection A (Street A & Walnut Lane) (with signalization)	C (28)	--	D (42)	WB-T (0.92) NB-L (0.96)
Unsignalized Intersections				
Kingston Road & Street B (RIRO Site Access)	B (10)	NB-R (0.17)	C (23)	NB-R (0.58)
Dixie Road & Shopping Plaza Entrance	A (9)	WB-LR (0.11)	A (10)	WB-LR (0.30)

Intersection	Weekday A.M. Peak Hour		Weekday P.M. Peak Hour	
	Overall LOS (Delay in Seconds)	Critical Movement (Volume/Capacity Ratio)	Overall LOS (Delay in Seconds)	Critical Movement (Volume/Capacity Ratio)
Intersection A (Street A & Walnut Lane) (with AWSC)	C (23)	NB-LR (0.76)	F (166)	WB-TL (1.30)
Intersection B (Walnut Lane & Street B)	B (14)	EB-LR (0.21)	C (22)	EB-LR (0.30)
Intersection C (Street B)	A (8)	SB-TL (0.17)	A (8)	SB-LT (0.16)
Intersection D (Street B & Shopping Plaza Entrance)	A (8)	NB-TL (0.14)	B (11)	EB-LR (0.49)
Intersection E (Street B & Street A)	A (8)	SB-TL (0.18)	B (12)	SB-TL (0.48)
Intersection F (Street Driveways & Street A)	B (12)	EB-LTR (0.45)	C (17)	WB-LTR (0.63)

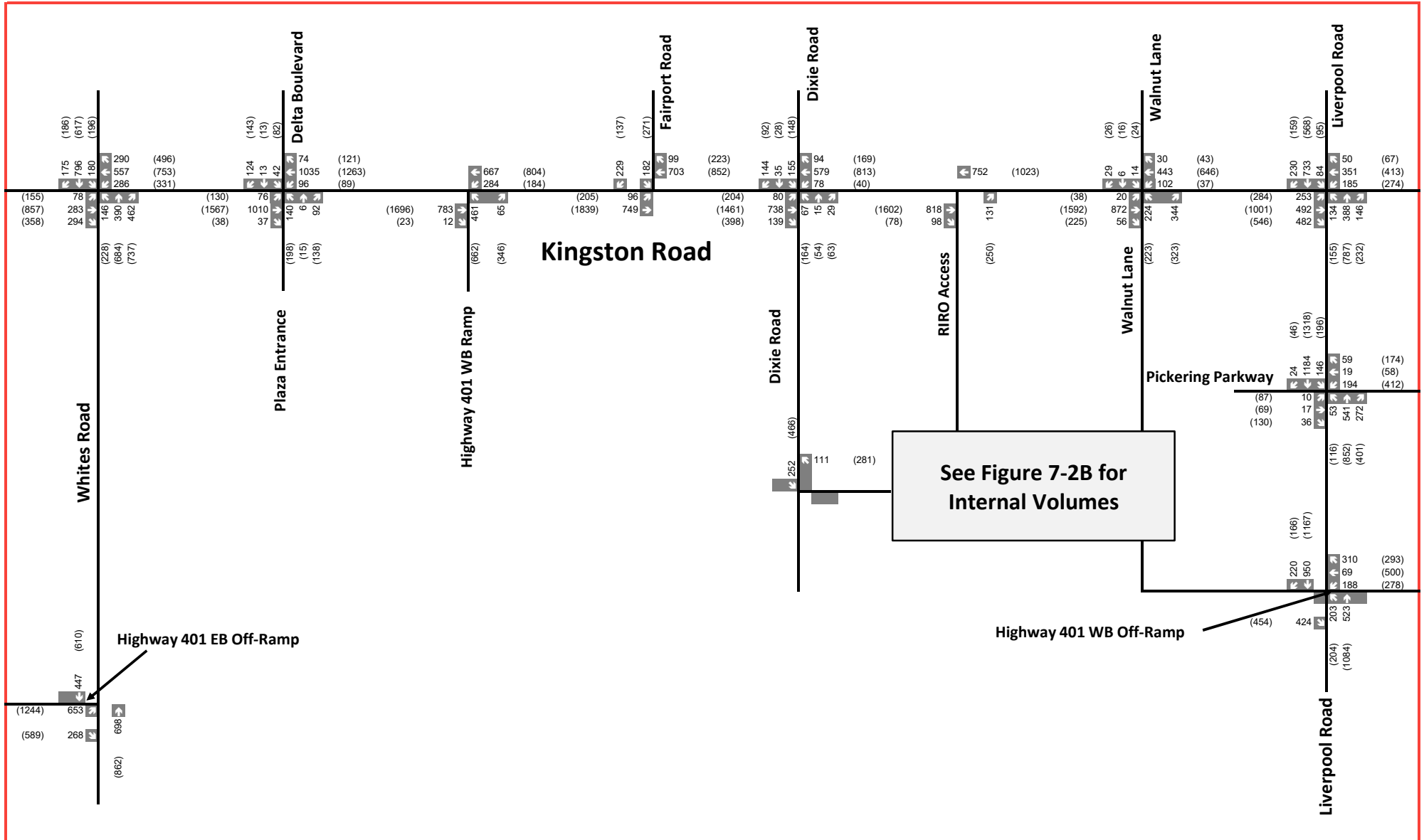
- 1 For signalized intersections, the level of service is based on the overall delay of the intersection. Critical v/c ratios are only listed for through or shared through/turning movements with values over 0.85. Critical v/c ratios are only listed for exclusive movements with values of 0.90.
- 2 For unsignalized intersections, the level of service is based on the critical movement, which is the movement with the highest delay.

Table 7-5: 2033 Future Total Intersection Operations – PHF Sensitivity Analysis

Intersection	Weekday A.M. Peak Hour		Weekday P.M. Peak Hour	
	Overall LOS (Delay in Seconds)	Critical Movement (Volume/Capacity Ratio)	Overall LOS (Delay in Seconds)	Critical Movement (Volume/Capacity Ratio)
Signalized Intersections				
Liverpool Road & Walnut Lane / Highway 401 WB Off-Ramp	--	--	D (38)	EB-R (0.97) WB-T (0.97) SB-T (0.94)
Liverpool Road & Kingston Road	D (39)	EB-L (0.93) WB-L (0.94)	D (49)	EB-T (0.97) WB-L (0.98)

Intersection	Weekday A.M. Peak Hour		Weekday P.M. Peak Hour	
	Overall LOS (Delay in Seconds)	Critical Movement (Volume/Capacity Ratio)	Overall LOS (Delay in Seconds)	Critical Movement (Volume/Capacity Ratio)
Kingston Road & Dixie Road	C (24)	WB-L (0.95)	--	--
Kingston Road & Highway 401 WB Ramps	--	--	D (40)	EB-T (0.94) WB-L (0.95)
Kingston Road & Whites Road	--	--	D (43)	EB-L (0.92) EB-T (0.91) WB-L (0.99)

- 1 For signalized intersections, the level of service is based on the overall delay of the intersection. Critical v/c ratios are only listed for through or shared through/turning movements with values over 0.85. Critical v/c ratios are only listed for exclusive movements with values of 0.90.
- 2 For unsignalized intersections, the level of service is based on the critical movement, which is the movement with the highest delay.

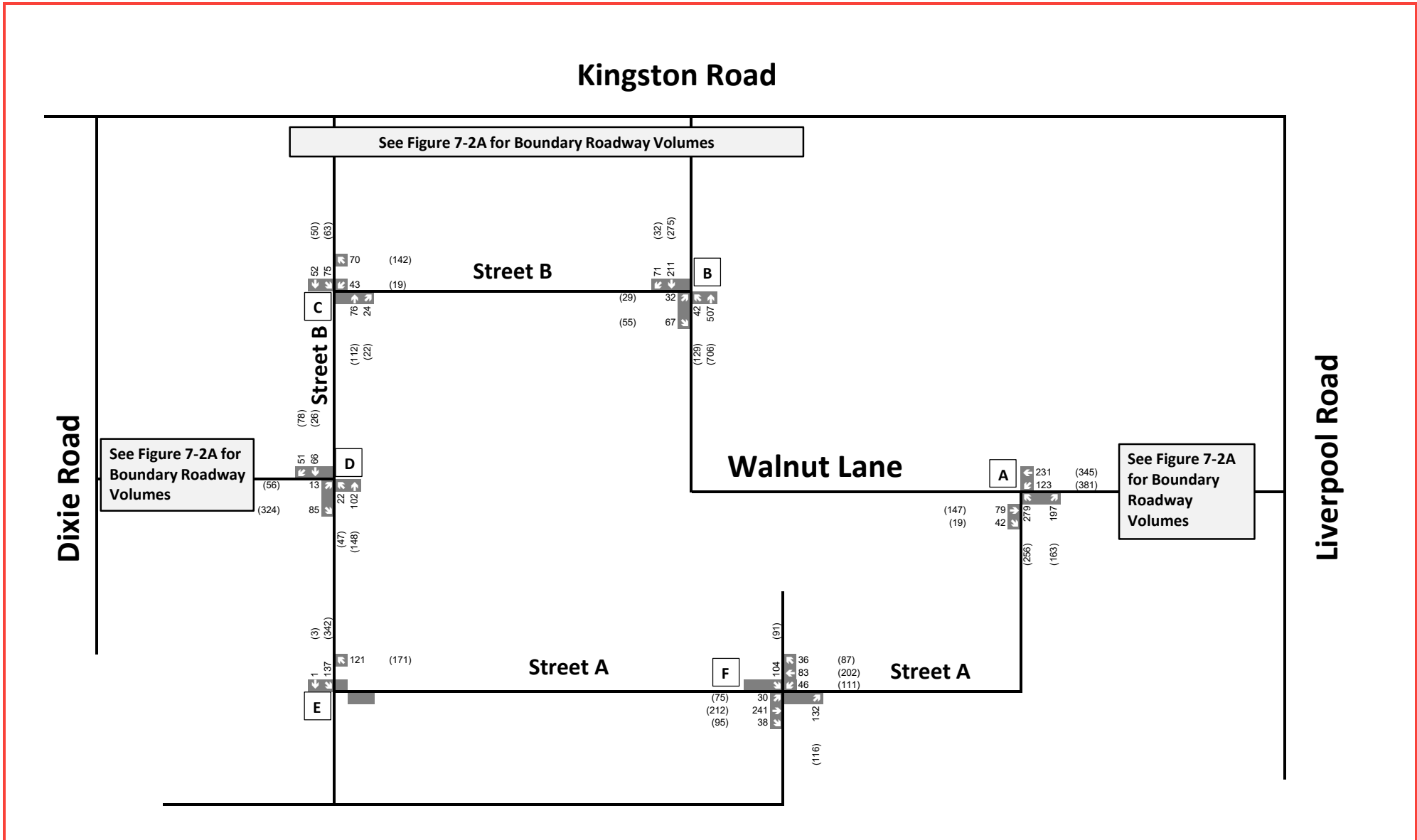


Legend

xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes

Figure 7-2A

2033 Future Total Traffic Volumes (Boundary Roadways)



Legend

xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes

Figure 7-2B

2033 Future Total Traffic Volumes (Internal Volumes)

A queueing analysis for the study intersections is presented in **Table 7-6**. The 50th percentile queue lengths are shown only for movements with 95th percentile queue lengths exceeding the available storage. Detailed queue results for all intersections and individual movements are provided in **Appendix H-2**.

Table 7-6: 2033 Future Total Intersection Queue Lengths

Intersection	Lane Movement	Available Storage (m)	95 th Percentile Queues (m) [50 th Percentile Queues (m)]	
			A.M. Peak Hour	P.M. Peak Hour
Liverpool Road & Walnut Lane / Highway 401 WB Off-Ramp	EBR	N/A	153	164
	WBL	203	44	72
	WBT	203	44	194
	WBR	125	23	66
	NBL	50	30	35
	NBT	348	17	52
	SBT	138	99	120
	SBR	38	10	22
Liverpool Road & Pickering Parkway	EBL	59	7	32
	EBT	59	8	17
	WBL	57	30	53
	WBT	305	10	19
	WBR	62	0	16
	NBL	54	6	43
	NBT	138	36	73
	NBR	76	20	54
	SBL	133	22	61
	SBT	234	75	128
SBR	36	0	0	
Liverpool Road & Kingston Road	EBL	221	123	88
	EBT	671	64	183
	EBR	98	164 [31]	160 [139]
	WBL	237	97	140
	WBT	372	55	70
	WBR	117	0	0
	NBL	186	32	43
	NBT	234	51	125
	NBR	52	15	38
	SBL	49	21	27
	SBT	325	103	87
SBR	61	18	16	

Intersection	Lane Movement	Available Storage (m)	95 th Percentile Queues (m) [50 th Percentile Queues (m)]	
			A.M. Peak Hour	P.M. Peak Hour
Kingston Road & Walnut Lane	EBL	107	13	14
	EBT	105	139 [96]	317 [280]
	WBL	159	43	20
	WBT	671	68	47
	NBL	63	75 [54]	97 [59]
	NBR	101	63	109 [66]
	SBL	19	8	13
Kingston Road & Dixie Road	EBL	184	44	68
	EBT	872	93	351
	WBL	129	54	27
	WBT	167	50	103
	NBL	13	28 [16]	65 [44]
	NBT	100	12	35
	SBL	16	56 [38]	59 [39]
Kingston Road & Fairport Road	EBL	238	43	55
	EBT	400	3	282
	WBT	872	94	44
	SBL	16	69 [49]	101 [73]
	SBR	256	21	17
Kingston Road & Highway 401 WB Ramps	EBT	245	58	329 [286]
	WBL	135	107	101
	WBT	400	90	6
	NBL	193	77	115
	NBR	52	12	71 [35]
Kingston Road & Delta Boulevard	EBL	39	41 [21]	38
	EBT	199	163	148
	WBL	121	45	48
	WBT	245	188	218
	NBL	107	57	99
	NBT	107	16	27
	SBL	146	21	36
SBT	146	21	26	

Intersection	Lane Movement	Available Storage (m)	95 th Percentile Queues (m) [50 th Percentile Queues (m)]	
			A.M. Peak Hour	P.M. Peak Hour
Kingston Road & Whites Road	EBL	153	43	89
	EBT	274	46	170
	EBR	123	67	93
	WBL	87	129 [80]	144 [101]
	WBT	199	91	83
	WBR	35	64 [47]	138 [37]
	NBL	72	50	83 [43]
	NBT	135	39	68
	NBR	35	63 [36]	189 [157]
	SBL	89	50	70
	SBT	361	81	62
Whites Road & Highway 401 EB Off-Ramp	SBR	47	20	17
	EBL	272	88	142
	EBR	225	19	131
	NBT	162	60	103
Street B & Kingston Road (RIRO Site Access)	SBT	293	37	67
	EBT	191	0	0
	WBT	129	0	0
Dixie Road & Shopping Plaza Centre	NBR	97	5	27
	WBL	193	3	10
	NBT	107	0	0
	SBT	44	5	11

The queueing analysis indicates that the queues have increased slightly when compared to the 2028 future total queues due to the larger number of site trips present in 2033. The same movements exceed their queues in the 2033 future total scenario as in the 2028 future total scenario, except for the eastbound right-turn movement at Liverpool Road & Kingston Road. Although this movement exceeds the storage length for the 95th percentile queue, since Kingston Road has two eastbound through lanes, spillover from the right-turn lane is not expected to cause significant delays for the through movement.

As discussed, the 95th percentile queue lengths are typically reached only a few times during peak periods; therefore, the impact of the queues would be limited as long as the 50th percentile (average) queue lengths are within the available storage lengths.

7.3 2038 FUTURE TOTAL

The traffic operations were analyzed based on the resulting 2038 future total traffic forecasts shown in **Figure 7-3**. The resulting levels of service are outlined in **Table 7-7** and the details related to the intersection operations provided in **Appendix H-3**.

Given our recommendation for Walnut Lane & Street A (Intersection A) to be signalized based on the traffic operations under 2033 future total conditions (see **Section 7.2**), this intersection has been solely assessed as signalized under 2038 future total conditions.

The Synchro results for the 2038 future total scenario indicate that it operates similarly to the 2033 future total scenario with all intersections continuing to operate at an acceptable LOS, several critical and over-capacity movements in the a.m. and p.m. peak hour. These capacity issues will be resolved in a PHF sensitivity scenario analyzed in **Table 7-8**. The PHF scenario continues to show that all movements can operate within capacity.

Table 7-7: 2038 Future Total Intersection Operations

Intersection	Weekday A.M. Peak Hour		Weekday P.M. Peak Hour	
	Overall LOS (Delay in Seconds)	Critical Movement (Volume/Capacity Ratio)	Overall LOS (Delay in Seconds)	Critical Movement (Volume/Capacity Ratio)
Signalized Intersections				
Liverpool Road & Walnut Lane / Highway 401 WB Off-Ramp	C (27)	EB-R (0.91) SB-T (0.90)	D (50)	EB-R (1.04) WB-T (1.05) SB-T (1.05)
Liverpool Road & Pickering Parkway	B (16)	--	C (26)	--
Liverpool Road & Kingston Road	D (44)	EB-L (0.99) EB-R (0.99) WB-L (1.02)	E (56)	EB-T (1.05) EB-R (0.96) WB-L (1.07)
Kingston Road & Walnut Lane	C (27)	--	D (37)	EB-T (0.96)
Kingston Road & Dixie Road	C (25)	WB-L (1.04)	D (38)	EB-L (0.90) EB-T (0.96)
Kingston Road & Fairport Road	B (18)	--	C (34)	EB-L (0.92) EB-T (0.88)
Kingston Road & Highway 401 WB Ramps	C (29)	--	D (52)	EB-TR (1.04) WB-L (1.03)
Kingston Road & Delta Boulevard	C (33)	--	D (37)	EB-L (0.93) EB-TR (0.91) WB-L (0.93) NB-L (0.93)

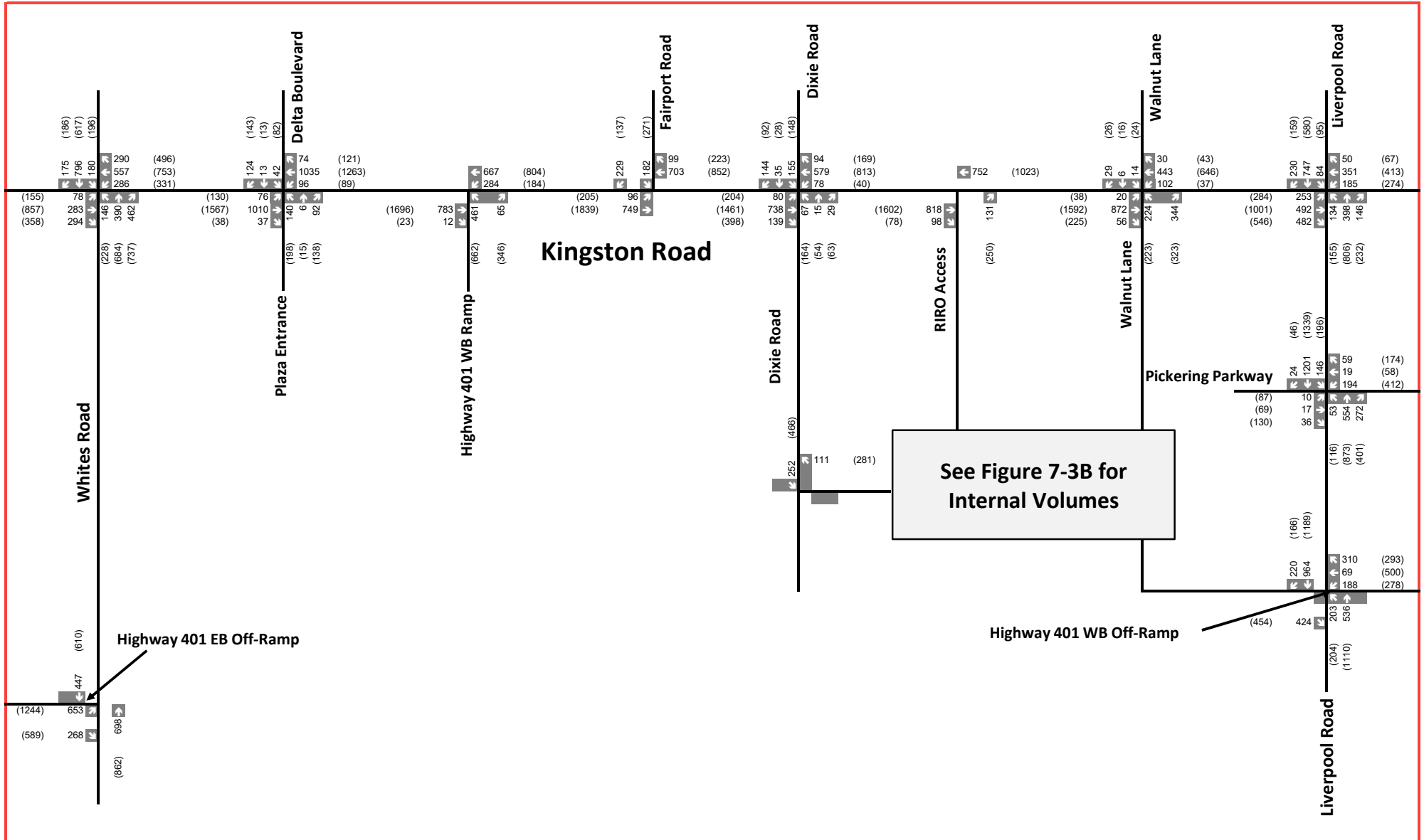
Intersection	Weekday A.M. Peak Hour		Weekday P.M. Peak Hour	
	Overall LOS (Delay in Seconds)	Critical Movement (Volume/Capacity Ratio)	Overall LOS (Delay in Seconds)	Critical Movement (Volume/Capacity Ratio)
Kingston Road & Whites Road	C (32)	WB-L (0.94)	D (52)	EB-L (1.00) EB-T (0.99) WB-L (1.08) NB-R (0.97)
Whites Road & Highway 401 EB Off-Ramp	C (21)	--	C (28)	--
Intersection A (Street A & Walnut Lane)	C (28)	NB-L (0.92)	D (42)	WB-T (0.92) NB-L (0.96)
Unsignalized Intersections				
Street B & Kingston Road (RIRO Site Access)	B (10)	NB-R (0.17)	C (23)	NB-R (0.58)
Dixie Road & Shopping Plaza Centre	A (9)	WB-LR (0.11)	A (10)	WB-LR (0.30)
Intersection B (Walnut Lane & Street B)	C (14)	EB-LR (0.21)	C (22)	EB-LR (0.30)
Intersection C (Street B)	A (8)	SB-TL (0.17)	A (8)	SB-LT (0.16)
Intersection D (Street B & Shopping Plaza Centre)	A (8)	NB-TL (0.16)	B (11)	EB-LR (0.49)
Intersection E (Street B & Street A)	A (8)	SB-TL (0.18)	B (12)	SB-TL (0.48)
Intersection F (Building Driveways & Street A)	B (12)	EB-LTR (0.45)	C (17)	WB-LTR (0.63)

- 1 For signalized intersections, the level of service is based on the overall delay of the intersection. Critical v/c ratios are only listed for through or shared through/turning movements with values over 0.85. Critical v/c ratios are only listed for exclusive movements with values of 0.90.
- 2 For unsignalized intersections, the level of service is based on the critical movement, which is the movement with the highest delay.

Table 7-8: 2038 Future Total Intersection Operations – PHF Sensitivity Analysis

Intersection	Weekday A.M. Peak Hour		Weekday P.M. Peak Hour	
	Overall LOS (Delay in Seconds)	Critical Movement (Volume/Capacity Ratio)	Overall LOS (Delay in Seconds)	Critical Movement (Volume/Capacity Ratio)
Signalized Intersections				
Liverpool Road & Walnut Lane / Highway 401 WB Off-Ramp	--	--	D (39)	EB-R (0.97) WB-T (0.97) SB-T (0.96)
Liverpool Road & Kingston Road	D (39)	EB-L (0.93) WB-L (0.94)	D (49)	EB-T (0.97) WB-L (0.98)
Kingston Road & Dixie Road	C (24)	WB-L (0.95)	--	--
Kingston Road & Highway 401 WB Ramps	--	--	D (40)	EB-T (0.94) WB-L (0.95)
Kingston Road & Whites Road	--	--	D (43)	EB-L (0.92) EB-T (0.91) WB-L (0.99)

- 1 For signalized intersections, the level of service is based on the overall delay of the intersection. Critical v/c ratios are only listed for through or shared through/turning movements with values over 0.85. Critical v/c ratios are only listed for exclusive movements with values of 0.90.
- 2 For unsignalized intersections, the level of service is based on the critical movement, which is the movement with the highest delay.

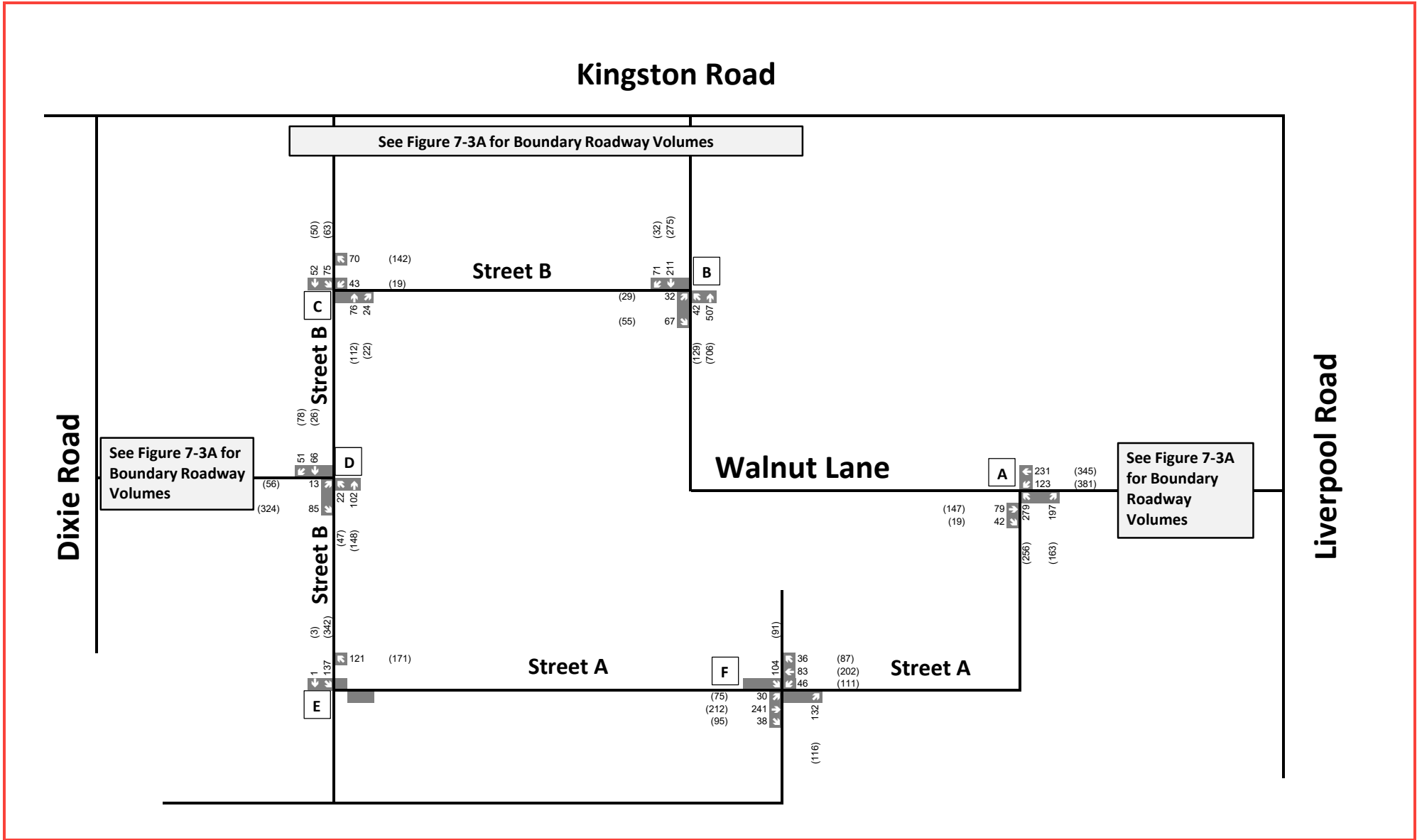


Legend

xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes

Figure 7-3A

2038 Future Total Traffic Volumes (Boundary Roadways)



Legend

xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes

Figure 7-3B

2038 Future Total Traffic Volumes (Internal Volumes)

A queueing analysis for the study intersections is presented in **Table 7-9**. The 50th percentile queue lengths are shown only for movements with 95th percentile queue lengths exceeding the available storage. Detailed queue results for all intersections and individual movements are provided in **Appendix H-3**.

Table 7-9: 2038 Future Total Intersection Queue Lengths

Intersection	Lane Movement	Available Storage (m)	95 th Percentile Queues (m) [50 th Percentile Queues (m)]	
			A.M. Peak Hour	P.M. Peak Hour
Liverpool Road & Walnut Lane / Highway 401 WB Off-Ramp	EBR	N/A	153	164
	WBL	203	44	72
	WBT	203	44	194
	WBR	125	23	66
	NBL	50	30	35
	NBT	348	17	54
	SBT	138	102	124
	SBR	38	10	22
Liverpool Road & Pickering Parkway	EBL	59	7	32
	EBT	59	8	17
	WBL	57	30	53
	WBT	305	10	19
	WBR	62	0	16
	NBL	54	6	43
	NBT	138	37	75
	NBR	76	20	55
	SBL	133	22	62
	SBT	234	76	131
SBR	36	0	0	
Liverpool Road & Kingston Road	EBL	221	123	88
	EBT	671	64	183
	EBR	98	137 [31]	160 [139]
	WBL	237	97	140
	WBT	372	55	70
	WBR	117	0	0
	NBL	186	32	43
	NBT	234	53	129
	NBR	52	15	39
	SBL	49	21	27
	SBT	325	105	89
SBR	61	18	16	

Intersection	Lane Movement	Available Storage (m)	95 th Percentile Queues (m) [50 th Percentile Queues (m)]	
			A.M. Peak Hour	P.M. Peak Hour
Kingston Road & Walnut Lane	EBL	107	13	14
	EBT	105	139 [96]	317 [280]
	WBL	159	43	20
	WBT	671	68	47
	NBL	63	75 [54]	97 [59]
	NBR	101	63	[109] 66
	SBL	19	8	13
Kingston Road & Dixie Road	EBL	184	44	68
	EBT	872	93	351
	WBL	129	54	27
	WBT	167	51	103
	NBL	13	28 [16]	65 [44]
	NBT	100	12	35
	SBL	16	56 [38]	59 [39]
Kingston Road & Fairport Road	EBL	238	43	55
	EBT	400	3	282
	WBT	872	94	44
	SBL	16	69 [49]	101 [73]
	SBR	256	21	17
Kingston Road & Highway 401 WB Ramps	EBT	245	58	329 [286]
	WBL	135	107	101
	WBT	400	90	6
	NBL	193	77	115
	NBR	52	12	71 [35]
Kingston Road & Delta Boulevard	EBL	39	41 [22]	38
	EBT	199	163	148
	WBL	121	45	48
	WBT	245	188	218
	NBL	107	57	99
	NBT	107	16	27
	SBL	146	21	36
SBT	146	21	26	

Intersection	Lane Movement	Available Storage (m)	95 th Percentile Queues (m) [50 th Percentile Queues (m)]	
			A.M. Peak Hour	P.M. Peak Hour
Kingston Road & Whites Road	EBL	153	43	89
	EBT	274	46	170
	EBR	123	67	93
	WBL	87	129 [80]	144 [101]
	WBT	199	91	83
	WBR	35	64 [47]	138 [37]
	NBL	72	50	83 [43]
	NBT	135	39	68
	NBR	35	63 [36]	189 [157]
	SBL	89	50	70
	SBT	361	81	62
Whites Road & Highway 401 EB Off-Ramp	SBR	47	20	17
	EBL	272	88	142
	EBR	225	19	131
	NBT	162	60	103
Street B & Kingston Road (RIRO Access)	SBT	293	37	67
	EBT	191	0	0
	WBT	129	0	0
Dixie Road & Shopping Plaza Centre	NBL	97	5	27
	WBL	193	3	10
	NBT	107	0	0
	SBT	44	5	11

The queueing analysis indicates that the queues very similar when compared to the 2033 future total queues. Overall, a majority of the movements that exceed their queues in the 2038 future total scenario are the same as the 2033 future total scenario.

As discussed, the 95th percentile queue lengths are typically reached only a few times during peak periods; therefore, the impact of the queues would be limited as long as the 50th percentile (average) queue lengths are within the available storage lengths.

7.4 2043 FUTURE TOTAL

The traffic operations were analyzed based on the resulting 2043 future total traffic forecasts shown in **Figure 7-4**. The resulting levels of service are outlined in **Table 7-10** and the details related to the intersection operations provided in **Appendix H-4**.

Given our recommendation for Walnut Lane & Street A (Intersection A) to be signalized based on the traffic operations under 2033 future total conditions (see **Section 7.2**), this intersection has been solely assessed as signalized under 2043 future total conditions.

The Synchro results for the 2043 future total scenario indicate that it operates similarly to the 2038 future total scenario with all intersections continuing to operate at an acceptable LOS, several critical movements and over-capacity movements in the a.m. and p.m. peak hour.

Table 7-10: 2043 Future Total Intersection Operations

Intersection	Weekday A.M. Peak Hour		Weekday P.M. Peak Hour	
	Overall LOS (Delay in Seconds)	Critical Movement (Volume/Capacity Ratio)	Overall LOS (Delay in Seconds)	Critical Movement (Volume/Capacity Ratio)
Signalized Intersections				
Liverpool Road & Walnut Lane / Highway 401 WB Off-Ramp	C (28)	EB-R (0.91) SB-T (0.91)	D (52)	EB-R (1.04) WB-T (1.05) SB-T (1.07)
Liverpool Road & Pickering Parkway	B (16)	--	C (26)	--
Liverpool Road & Kingston Road	D (44)	EB-L (0.99) EB-R (0.99) WB-L (1.02)	E (56)	EB-T (1.05) EB-R (0.96) WB-L (1.07)
Kingston Road & Walnut Lane	C (27)	--	D (37)	EB-T (0.96)
Kingston Road & Dixie Road	C (25)	WB-L (1.04)	D (38)	EB-L (0.90) EB-T (0.96)
Kingston Road & Fairport Road	B (18)	--	C (34)	EB-L (0.92) EB-T (0.88)
Kingston Road & Highway 401 WB Ramps	C (29)	--	D (52)	EB-TR (1.04) WB-L (1.03)
Kingston Road & Delta Boulevard	C (33)	--	D (37)	EB-L (0.93) EB-TR (0.91) WB-L (0.93) NB-L (0.93)
Kingston Road & Whites Road	C (32)	WB-L (0.94)	D (52)	EB-L (1.00) EB-T (0.99) WB-L (1.08) NB-R (0.97)
Whites Road & Highway 401 EB Off-Ramp	C (21)	--	C (28)	--
Intersection A (Street A & Walnut Lane)	C (28)	NB-L (0.92)	D (42)	WB-T (0.92) NB-L (0.96)

Intersection	Weekday A.M. Peak Hour		Weekday P.M. Peak Hour	
	Overall LOS (Delay in Seconds)	Critical Movement (Volume/Capacity Ratio)	Overall LOS (Delay in Seconds)	Critical Movement (Volume/Capacity Ratio)
Unsignalized Intersections				
Street B & Kingston Road (RIRO Site Access)	B (10)	NB-R (0.17)	C (23)	NB-R (0.58)
Dixie Road & Shopping Plaza Entrance	A (9)	WB-LR (0.11)	A (10)	WB-LR (0.30)
Intersection B (Walnut Lane & Street B)	B (14)	EB-LR (0.21)	C (22)	EB-LR (0.30)
Intersection C (Street B)	A (8)	SB-TL (0.17)	A (8)	SB-LT (0.16)
Intersection D (Street B & Shopping Plaza Entrance)	A (8)	NB-TL (0.16)	B (11)	EB-LR (0.49)
Intersection E (Street B & Street A)	A (8)	SB-TL (0.18)	B (12)	SB-TL (0.48)
Intersection F (Building Driveways & Street A)	B (12)	EB-LTR (0.45)	C (17)	WB-LTR (0.63)

- 1 For signalized intersections, the level of service is based on the overall delay of the intersection. Critical v/c ratios are only listed for through or shared through/turning movements with values over 0.85. Critical v/c ratios are only listed for exclusive movements with values of 0.90.
- 2 For unsignalized intersections, the level of service is based on the critical movement, which is the movement with the highest delay.

As mentioned previously, to resolve these capacity issues, a PHF sensitivity scenario will be analyzed. This includes four intersections: Liverpool Road & Walnut Lane / Highway 401 WB Ramp, Liverpool Road & Kingston Road, Kingston Road & Highway 401 WB Ramps, and Kingston Road & Whites Road.

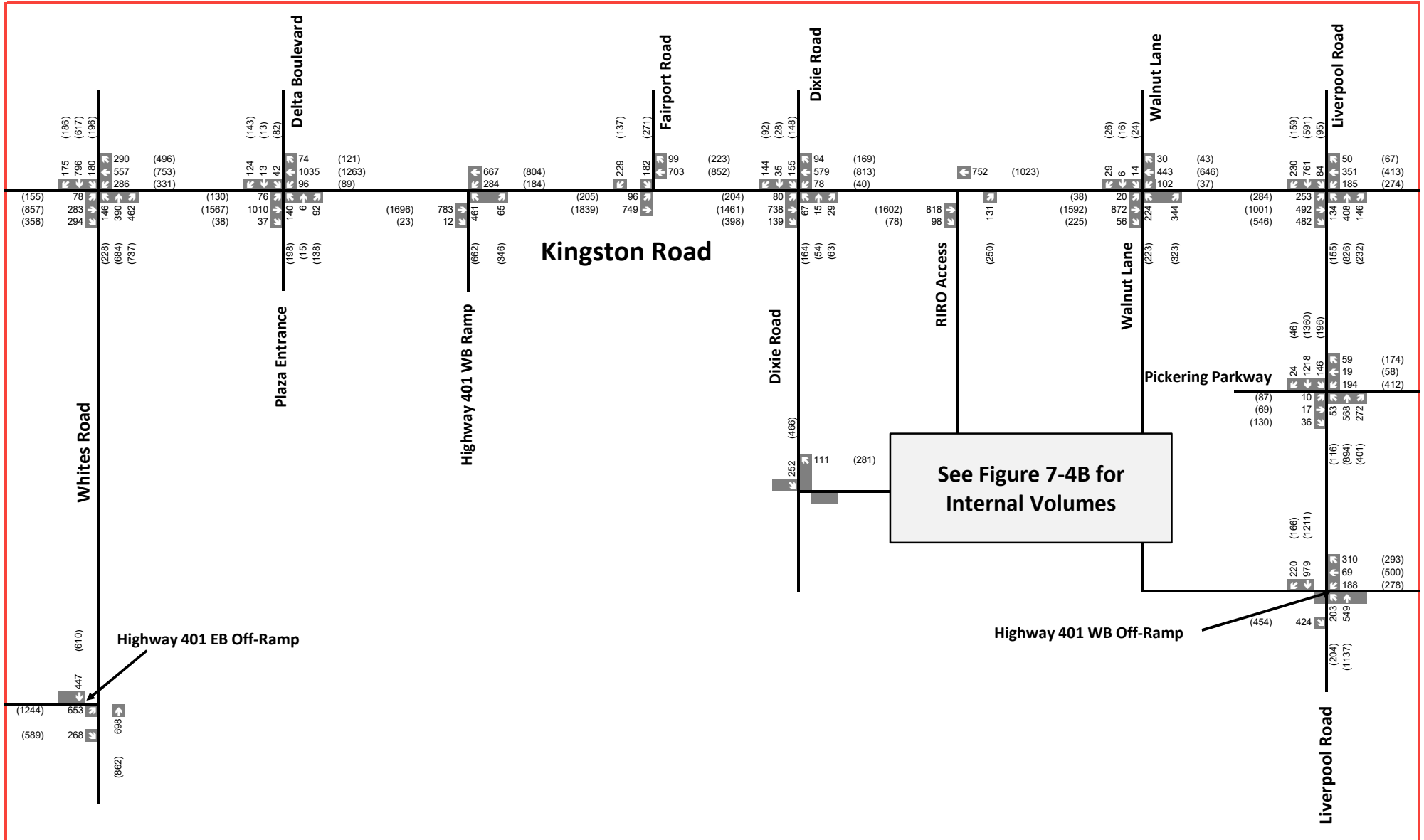
The sensitivity analysis results are shown in **Table 7-11**. The sensitivity results show that with a PHF of 1.00, although some critical movements remain, these intersections operate within capacity. Since all intersections can operate within capacity, the road network can accommodate the site trips generated by the proposed development under 2043 future total conditions with this adjustment.

Considering that 2043 future total is the worst-case scenario, it can be assumed that, if the road network can accommodate the proposed development under 2043 future total conditions, that it can accommodate all of the previous horizon years as well.

Table 7-11: 2043 Future Total Intersection Operations – PHF Sensitivity Analysis

Intersection	Weekday A.M. Peak Hour		Weekday P.M. Peak Hour	
	Overall LOS (Delay in Seconds)	Critical Movement (Volume/Capacity Ratio)	Overall LOS (Delay in Seconds)	Critical Movement (Volume/Capacity Ratio)
Signalized Intersections				
Liverpool Road & Walnut Lane / Highway 401 WB Off-Ramp	--	--	D (40)	EB-R (0.97) WB-T (0.97) SB-T (0.98)
Liverpool Road & Kingston Road	D (39)	EB-L (0.93) WB-L (0.94)	D (49)	EB-T (0.97) WB-L (0.98)
Kingston Road & Dixie Road	C (24)	WB-L (0.95)	--	--
Kingston Road & Highway 401 WB Ramps	--	--	D (40)	EB-T (0.94) WB-L (0.95)
Kingston Road & Whites Road	--	--	D (43)	EB-L (0.92) EB-T (0.91) WB-L (0.99)

- 1 For signalized intersections, the level of service is based on the overall delay of the intersection. Critical v/c ratios are only listed for through or shared through/turning movements with values over 0.85. Critical v/c ratios are only listed for exclusive movements with values of 0.90.
- 2 For unsignalized intersections, the level of service is based on the critical movement, which is the movement with the highest delay.

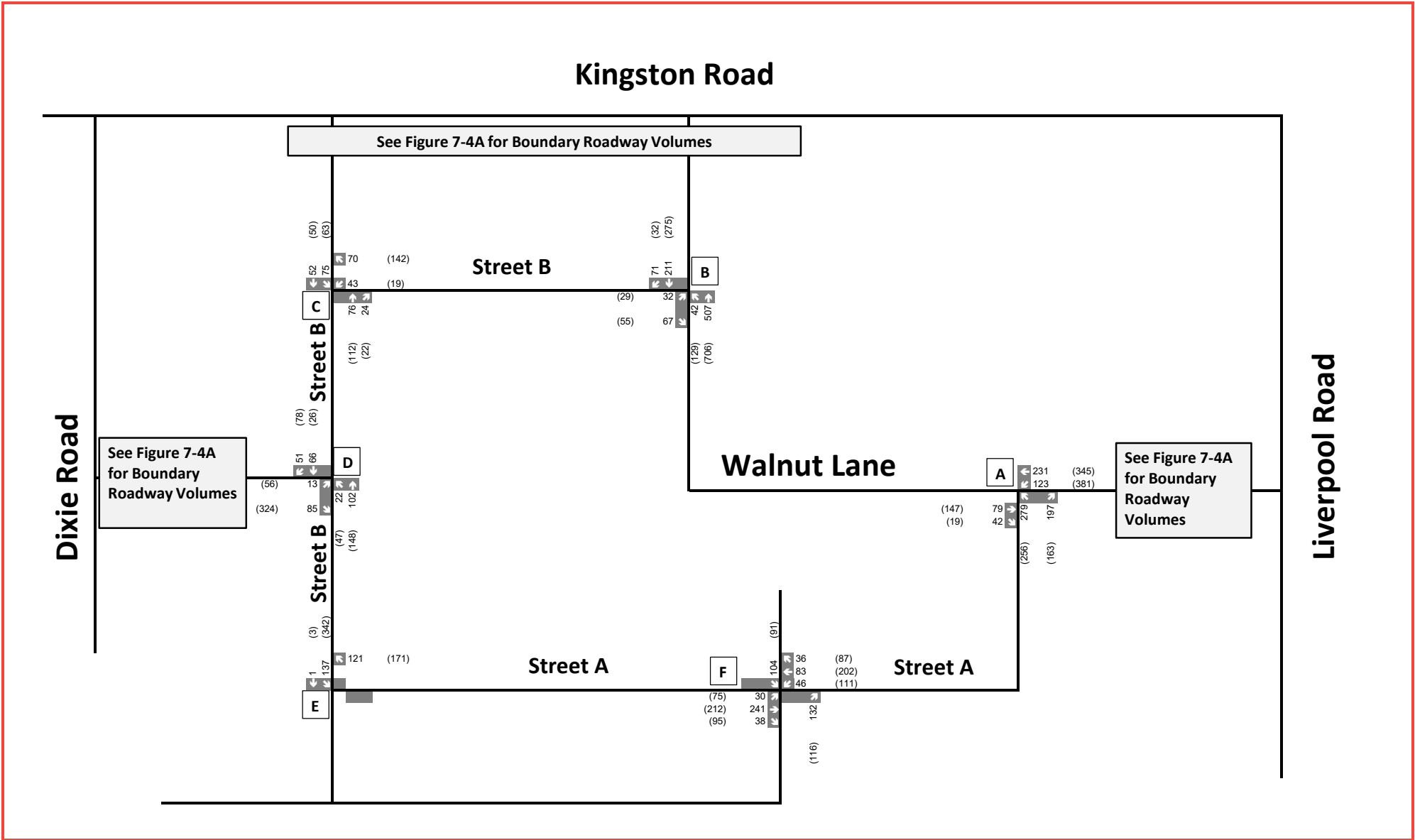


Legend

xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes

Figure 7-4A

2043 Future Total Traffic Volumes (Boundary Roadways)



Legend

xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes

Figure 7-4B

2043 Future Total Traffic Volumes (Internal Volumes)

A queueing analysis for the study intersections is presented in **Table 7-12**. The 50th percentile queue lengths are shown only for movements with 95th percentile queue lengths exceeding the available storage. Detailed queue results for all intersections and individual movements are provided in **Appendix H-4**.

Table 7-12: 2043 Future Total Intersection Queue Lengths

Intersection	Lane Movement	Available Storage (m)	95 th Percentile Queues (m) [50 th Percentile Queues (m)]	
			A.M. Peak Hour	P.M. Peak Hour
Liverpool Road & Walnut Lane / Highway 401 WB Off-Ramp	EBR	N/A	153	164
	WBL	203	44	72
	WBT	203	44	194
	WBR	125	24	66
	NBL	50	30	35
	NBT	348	17	56
	SBT	138	104	127
	SBR	38	9	22
Liverpool Road & Pickering Parkway	EBL	59	7	32
	EBT	59	8	17
	WBL	57	30	53
	WBT	305	10	19
	WBR	62	0	16
	NBL	54	6	43
	NBT	138	38	77
	NBR	76	20	56
	SBL	133	22	63
	SBT	234	76	135
SBR	36	0	0	
Liverpool Road & Kingston Road	EBL	221	123	88
	EBT	671	64	183
	EBR	98	137 [31]	160 [139]
	WBL	237	97	140
	WBT	372	55	70
	WBR	117	0	0
	NBL	186	32	43
	NBT	234	54	133
	NBR	52	15	40
	SBL	49	21	27
	SBT	325	107	91
SBR	61	19	16	

Intersection	Lane Movement	Available Storage (m)	95 th Percentile Queues (m) [50 th Percentile Queues (m)]	
			A.M. Peak Hour	P.M. Peak Hour
Kingston Road & Walnut Lane	EBL	107	13	14
	EBT	105	139 [96]	317 [280]
	WBL	159	42	20
	WBT	671	68	47
	NBL	63	75 [54]	97 [59]
	NBR	101	63	[109] 66
	SBL	19	8	13
Kingston Road & Dixie Road	EBL	184	44	68
	EBT	872	93	351
	WBL	129	54	27
	WBT	167	51	103
	NBL	13	28 [16]	65 [44]
	NBT	100	12	35
	SBL	16	56 [38]	59 [39]
Kingston Road & Fairport Road	EBL	238	43	55
	EBT	400	3	282
	WBT	872	94	44
	SBL	16	69 [49]	101 [73]
	SBR	256	21	17
Kingston Road & Highway 401 WB Ramps	EBT	245	58	329 [286]
	WBL	135	107	101
	WBT	400	90	6
	NBL	193	77	115
	NBR	52	12	71
Kingston Road & Delta Boulevard	EBL	39	41 [22]	38
	EBT	199	163	148
	WBL	121	45	48
	WBT	245	188	218
	NBL	107	57	99
	NBT	107	16	27
	SBL	146	21	36
SBT	146	21	26	

Intersection	Lane Movement	Available Storage (m)	95 th Percentile Queues (m) [50 th Percentile Queues (m)]	
			A.M. Peak Hour	P.M. Peak Hour
Kingston Road & Whites Road	EBL	153	43	89
	EBT	274	46	170
	EBR	123	67	93
	WBL	87	129 [80]	144 [101]
	WBT	199	91	83
	WBR	35	64	138 [37]
	NBL	72	50	83 [43]
	NBT	135	39	68
	NBR	35	63 [36]	189 [157]
	SBL	89	50	70
	SBT	361	81	62
Whites Road & Highway 401 EB Off-Ramp	SBR	47	20	17
	EBL	272	88	142
	EBR	225	19	131
	NBT	162	60	103
Street B & Kingston Road	SBT	293	37	67
	EBT	191	0	0
	WBT	129	0	0
Dixie Road & Shopping Plaza Entrance	NBL	97	5	27
	WBL	193	3	10
	NBT	107	0	0
	SBT	44	5	11

The 2043 future total queueing analysis indicates that the queues very similar to the 2038 future total queues. Overall, the same movements exceed their queues in the 2043 future total scenario as the 2038 future total scenario, with no new queueing issues.

As discussed, the 95th percentile queue lengths are typically reached only a few times during peak periods; therefore, the impact of the queues would be limited as long as the 50th percentile (average) queue lengths are within the available storage lengths.

8 PARKING ASSESSMENT

8.1 VEHICLE PARKING

The development is proposing to supply a total of 4,192 vehicle parking spaces.

Per the Pickering City Centre Zoning By-Law 7553/17², the following parking supply rates are required for the site:

- **Apartment Residents:** minimum of 0.80 parking spaces per unit;
- **Visitors:** minimum of 0.15 parking spaces per unit; and
- **Retail:** minimum of 3.5 spaces per 100 sq.m. GFA.

It is expected that the retail uses will largely service the residents; therefore, they are expected to generate lower parking demands compared to the by-law requirements. Regardless, as a conservative approach, it was assumed that the parking demand will be equal to the by-law requirements.

The By-law also provides a shared parking formula that can be used to calculate the required parking for multi-use developments such as this site. The relevant weekday shared parking formulas per Table 2 of the by-law (reproduced in **Table 8-1**) were used to calculate the site's parking requirement, with resident demand being assumed to be 100% during all periods of the day. As no formulas were provided for the daycare use, it was conservatively assumed to also be 100% during all periods of the day.

Table 8-1: Pickering City Centre Zoning By-law 7553/17 Weekday Shared Parking Formula

Type of Use	Percentage of Peak Period (Weekday)			
	Morning	Noon	Afternoon	Evening
Food Store/Personal Service Shop/Retail Store	65%	90%	90%	90%
Residential - Visitors	20%	20%	60%	100%

The parking supply requirements are provided in **Table 8-2**. As the details necessary to calculate the daycare parking requirement (number of employees and classrooms) are not currently known, the minimum retail parking rate has also been applied to the daycare component for the purpose of this preliminary analysis.

² While the site's location is just west of the area for which by-law 7553/17 applies, it is our opinion that the parking standards from this by-law should be applied to the site given its comparable land uses, density, and proximity to higher-order transit.

Table 8-2: Vehicle Parking Calculation – Pickering City Centre Zoning By-Law

Land Use	Density	Min. Parking Requirement (By-law 7553-17)	Peak Parking Demand	Shared Parking Formula Adjustment (City of Pickering Zoning By-law 7553-17)				Adjusted Parking Demand			
				Morning	Noon	Afternoon	Evening	Morning	Noon	Afternoon	Evening
Resident	5,264 units	0.80 spaces/unit	4,212	100%	100%	100%	100%	4,212	4,212	4,212	4,212
Visitor	5,264 units	0.15 spaces/unit	790	20%	20%	60%	100%	158	158	474	790
Retail	6,585 m ²	3.5 spaces/100 m ²	231	65%	90%	90%	90%	151	208	208	208
Total:								4,578	4,578	4,894	5,210
Total Non-adjusted Parking Requirement:			5,233	Total Adjusted Parking Requirement:							5,210

Table 8-3: Vehicle Parking Calculation – Proposed Parking Rates

Land Use	Density	Min. Parking Requirement (By-law 7553-17)	Peak Parking Demand	Shared Parking Formula Adjustment (City of Pickering Zoning By-law 7553-17)				Adjusted Parking Demand			
				Morning	Noon	Afternoon	Evening	Morning	Noon	Afternoon	Evening
Resident	5,264 units	0.60 spaces/unit	3,159	100%	100%	100%	100%	3,159	3,159	3,159	3,159
Visitor	5,264 units	0.15 spaces/unit	795	20%	20%	60%	100%	159	159	477	795
Retail	6,585 m ²	3.3 spaces/100 m ²	218	65%	90%	90%	90%	142	197	197	197
Total:								3,460	3,515	3,833	4,151
Total Non-adjusted Parking Requirement:			4,172	Total Adjusted Parking Requirement:							4,151

As shown above, the unadjusted parking requirement is 5,233 spaces and the adjusted parking requirement is 5,210 spaces.

However, for the nearby development at 1786-1790 Liverpool Road, the City approved site-specific zoning by-law 8023/23 which permitted a minimum apartment resident parking supply of 0.55 spaces per unit and a minimum non-residential parking supply of 3.3 spaces per 100 m² GFA.

Based on this nearby approval, it is proposed that the development provide a minimum apartment resident parking supply of 0.60 spaces per unit (higher than the nearby approved development) and a minimum supply of 3.3 spaces per 100 m² GFA for each of the non-residential uses (equivalent to the nearby approved development). With these proposed rates applied to the subject development, as shown in **Table 8-3**, the unadjusted parking requirement becomes 4,172 spaces and the adjusted parking requirement would become 4,151 spaces, both of which fall below the proposed parking supply of 4,192 spaces. Therefore, it is our opinion that a sufficient parking supply has been provided for the site.

8.2 ACCESSIBLE PARKING

Based on the City's Traffic and Parking By-Law 6604/05, accessible parking spaces should be calculated based on the visitor and non-residential parking supply. Assuming that a total of 1,010 visitor and non-residential parking spaces (residential visitor, retail, and daycare spaces) are provided, the by-law requires 11 Type A and 11 Type B accessible spaces.

The requirement of 11 Type A and 11 Type B accessible spaces will be met in a future site plan approval application submission.

8.3 BICYCLE PARKING

As per the City Centre Zoning By-law 7553/17, **Table 8-4** summarizes the bicycle parking requirements for the site. In total, 2,639 bicycle parking spaces are required for the development.

Table 8-4: Bicycle Parking Requirements

Land Use	Density	Minimum Bicycle Parking Rate	Bicycle Parking Requirement
Residential	5,264 units	0.5 spaces/unit	2,632
Retail	6,585 m ²	greater of 2 or 1.0 space/1,000 m ²	7
Total:			2,639

The requirement of 2,639 bicycle parking spaces will be met in a future site plan approval application submission.

9 TRANSPORTATION DEMAND MANAGEMENT (TDM)

Transportation Demand Management (TDM) is a general concept under which various transportation strategies are considered to increase the efficiency of the transportation system through the management of travel demands across all available modes of transportation. It treats mobility as a means to an end itself and emphasizes the movement of people and goods rather than the movement of vehicles. TDM initiatives generally discourage single-occupant vehicle travel and encourage more effective use of various alternative modes and strategies such as walking, cycling, public transit, and ridesharing/carpooling in order to reduce traffic congestion in the road network.

An effective TDM program is successful at reducing peak hour roadway demand. This section of the report details the wider measures already implemented and/or planned by the Region of Durham and/or the City of Pickering, and the specific TDM initiatives that are proposed for the subject development.

There are several planned transit and multimodal improvements that will play a key role in the mobility in the study area. Multi modal transportation facilities planned for the study area include the future Durham-Scarborough BRT and several transit service options, cycle network improvements, and pedestrian amenities, as previously discussed in detail in **Sections 3.4 and 3.5**. Furthermore, the site is located approximately 1 km away from the Pickering GO station which provides residents convenient transit options for long-distance travel/commute trips.

This section outlines some of the TDM components that could be incorporated into the proposed development to facilitate the reduction of trips to and from the study area by single-occupant vehicles. In the context of a new subdivision development, TDM initiatives provide essential elements to a progressive transportation plan that promotes and maintains an efficient and functional transportation system in and around the study area.

9.1 DEVELOPMENT OF SITE SPECIFIC TDM STRATEGY

9.1.1 PRESTO TRANSIT CARDS

Durham Region Transit (DRT) currently uses the Presto card as the electronic fare option. The Presto card is also accepted on GO Transit and all other transit agencies in the Greater Toronto Area. The Presto card is an alternative to buying bus tickets or having the correct change to ride the DRT.

To encourage transit use, the occupants of the development should be provided a Presto Card with pre-loaded funds to incentivize new residents to try and become familiar with the local transit network.

It is recommended that the developer provide all initial occupants with a Presto transit card loaded with a minimum of \$50 (one card per unit).

9.1.2 BICYCLE PARKING

With the planned cycle tracks on Kingston Road and cycling facilities on Liverpool Road, providing on-site cycling amenities such as bicycle parking will encourage residents to cycle. As discussed in **Section 8.3**, the City of Pickering's City Centre Zoning By-Law 7553/17 requires 2,639 bicycle parking spaces at the subject site.

The proposed development will provide at least 2,639 bicycle parking spaces in order to meet the by-law requirements. Additionally, it is recommended that bicycle repair stations be provided in the bicycle parking areas (one per building) in order to allow residents to do maintenance and minor repairs on their bicycles.

9.1.3 UNBUNDLING OF PARKING

All resident parking spaces will be provided as ‘unbundled parking’, and unit purchasers will have the option to decide whether to purchase a parking space or not. Based on the recent trend observed at several sites in the GTA, it appears this strategy has become a very effective in reducing the parking demand requirements and consequently a number of auto trips generated by the site.

The practice of unbundled parking is an important and standard TDM strategy for medium and high-density residential developments. This TDM measure allows potential residents the option to purchase their unit separately from the parking space at a reduced cost. The reduced cost should reflect the realistic and actual cost of the parking space to provide reasonable incentives and encourage purchasers to consider an unbundled parking option. This, in turn, promotes residents to explore alternative transportation options aside from single occupancy driving. Furthermore, it will also allow residents of larger units to purchase more than one space, if desired. As a result, the likelihood of oversupplying parking spaces for the development is reduced.

9.1.4 ON-SITE MOBILITY ALTERNATIVES INFORMATION

To help facilitate non-auto trips, it is important to provide transportation information to new residents so that they can view and understand their travel options before establishing new travel habits. This will increase the chance that new residents incorporate these alternatives in their travel patterns after moving into the development.

Information regarding transit availability and schedules, available cycling facilities and connections, as well as other non-auto travel options would be made available on-site in a convenient and logical location, and/or be included as part of the welcome package to new residents of the development to inform them of the alternative modes of transportation available to them.

The developer will provide information about transportation options to new residents in an information package that will include items such as:

- Existing transit services, including a Durham Region Transit system map, a GO system map, route navigators for each area transit route (including GO bus and rail), and seven-day schedules for nearby stops for each of these routes. Information will

be provided by the Region and the Municipality and will also include relevant fare and incentive-based information such as the preloaded Presto card provided by the developer.

- A map of the surrounding area with sidewalks and bicycle facilities, a copy of the Durham Region Cycle Tours Map, cycling and pedestrian safety tips, and information on active transportation events (such as Bike to Work Day and CAN-BIKE cycling lessons). This information would also be provided by the Region and Municipality.
- Carpooling information, including information on Smart Commute and how one can join through their employer.

The Region requires the developer to develop and distribute to all initial occupants an information package including transit maps, schedules, fares, bicycle route maps and any other relevant local transit information. Costs associated with the information package will be the responsibility of the developer.

9.1.5 TRANSPORTATION INTERACTIVE DISPLAY

In the past, interactive displays were recommended to be provided within the lobby or elevators of residential and commercial buildings to provide residents and visitors with an array of information including transportation. These could include the expected arrival time for the next bus on each route by using real-time transit data that can be obtained from the Region.

However, given the widespread adoption of smartphones, it is expected that many residents will use transit applications on their phones to obtain live information about bus transit arrival times. Therefore, an interactive display is not recommended as a required TDM measure. However, should the condominium corporation wish to include an interactive display for their use, they can program transportation information on the unit. As such, where possible the developer should include the appropriate electronic connections within the common area (lobby or elevator) where such a display can be installed by the Condominium Corporation.

9.1.6 RIDESHARE SERVICES, HOME-DELIVERY SERVICES, REMOTE WORKING

In recent years, more and more people are shifting to the use of private transportation companies (PTC) such as Uber and Lyft to reach their destinations. Moreover, during the Covid-19 pandemic, there has been a significant increase in reliance on home-delivery services, including food and grocery delivery services. It is anticipated that this type of services will continue to be widely used even after the pandemic. This also apply to remote work, which will likely continue to be a viable option for many people. These types of technological trends and the continued high cost of car ownership will continue to reduce the demand for parking spaces.

9.2 SITE TDM SUMMARY

It is recommended that the owner/developer complete the following as part of a site TDM strategy:

A. Presto Card

- It is recommended that the developer provide all initial occupants with a Presto transit card loaded with a minimum of \$50 (1 card per unit).

B. Bicycle Parking & Facilities

- The development will provide at least 2,639 bicycle parking spaces which meets the City's by-law requirement.
- It is recommended that bicycle repair stations be provided in the bicycle parking areas (one per building) in order to allow residents to do maintenance and minor repairs on their bicycles.

C. Unbundling of Parking Spaces

- Unbundling of residential parking spaces from unit sales should be implemented such that only residents requiring parking spaces purchase them, thus reducing demand.

D. Information Package

- Provide a package of transportation information to new residents at the time of purchase.
- Costs associated with the information package will be the responsibility of the developer.

The estimated costs of the TDM measures are summarized in **Table 9-1**.

Table 9-1 TDM Cost Summary for Proposed Development

Measure	Quantity	Unit Cost	Total Cost	Comments/Assumptions
Presto Card	5,264	\$50	\$263,200	One card per unit at a minimum of \$50 per card
Bicycle parking spaces	2,639	--	--	Cost is included in construction cost.
Bicycle Repair Station	5 (one per building)	\$2,000	\$10,000	\$2,000 per station, as quoted on Greenspoke website ³ for their "Freestanding Bike Repair Post"
Unbundling of Parking Spaces	N/A	--	--	No cost associated with this measure
Information Package	5,264	\$10	\$52,640	Package of transportation information provided to new residents at the time of purchase
TOTAL			\$325,840	

³ <https://gogreenspoke.com/products/repair-post/>

10 RESPONSES TO COMMENTS

Transportation comments received in response to the pre-submission application have been reproduced in blue below, with our responses provided below each comment.

10.1 CITY OF PICKERING, CITY DEVELOPMENT (JULY 31, 2024)

Comment 22: All public and private streets (proposed through Phase 1 and the future build-out within the larger landholdings) are to be designed in accordance with the Intensification Plan and Draft Urban Design Guidelines. The proposed public street layout varies from what is shown in the Intensification Plan. The rationale for the proposed public road stems from the fact that the Intensification Plan seeks the provision of a new and improved road network for multiple modes of transportation, providing access to multiple development blocks, park space, and serving as right of ways (conduits) for underground municipal infrastructure, integrated with secondary network of private streets and laneways. The Intensification Plan illustrates the future east-west public street to the north, with the proposed public park to the south of the proposed right-of-way (ROW). The applicant has shown the proposed public ROW as part of Phase 3, which staff would prefer connections from Walnut Lane to be introduced as part of Phase 1, in keeping with the Intensification Plan.

Response: Since the pre-submission, revisions were made to the proposed internal road network, please refer to the revised plans (including the phasing plans for each phase). While the full extent of the public roadways within the site are intended to be built as part of Phase 4, there will be road connections from all of the buildings to both Walnut Lane and Dixie Road in all phases using a combination of both new public and private roadways and existing drive aisles within the site and the neighbouring property to the west.

For example, as part of Phase 1, the following road connections will be available for the new building:

- Direct right-in/right-out access to Kingston Road;
- Access to Walnut Lane through a portion of Public Street B; and
- Access to Dixie Road through the existing drive aisles.

Comment 23: Phase 3 of the proposed Phasing Plan illustrates a 20 metre east-west public ROW, which is proposed to connect south from Walnut Lane to Dixie Road. Although staff acknowledge for conceptual purposes this illustrates a street connection as shown within the Intensification Plan, the proposal cannot identify development and infrastructure outside of its development limits. Please identify that the proposed ROW proposed outside of the property owner’s limits is for conceptual purposes to illustrate a potential future road connection.

Further, consideration should be given on the termination of the proposed east-west public ROW to the western property limits, should the lands to the west not

develop at a concurrent timeline of the subject lands. The termination of the public ROW should be appropriately designed to accommodate turning movements of emergency and waste removal vehicles, and consideration should be provided for both interim and future connections to the adjacent lands. Staff have had communication with the adjacent landowner lands the west, and concerns were expressed in relation to the proposed road pattern, and how this may impact existing cross-use access easements, and access between the two properties. The applicant is requested to engage in discussion with the adjacent landowner to the west with regards to the concerns.

Response: The development plans has been revised to show the existing driveway connections to Dixie Road (covered under existing access easements), which are intended to be maintained until such time as new connections are constructed as part of the future redevelopment of the neighbouring property to the west.

Comment 24: The DUDG within Figure 85 identifies a new primary street (public) connecting Walnut Lane to the west, two secondary streets which connect Walnut Lane to the south to a service street, and to the east. Section 4.5.1 of the DUDG identifies that Primary Streets shall have a distinctive urban character and should be designed as complete streets with consideration given to the needs of pedestrians, cyclists, transit users and drivers. Travel lanes should be designed with a minimum width of 3.5 metres and should be provided in both directions of travel, and should be designed to prioritize public transit facilities, such as stops, shelters and dedicated lanes. The applicant is referred to the cross section as illustrated in Figure 91 of the DUDG. Secondary Streets are shown as medium or low-capacity roads that act as local connectors, taking on more neighbourhood-oriented scale and character while creating links between local destinations and surrounding neighbourhood areas, the applicant is directed to Section 4.5.2 of the DUDG for further policy direction.

Response: In the revised plans, Public Street A has been designed with a 20-metre right-of-way in order to accommodate the intended functions of the new primary street per the DUDG.

Comment 25: Accessible paths of travel shall be provided through the site including pedestrian connections to street networks, public transit, POPS and other outdoor amenity spaces.

Response: Sidewalks are provided along the proposed public and private streets in order to fulfill this function.

Comment 26: Please indicate which proposed ROWs are to be subject to easements in favour of lands to the west. Staff will require these easements be secured as part of the conditions of approval. In accordance with Section 2.4 Grading and Access of the DUDG, the guidelines identify that access off Kingston Road shall be minimized. Accesses should be developed with a coordinated approach across landowners to ensure that clear accessways are maintained, no properties are landlocked, and all lots have viable connections back to public roads.

Response: The development plans has been revised to show the existing driveway connections to Dixie Road (covered under existing access easements), which are intended to be maintained until such time as new connections are constructed as part of the future redevelopment of the neighbouring property to the west.

Comment 27: Staff are concerned that the parking rates proposed for residential units and visitors may not be sufficient to support the development. The submitted Traffic Impact Study (TIS) provides 0.6 spaces per residential unit and 0.5 spaces per visitor parking spaces. The proposed parking rates are considerably less than the City Centre Zoning By-law 7553/17, which provides a residential parking rate of 0.8 spaces per unit.

The TIS justifies the reduced rate by identifying that City File A 07/22 located at 1786-1790 Liverpool Road, consisting of a 48-storey building with 594 residential units and 190 square metres of commercial space, provides a parking supply of 0.55 spaces per unit and a non-residential parking supply of 3.3 spaces per 100 square metres of GFA. However, staff are of the opinion that these parking ratios may not be appropriate for the subject development proposal due to the difference in scale of the developments, and given the subject lands are located outside of the City Centre and is not within convenient walking distance to the GO Station.

Response: Generally, the per-unit demand for parking decreases as the density of a site increases, especially when complementary uses (such as commercial uses) are included in the site. As such, this development's substantially larger scale (with 5,264 units and 6,585 m² of commercial space) would, if anything, result in a lower parking demand rate than that of the 1786-1790 Liverpool Road development.

While this site is not as close to the Pickering GO Station as 1786-1790 Liverpool Road, it is still within a walkable distance of approximately 1 km (about 13 minutes of walking) from the station. Additionally, this site is closer to the Kingston Road corridor, which will soon have a BRT line and cycle tracks running along it.

Therefore, WSP maintains the opinion that this proposed development is likely to have a similar or lower parking demand than the approved nearby development at 1786-1790 Liverpool Road.

Comment 28: Please submit a Parking Justification Study with the next submission to support the proposed parking rates and shared parking formula. Please submit a Terms of Reference to be reviewed and approved by the City.

Response: Please refer to the response to comment 27 above and to Section 8.1 of this report.

Comment 29: Staff note that there does not appear to be any surface/at-grade parking to support the proposed daycare facility, commercial, and retail uses, as well as the proposed park space. Staff advise that an appropriate amount of surface parking for these uses should be incorporated, particularly from an accessibility perspective. Section 2.5.1 of the DUDG identifies to achieve a vibrant district and to minimize the need for parking lots that have greater impacts on the pedestrian realm, on-street parking is encouraged on public and private roads in

strategic locations. These includes destinations such as community facilities, parks and grade-retailed retail uses.

Response: The development is no longer proposed to include a daycare facility. It is anticipated that some lay-by parking will be provided along the proposed streets to serve the retail uses and park spaces. The exact quantity and locations of these spaces are to be determined at a later stage.

10.2 CITY OF PICKERING, ENGINEERING SERVICES (AUGUST 9, 2024)

Transportation & Traffic Comments

Comment 2: Show the roads to be constructed for each phase and provide the lane configurations for each phase of development.

Response: Please refer to the phasing plans for the roads to be constructed in each phase. All internal intersections are to be designed with a single lane in each approach.

Comment 3: The layout of the internal existing roads for Phase 1 works appears to be different than the existing site road layout conditions. Review and confirm the layout of the internal street or proposed layout. Provide an explanation as how the access near the bend of Phase 1 Park to the site parking will be provided. Also, provide suitable signage as required at the bend. Provide existing pavement /proposed widths for review.

Response: The phasing plan for Phase 1 has been revised to clearly indicate the new road construction and to better align with existing accesses.

Comment 4: Correct the spelling of Dunbarton Road as it is incorrectly spelled as Dunbar Road in the first paragraph on page 17.

Response: Noted, this has been corrected in this report.

Comment 5: As per the Walnut Lane Extension Environmental Assessment recommendations, the intersection of Walnut Lane and Kingston Road will not allow northbound through movement. Use the latest detailed design for Walnut Lane, and revise all the traffic volume assignments, traffic analysis, and the overall report accordingly on Section 3.2 and Figure 3-6.

Response: The traffic volume forecasting in this report has been revised to not include any volumes on the northbound through movement at Kingston Road & Walnut Lane.

Comment 6: The detailed design for Walnut Lane shows two northbound through lanes and one dedicated northbound left-turn lane at the intersection of Liverpool Road and Highway 401 WB Off-Ramp / Walnut Lane. Use the latest detailed design for the Walnut Lane extension and revise the traffic analysis and report accordingly on Section 3.3.

Response: For the 2028 horizon, the traffic analysis has been revised to model the intersection of Liverpool Road & Walnut Lane / Highway 401 WB Off-Ramp in accordance with the detailed design for Walnut Lane (with two northbound through

lanes and one northbound left-turn lane). For the 2033 and later horizons, it is assumed that a third northbound through lane will be added to the intersection as part of the Region's widening of Liverpool Road, as detailed in Section 3.3 of this report.

Comment 7: Include a review of the City's 2021 Integrated Transportation Master Plan for the planned active transportation network improvements in Section 3.5.

Response: Section 3.5 of this report has been revised to include the nearby active transportation network improvements proposed in the City's Integrated Transportation Master Plan.

Comment 8: The internal roadway network at Intersection B shows that there will not be any eastbound left-turn traffic. Confirm and provide an explanation why there is no eastbound left turning volumes assigned and update Figure 8-1 according.

Response: The internal site traffic assignment has been revised to include volumes for the eastbound left-turn movement at intersection B.

Comment 9: On Figure 8-2, it shows that there will be westbound left and right turns allowed at the internal road network intersection labelled C. However, Figure 8-1 has not estimated any traffic volume for the westbound left-turn movement. Please confirm and provide an explanation for why this is.

Response: The internal site traffic assignment has been revised to include volumes for the westbound left-turn movement at intersection C.

Comment 10: In Section 8.2, confirm if a traffic control warrant was performed for the intersection of Dixie Road and the proposed east-west 20m ROW wide roadway analyzed. Provide an explanation for why this intersection was not part of the traffic analysis and confirm if it should be included in the traffic analysis.

Response: The development plans has been revised to show the existing driveway connections to Dixie Road (covered under existing access easements), which are intended to be maintained until such time as new connections are constructed as part of the future redevelopment of the neighbouring property to the west. The intersection of the existing driveway with Dixie Road has been added to the traffic analysis; no traffic control changes have been considered for this intersection given its interim state and its close proximity to Kingston Road.

Comment 11: Provide a pavement marking and signage plan (including traffic controls) and ensure the curb radius and cross-sections dimensions such as pavement, sidewalk, MUP, and public right-of-way widths are included.

Response: A pavement marking and signage plan is to be prepared at a later stage.

Comment 12: Ensure the proposed sidewalks are designed as per the cross-section requirements from the City's standard design drawings.

Response: Noted.

Comment 13: Ensure the site plan and all associated design drawings reflect the latest detailed design for Walnut Lane.

Response: Noted.

Comment 14: Show the existing and future right-in/right-out access as per the traffic impact study Figure 3-3 on all site plan and associated design drawings.

Response: The site plan has been revised to note that the private driveway access off of Kingston Road is to remain right-in/right-out.

Comment 15: Confirm if pedestrian crossing facilities are needed as per the requirements in the OTM Book 15.

Response: Given the recommended provision of all-way stop control at almost all of the internal intersections (warranted per OTM Book 5 as indicated in Section 6.2 of this report) and the short distances between the intersections, mid-block pedestrian crossings are not recommended at any location within the development.

Comment 16: Clearly label on the site plans which roads are public and which roads are private and their limits. Also confirm the Dixie Road right-of-way north and south of Kingston Road as it seems narrow at this location.

Response: It is proposed that the entirety of Street A and Street B (as indicated on the plan) be public roads, with all other internal roadways being private. No changes to Dixie Road are proposed as part of this development.

Comment 17: Provide a parking plan for any proposed on-street parking.

Response: An on-street parking plan is to be prepared at a later stage.

10.3 REGION OF DURHAM (OCTOBER 17, 2024)

Comment: The project, consisting of 14 towers across 6 buildings (3 residential and 3 mixed-use), will be executed in 4 phases. The TIS report should detail the anticipated start dates and trip generation estimates for each phase, incorporating these into background traffic scenarios.

Response: Given the large scale of this development and the existing retail uses, it is not possible to provide specific dates for each phase. Therefore, it has been conservatively assumed that the first phase will be constructed by the 2028 horizon and that all subsequent phases will be constructed by the 2033 horizon. It is acknowledged that this study will need to be updated as part of each phase's SPA application, at which point these assumptions will be revised.

Comment: The Study is to include a site visit to observe existing infrastructure and operations for all travel modes. Key observations are to be included in the report, including any observed operational or safety issues. Observations of existing traffic operations (ex., queue lengths) should be used to validate the existing conditions Synchro analysis results.

Response: A site visit was undertaken in September 2023 in order to observe the existing infrastructure throughout the study area. Additionally, weekday peak hour video recordings from the turning movement counts at the intersections of Liverpool Road & Kingston Road, Kingston Road & Walnut Lane, and Kingston Road & Dixie Road have

been reviewed to identify any operational and safety issues. The observations from the site visit and video recordings have been incorporated into this report; no safety issues have been identified.

Comment: There is no discussion on whether the proposed access points will be operational from the outset or introduced in phases. Please provide these details.

Response: Please refer to the phasing plans for full details on when access points will be constructed.

Comment: Subsequent phases will require updated studies to reassess assumptions, findings, and design improvements. The TIS must specifically note the need for these follow-up studies.

Response: A note to this effect has been added to the conclusions of this report.

Comment: Section 3.3 proposes a left/U-turn lane at Liverpool Road and Kingston Road. The Region notes that left/U-turn movements will be permitted with the implementation of the BRT.

Response: Noted.

Comment: Section 4 indicates that queue lengths will exceed capacity during peak hours for 2028 and 2033 scenarios. Provide actionable recommendations to address these issues to prevent queue spill-back in all future scenarios.

Response: Proposed traffic signal timings have been optimized to improve traffic operations, including queueing. It should be noted that the indicated future queueing results are conservative as the future scenarios assume a peak hour factor (PHF) of 0.92. In reality, as traffic conditions become more congested, PHFs tend to approach 1.00 as traffic becomes more evenly spread out. Therefore, the actual queues under future conditions are expected to be shorter than indicated.

Comment: The Study discusses queue lengths using both the 50th and 95th percentiles, noting that while 95th percentile queue lengths exceed available storage at some locations, the 50th percentile does not, suggesting that the impact is limited. However, relying on the 50th percentile to determine storage adequacy is problematic, particularly during peak times. During peak periods, when capacity and safety issues are most critical due to high volumes, any overflow that exceeds storage can cause operational disruptions and safety hazards. Therefore, it is recommended that queue length requirements for storage be based on the 95th percentile to ensure that the road network can accommodate traffic volumes during these peak periods without causing spill-back that could block through lanes.

Response: While 95th percentile queue lengths are an appropriate standard for designing storage lanes on new roadways, applying this approach to existing roads in urban areas is not practical as it is generally not feasible to make geometric changes to such roads. Additionally, in urban conditions such as in the area of this site, queue spillbacks do not represent a safety concern as drivers expect to encounter queued vehicles in through lanes, especially in proximity to signalized intersections. Finally, a spillback of a left-turn queue onto a through lane typically does not cause operational

disruptions and delays to through vehicles given that queue spillbacks occur at the end of the green phase and in the next cycle's advanced left-turn phases, allowing for the spillback to be cleared before the start of the green phases for through movements.

Comment: There is an inconsistency between the Study's recommendation to prohibit the northbound through movement at Walnut Lane / Kingston Road and the traffic analysis, which does not enforce this in the model. Section 7 and associated figures incorrectly show through movements at Walnut Lane and Kingston Road. This should be corrected to restrict northbound through traffic from Walnut Lane.

Response: The traffic analysis in this report has been revised to remove the northbound through movement at Kingston Road & Walnut Lane.

Comment: Section 8.2 - The proposed spacing of the side street connection to Dixie Road south leg is acceptable however, Dixie Road's south leg should be evaluated for realignment to minimize or remove the negative offset where feasible.

Response: The development plans has been revised to show the existing driveway connections to Dixie Road (covered under existing access easements), which are intended to be maintained until such time as new connections are constructed as part of the future redevelopment of the neighbouring property to the west. Any potential changes to the alignment of Dixie Road should be considered as part of the redevelopment of the neighbouring property.

Comment: Section 9 should outline the developer's commitments to implementing proposed TDM measures.

Response: Further information regarding the developer's commitments to implementing the proposed TDM measures, including the estimated costs of the TDM measures, is included in Section 9 of this report.

Comment: It is highly recommended that the TIS recognize the existing school north of Walnut Lane, which could draw additional traffic from the development, especially during peak school hours. Given the high-density character of the development, there may be a need for new educational facilities in the area. The TIS should discuss this in the report.

Response: The generated quantity of residential site trips, as determined based on surveyed rates provided by the Institute of Transportation Engineers and mode splits based on data from the Transportation Tomorrow Survey and other studies, encompass all expected home-based trips, including trips to and from schools. As a school has not been proposed within the development site, it is currently unknown which schools will serve the development and whether school buses will be used to transport students. Therefore, it is not possible to specifically assign school trips in the traffic analysis.

Comment: For the 76,951 square foot shopping centre trip generation, the Study utilized the average rate which amounted to 262 total vehicle trips generated during the PM peak hour. However, ITE guidance recommends using the fitted curve equation, which results in 468 trips. Given the significant discrepancy,

please update the analysis to use the fitted curve equation for a more accurate trip generation estimate of the shopping centre.

Response: Section 5.1 of this report has been updated to use the fitted curve equation for the p.m. peak hour trip generation for the retail use; no fitted curve equation is available for the a.m. peak hour.

Comment: The Region is agreeable to using a 130 second cycle length.

Response: Noted.

Comment: Fully protected left turn phases require a minimum 2 second all-red phase. Please update the model.

Response: The modelling has been updated accordingly.

Comment: Operation of the EBR at Walnut & Liverpool - Along with operating as an overlap with the NBL, it will also operate with its own phase 4 (split from phase 8 WB). This will be to activate when there is no demand to the NBL. We recommend using delay on the stop bar detector.

Response: Per the PHM-125 drawing prepared for the intersection of Liverpool Road & Walnut Lane / Highway 401 WB Off-Ramp as part of the Walnut Lane detailed design, the eastbound approach is to be equipped with Type 3 signal heads, which only allow for fully-protected right-turns. As such, the only movements that can occur simultaneously to the eastbound right-turn are the northbound left-turn and through movements. Therefore, the most efficient signal phasing arrangement is to have the eastbound right-turn phase occur alongside the northbound left-turn phase, with the detectors on both of those lanes serving to call and extend the phase.

Comment: Adding a NBL advance at Kingston Road and Walnut Lane will require a ATCC cabinet with the BRT construction. 16 channel cabinets will not accommodate the side street advances with the transit and bike phases. The current plan for the BRT does not include an ATCC cabinet at this intersection. A sensitivity analysis should show the impact of not having the NBL advance under future conditions including the NBL storage requirements.

Response: Noted. Given this constraint, the modelling has been revised to no longer include a northbound left-turn phase at Kingston Road & Walnut Lane.

Comment: Additional transportation planning comments are provided for the proposed development:

The applicant should demonstrate how they support active transportation options for residents within the site. Adding cycling facilities, e.g., bike lanes to/from Kingston Road, in addition to bicycle parking (inside/outside) would go a long way to support more sustainable modes of transportation; and

Please identify on a future Site Plan where the bicycle parking spaces are being offered inside the proposed buildings.

Response: As indicated on the Walnut Lane detailed design drawings, a multi-use pathway will be built along Walnut Lane between Kingston Road and Liverpool Road.

The locations of bicycle parking spaces will be identified at the SPA stage.

11 CONCLUSIONS AND RECOMMENDATIONS

Based on the analysis contained in this report, our conclusions and recommendations are as follows:

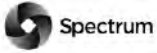
- The proposed development is expected to produce:
 - 2028 a.m. peak hour – 137 inbound and 143 outbound vehicle trips;
 - 2028 p.m. peak hour – 255 inbound and 243 outbound vehicle trips;
 - 2033/2038/2043 a.m. peak hour – 395 inbound and 735 outbound vehicle trips; and
 - 2033/2038/2043 p.m. peak hour – 897 inbound and 750 outbound vehicle trips.
- The trips associated with the proposed development can readily be accommodated by the road network in all four horizons (following the application of a higher PHF at certain constrained intersections) with the following signal timing improvements:
 - In order to accommodate the combination of background traffic growth, lane configuration changes due to the BRT, and the addition of protected left-turn phases, the cycle length should be increased to 130 seconds at all study intersections along Kingston Road during the p.m. peak hour and at the intersections along Kingston Road between Whites Road and Fairport Road during the a.m. peak hour;
 - An eastbound right-turn phase (overlapping with the existing northbound left-turn phase) should be added during the p.m. peak hour at the intersection of Kingston Road & Liverpool Road; and
 - Various signal phase splits optimizations should be made throughout the study network.
- The proposed parking supply meet the needs of the development.
- All-way stop control is recommended for almost all of the internal intersections, as indicated in **Section 6.1**.
- A summary of the development’s recommended TDM strategy is provided in **Section 9.2**.

Given the large scale of this development, it is acknowledged that updates to this study will be required as part of the SPA application for each phase in order to reassess assumptions, findings, and design improvements.

APPENDIX

A TRAFFIC DATA



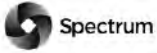


Turning Movement Count
 Location Name: LIVERPOOL RD & HWY 401 WB RAMPS
 Date: Wed, Jun 08, 2022 Deployment Lead: Tasos Issaakidis

BA Group
 300 45 ST. CLAIR AVE W
 TORONTO ONTARIO, M4V 1K9
 CANADA

Turning Movement Count (5 - LIVERPOOL RD & HWY 401 WB RAMPS)

Start Time	N Approach LIVERPOOL RD						E Approach WB 401 OFF RAMP						S Approach LIVERPOOL RD						W Approach WESTSIDE DRIVEWAY						SE Approach HWY 401 WB ON RAMP (NB LIVERPOOL)			SW Approach HWT 401 WB ON RAMP			Int. Total (15 min)	Int. Total (1 hr)				
	Right N/W	Bar Right N/SW	Thru N/S	UTurn N/N	Peds N:	Approach Total	Right E/N	Thru E/W	Bar Left E/SW	Left E/S	UTurn E/E	Peds E:	Approach Total	Right S/E	Thru S/N	Left S/W	Hard Left S/SW	UTurn S/S	Peds S:	Approach Total	Hard Right W/SW	Right W/S	Left W/N	UTurn W/W	Peds W:	Approach Total	UTurn SE/SE	Peds SE:	Approach Total	UTurn SWSW			Peds SW:	Approach Total		
07:30:00	0	106	83	0	0	189	39	0	0	43	0	3	82	91	95	1	0	1	0	188	2	1	3	0	2	6	0	3	0	0	0	0	465			
07:45:00	0	119	154	0	0	273	66	0	0	53	0	2	119	80	99	2	0	0	0	181	1	2	2	0	1	5	0	2	0	0	0	1	0	578		
08:00:00	0	93	140	0	0	233	71	0	0	50	0	4	121	77	138	2	0	0	0	217	0	0	2	0	1	2	0	4	0	0	0	0	573			
08:15:00	0	89	151	0	0	240	86	0	0	43	0	3	129	86	168	3	1	0	0	258	0	1	1	0	1	2	0	3	0	0	0	0	629	2245		
08:30:00	0	81	138	0	0	219	74	0	1	43	0	6	118	80	157	2	0	2	0	241	0	1	1	0	1	2	0	6	0	0	1	0	580	2360		
08:45:00	0	72	151	0	0	223	107	2	0	52	0	1	161	74	167	1	0	0	0	242	1	0	2	0	4	3	0	1	0	0	4	0	629	2411		
09:00:00	1	91	121	0	0	213	89	1	0	53	0	2	143	58	137	2	0	1	0	198	2	4	4	0	1	10	0	2	0	0	1	0	564	2402		
09:15:00	0	82	125	0	0	207	84	0	0	40	0	1	124	67	145	2	0	0	0	214	1	2	4	0	2	7	0	1	0	0	0	5	552	2325		
BREAK																																				
16:00:00	0	109	189	0	0	298	86	2	2	49	0	2	139	103	210	4	0	1	0	318	2	1	12	0	3	15	0	2	0	0	4	0	770			
16:15:00	2	116	196	0	0	314	98	5	0	63	0	7	166	132	221	5	0	0	0	358	8	5	8	0	5	19	0	7	0	0	5	0	857			
16:30:00	0	130	195	0	1	325	92	2	1	47	0	4	142	133	224	8	0	0	0	365	3	5	8	0	4	16	0	4	0	0	5	0	848			
16:45:00	0	102	193	0	0	295	99	1	0	52	0	3	152	113	268	6	0	0	0	387	2	1	7	0	4	10	0	3	0	0	7	0	844	3319		
17:00:00	0	120	212	0	0	332	107	2	0	76	0	4	185	105	258	3	0	0	0	366	5	7	8	0	5	20	0	4	0	0	6	0	903	3462		
17:15:00	1	105	233	0	0	339	106	2	3	85	0	7	196	125	278	8	0	0	0	411	4	3	11	0	6	18	0	8	0	0	6	0	964	3559		
17:30:00	1	102	249	0	0	352	93	3	0	65	0	1	161	86	251	8	0	0	0	345	4	5	10	0	2	19	0	1	0	0	2	0	877	3588		
17:45:00	0	103	227	0	0	330	92	3	0	60	0	4	155	70	251	4	0	0	0	325	2	2	14	0	6	18	0	4	0	0	8	0	828	3572		
Grand Total	5	1620	2757	0	1	4382	1389	23	7	874	0	54	2293	1480	3067	61	1	5	0	4614	35	40	97	0	48	172	0	55	0	0	55	0	11461	-		
Approach%	0.1%	37%	62.9%	0%	-	-	60.6%	1%	0.3%	38.1%	0%	-	-	32.1%	66.5%	1.3%	0%	0.1%	-	20.3%	23.3%	56.4%	0%	-	-	0%	-	-	-	-	-	-				
Totals %	0%	14.1%	24.1%	0%	38.2%	12.1%	0.2%	0.1%	7.6%	0%	20%	12.9%	26.8%	0.5%	0%	0%	40.3%	0.3%	0.3%	0.8%	0%	1.5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%		
Heavy	0	23	62	0	-	-	19	1	1	8	0	-	-	81	66	3	0	0	-	2	2	0	0	-	-	0	0	0	0	0	0	0	0	0	0	0
Heavy %	0%	1.4%	2.2%	0%	-	-	1.4%	4.3%	14.3%	0.9%	0%	-	-	5.5%	2.2%	4.9%	0%	0%	-	5.7%	5%	0%	0%	-	-	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Bicycles	0	1	4	0	-	-	0	0	0	0	0	-	-	1	13	0	0	0	-	0	0	0	0	-	-	0	0	0	0	0	0	0	0	0	0	0
Blcyde %	0%	0.1%	0.1%	0%	-	-	0%	0%	0%	0%	0%	-	-	0.1%	0.4%	0%	0%	0%	-	0%	0%	0%	0%	-	-	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

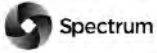


Turning Movement Count
 Location Name: LIVERPOOL RD & HWY 401 WB RAMPS
 Date: Wed, Jun 08, 2022 Deployment Lead: Tasos Issaakidis

BA Group
 300 45 ST. CLAIR AVE W
 TORONTO ONTARIO, M4V 1K9
 CANADA

Peak Hour: 08:00 AM - 09:00 AM Weather: Broken Clouds (15.24 °C)

Start Time	N Approach LIVERPOOL RD					E Approach WB 401 OFF RAMP					S Approach LIVERPOOL RD					W Approach WESTSIDE DRIVEWAY					SE Approach HWY 401 WB ON RAMP (NB LIVERPOOL)			SW Approach HWT 401 WB ON RAMP			Int. Total (15 min)					
	Right	Bear Right	Thru	UTurn	Peds	Approach Total	Right	Thru	Bear Left	Left	UTurn	Peds	Approach Total	Right	Thru	Left	Hard Left	UTurn	Peds	Approach Total	Hard Right	Right	Left	UTurn	Peds	Approach Total		UTurn	Peds	Approach Total	UTurn	Peds
08:00:00	0	93	140	0	0	233	71	0	0	50	0	4	121	77	138	2	0	0	0	217	0	0	2	0	1	2	0	4	0	0	0	573
08:15:00	0	89	151	0	0	240	86	0	0	43	0	3	129	86	168	3	1	0	0	258	0	1	1	0	1	2	0	3	0	0	0	629
08:30:00	0	81	138	0	0	219	74	0	1	43	0	6	118	80	157	2	0	2	0	241	0	1	1	0	1	2	0	6	0	1	0	590
08:45:00	0	72	151	0	0	223	107	2	0	52	0	1	161	74	167	1	0	0	0	242	1	0	2	0	4	3	0	1	0	4	0	629
Grand Total	0	335	500	0	0	915	338	2	1	188	0	14	529	317	630	8	1	2	0	958	1	2	6	0	7	9	0	14	0	0	5	2411
Approach%	0%	36.8%	63.4%	0%	-	-	63.9%	0.4%	0.2%	35.5%	0%	-	-	33.1%	65.8%	0.8%	0.1%	0.2%	-	-	11.1%	22.2%	66.7%	0%	-	0%	-	0%	-	-	-	
Totals %	0%	13.9%	24.1%	0%	38%	14%	0.1%	0%	7.8%	0%	21.9%	13.1%	26.1%	0.3%	0%	0.1%	39.7%	0%	0.1%	0.2%	0%	0.4%	0%	0%	0.4%	0%	0%	0%	0%	0%	-	
PHF	0	0.9	0.96	0	0.95	0.79	0.25	0.25	0.9	0	0.82	0.92	0.94	0.67	0.25	0.25	0.93	0.25	0.5	0.75	0	0.75	0	0	0.75	0	0	0	0	0	-	
Heavy	0	6	19	0	25	9	0	0	2	0	11	19	19	2	0	0	40	0	1	0	0	1	0	0	0	0	0	0	0	0	-	
Heavy %	0%	1.8%	3.3%	0%	2.7%	2.7%	0%	0%	1.1%	0%	2.1%	6%	3%	25%	0%	0%	4.2%	0%	50%	0%	0%	11.1%	0%	0%	0%	0%	0%	0%	0%	0%	-	
Lights	0	329	561	0	890	329	2	1	188	0	518	298	611	6	1	2	918	1	1	6	0	8	0	0	0	0	0	0	0	0	-	
Lights %	0%	98.2%	96.7%	0%	97.3%	97.3%	100%	100%	98.9%	0%	97.9%	94%	97%	75%	100%	100%	95.8%	100%	50%	100%	0%	88.9%	0%	0%	0%	0%	0%	0%	0%	0%	-	
Single-Unit Trucks	0	5	6	0	11	4	0	0	1	0	5	10	7	1	0	0	18	0	0	0	0	0	0	0	0	0	0	0	0	0	-	
Single-Unit Trucks %	0%	1.5%	1%	0%	1.2%	1.2%	0%	0%	0.5%	0%	0.9%	3.2%	1.1%	12.8%	0%	0%	1.9%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-	
Buses	0	0	13	0	13	2	0	0	1	0	3	1	11	0	0	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0	-	
Buses %	0%	0%	2.2%	0%	1.4%	0.6%	0%	0%	0.5%	0%	0.6%	0.3%	1.7%	0%	0%	0%	1.3%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-	
Articulated Trucks	0	1	0	0	1	3	0	0	0	0	3	8	1	1	0	0	10	0	1	0	0	1	0	0	1	0	0	0	0	-		
Articulated Trucks %	0%	0.3%	0%	0%	0.1%	0.9%	0%	0%	0%	0%	0.6%	2.5%	0.2%	12.9%	0%	0%	1%	0%	50%	0%	0%	11.1%	0%	0%	0%	0%	0%	0%	0%	0%	-	
Pedestrians	-	-	-	-	0	-	-	-	-	10	-	-	-	-	-	-	0	-	-	-	7	-	-	-	7	-	11	-	5	-	-	
Pedestrians%	-	-	-	-	0%	-	-	-	-	25%	-	-	-	-	-	-	0%	-	-	-	17.5%	-	-	-	27.5%	-	27.5%	-	12.5%	-	-	
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	4	-	-	-	-	-	-	0	-	-	-	0	-	-	-	0	-	3	-	0	-	-	
Bicycles on Crosswalk%	-	-	-	-	0%	-	-	-	-	10%	-	-	-	-	-	-	0%	-	-	-	0%	-	-	-	7.5%	-	7.5%	-	0%	-	-	
Bicycles on Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	
Bicycles on Road%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	-	-	0%	-	-	-	0%	-	-	-	0%	-	0%	-	0%	-	-	



Turning Movement Count
 Location Name: LIVERPOOL RD & HWY 401 WB RAMPS
 Date: Wed, Jun 08, 2022 Deployment Lead: Tasos Issaakidis

BA Group
 300 45 ST. CLAIR AVE W
 TORONTO ONTARIO, M4V 1K9
 CANADA

Peak Hour: 04:45 PM - 05:45 PM Weather: Broken Clouds (22.35 °C)

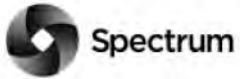
Start Time	N Approach LIVERPOOL RD					E Approach WB 401 OFF RAMP					S Approach LIVERPOOL RD					W Approach WESTSIDE DRIVEWAY					SE Approach HWY 401 WB ON RAMP (NB LIVERPOOL)			SW Approach HWT 401 WB ON RAMP			Int. Total (15 min)						
	Right	Bear Right	Thru	UTurn	Peds	Approach Total	Right	Thru	Bear Left	Left	UTurn	Peds	Approach Total	Right	Thru	Left	Hard Left	UTurn	Peds	Approach Total	Hard Right	Right	Left	UTurn	Peds	Approach Total		UTurn	Peds	Approach Total	UTurn	Peds	Approach Total
16:45:00	0	102	193	0	0	295	99	1	0	52	0	3	152	113	268	6	0	0	0	387	2	1	7	0	4	10	0	3	0	0	0	0	844
17:00:00	0	120	212	0	0	332	107	2	0	76	0	4	185	105	298	3	0	0	0	366	5	7	8	0	5	20	0	4	0	0	0	903	
17:15:00	1	105	233	0	0	339	106	2	3	85	0	7	196	125	278	8	0	0	0	411	4	3	11	0	6	18	0	8	0	0	0	964	
17:30:00	1	102	249	0	0	352	93	3	0	65	0	1	161	86	251	8	0	0	0	345	4	5	10	0	2	19	0	1	0	0	0	877	
Grand Total	2	429	887	0	0	1318	405	8	3	278	0	15	694	429	1055	25	0	0	0	1509	15	16	36	0	17	67	0	16	0	0	0	3586	
Approach%	0.2%	32.5%	67.3%	0%	-	-	56.4%	1.2%	0.4%	40.1%	0%	-	-	28.4%	89.9%	1.7%	0%	0%	-	22.4%	23.9%	53.7%	0%	-	0%	-	0%	-	0%	-	-		
Totals %	0.1%	12%	24.7%	0%	36.7%	11.3%	0.2%	0.1%	7.7%	0%	19.3%	12%	29.4%	0.7%	0%	0%	0%	0%	42.1%	0.4%	0.4%	1%	0%	1.9%	0%	0%	0%	0%	0%	0%	-		
PHF	0.5	0.89	0.89	0	0.94	0.95	0.67	0.25	0.82	0	0.89	0.36	0.95	0.78	0	0	0	0	0.92	0.75	0.57	0.82	0	0.84	0	0	0	0	0	0	-		
Heavy	0	7	10	0	17	4	0	0	0	0	4	14	9	0	0	0	0	0	23	0	0	0	0	0	0	0	0	0	0	0	0	-	
Heavy %	0%	1.6%	1.1%	0%	1.3%	1%	0%	0%	0%	0%	0.6%	3.3%	0.9%	0%	0%	0%	0%	0%	1.5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-		
Lights	2	422	877	0	1301	401	8	3	278	0	690	415	1046	25	0	0	0	0	1486	15	16	36	0	67	0	0	0	0	0	0	0	-	
Lights %	100%	98.4%	98.9%	0%	98.7%	99%	100%	100%	100%	0%	99.4%	96.7%	99.1%	100%	0%	0%	0%	0%	98.5%	100%	100%	100%	0%	100%	0%	0%	0%	0%	0%	0%	-		
Single-Unit Trucks	0	5	4	0	9	3	0	0	0	0	3	4	2	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	-	
Single-Unit Trucks %	0%	1.2%	0.5%	0%	0.7%	0.7%	0%	0%	0%	0%	0.4%	0.9%	0.2%	0%	0%	0%	0%	0%	0.4%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-		
Buses	0	1	6	0	7	0	0	0	0	0	0	1	7	0	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	-	
Buses %	0%	0.2%	0.7%	0%	0.5%	0%	0%	0%	0%	0%	0%	0.2%	0.7%	0%	0%	0%	0%	0%	0.5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-		
Articulated Trucks	0	1	0	0	1	1	0	0	0	0	1	9	0	0	0	0	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	-	
Articulated Trucks %	0%	0.2%	0%	0%	0.1%	0.2%	0%	0%	0%	0%	0.1%	2.1%	0%	0%	0%	0%	0%	0%	0.6%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-		
Pedestrians	-	-	-	0	-	-	-	-	-	9	-	-	-	-	-	-	-	-	0	-	-	-	-	10	-	-	9	-	-	14	-		
Pedestrians%	-	-	-	0%	-	-	-	-	-	13%	-	-	-	-	-	-	-	-	0%	-	-	-	-	14.5%	-	-	13%	-	-	20.3%	-		
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	-	6	-	-	-	-	-	-	-	-	0	-	-	-	-	7	-	-	7	-	-	-	-		
Bicycles on Crosswalk%	-	-	-	0%	-	-	-	-	-	8.7%	-	-	-	-	-	-	-	-	0%	-	-	-	-	10.1%	-	-	10.1%	-	-	10.1%	-		
Bicycles on Road	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	-	
Bicycles on Road%	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	-	-	-	0%	-	-	-	-	0%	-	-	0%	-	-	0%	-		

Peak Hour: 08:00 AM - 09:00 AM Weather: Broken Clouds (15.24 °C)



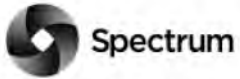
Peak Hour: 04:45 PM - 05:45 PM Weather: Broken Clouds (22.35 °C)





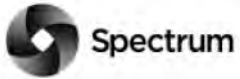
Turning Movement Count (3 . LIVERPOOL RD & PICKERING PKWY)

Start Time	N Approach LIVERPOOL RD						E Approach PICKERING PKWY						S Approach LIVERPOOL RD						W Approach LOBLAW ACCESS						Int. Total (15 min)	Int. Total (1 hr)
	Right NW	Thru NS	Left NE	UTurn NN	Peds N:	Approach Total	Right EN	Thru EW	Left ES	UTurn EE	Peds E:	Approach Total	Right SE	Thru SN	Left SW	UTurn SS	Peds S:	Approach Total	Right WS	Thru WE	Left WN	UTurn WW	Peds W:	Approach Total		
07:30:00	4	155	29	0	4	188	11	4	29	0	3	44	20	107	3	0	0	130	2	0	2	0	1	4	366	
07:45:00	4	218	36	0	3	258	15	1	61	0	2	77	36	123	8	0	0	167	4	1	2	0	1	7	509	
08:00:00	10	180	26	1	1	217	11	3	55	0	2	69	42	183	9	0	0	214	7	2	0	0	2	9	509	
08:15:00	5	176	33	1	2	215	16	1	57	2	3	76	71	179	9	0	0	259	5	1	4	0	5	10	560	1944
08:30:00	4	153	25	2	1	184	14	5	53	0	5	72	56	161	8	0	0	225	10	6	3	0	0	19	500	2078
08:45:00	11	165	47	3	4	226	13	6	46	1	2	66	87	182	17	0	0	266	12	4	2	0	3	18	596	2165
09:00:00	4	174	41	0	0	219	16	7	36	0	1	59	58	159	14	0	0	231	9	6	1	0	2	16	525	2181
09:15:00	11	161	31	0	4	203	16	6	42	0	4	64	53	155	18	0	0	226	15	6	6	0	4	27	520	2141
BREAK																										
16:00:00	15	192	29	0	4	236	34	15	77	0	8	126	78	196	26	2	0	302	36	8	20	0	6	64	728	
16:15:00	7	210	42	3	10	262	37	8	86	0	9	131	75	237	26	0	0	338	23	8	13	0	7	44	775	
16:30:00	14	189	40	1	4	244	26	10	106	0	3	142	72	230	27	0	0	329	33	5	21	0	3	59	774	
16:45:00	16	196	43	0	5	255	50	13	80	0	8	143	85	253	30	0	1	368	28	16	21	0	5	65	831	3108
17:00:00	9	195	44	1	7	249	53	17	112	0	3	182	91	253	25	0	0	369	40	10	22	0	4	72	872	3252
17:15:00	12	198	51	2	0	263	46	16	115	0	10	177	117	258	27	0	0	402	30	15	18	0	9	63	905	3382
17:30:00	12	238	44	0	6	294	42	13	82	0	5	137	94	232	30	0	0	356	34	23	24	0	7	81	868	3476
17:45:00	13	224	52	0	8	289	33	12	89	1	3	135	96	249	24	0	0	369	26	21	23	0	1	70	863	3508
Grand Total	151	3024	613	14	63	3802	433	137	1126	4	71	1700	1131	3137	301	2	1	4571	314	132	182	0	60	628	10701	-
Approach%	4%	79.5%	16.1%	0.4%	-	-	25.5%	8.1%	66.2%	0.2%	-	-	24.7%	68.6%	6.8%	0%	-	-	50%	21%	29%	0%	-	-	-	-
Totals%	1.4%	28.3%	5.7%	0.1%	-	35.5%	4%	1.3%	10.5%	0%	-	15.9%	10.6%	29.3%	2.8%	0%	-	42.7%	2.9%	1.2%	1.7%	0%	-	5.9%	-	-
Heavy	2	51	10	0	-	-	51	2	30	0	-	-	19	65	1	0	-	-	1	2	0	0	-	-	-	-
Heavy%	1.3%	1.7%	1.6%	0%	-	-	11.8%	1.5%	2.7%	0%	-	-	1.7%	2.1%	0.3%	0%	-	-	0.3%	1.5%	0%	0%	-	-	-	-
Bicycles	0	2	0	0	-	-	0	0	1	0	-	-	1	10	2	0	-	-	0	0	0	0	-	-	-	-
Bicycle%	0%	0.1%	0%	0%	-	-	0%	0%	0.1%	0%	-	-	0.1%	0.3%	0.7%	0%	-	-	0%	0%	0%	0%	-	-	-	-



Peak Hour: 08:15 AM - 09:15 AM Weather: Broken Clouds (15.24 °C)

Start Time	N Approach LIVERPOOL RD						E Approach PICKERING PKWY						S Approach LIVERPOOL RD						W Approach LOBLAW ACCESS						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
08:15:00	5	176	33	1	2	215	16	1	57	2	3	76	71	179	9	0	0	259	5	1	4	0	5	10	560
08:30:00	4	153	25	2	1	184	14	5	53	0	5	72	56	161	8	0	0	225	10	6	3	0	0	19	500
08:45:00	11	165	47	3	4	226	13	6	46	1	2	66	87	182	17	0	0	286	12	4	2	0	3	18	596
09:00:00	4	174	41	0	0	219	16	7	36	0	1	59	58	159	14	0	0	231	9	6	1	0	2	16	525
Grand Total	24	668	146	6	7	844	59	19	192	3	11	273	272	681	48	0	0	1001	36	17	10	0	10	63	2181
Approach%	2.8%	79.1%	17.3%	0.7%	-	-	21.6%	7%	70.3%	1.1%	-	-	27.2%	68%	4.8%	0%	-	57.1%	27%	15.9%	0%	-	-	-	
Totals %	1.1%	30.6%	6.7%	0.3%	38.7%	2.7%	0.9%	8.8%	0.1%	12.5%	12.5%	31.2%	2.2%	0%	45.9%	1.7%	0.8%	0.5%	0%	2.9%	-	-	-	-	
PHF	0.55	0.95	0.78	0.5	0.93	0.92	0.68	0.84	0.38	0.9	0.78	0.94	0.71	0	0.88	0.75	0.71	0.63	0	0.83	-	-	-	-	
Heavy	1	12	4	0	17	13	0	8	0	21	9	19	0	0	28	0	0	0	0	0	-	-	-	-	
Heavy %	4.2%	1.8%	2.7%	0%	2%	22%	0%	4.2%	0%	7.7%	3.3%	2.8%	0%	0%	2.8%	0%	0%	0%	0%	0%	-	-	-	-	
Lights	23	656	142	6	827	46	19	184	3	252	263	662	48	0	973	36	17	10	0	63	-	-	-	-	
Lights %	95.8%	98.2%	97.3%	100%	98%	78%	100%	95.8%	100%	92.3%	96.7%	97.2%	100%	0%	97.2%	100%	100%	100%	0%	100%	-	-	-	-	
Single-Unit Trucks	1	4	2	0	7	1	0	5	0	6	2	8	0	0	10	0	0	0	0	0	-	-	-	-	
Single-Unit Trucks %	4.2%	0.6%	1.4%	0%	0.8%	1.7%	0%	2.6%	0%	2.2%	0.7%	1.2%	0%	0%	1%	0%	0%	0%	0%	0%	-	-	-	-	
Buses	0	8	2	0	10	12	0	3	0	15	6	9	0	0	15	0	0	0	0	0	-	-	-	-	
Buses %	0%	1.2%	1.4%	0%	1.2%	20.3%	0%	1.6%	0%	5.5%	2.2%	1.3%	0%	0%	1.5%	0%	0%	0%	0%	0%	-	-	-	-	
Articulated Trucks	0	0	0	0	0	0	0	0	0	0	1	2	0	0	3	0	0	0	0	0	-	-	-	-	
Articulated Trucks %	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0.4%	0.3%	0%	0%	0.3%	0%	0%	0%	0%	0%	-	-	-	-	
Pedestrians	-	-	-	-	7	-	-	-	-	10	-	-	-	-	0	-	-	-	-	10	-	-	-	-	
Pedestrians %	-	-	-	-	25%	-	-	-	-	35.7%	-	-	-	-	0%	-	-	-	-	35.7%	-	-	-	-	
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	1	-	-	-	-	0	-	-	-	-	0	-	-	-	-	
Bicycles on Crosswalk %	-	-	-	-	0%	-	-	-	-	3.6%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	
Bicycles on Road	0	1	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	-	-	-	-	
Bicycles on Road %	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	0%	-	-	-	-	



Peak Hour: 05:00 PM - 06:00 PM Weather: Broken Clouds (22.35 °C)

Start Time	N Approach LIVERPOOL RD						E Approach PICKERING PKWY						S Approach LIVERPOOL RD						W Approach LOBLAW ACCESS						Int. Total (15 min)
	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	Right	Thru	Left	UTurn	Peds	Approach Total	
17:00:00	9	195	44	1	7	249	53	17	112	0	3	182	91	253	25	0	0	369	40	10	22	0	4	72	872
17:15:00	12	198	51	2	0	263	46	16	115	0	10	177	117	258	27	0	0	402	30	15	18	0	9	63	905
17:30:00	12	238	44	0	6	294	42	13	82	0	5	137	94	232	30	0	0	356	34	23	24	0	7	81	868
17:45:00	13	224	52	0	8	289	33	12	89	1	3	135	96	249	24	0	0	369	26	21	23	0	1	70	863
Grand Total	46	855	191	3	21	1095	174	58	398	1	21	631	398	992	106	0	0	1496	130	69	87	0	21	286	3508
Approach%	4.2%	78.1%	17.4%	0.3%	-	-	27.6%	9.2%	63.1%	0.2%	-	-	26.6%	66.3%	7.1%	0%	-	45.5%	24.1%	30.4%	0%	-	-	-	
Totals %	1.3%	24.4%	5.4%	0.1%	-	31.2%	5%	1.7%	11.3%	0%	-	18%	11.3%	28.3%	3%	0%	-	42.6%	3.7%	2%	2.5%	0%	-	8.2%	
PHF	0.88	0.9	0.92	0.38	-	0.93	0.82	0.85	0.87	0.25	-	0.87	0.85	0.96	0.88	0	-	0.93	0.81	0.75	0.91	0	-	0.88	
Heavy	0	8	1	0	-	9	8	0	7	0	-	15	2	11	0	0	-	13	0	0	0	0	-	0	
Heavy %	0%	0.9%	0.5%	0%	-	0.8%	4.6%	0%	1.8%	0%	-	2.4%	0.5%	1.1%	0%	0%	-	0.9%	0%	0%	0%	0%	-	0%	
Lights	46	847	190	3	-	1086	166	58	391	1	-	616	396	981	106	0	-	1483	130	69	87	0	-	286	-
Lights %	100%	99.1%	99.5%	100%	-	99.2%	95.4%	100%	98.2%	100%	-	97.6%	99.5%	98.9%	100%	0%	-	99.1%	100%	100%	100%	0%	-	100%	
Single-Unit Trucks	0	5	0	0	-	5	0	0	2	0	-	2	1	6	0	0	-	7	0	0	0	0	0	-	0
Single-Unit Trucks %	0%	0.6%	0%	0%	-	0.5%	0%	0%	0.5%	0%	-	0.3%	0.3%	0.6%	0%	0%	-	0.5%	0%	0%	0%	0%	-	0%	
Buses	0	2	1	0	-	3	8	0	5	0	-	13	0	5	0	0	-	5	0	0	0	0	0	-	0
Buses %	0%	0.2%	0.5%	0%	-	0.3%	4.6%	0%	1.3%	0%	-	2.1%	0%	0.5%	0%	0%	-	0.3%	0%	0%	0%	0%	-	0%	
Articulated Trucks	0	1	0	0	-	1	0	0	0	0	-	0	1	0	0	0	-	1	0	0	0	0	0	-	0
Articulated Trucks %	0%	0.1%	0%	0%	-	0.1%	0%	0%	0%	0%	-	0%	0.3%	0%	0%	0%	-	0.1%	0%	0%	0%	0%	-	0%	
Pedestrians	-	-	-	-	19	-	-	-	-	-	16	-	-	-	-	-	0	-	-	-	-	-	15	-	-
Pedestrians %	-	-	-	-	30.2%	-	-	-	-	-	25.4%	-	-	-	-	-	0%	-	-	-	-	-	23.8%	-	-
Bicycles on Crosswalk	-	-	-	-	2	-	-	-	-	-	5	-	-	-	-	-	0	-	-	-	-	-	6	-	-
Bicycles on Crosswalk %	-	-	-	-	3.2%	-	-	-	-	-	7.9%	-	-	-	-	-	0%	-	-	-	-	-	9.5%	-	-
Bicycles on Road	0	1	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	-
Bicycles on Road %	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-	-	-	-	0%	-	-

Peak Hour: 08:15 AM - 09:15 AM Weather: Broken Clouds (15.24 °C)



Peak Hour: 05:00 PM - 06:00 PM Weather: Broken Clouds (22.35 °C)



Horizon Data Services Ltd

(416) 840-6619

Your Traffic Count Specialist

File Name : Liverpool Road at Kingston Road

Site Code : 00000000

Start Date : 2024-11-19

Page No : 1

Groups Printed- Cars - Trucks - Heavies - Cyclists

Start Time	Liverpool Rd From North					Kingston Rd From East					Liverpool Rd From South					Kingston Rd From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00 AM	7	156	11	6	180	3	69	22	10	104	17	63	34	8	122	44	49	7	11	111	517
07:15 AM	13	125	11	8	157	11	78	29	13	131	17	58	32	7	114	34	64	18	6	122	524
07:30 AM	13	178	11	5	207	9	104	28	13	154	25	85	48	7	165	69	51	21	8	149	675
07:45 AM	26	186	17	7	236	7	109	42	8	166	30	90	46	20	186	61	80	26	22	189	777
Total	59	645	50	26	780	30	360	121	44	555	89	296	160	42	587	208	244	72	47	571	2493
08:00 AM	28	179	15	4	226	4	108	30	10	152	30	104	53	4	191	55	69	13	6	143	712
08:15 AM	22	130	14	4	170	6	107	40	10	163	29	74	57	5	165	43	104	29	7	183	681
08:30 AM	27	131	24	8	190	16	101	37	14	168	30	95	65	3	193	62	104	30	10	206	757
08:45 AM	24	134	12	6	176	10	115	40	11	176	38	97	82	3	220	63	125	32	4	224	796
Total	101	574	65	22	762	36	431	147	45	659	127	370	257	15	769	223	402	104	27	756	2946
09:00 AM	27	133	20	2	182	13	123	26	12	174	39	96	76	7	218	57	124	22	10	213	787
09:15 AM	28	120	22	5	175	9	124	30	7	170	43	79	46	4	172	55	148	29	10	242	759
Total	55	253	42	7	357	22	247	56	19	344	82	175	122	11	390	112	272	51	20	455	1546
04:00 PM	24	105	25	6	160	16	127	37	20	200	60	156	83	5	304	77	255	36	6	374	1038
04:15 PM	18	92	13	7	130	20	132	57	15	224	53	153	71	13	290	84	250	65	15	414	1058
04:30 PM	24	109	21	5	159	17	122	46	21	206	56	180	81	8	325	73	208	57	12	350	1040
04:45 PM	28	103	20	5	156	11	162	48	13	234	64	172	83	7	326	76	258	49	5	388	1104
Total	94	409	79	23	605	64	543	188	69	864	233	661	318	33	1245	310	971	207	38	1526	4240
05:00 PM	37	120	21	5	183	14	122	52	20	208	63	209	85	7	364	76	213	40	7	336	1091
05:15 PM	24	90	23	6	143	14	136	56	18	224	64	161	79	11	315	71	252	49	11	383	1065
05:30 PM	14	113	26	4	157	22	124	45	11	202	66	194	76	6	342	87	229	54	6	376	1077
05:45 PM	28	96	18	9	151	17	132	57	18	224	66	156	81	6	309	73	246	62	6	387	1071
Total	103	419	88	24	634	67	514	210	67	858	259	720	321	30	1330	307	940	205	30	1482	4304
06:00 PM	26	97	29	3	155	10	115	48	11	184	61	160	70	9	300	69	230	52	19	370	1009
06:15 PM	32	87	23	3	145	15	132	60	10	217	74	156	76	7	313	72	241	51	12	376	1051
Grand Total	470	2484	376	108	3438	244	2342	830	265	3681	925	2538	1324	147	4934	1301	3300	742	193	5536	17589
Apprch %	13.7	72.3	10.9	3.1		6.6	63.6	22.5	7.2		18.7	51.4	26.8	3		23.5	59.6	13.4	3.5		
Total %	2.7	14.1	2.1	0.6	19.5	1.4	13.3	4.7	1.5	20.9	5.3	14.4	7.5	0.8	28.1	7.4	18.8	4.2	1.1	31.5	
Cars	463	2465	371	108	3407	244	2275	816	265	3600	868	2491	1278	147	4784	1270	3198	736	193	5397	17188
% Cars	98.5	99.2	98.7	100	99.1	100	97.1	98.3	100	97.8	93.8	98.1	96.5	100	97	97.6	96.9	99.2	100	97.5	97.7
Trucks	2	14	4	0	20	0	14	4	0	18	3	14	14	0	31	13	41	4	0	58	127
% Trucks	0.4	0.6	1.1	0	0.6	0	0.6	0.5	0	0.5	0.3	0.6	1.1	0	0.6	1	1.2	0.5	0	1	0.7

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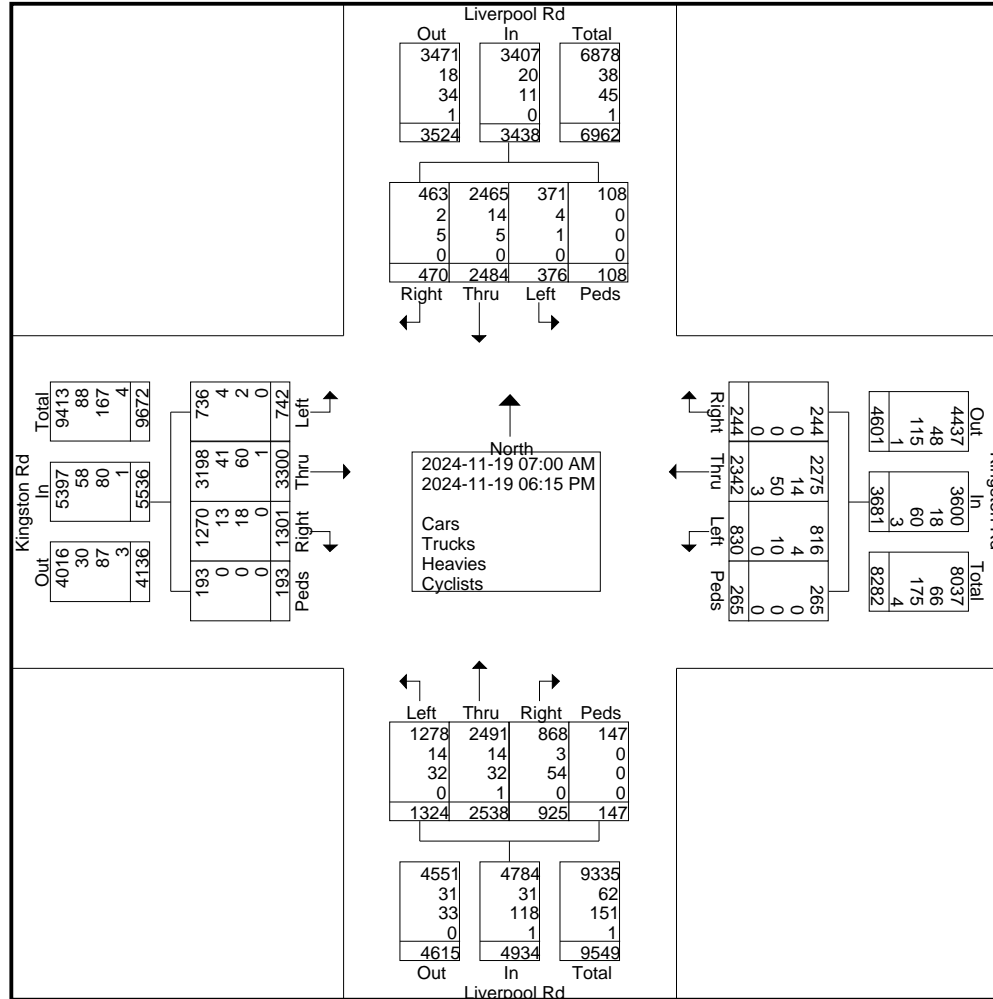
Your Traffic Count Specialist

File Name : Liverpool Road at Kingston Road

Site Code : 00000000

Start Date : 2024-11-19

Page No : 3



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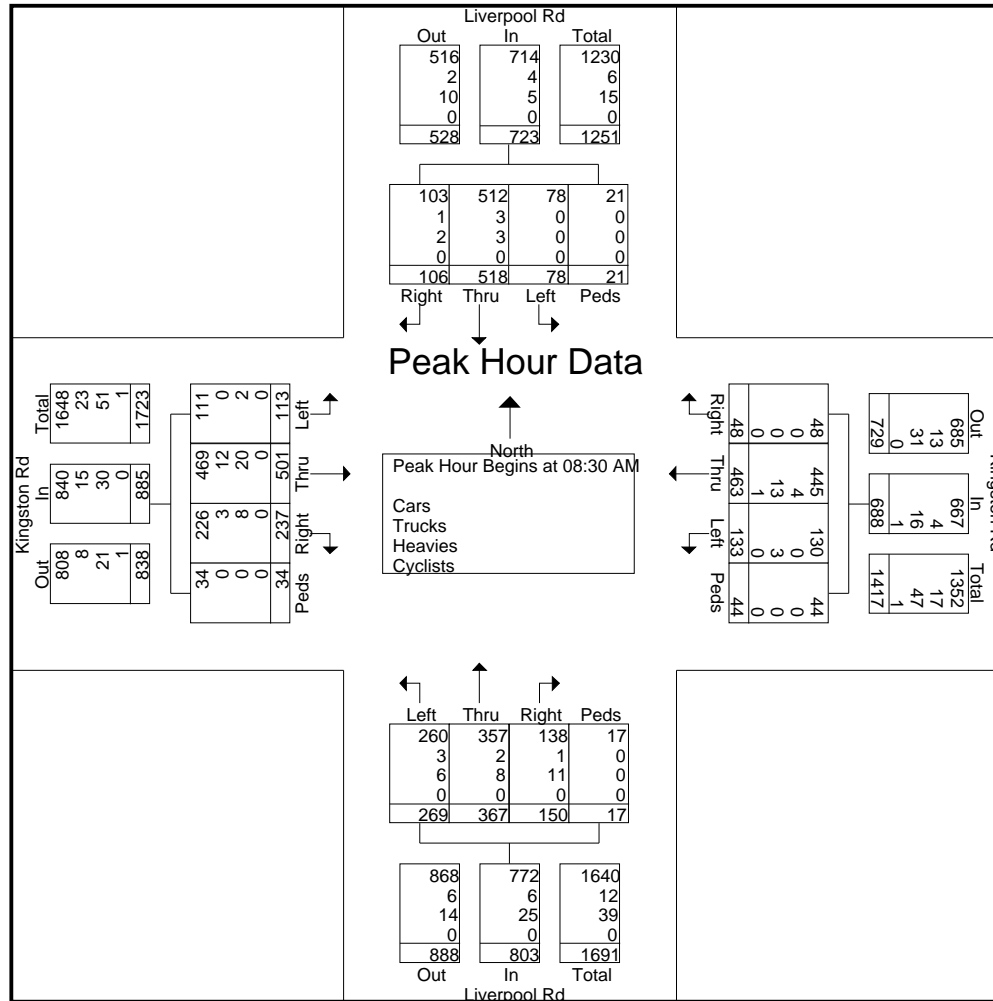
Your Traffic Count Specialist

File Name : Liverpool Road at Kingston Road

Site Code : 00000000

Start Date : 2024-11-19

Page No : 5



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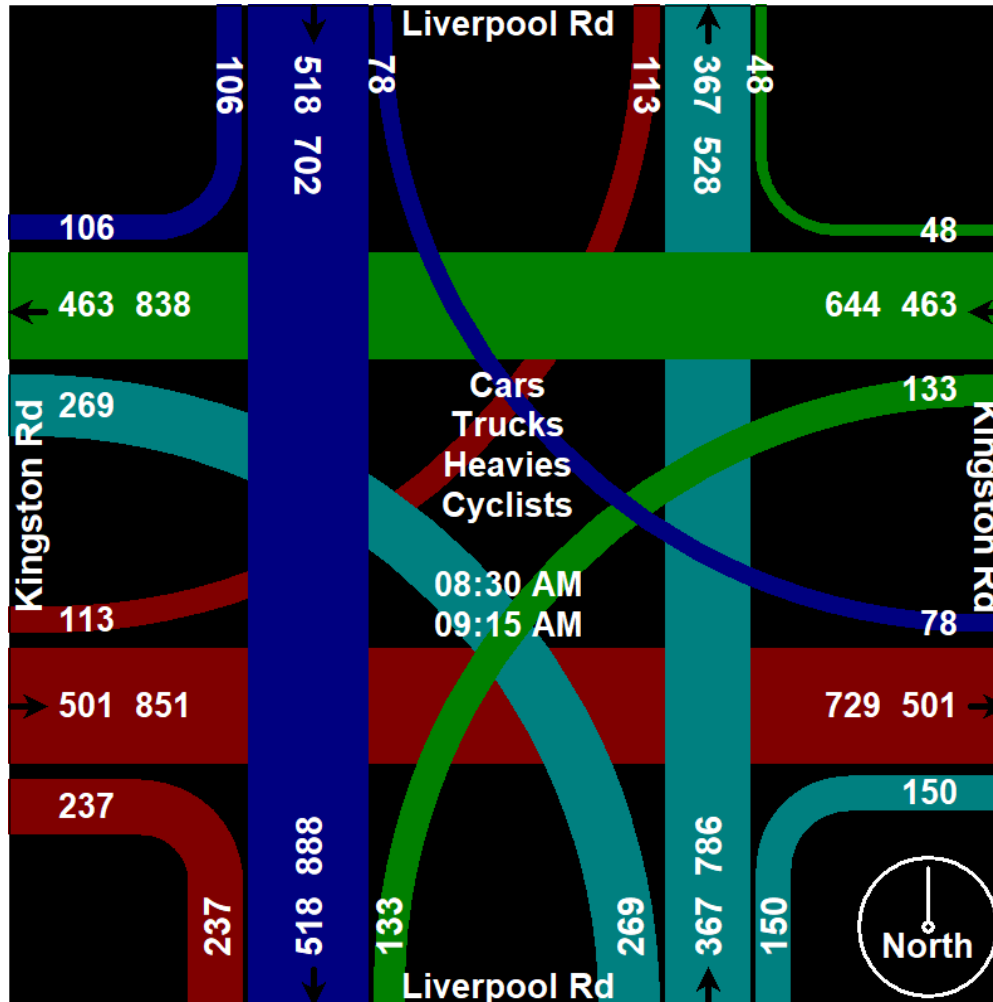
Your Traffic Count Specialist

File Name : Liverpool Road at Kingston Road

Site Code : 00000000

Start Date : 2024-11-19

Page No : 6



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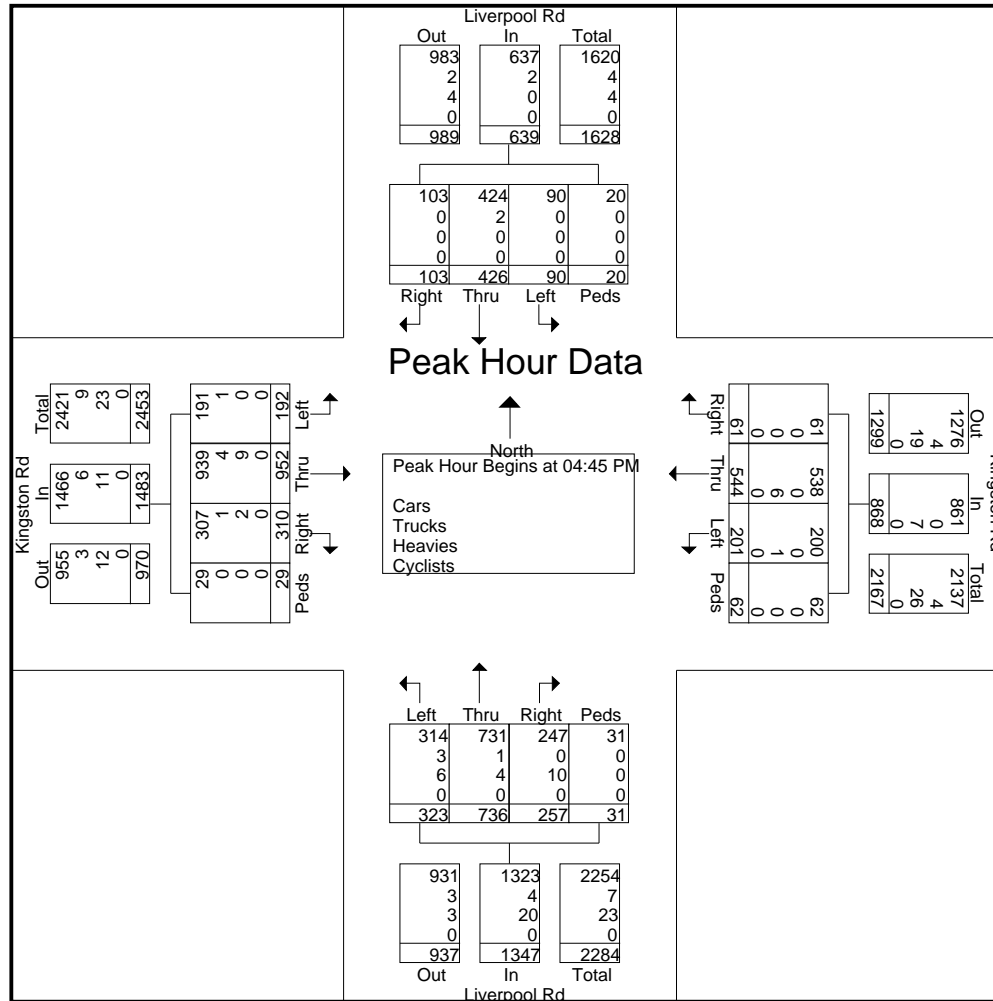
Your Traffic Count Specialist

File Name : Liverpool Road at Kingston Road

Site Code : 00000000

Start Date : 2024-11-19

Page No : 8



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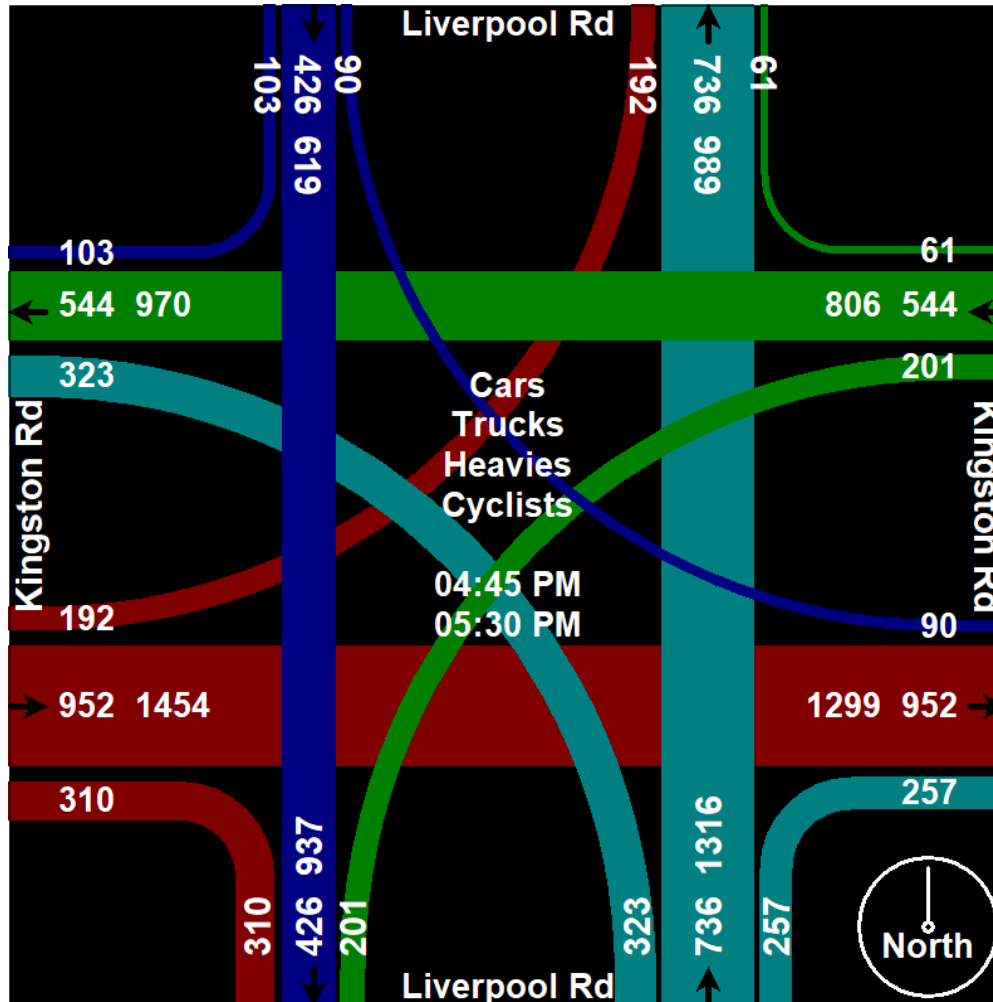
Your Traffic Count Specialist

File Name : Liverpool Road at Kingston Road

Site Code : 00000000

Start Date : 2024-11-19

Page No : 9



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Email: nhyree@gmail.com
 Phone: (416) 840-6619 Fax: (416) 840-5297
"Your Traffic Count Specialist"

File Name : Kingston Road at Walnut Lane
 Site Code : 00000000
 Start Date : 01/10/2023
 Page No : 1

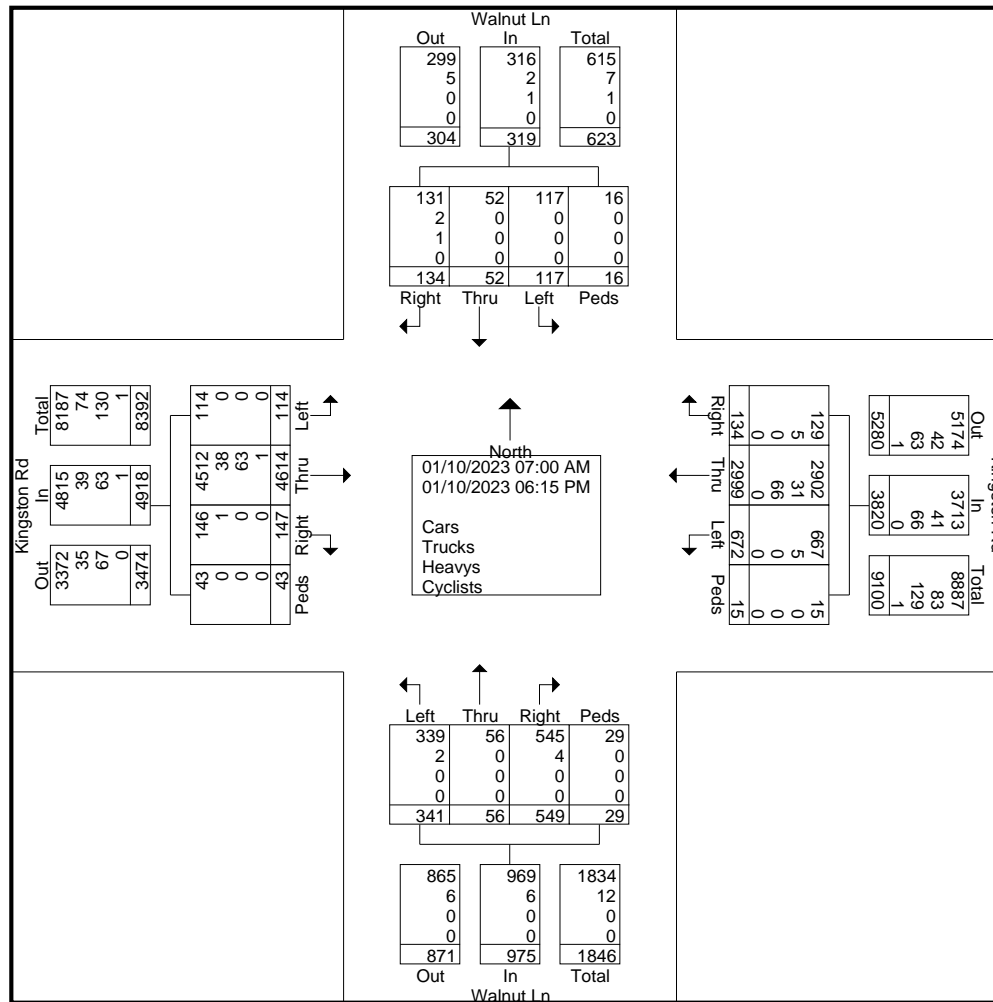
Groups Printed- Cars - Trucks - Heavys - Cyclists

Start Time	Walnut Ln From North					Kingston Rd From East					Walnut Ln From South					Kingston Rd From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00 AM	6	0	3	0	9	1	79	7	0	87	2	0	4	0	6	0	64	0	1	65	167
07:15 AM	7	0	3	1	11	3	95	17	0	115	1	1	1	1	4	0	86	2	1	89	219
07:30 AM	10	1	4	1	16	1	114	18	1	134	1	0	3	0	4	1	94	3	1	99	253
07:45 AM	8	1	4	0	13	4	119	20	1	144	9	0	8	1	18	1	123	1	1	126	301
Total	31	2	14	2	49	9	407	62	2	480	13	1	16	2	32	2	367	6	4	379	940
08:00 AM	12	4	8	1	25	4	130	15	0	149	8	1	4	0	13	5	141	3	1	150	337
08:15 AM	8	2	5	0	15	4	127	33	1	165	12	2	12	1	27	3	155	1	0	159	366
08:30 AM	10	1	4	1	16	7	125	29	1	162	14	1	12	2	29	2	174	5	3	184	391
08:45 AM	6	0	2	0	8	9	138	36	0	183	18	4	11	0	33	6	189	5	1	201	425
Total	36	7	19	2	64	24	520	113	2	659	52	8	39	3	102	16	659	14	5	694	1519
09:00 AM	4	0	1	2	7	5	128	52	1	186	15	1	12	3	31	6	210	3	2	221	445
09:15 AM	9	5	7	1	22	9	132	26	0	167	30	0	17	3	50	5	189	7	3	204	443
Total	13	5	8	3	29	14	260	78	1	353	45	1	29	6	81	11	399	10	5	425	888
04:00 PM	4	2	5	2	13	9	204	51	2	266	42	4	24	1	71	13	324	5	2	344	694
04:15 PM	6	5	12	1	24	7	179	40	2	228	50	7	25	5	87	17	287	9	3	316	655
04:30 PM	9	4	3	2	18	5	189	34	1	229	41	10	27	2	80	11	372	8	2	393	720
04:45 PM	7	5	10	0	22	14	187	42	2	245	38	7	35	3	83	15	363	8	5	391	741
Total	26	16	30	5	77	35	759	167	7	968	171	28	111	11	321	56	1346	30	12	1444	2810
05:00 PM	3	6	4	1	14	12	192	44	1	249	56	0	22	0	78	10	356	15	5	386	727
05:15 PM	7	1	7	2	17	9	193	46	1	249	45	2	33	2	82	9	311	7	2	329	677
05:30 PM	4	4	5	1	14	8	183	47	0	238	35	4	30	1	70	12	336	8	3	359	681
05:45 PM	3	4	14	0	21	7	155	35	1	198	43	5	16	3	67	10	309	8	4	331	617
Total	17	15	30	4	66	36	723	172	3	934	179	11	101	6	297	41	1312	38	14	1405	2702
06:00 PM	5	2	7	0	14	8	187	44	0	239	43	4	26	0	73	10	270	9	3	292	618
06:15 PM	6	5	9	0	20	8	143	36	0	187	46	3	19	1	69	11	261	7	0	279	555
Grand Total	134	52	117	16	319	134	2999	672	15	3820	549	56	341	29	975	147	4614	114	43	4918	10032
Apprch %	42	16.3	36.7	5		3.5	78.5	17.6	0.4		56.3	5.7	35	3		3	93.8	2.3	0.9		
Total %	1.3	0.5	1.2	0.2	3.2	1.3	29.9	6.7	0.1	38.1	5.5	0.6	3.4	0.3	9.7	1.5	46	1.1	0.4	49	
Cars	131	52	117	16	316	129	2902	667	15	3713	545	56	339	29	969	146	4512	114	43	4815	9813
% Cars	97.8	100	100	100	99.1	96.3	96.8	99.3	100	97.2	99.3	100	99.4	100	99.4	99.3	97.8	100	100	97.9	97.8
Trucks	2	0	0	0	2	5	31	5	0	41	4	0	2	0	6	1	38	0	0	39	88
% Trucks	1.5	0	0	0	0.6	3.7	1	0.7	0	1.1	0.7	0	0.6	0	0.6	0.7	0.8	0	0	0.8	0.9

Horizon Data Services Ltd

Email: nhyree@gmail.com
 Phone: (416) 840-6619 Fax: (416) 840-5297
"Your Traffic Count Specialist"

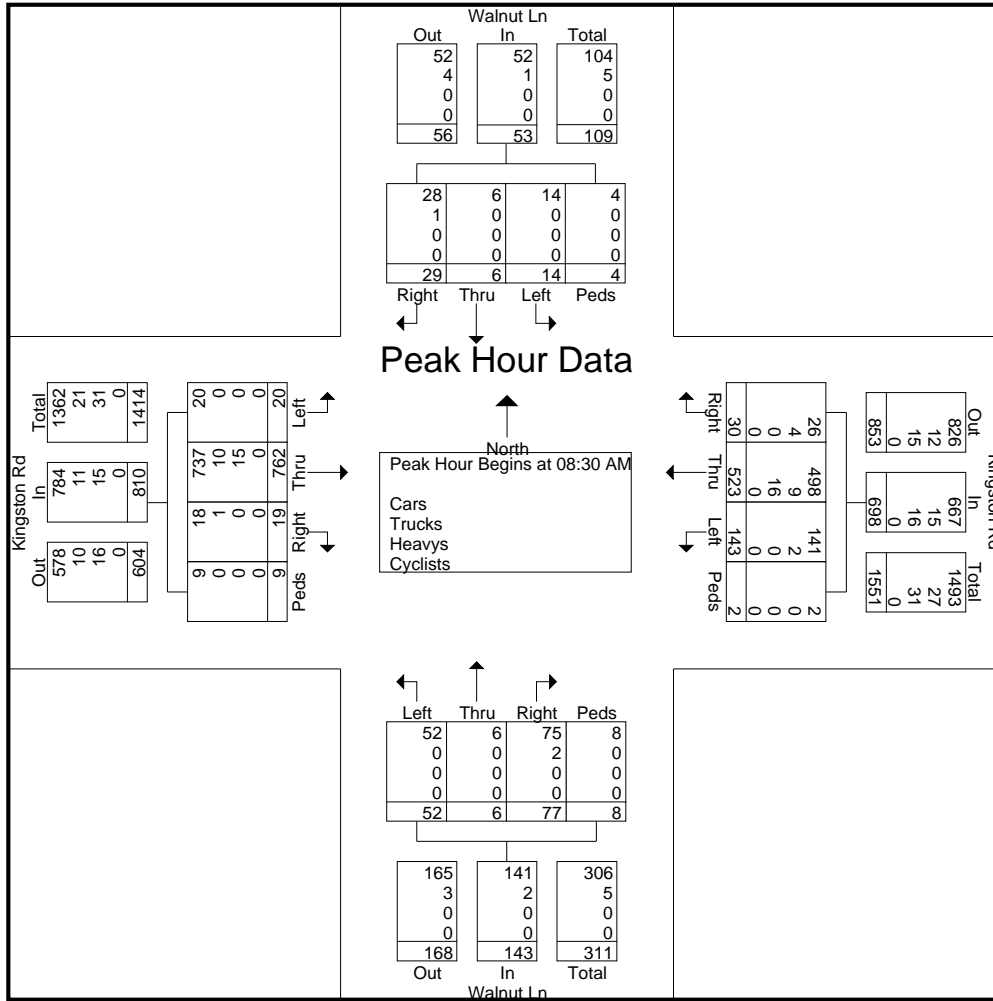
File Name : Kingston Road at Walnut Lane
 Site Code : 00000000
 Start Date : 01/10/2023
 Page No : 3



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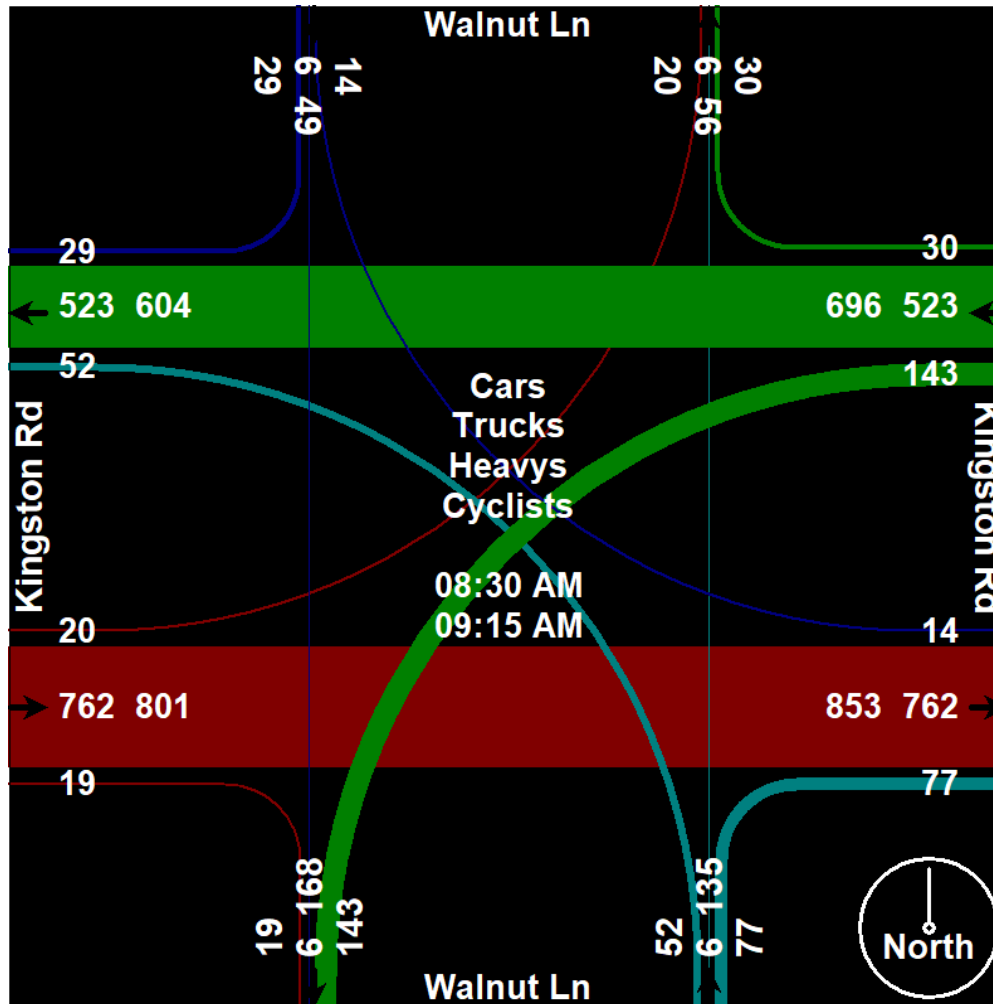
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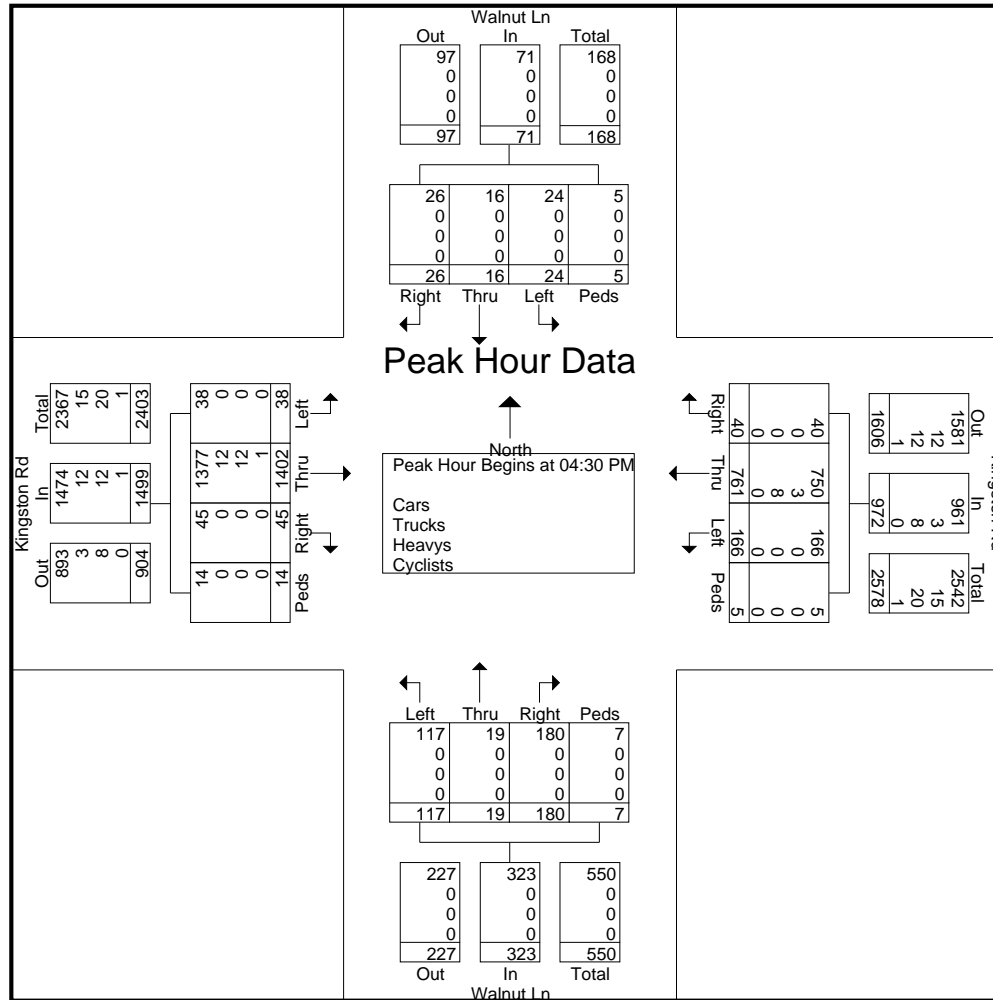
File Name : Kingston Road at Walnut Lane
 Site Code : 00000000
 Start Date : 01/10/2023
 Page No : 7

Start Time	Walnut Ln From North					Kingston Rd From East					Walnut Ln From South					Kingston Rd From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 04:00 PM to 06:15 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	9	4	3	2	18	5	189	34	1	229	41	10	27	2	80	11	372	8	2	393	720
04:45 PM	7	5	10	0	22	14	187	42	2	245	38	7	35	3	83	15	363	8	5	391	741
05:00 PM	3	6	4	1	14	12	192	44	1	249	56	0	22	0	78	10	356	15	5	386	727
05:15 PM	7	1	7	2	17	9	193	46	1	249	45	2	33	2	82	9	311	7	2	329	677
Total Volume	26	16	24	5	71	40	761	166	5	972	180	19	117	7	323	45	1402	38	14	1499	2865
% App. Total	36.6	22.5	33.8	7		4.1	78.3	17.1	0.5		55.7	5.9	36.2	2.2		3	93.5	2.5	0.9		
PHF	.722	.667	.600	.625	.807	.714	.986	.902	.625	.976	.804	.475	.836	.583	.973	.750	.942	.633	.700	.954	.967
Cars	26	16	24	5	71	40	750	166	5	961	180	19	117	7	323	45	1377	38	14	1474	2829
% Cars	100	100	100	100	100	100	98.6	100	100	98.9	100	100	100	100	100	100	98.2	100	100	98.3	98.7
Trucks	0	0	0	0	0	0	3	0	0	3	0	0	0	0	0	0	12	0	0	12	15
% Trucks	0	0	0	0	0	0	0.4	0	0	0.3	0	0	0	0	0	0	0.9	0	0	0.8	0.5
Heavyvs	0	0	0	0	0	0	8	0	0	8	0	0	0	0	0	0	12	0	0	12	20
% Heavyvs	0	0	0	0	0	0	1.1	0	0	0.8	0	0	0	0	0	0	0.9	0	0	0.8	0.7
Cyclists	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
% Cyclists	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0	0	0.1	0.0

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Email: nhyree@gmail.com
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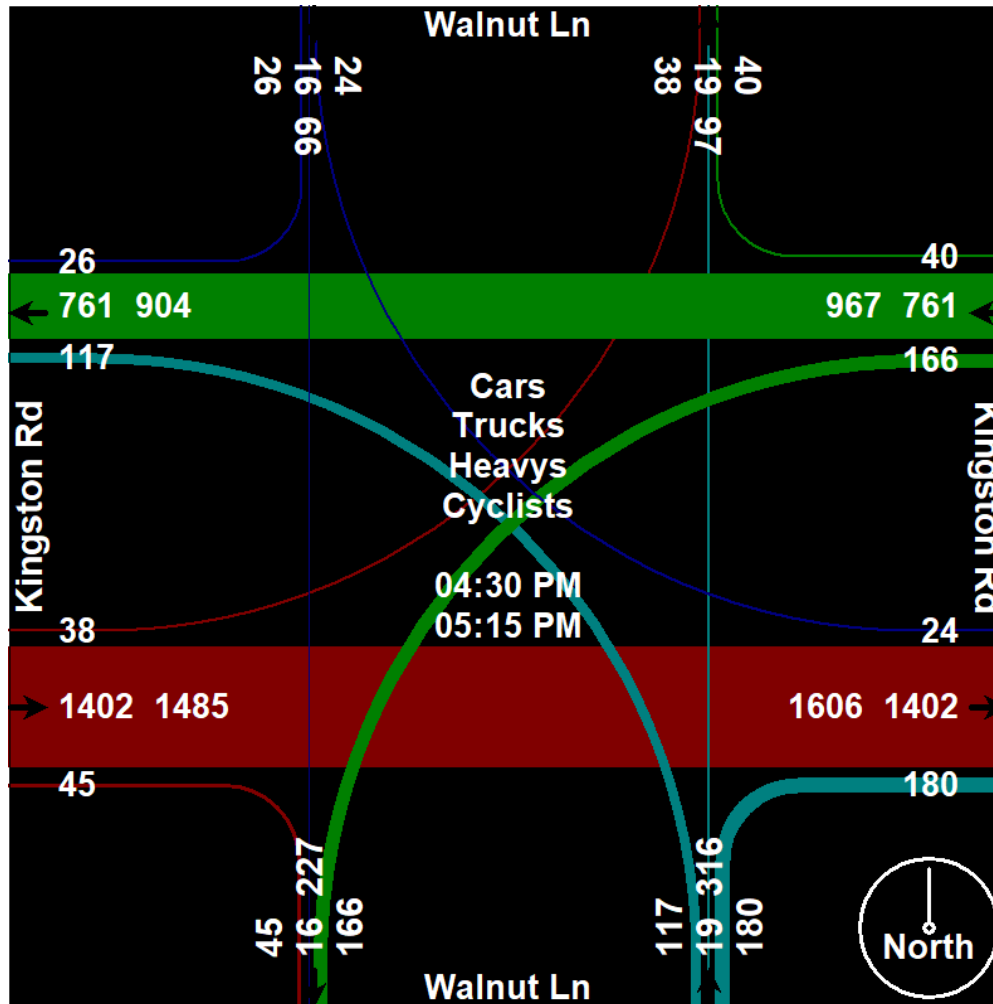
File Name : Kingston Road at Walnut Lane
 Site Code : 00000000
 Start Date : 01/10/2023
 Page No : 8



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Phone: (416) 840-6619 Fax: (416) 840-5297
"Your Traffic Count Specialist"

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Site Code : 00000000
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Page No : 9



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Email: nhyree@gmail.com
 Phone: (416) 840-6619 Fax: (416) 840-5297
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File Name : Kingston Road at Dixie Road
 Site Code : 00000000
 Start Date : 01/10/2023
 Page No : 1

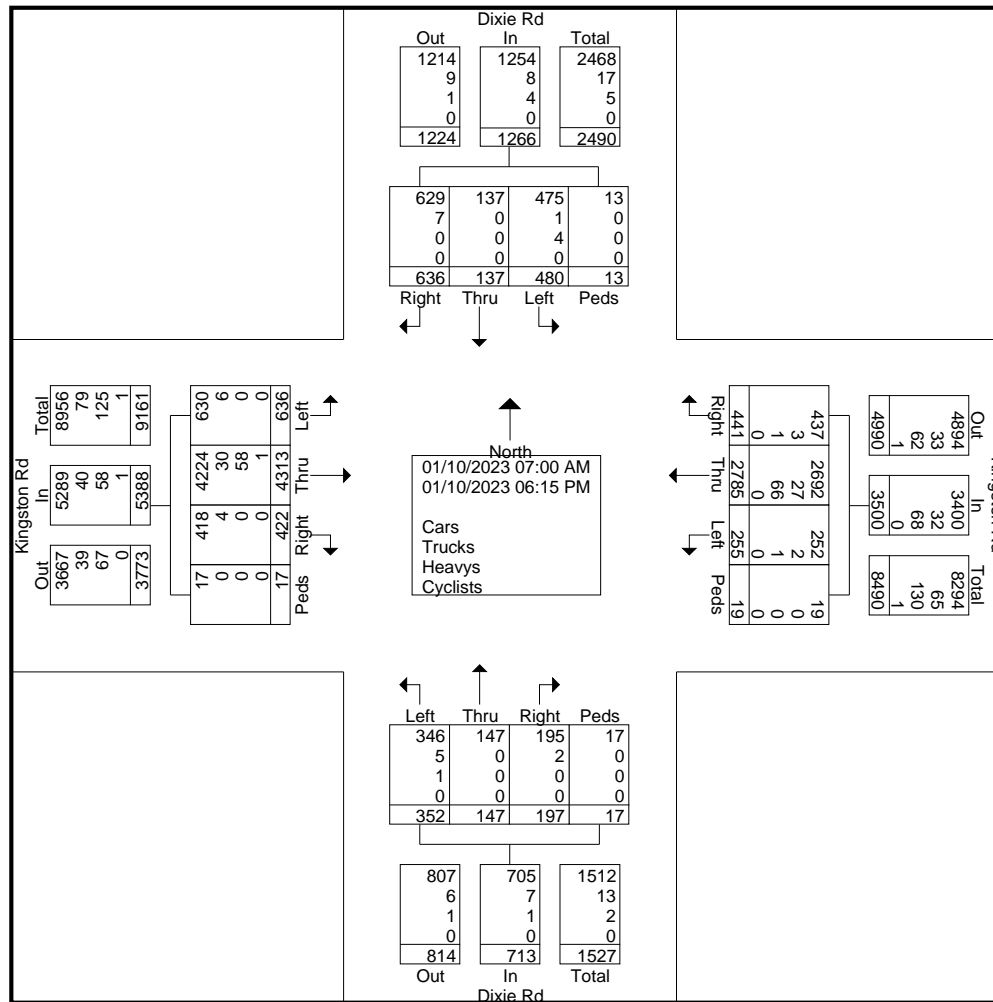
Groups Printed- Cars - Trucks - Heavys - Cyclists

Start Time	Dixie Rd From North					Kingston Rd From East					Dixie Rd From South					Kingston Rd From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
07:00 AM	27	1	8	0	36	12	73	5	0	90	2	0	6	0	8	7	57	4	0	68	202
07:15 AM	35	0	15	0	50	7	91	4	0	102	1	1	8	0	10	3	71	9	0	83	245
07:30 AM	41	3	17	0	61	12	109	6	1	128	1	3	3	0	7	8	79	4	1	92	288
07:45 AM	41	5	19	1	66	10	112	9	1	132	2	2	14	1	19	15	122	17	3	157	374
Total	144	9	59	1	213	41	385	24	2	452	6	6	31	1	44	33	329	34	4	400	1109
08:00 AM	57	3	12	1	73	19	121	9	1	150	5	4	12	0	21	15	131	24	0	170	414
08:15 AM	46	4	25	1	76	10	121	15	1	147	6	1	6	0	13	13	138	30	0	181	417
08:30 AM	41	6	28	0	75	13	122	15	0	150	5	2	10	1	18	12	157	17	0	186	429
08:45 AM	41	10	35	3	89	16	118	19	2	155	7	7	7	0	21	25	184	29	0	238	503
Total	185	23	100	5	313	58	482	58	4	602	23	14	35	1	73	65	610	100	0	775	1763
09:00 AM	37	8	27	2	74	17	110	22	0	149	12	3	5	2	22	22	194	17	2	235	480
09:15 AM	25	11	27	1	64	15	119	22	0	156	5	3	15	1	24	22	192	17	1	232	476
Total	62	19	54	3	138	32	229	44	0	305	17	6	20	3	46	44	386	34	3	467	956
04:00 PM	33	6	25	2	66	28	188	16	2	234	19	7	27	0	53	18	301	47	1	367	720
04:15 PM	22	7	27	0	56	32	167	10	0	209	15	12	28	2	57	35	270	44	1	350	672
04:30 PM	33	4	34	0	71	34	181	10	3	228	15	12	31	5	63	25	349	52	1	427	789
04:45 PM	16	12	25	1	54	32	184	10	1	227	24	9	24	0	57	22	338	46	1	407	745
Total	104	29	111	3	247	126	720	46	6	898	73	40	110	7	230	100	1258	189	4	1551	2926
05:00 PM	20	6	29	0	55	36	177	11	2	226	15	18	27	1	61	32	317	55	2	406	748
05:15 PM	23	6	31	0	60	33	189	9	1	232	9	15	29	0	53	21	286	51	0	358	703
05:30 PM	30	9	24	0	63	30	174	15	0	219	16	10	20	3	49	31	329	42	3	405	736
05:45 PM	26	16	32	0	74	18	137	17	1	173	12	10	27	0	49	37	282	53	0	372	668
Total	99	37	116	0	252	117	677	52	4	850	52	53	103	4	212	121	1214	201	5	1541	2855
06:00 PM	18	12	21	1	52	44	163	22	2	231	14	15	25	0	54	24	264	43	0	331	668
06:15 PM	24	8	19	0	51	23	129	9	1	162	12	13	28	1	54	35	252	35	1	323	590
Grand Total	636	137	480	13	1266	441	2785	255	19	3500	197	147	352	17	713	422	4313	636	17	5388	10867
Apprch %	50.2	10.8	37.9	1		12.6	79.6	7.3	0.5		27.6	20.6	49.4	2.4		7.8	80	11.8	0.3		
Total %	5.9	1.3	4.4	0.1	11.6	4.1	25.6	2.3	0.2	32.2	1.8	1.4	3.2	0.2	6.6	3.9	39.7	5.9	0.2	49.6	
Cars	629	137	475	13	1254	437	2692	252	19	3400	195	147	346	17	705	418	4224	630	17	5289	10648
% Cars	98.9	100	99	100	99.1	99.1	96.7	98.8	100	97.1	99	100	98.3	100	98.9	99.1	97.9	99.1	100	98.2	98
Trucks	7	0	1	0	8	3	27	2	0	32	2	0	5	0	7	4	30	6	0	40	87
% Trucks	1.1	0	0.2	0	0.6	0.7	1	0.8	0	0.9	1	0	1.4	0	1	0.9	0.7	0.9	0	0.7	0.8

Horizon Data Services Ltd

Email: nhyree@gmail.com
 Phone: (416) 840-6619 Fax: (416) 840-5297
"Your Traffic Count Specialist"

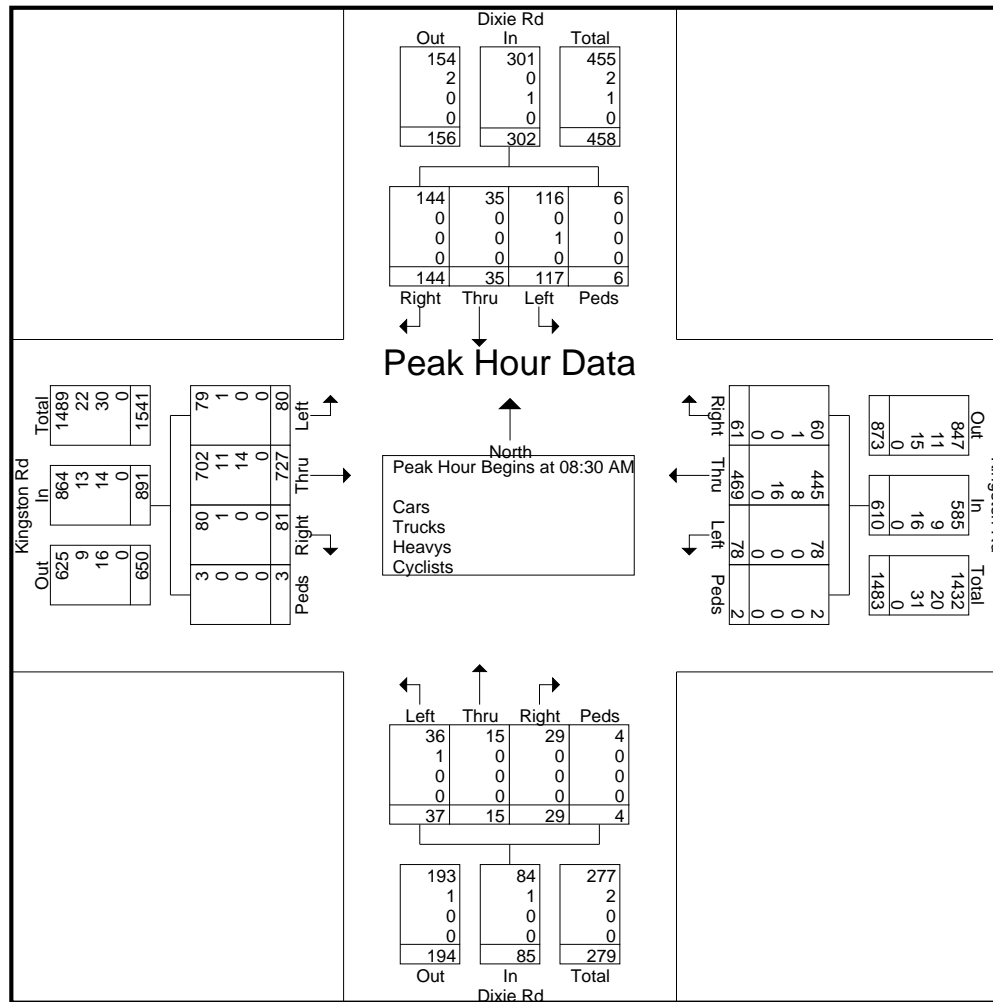
File Name : Kingston Road at Dixie Road
 Site Code : 00000000
 Start Date : 01/10/2023
 Page No : 3



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 Phone: (416) 840-6619 Fax: (416) 840-5297
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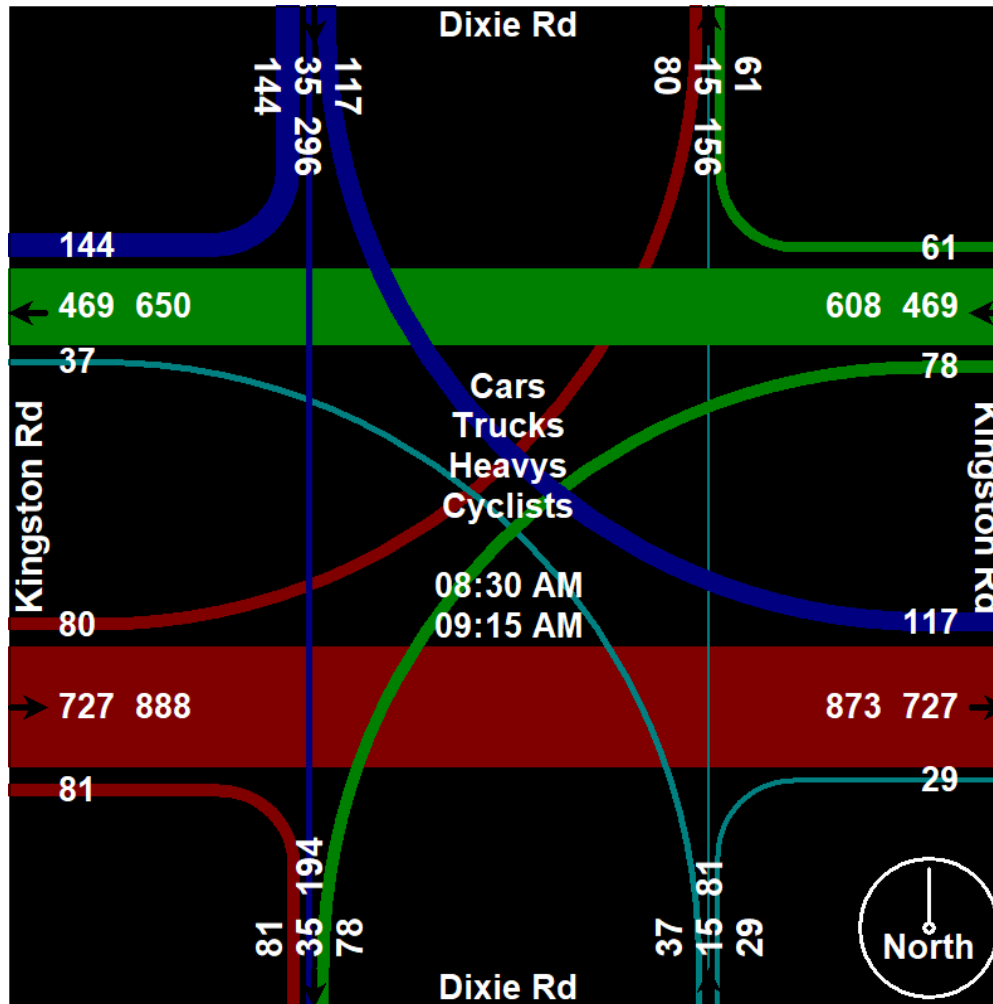
File Name : Kingston Road at Dixie Road
 Site Code : 00000000
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 Phone: (416) 840-6619 Fax: (416) 840-5297
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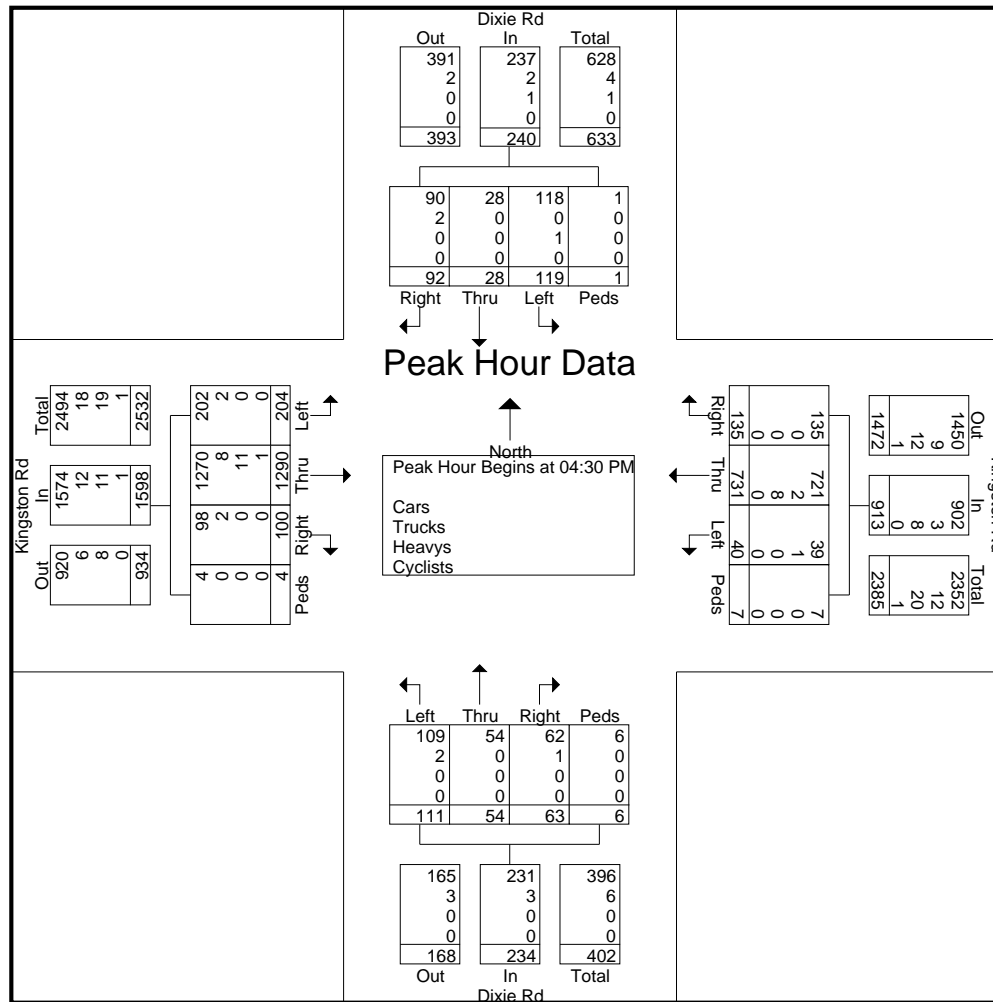
File Name : Kingston Road at Dixie Road
 Site Code : 00000000
 Start Date : 01/10/2023
 Page No : 7

Start Time	Dixie Rd From North					Kingston Rd From East					Dixie Rd From South					Kingston Rd From West					Int. Total
	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	
Peak Hour Analysis From 04:00 PM to 06:15 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	33	4	34	0	71	34	181	10	3	228	15	12	31	5	63	25	349	52	1	427	789
04:45 PM	16	12	25	1	54	32	184	10	1	227	24	9	24	0	57	22	338	46	1	407	745
05:00 PM	20	6	29	0	55	36	177	11	2	226	15	18	27	1	61	32	317	55	2	406	748
05:15 PM	23	6	31	0	60	33	189	9	1	232	9	15	29	0	53	21	286	51	0	358	703
Total Volume	92	28	119	1	240	135	731	40	7	913	63	54	111	6	234	100	1290	204	4	1598	2985
% App. Total	38.3	11.7	49.6	0.4		14.8	80.1	4.4	0.8		26.9	23.1	47.4	2.6		6.3	80.7	12.8	0.3		
PHF	.697	.583	.875	.250	.845	.938	.967	.909	.583	.984	.656	.750	.895	.300	.929	.781	.924	.927	.500	.936	.946
Cars	90	28	118	1	237	135	721	39	7	902	62	54	109	6	231	98	1270	202	4	1574	2944
% Cars	97.8	100	99.2	100	98.8	100	98.6	97.5	100	98.8	98.4	100	98.2	100	98.7	98.0	98.4	99.0	100	98.5	98.6
Trucks	2	0	0	0	2	0	2	1	0	3	1	0	2	0	3	2	8	2	0	12	20
% Trucks	2.2	0	0	0	0.8	0	0.3	2.5	0	0.3	1.6	0	1.8	0	1.3	2.0	0.6	1.0	0	0.8	0.7
Heavyvs	0	0	1	0	1	0	8	0	0	8	0	0	0	0	0	0	11	0	0	11	20
% Heavyvs	0	0	0.8	0	0.4	0	1.1	0	0	0.9	0	0	0	0	0	0	0.9	0	0	0.7	0.7
Cyclists	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
% Cyclists	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0	0	0.1	0.0

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File Name : Kingston Road at Dixie Road
 Site Code : 00000000
 Start Date : 01/10/2023
 Page No : 8

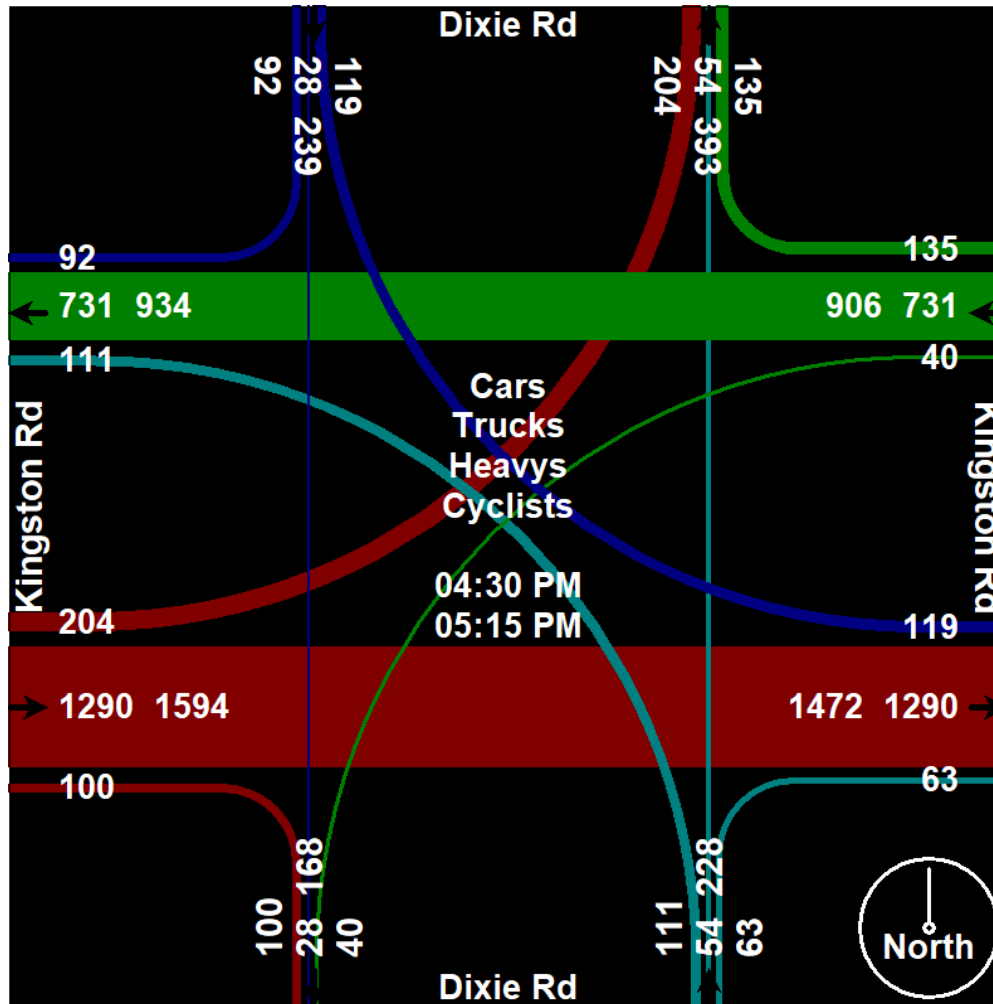


Horizon Data Services Ltd

Email: nhyree@gmail.com
Phone: (416) 840-6619 Fax: (416) 840-5297

"Your Traffic Count Specialist"

File Name : Kingston Road at Dixie Road
Site Code : 00000000
Start Date : 01/10/2023
Page No : 9



TMC Tabular Report

Kingston Rd (RHwy 2) @ Fairport Rd

TMC No: 0700500000 Intersection ID: 10745 Count ID: 35702040618 Count Date: 12/06/2022, Tue

AM Peak 08:45

		0.86	0.00	0.81	Ped.		0
		3%	0%	3%	↑		
		8	6	7	195		
↓		0	0	182	Cars		
Ped.		229	0	6	Trucks		
0		0	0	182	Trucks % PHF		
←		23	792	99	6		6%
0.76		1%	1	96	563		0.77
0.86		4%	28	681	0		0.89
0.00		0%	0	0	0		0.00
PHF		Trucks %	Trucks	Cars	0		Ped.
					0		
					0		
					0		
					0		
					0		
					0		
					0		
					0		
					0		
					0		
					0		
					0		
					0		
					0		

MD Peak 12:15

		0.83	0.00	0.86	Ped.		2
		7%	0%	1%	↑		
		9	1	5	288		
↓		1	0	192	Cars		
Ped.		123	0	6	Trucks		
1		0	0	192	Trucks % PHF		
←		28	786	178	3		2%
0.76		2%	2	110	663		0.85
0.93		3%	30	900	0		0.90
0.00		0%	0	0	0		0.00
PHF		Trucks %	Trucks	Cars	0		Ped.
					0		
					0		
					0		
					0		
					0		
					0		
					0		
					0		
					0		
					0		
					0		
					0		
					0		
					0		
					0		

PM Peak 16:30

		0.93	0.00	0.87	Ped.		1
		0%	0%	0%	↑		
		0	0	3	428		
↓		0	0	271	Cars		
Ped.		137	0	6	Trucks		
2		0	0	271	Trucks % PHF		
←		15	855	223	2		1%
0.75		0%	1	205	718		0.85
0.92		2%	21	1371	0		0.88
0.00		0%	0	0	0		0.00
PHF		Trucks %	Trucks	Cars	0		Ped.
					0		
					0		
					0		
					0		
					0		
					0		
					0		
					0		
					0		
					0		
					0		
					0		
					0		
					0		
					0		

Total Count 8 hours*

		3%	0%	1%	Ped.		14
		60	36	60	↑		
		1940	2405	3357	Cars		
↓		0	0	1873	Trucks		
Ped.		19	0	7946	Trucks % PHF		
19		0	0	7946	245		3%
←		305	9886	1873	35		2%
2%		25	1484	7946	0		0%
3%		291	11181	0	0		0%
0%		0	0	13586	327		→
PHF		Trucks %	Trucks	Cars	2		Ped.
					2		
					0		
					0		
					0		
					0		
					0		
					0		
					0		
					0		
					0		
					0		
					0		
					0		
					0		
					0		
					0		

TMC Tabular Report

Kingston Rd (RHwy 2) @ Boyer Plaza / Delta Bv

TMC No: 0700200000 Intersection ID: 4063 Count ID: 35702040743 Count Date: 12/13/2022, Tue

AM Peak 10:30		Ped.		Ped.		Ped.	
0.78	0.65	0.61	5%	2	2	156	13
0%	0%	0%	↑	0	0	42	13
0	0	2	↑	0	0	156	13
124	13	156	↑	124	13	156	13
Ped.	Cars	Trucks	Trucks %	PHF			
6	74	2	3%	0.70			
←	18	1159	→	→	→	→	→
0.79	0%	0	76	895	18	2%	0.91
0.95	4%	35	942	96	1	1%	0.69
0.93	0%	0	37	1076	38		
PHF	Trucks %	Trucks	Cars				
0		146	140	6	92	1	3
0		1	0	0	1	0%	0.73
		0	0%	0.81			

MD Peak 12:15		Ped.		Ped.		Ped.	
0.79	0.59	0.71	0%	7	7	243	43
3%	5%	0%	↑	0	0	77	18
4	1	18	↑	4	1	147	18
147	18	243	↑	147	18	243	18
Ped.	Cars	Trucks	Trucks %	PHF			
5	93	1	1%	0.87			
←	31	1436	→	→	→	→	→
0.84	2%	2	125	1088	25	2%	0.95
0.91	2%	23	1010	119	1	1%	0.97
0.71	3%	1	39	1228	26		
PHF	Trucks %	Trucks	Cars				
		176	201	25	141	3	2
		3	2	4	3	2%	0.92
			1%	14%			
			0.86				

PM Peak 16:45		Ped.		Ped.		Ped.	
0.85	0.41	0.73	0%	1	1	266	16
0%	0%	0%	↑	0	0	82	13
0	0	13	↑	0	0	143	13
143	13	266	↑	143	13	266	13
Ped.	Cars	Trucks	Trucks %	PHF			
1	121	0	0%	0.84			
←	15	1470	→	→	→	→	→
0.66	1%	1	130	1129	13	1%	0.87
0.98	1%	15	1344	89	0	0%	0.74
0.79	0%	0	38	1564	15		
PHF	Trucks %	Trucks	Cars				
		140	198	15	138	0	0
		0	2	0	0	0%	0.54
			1%	0.94			

Total Count 8 hours*		Ped.		Ped.		Ped.	
1%	0%	0%	↑	31	31	2619	152
1%	1%	2	↑	2	2	756	142
25	2	142	↑	25	2	1722	142
1722	2	142	↑	1722	2	142	142
Ped.	Cars	Trucks	Trucks %	PHF			
43	1160	8	1%	12357	341	3%	
←	382	15830	→	→	→	→	→
1%	16	1331	→	→	→	→	→
2%	292	12084	→	→	→	→	→
3%	12	372	→	→	→	→	→
PHF	Trucks %	Trucks	Cars				
		1498	1751	128	1216	11	25
		22	16	7	11	1%	0.93
			1%	5%			

TMC Tabular Report

Kingston Rd (RHwy 2) @ Whites Rd (R.R.38)

TMC No:

0380500000

Intersection ID:

10956

Count ID:

35702040625

Count Date:

12/06/2022, Tue

AM Peak 08:45				
Ped. 38	↕	↑	↔	↓
0.52	2%	4	46	796
0.91	5%	2	156	799
0.77	1%	39	749	799
Cars	Trucks	Trucks %	PHF	
281	14	5%	0.91	
478	17	3%	0.77	
234	2	1%	0.76	
857	28			
PHF	Trucks %	Trucks	Cars	20 Ped. ↓↕
1324	146	7	57	↓
390	13	3%	0.87	Ped. ↓↕ 13
390	21	5%	0.91	
1324	57	5%	0.89	

MD Peak 12:15				
Ped. 251	↕	↑	↔	↓
0.78	3%	4	14	490
0.80	3%	7	159	490
0.77	4%	32	727	490
Cars	Trucks	Trucks %	PHF	
334	15	4%	0.93	
612	25	4%	0.94	
273	8	3%	0.88	
1162	34			
PHF	Trucks %	Trucks	Cars	72 Ped. ↓↕
1073	182	4	2%	0.85
481	15	3%	0.98	Ped. ↓↕ 40
297	11	4%	0.89	
182	4	2%	0.85	

PM Peak 15:45				
Ped. 75	↕	↑	↔	↓
0.75	2%	3	29	617
0.88	1%	21	1329	1138
0.88	1%	2	189	1138
Cars	Trucks	Trucks %	PHF	
490	5	1%	0.83	
724	11	1%	0.88	
231	5	2%	0.83	
1566	27			
PHF	Trucks %	Trucks	Cars	65 Ped. ↓↕
1206	228	2	1%	0.87
655	7	1%	0.97	Ped. ↓↕ 31
684	12	2%	0.90	
1206	44	1%	0.97	

Total Count 8 hours*				
Ped. 575	↕	↑	↔	↓
2%	32	202	8095	1570
2%	45	1912	11133	1174
2%	336	4373	145	3%
Cars	Trucks	Trucks %	PHF	
4373	145	3%	7119	
7119	231	3%	3018	
3018	57	2%	13769	
13769	343			
PHF	Trucks %	Trucks	Cars	289 Ped. ↓↕
14877	2060	40	2%	154
5844	122	2%	Ped. ↓↕ 154	
5551	158	3%		
2060	40	2%		

TMC Tabular Report

Whites Rd (R.R.38) @ Highway 401 EB Off Ramp

TMC No: 0380700000 Intersection ID: 11065 Count ID: 35702040624 Count Date: 12/06/2022, Tue

AM Peak 08:45	0.00	0.89	0.00	0.00	0.00	Ped. 0	↕↔
↕↔	0%	5%	0%	0%	0%	↑	↕↔
Ped. 7	0	21	0	0	58	1278	Cars Trucks Trucks % PHF
←	0	→	0	↕↔	↕↔	↕↔	0 0 0% 0.00
0.85 3%	16	→	↕↔	↕↔	↕↔	↕↔	0 0 0% 0.00
0.00 0%	0	↕↔	↕↔	↕↔	↕↔	↕↔	0 0 0% 0.00
0.91 4%	12	↕↔	↕↔	↕↔	↕↔	↕↔	0 0 0% 0.00
PHF	Trucks % Trucks	Cars	685	↕↔	↕↔	↕↔	11 Ped. ↕↔
			33	↕↔	↕↔	↕↔	0 0 0% 0.00
			↕↔	↕↔	↕↔	↕↔	0.88 0.00
			↕↔	↕↔	↕↔	↕↔	0.00
			↕↔	↕↔	↕↔	↕↔	0.00

MD Peak 12:15	0.00	0.92	0.00	0.00	0.00	Ped. 0	↕↔
↕↔	0%	3%	0%	0%	0%	↑	↕↔
Ped. 0	0	13	0	0	43	1198	Cars Trucks Trucks % PHF
←	0	↕↔	↕↔	↕↔	↕↔	↕↔	0 0 0% 0.00
0.88 3%	20	↕↔	↕↔	↕↔	↕↔	↕↔	0 0 0% 0.00
0.00 0%	0	↕↔	↕↔	↕↔	↕↔	↕↔	0 0 0% 0.00
0.88 5%	14	↕↔	↕↔	↕↔	↕↔	↕↔	0 0 0% 0.00
PHF	Trucks % Trucks	Cars	655	↕↔	↕↔	↕↔	4 Ped. ↕↔
			27	↕↔	↕↔	↕↔	0 0 0% 0.00
			↕↔	↕↔	↕↔	↕↔	0.89 0.00
			↕↔	↕↔	↕↔	↕↔	0.00
			↕↔	↕↔	↕↔	↕↔	0.00

PM Peak 16:45	0.00	0.99	0.00	0.00	0.00	Ped. 0	↕↔
↕↔	0%	1%	0%	0%	0%	↑	↕↔
Ped. 4	0	7	0	0	23	2024	Cars Trucks Trucks % PHF
←	0	↕↔	↕↔	↕↔	↕↔	↕↔	0 0 0% 0.00
0.97 1%	11	↕↔	↕↔	↕↔	↕↔	↕↔	0 0 0% 0.00
0.00 0%	0	↕↔	↕↔	↕↔	↕↔	↕↔	0 0 0% 0.00
0.95 3%	17	↕↔	↕↔	↕↔	↕↔	↕↔	0 0 0% 0.00
PHF	Trucks % Trucks	Cars	1136	↕↔	↕↔	↕↔	11 Ped. ↕↔
			24	↕↔	↕↔	↕↔	0 0 0% 0.00
			↕↔	↕↔	↕↔	↕↔	0.83 0.00
			↕↔	↕↔	↕↔	↕↔	0.00
			↕↔	↕↔	↕↔	↕↔	0.00

Total Count 8 hours*	0.00	0.00	0.00	0.00	0.00	Ped. 0	↕↔
↕↔	0%	3%	0%	0%	0%	↑	↕↔
Ped. 52	0	154	0	0	455	17277	Cars Trucks Trucks % PHF
←	0	↕↔	↕↔	↕↔	↕↔	↕↔	0 0 0% 0.00
2% 202	↕↔	↕↔	↕↔	↕↔	↕↔	↕↔	0 0 0% 0.00
0% 0	↕↔	↕↔	↕↔	↕↔	↕↔	↕↔	0 0 0% 0.00
4% 192	↕↔	↕↔	↕↔	↕↔	↕↔	↕↔	0 0 0% 0.00
PHF	Trucks % Trucks	Cars	9964	↕↔	↕↔	↕↔	58 Ped. ↕↔
			346	↕↔	↕↔	↕↔	0 0 0% 0.00
			↕↔	↕↔	↕↔	↕↔	0.00 0.00
			↕↔	↕↔	↕↔	↕↔	0.00 0.00
			↕↔	↕↔	↕↔	↕↔	0.00 0.00

TMC 15 Min Report

Whites Rd (R.R.38) @ Highway 401 EB Off Ramp

TMC No: 0380700000 Intersection ID: 11065 Count ID: 35702040624 Count Date: 12/06/2022, Tue

Table with columns for Time, Car/Truck/Heavy/Ped counts for NORTH, EAST, SOUTH, and WEST approaches, and a Total column. Data is organized into three periods: Period 1 (05:00-10:45), Period 2 (11:00-13:45), and Period 3 (14:00-20:30).



INTERSECTION SIGNAL TIMING REPORT

Location	Kingston Rd & Delta / Boyer				
Date	31-07-23	C&E No.	43688597	Prepared by	N. Mimay
Prepared for	WSP				

AM Peak 05:30 - 09:00

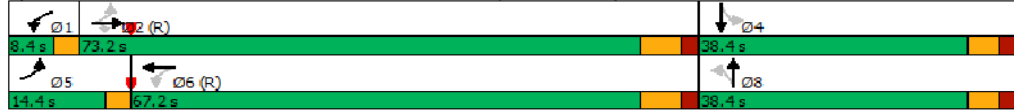


Phase Number	1	2	4	5	6	8
Movement	WBL	EBTL	SBTL	EBL	WBTL	NBTL
Lead/Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	None	None	C-Max	None
Maximum Split (s)	8.4	73.2	38.4	14.4	67.2	38.4
Maximum Split (%)	7.0%	61.0%	32.0%	12.0%	56.0%	32.0%
Minimum Split (s)	8	32	38	8	32	38
Yellow Time (s)	3	4.7	3.8	3	4.7	3.8
All-Red Time (s)	0	2.2	2.8	0	2.2	2.8
Minimum Initial (s)	5	20	8	5	20	8
Vehicle Extension (s)	3	0.2	3	3	0.2	3
Minimum Gap (s)	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0
Walk Time (s)		7	7		7	7
Flash Dont Walk (s)		18	24		18	24

Intersection Summary

Cycle Length	120
Control Type	Actuated-Coordinated
Natural Cycle	90
Offset: 105.6 (88%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	

Splits and Phases: 254: BOYER PLAZA/DELTA BV & HWY 2 (KINGSTON RD)



PM Peak (14:30-20:00)

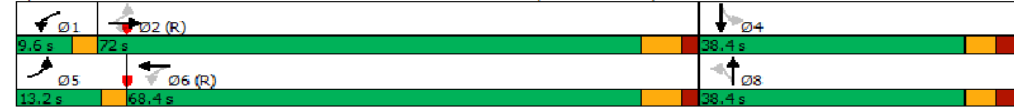


Phase Number	1	2	4	5	6	8
Movement	WBL	EBTL	SBTL	EBL	WBTL	NBTL
Lead/Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	None	None	C-Max	None
Maximum Split (s)	9.6	72	38.4	13.2	68.4	38.4
Maximum Split (%)	8.0%	60.0%	32.0%	11.0%	57.0%	32.0%
Minimum Split (s)	8	32	38	8	32	38
Yellow Time (s)	3	4.7	3.8	3	4.7	3.8
All-Red Time (s)	0	2.2	2.8	0	2.2	2.8
Minimum Initial (s)	5	20	8	5	20	8
Vehicle Extension (s)	3	0.2	3	3	0.2	3
Minimum Gap (s)	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0
Walk Time (s)		7	7		7	7
Flash Dont Walk (s)		18	24		18	24

Intersection Summary

Cycle Length	120
Control Type	Actuated-Coordinated
Natural Cycle	90
Offset: 111.6 (93%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	

Splits and Phases: 254: BOYER ENTRANCE/DELTA BV & HWY 2 (KINGSTON RD)



Weekend Peak (8:00-21:00)

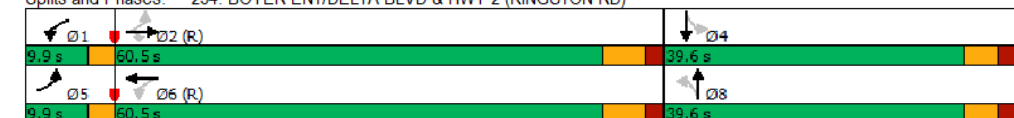


Phase Number	1	2	4	5	6	8
Movement	WBL	EBTL	SBTL	EBL	WBTL	NBTL
Lead/Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	None	None	C-Max	None
Maximum Split (s)	9.9	60.5	39.6	9.9	60.5	39.6
Maximum Split (%)	9.0%	55.0%	36.0%	9.0%	55.0%	36.0%
Minimum Split (s)	8	32	38	8	32	38
Yellow Time (s)	3	4.7	3.8	3	4.7	3.8
All-Red Time (s)	0	2.2	2.8	0	2.2	2.8
Minimum Initial (s)	5	20	8	5	20	8
Vehicle Extension (s)	3	0.2	3	3	0.2	3
Minimum Gap (s)	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0
Walk Time (s)		7	7		7	7
Flash Dont Walk (s)		18	24		18	24

Intersection Summary

Cycle Length	110
Control Type	Actuated-Coordinated
Natural Cycle	80
Offset: 103.4 (94%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	

Splits and Phases: 254: BOYER ENT/DELTA BLVD & HWY 2 (KINGSTON RD)



*Please note a concerted effort has been made to ensure the accuracy and completeness of the data provided, however, inadvertent errors or omissions can still occur. Please bring any errors or omissions to the Region's attention.



INTERSECTION SIGNAL TIMING REPORT

Location	Kingston Rd. (Hwy 2) and Fairport Rd.		
Date	16-08-23	C&E No.	43688597
Prepared for	WSP		
Prepared by	N. Mimay		

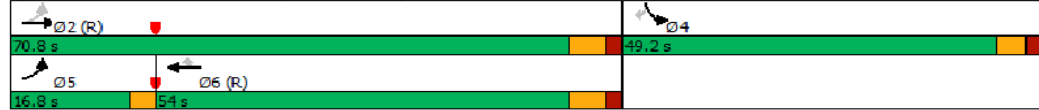
AM Peak 05:30-9:00



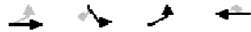
Phase Number	2	4	5	6
Movement	EBTL	SBL	EBL	WBT
Lead/Lag			Lead	Lag
Lead-Lag Optimize			Yes	Yes
Recall Mode	C-Max	None	None	C-Max
Maximum Split (s)	70.8	49.2	16.8	54
Maximum Split (%)	59.0%	41.0%	14.0%	45.0%
Minimum Split (s)	33	29	8	33
Yellow Time (s)	4.3	3.3	3	4.3
All-Red Time (s)	2	2.7	0	2
Minimum Initial (s)	20	8	5	20
Vehicle Extension (s)	0.2	3	3	0.2
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	7	7	7	7
Flash Dont Walk (s)	19	16		19

Intersection Summary	
Cycle Length	120
Control Type	Actuated-Coordinated
Natural Cycle	70
Offset: 60 (50%), Referenced to phase 2:EBTL and 6:WBT, Start of Green	

Splits and Phases: 258: HWY 2 (KINGSTON RD) & FAIRPORT RD



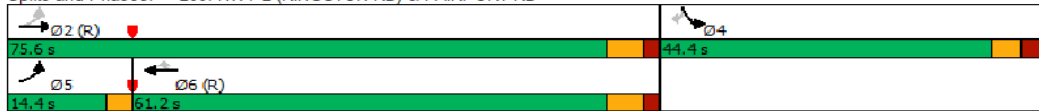
PM Peak (14:30-20:00)



Phase Number	2	4	5	6
Movement	EBTL	SBL	EBL	WBT
Lead/Lag			Lead	Lag
Lead-Lag Optimize			Yes	Yes
Recall Mode	C-Max	None	None	C-Max
Maximum Split (s)	75.6	44.4	14.4	61.2
Maximum Split (%)	63.0%	37.0%	12.0%	51.0%
Minimum Split (s)	33	29	8	33
Yellow Time (s)	4.3	3.3	3	4.3
All-Red Time (s)	2	2.7	0	2
Minimum Initial (s)	20	8	5	20
Vehicle Extension (s)	0.2	3	3	0.2
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	7	7	7	7
Flash Dont Walk (s)	19	16		19

Intersection Summary	
Cycle Length	120
Control Type	Actuated-Coordinated
Natural Cycle	70
Offset: 72 (60%), Referenced to phase 2:EBTL and 6:WBT, Start of Green	

Splits and Phases: 258: HWY 2 (KINGSTON RD) & FAIRPORT RD



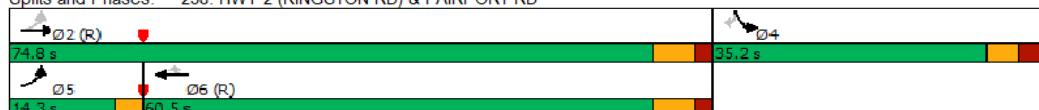
Weekend Peak 8:00-21:00



Phase Number	2	4	5	6
Movement	EBTL	SBL	EBL	WBT
Lead/Lag			Lead	Lag
Lead-Lag Optimize			Yes	Yes
Recall Mode	C-Max	None	None	C-Max
Maximum Split (s)	74.8	35.2	14.3	60.5
Maximum Split (%)	68.0%	32.0%	13.0%	55.0%
Minimum Split (s)	33	29	8	33
Yellow Time (s)	4.3	3.3	3	4.3
All-Red Time (s)	2	2.7	0	2
Minimum Initial (s)	20	8	5	20
Vehicle Extension (s)	0.2	3	3	0.2
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	7	7	7	7
Flash Dont Walk (s)	19	16		19

Intersection Summary	
Cycle Length	110
Control Type	Actuated-Coordinated
Natural Cycle	70
Offset: 71.5 (65%), Referenced to phase 2:EBTL and 6:WBT, Start of Green	

Splits and Phases: 258: HWY 2 (KINGSTON RD) & FAIRPORT RD



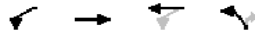
**Please note a concerted effort has been made to ensure the accuracy and completeness of the data provided, however, inadvertent errors or omissions can still occur. Please bring any errors or omissions to the Region's attention.*



INTERSECTION SIGNAL TIMING REPORT

Location	Kingston Rd & Hwy 401 Ramp (E of Whites Rd.)		
Date	24-05-23	C&E No.	43688597
Prepared for	WSP		
		Prepared by	N. Mimay

AM Peak 05:30 - 09:00



Phase Number	1	2	6	8
Movement	WBL	EBT	WBTL	NBL
Lead/Lag	Lead	Lag		
Lead-Lag Optimize	Yes	Yes		
Recall Mode	None	C-Max	C-Max	None
Maximum Split (s)	25.2	52.8	78	42
Maximum Split (%)	21.0%	44.0%	65.0%	35.0%
Minimum Split (s)	8	50	50	32
Yellow Time (s)	3	4.2	4.2	3.7
All-Red Time (s)	0	3	3	1.7
Minimum Initial (s)	5	20	20	8
Vehicle Extension (s)	3	0.2	0.2	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)		7	7	7
Flash Dont Walk (s)		35	35	19

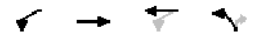
Intersection Summary

Cycle Length	120
Control Type	Actuated-Coordinated
Natural Cycle	100
Offset: 96 (80%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	

Splits and Phases: 256: 401 WB RAMP & HWY 2 (KINGSTON RD)



PM Peak (14:30-20:00)

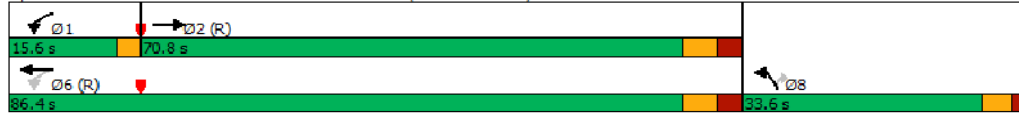


Phase Number	1	2	6	8
Movement	WBL	EBT	WBTL	NBL
Lead/Lag	Lead	Lag		
Lead-Lag Optimize	Yes	Yes		
Recall Mode	None	C-Max	C-Max	None
Maximum Split (s)	15.6	70.8	86.4	33.6
Maximum Split (%)	13.0%	59.0%	72.0%	28.0%
Minimum Split (s)	8	50	50	32
Yellow Time (s)	3	4.2	4.2	3.7
All-Red Time (s)	0	3	3	1.7
Minimum Initial (s)	5	20	20	8
Vehicle Extension (s)	3	0.2	0.2	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)		7	7	7
Flash Dont Walk (s)		35	35	19

Intersection Summary

Cycle Length	120
Control Type	Actuated-Coordinated
Natural Cycle	90
Offset: 8.4 (7%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	

Splits and Phases: 256: 401 WB RAMP & HWY 2 (KINGSTON RD)



Weekend Peak 8:00-21:00

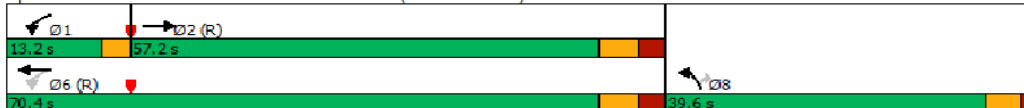


Phase Number	1	2	6	8
Movement	WBL	EBT	WBTL	NBL
Lead/Lag	Lead	Lag		
Lead-Lag Optimize	Yes	Yes		
Recall Mode	None	C-Max	C-Max	None
Maximum Split (s)	13.2	57.2	70.4	39.6
Maximum Split (%)	12.0%	52.0%	64.0%	36.0%
Minimum Split (s)	8	50	50	32
Yellow Time (s)	3	4.2	4.2	3.7
All-Red Time (s)	0	3	3	1.7
Minimum Initial (s)	5	20	20	8
Vehicle Extension (s)	3	0.2	0.2	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)		7	7	7
Flash Dont Walk (s)		35	35	19

Intersection Summary

Cycle Length	110
Control Type	Actuated-Coordinated
Natural Cycle	90
Offset: 20 (18%), Referenced to phase 2:EBT and 6:WBTL, Start of Green	

Splits and Phases: 256: HWY 401 WB & HWY 2 (KINGSTON RD)



**Please note a concerted effort has been made to ensure the accuracy and completeness of the data provided, however, inadvertent errors or omissions can still occur. Please bring any errors or omissions to the Region's attention.*



INTERSECTION SIGNAL TIMING REPORT

Location	Kingston Road (Hwy 2) and Whites Road (RR38)		
Date	31-07-23	C&E No.	43688597
Prepared for	WSP		
	Prepared by		N. Mimay

AM Peak 05:30 - 09:00

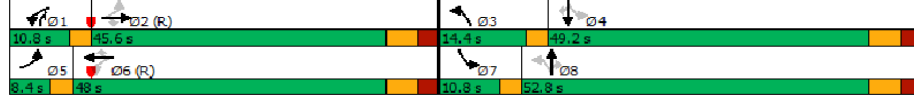


Phase Number	1	2	3	4	5	6	7	8
Movement	WBL	EBTL	NBL	SBTL	EBL	WBTL	SBL	NBTL
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	Max	None	C-Max	None	Max
Maximum Split (s)	10.8	45.6	14.4	49.2	8.4	48	10.8	52.8
Maximum Split (%)	9.0%	38.0%	12.0%	41.0%	7.0%	40.0%	9.0%	44.0%
Minimum Split (s)	8	43	8	45	8	43	8	45
Yellow Time (s)	3	4.2	3	4.3	3	4.2	3	4.3
All-Red Time (s)	0	2.8	0	2.8	0	2.8	0	2.8
Minimum Initial (s)	5	20	5	8	5	20	5	8
Vehicle Extension (s)	3	0.2	3	0.2	3	0.2	3	0.2
Minimum Gap (s)	3	3	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0	0	0
Walk Time (s)		7		7		7		7
Flash Dont Walk (s)		29		30		29		30

Intersection Summary

Cycle Length	120
Control Type	Actuated-Coordinated
Natural Cycle	105
Offset: 1.2 (1%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	

Splits and Phases: 250: RR 38 (WHITES ROAD) & HWY 2 (KINGSTON RD)



PM Peak (14:30-20:00)

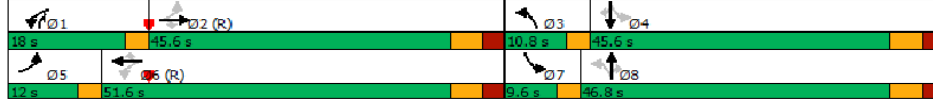


Phase Number	1	2	3	4	5	6	7	8
Movement	WBL	EBTL	NBL	SBTL	EBL	WBTL	SBL	NBTL
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	Max	None	C-Max	None	Max
Maximum Split (s)	18	45.6	10.8	45.6	12	51.6	9.6	46.8
Maximum Split (%)	15.0%	38.0%	9.0%	38.0%	10.0%	43.0%	8.0%	39.0%
Minimum Split (s)	8	43	8	45	8	43	8	45
Yellow Time (s)	3	4.2	3	4.3	3	4.2	3	4.3
All-Red Time (s)	0	2.8	0	2.8	0	2.8	0	2.8
Minimum Initial (s)	5	20	5	8	5	20	5	8
Vehicle Extension (s)	3	0.2	3	0.2	3	0.2	3	0.2
Minimum Gap (s)	3	3	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0	0	0
Walk Time (s)		7		7		7		7
Flash Dont Walk (s)		29		30		29		30

Intersection Summary

Cycle Length	120
Control Type	Actuated-Coordinated
Natural Cycle	105
Offset: 1.2 (1%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	

Splits and Phases: 250: RR 38 (WHITES RD) & HWY 2 (KINGSTON RD)



Weekend Peak 8:00-21:00

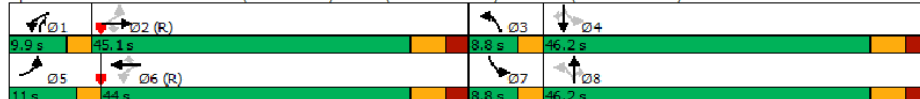


Phase Number	1	2	3	4	5	6	7	8
Movement	WBL	EBTL	NBL	SBTL	EBL	WBTL	SBL	NBTL
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	Max	None	C-Max	None	Max
Maximum Split (s)	9.9	45.1	8.8	46.2	11	44	8.8	46.2
Maximum Split (%)	9.0%	41.0%	8.0%	42.0%	10.0%	40.0%	8.0%	42.0%
Minimum Split (s)	8	43	8	45	8	43	8	45
Yellow Time (s)	3	4.2	3	4.3	3	4.2	3	4.3
All-Red Time (s)	0	2.8	0	2.8	0	2.8	0	2.8
Minimum Initial (s)	5	20	5	8	5	20	5	8
Vehicle Extension (s)	3	0.2	3	0.2	3	0.2	3	0.2
Minimum Gap (s)	3	3	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0	0	0
Walk Time (s)		7		7		7		7
Flash Dont Walk (s)		29		30		29		30

Intersection Summary

Cycle Length	110
Control Type	Actuated-Coordinated
Natural Cycle	105
Offset: 1.1 (1%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	

Splits and Phases: 250: RR 38 (WHITES RD)/RR 38 (WHITES ROAD) & HWY 2 (KINGSTON RD)



**Please note a concerted effort has been made to ensure the accuracy and completeness of the data provided, however, inadvertent errors or omissions can still occur. Please bring any errors or omissions to the Region's attention.*



INTERSECTION SIGNAL TIMING REPORT

Location	Whites Rd. (RR 38) and Hwy. 401 EB Off-Ramp		
Date	31-07-23	C&E No.	43688597
Prepared for	WSP	Prepared by	N. Mimay

AM Peak 06:15 - 9:15

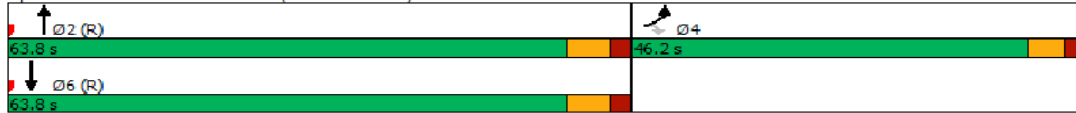


Phase Number	2	4	6
Movement	NBT	EBL	SBT
Lead/Lag			
Lead-Lag Optimize			
Recall Mode	C-Max	None	C-Max
Maximum Split (s)	63.8	46.2	63.8
Maximum Split (%)	58.0%	42.0%	58.0%
Minimum Split (s)	28	29	28
Yellow Time (s)	4.5	3.7	4.5
All-Red Time (s)	2.2	1.8	2.2
Minimum Initial (s)	20	8	20
Vehicle Extension (s)	0.2	3	0.2
Minimum Gap (s)	3	3	3
Time Before Reduce (s)	0	0	0
Time To Reduce (s)	0	0	0
Walk Time (s)	7	7	7
Flash Dont Walk (s)	14	16	14

Intersection Summary

Cycle Length	110
Control Type	Actuated-Coordinated
Natural Cycle	60
Offset: 79.2 (72%), Referenced to phase 2:NBT and 6:SBT, Start of Green	

Splits and Phases: 251: RR 38 (WHITES ROAD) & 401 EB RAMP



PM Peak (14:30-19:00)

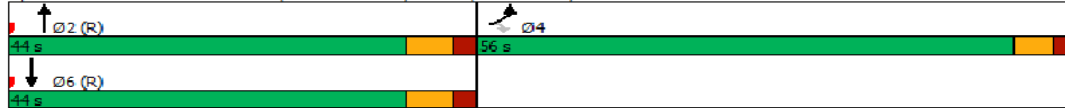


Phase Number	2	4	6
Movement	NBT	EBL	SBT
Lead/Lag			
Lead-Lag Optimize			
Recall Mode	C-Max	None	C-Max
Maximum Split (s)	44	56	44
Maximum Split (%)	44.0%	56.0%	44.0%
Minimum Split (s)	28	29	28
Yellow Time (s)	4.5	3.7	4.5
All-Red Time (s)	2.2	1.8	2.2
Minimum Initial (s)	20	8	20
Vehicle Extension (s)	0.2	3	0.2
Minimum Gap (s)	3	3	3
Time Before Reduce (s)	0	0	0
Time To Reduce (s)	0	0	0
Walk Time (s)	7	7	7
Flash Dont Walk (s)	14	16	14

Intersection Summary

Cycle Length	100
Control Type	Actuated-Coordinated
Natural Cycle	60
Offset: 8 (8%), Referenced to phase 2:NBT and 6:SBT, Start of Green	

Splits and Phases: 251: RR 38 (WHITES ROAD)/RR 38 (WHITES RD) & 401 EB RAMP



Weekend Peak (8:00-21:00)

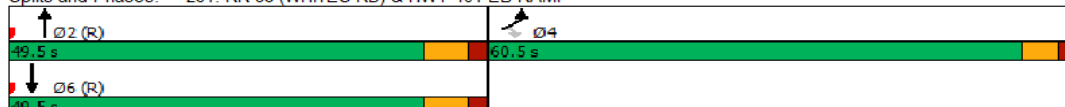


Phase Number	2	4	6
Movement	NBT	EBL	SBT
Lead/Lag			
Lead-Lag Optimize			
Recall Mode	C-Max	None	C-Max
Maximum Split (s)	49.5	60.5	49.5
Maximum Split (%)	45.0%	55.0%	45.0%
Minimum Split (s)	28	29	28
Yellow Time (s)	4.5	3.7	4.5
All-Red Time (s)	2.2	1.8	2.2
Minimum Initial (s)	20	8	20
Vehicle Extension (s)	0.2	3	0.2
Minimum Gap (s)	3	3	3
Time Before Reduce (s)	0	0	0
Time To Reduce (s)	0	0	0
Walk Time (s)	7	7	7
Flash Dont Walk (s)	14	16	14

Intersection Summary

Cycle Length	110
Control Type	Actuated-Coordinated
Natural Cycle	60
Offset: 24.2 (22%), Referenced to phase 2:NBT and 6:SBT, Start of Green	

Splits and Phases: 251: RR 38 (WHITES RD) & HWY 401 EB RAMP



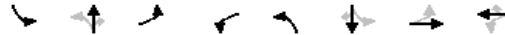
*Please note a concerted effort has been made to ensure the accuracy and completeness of the data provided, however, inadvertent errors or omissions can still occur. Please bring any errors or omissions to the Region's attention.



INTERSECTION SIGNAL TIMING REPORT

Location	Liverpool Rd. (RR 29) and Pickering Pkwy.		
Date	2021-06-08	C&E No.	34466194
Prepared for	WSP Canada Inc.		
		Prepared by	C. Maw

AM Peak 05:30 - 09:00

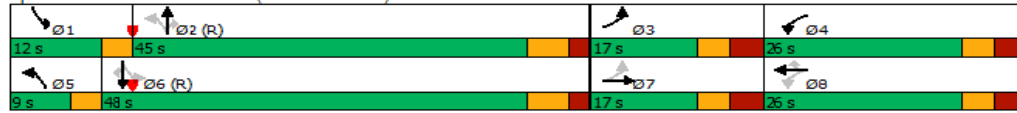


Phase Number	1	2	3	4	5	6	7	8
Movement	SBL	NBTL	EBL	WBL	NBL	SBTL	EBTL	WBTL
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	None	None	C-Max	None	None
Maximum Split (s)	12	45	17	26	9	48	17	26
Maximum Split (%)	12.0%	45.0%	17.0%	26.0%	9.0%	48.0%	17.0%	26.0%
Minimum Split (s)	8	30	15	15	8	30	15	34
Yellow Time (s)	3	4.2	3.3	3.3	3	4.2	3.3	3.3
All-Red Time (s)	0	2.1	3.3	3.3	0	2.1	3.3	3.3
Minimum Initial (s)	5	20	8	8	5	20	8	8
Vehicle Extension (s)	3	3	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0	0	0
Walk Time (s)		17				17		19
Flash Dont Walk (s)		6				6		8

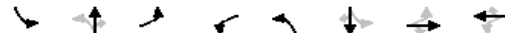
Intersection Summary

Cycle Length	100
Control Type	Actuated-Coordinated
Natural Cycle	90
Offset: 34 (34%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	

Splits and Phases: 240: RR 29 (LIVERPOOL RD) & PICKERING PARKWAY



PM Peak 14:30 - 21:00

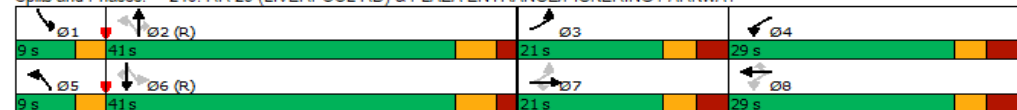


Phase Number	1	2	3	4	5	6	7	8
Movement	SBL	NBTL	EBL	WBL	NBL	SBTL	EBTL	WBTL
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	None	None	C-Max	None	None
Maximum Split (s)	9	41	21	29	9	41	21	29
Maximum Split (%)	9.0%	41.0%	21.0%	29.0%	9.0%	41.0%	21.0%	29.0%
Minimum Split (s)	8	30	15	15	8	30	15	34
Yellow Time (s)	3	4.2	3.3	3.3	3	4.2	3.3	3.3
All-Red Time (s)	0	2.1	3.3	3.3	0	2.1	3.3	3.3
Minimum Initial (s)	5	20	8	8	5	20	8	8
Vehicle Extension (s)	3	3	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0	0	0
Walk Time (s)		17				17		19
Flash Dont Walk (s)		6				6		8

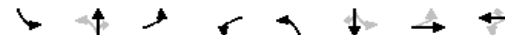
Intersection Summary

Cycle Length	100
Control Type	Actuated-Coordinated
Natural Cycle	90
Offset: 15 (15%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	

Splits and Phases: 240: RR 29 (LIVERPOOL RD) & PLAZA ENTRANCE/PICKERING PARKWAY



Weekend Peak 08:00 - 21:00

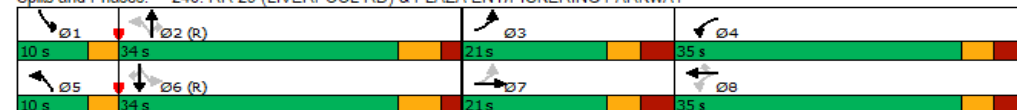


Phase Number	1	2	3	4	5	6	7	8
Movement	SBL	NBTL	EBL	WBL	NBL	SBTL	EBTL	WBTL
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	None	None	C-Max	None	None
Maximum Split (s)	10	34	21	35	10	34	21	35
Maximum Split (%)	10.0%	34.0%	21.0%	35.0%	10.0%	34.0%	21.0%	35.0%
Minimum Split (s)	8	30	15	15	8	30	15	34
Yellow Time (s)	3	4.2	3.3	3.3	3	4.2	3.3	3.3
All-Red Time (s)	0	2.1	3.3	3.3	0	2.1	3.3	3.3
Minimum Initial (s)	5	20	8	8	5	20	8	8
Vehicle Extension (s)	3	3	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0	0	0
Walk Time (s)		17				17		19
Flash Dont Walk (s)		6				6		8

Intersection Summary

Cycle Length	100
Control Type	Actuated-Coordinated
Natural Cycle	90
Offset: 80 (80%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green	

Splits and Phases: 240: RR 29 (LIVERPOOL RD) & PLAZA ENT/PICKERING PARKWAY



*Please note Cycle Extension enabled for Phase 4 and Phase 8

*Please note a concerted effort has been made to ensure the accuracy and completeness of the data provided, however, inadvertent errors or omissions can still occur. Please bring any errors or omissions to the Region's attention.



INTERSECTION SIGNAL TIMING REPORT

Location	Liverpool Rd. (RR29) and Hwy. 401 WB Ramp		
Date	2021-06-08	C&E No.	34466194
Prepared for	WSP Canada Inc.	Prepared by	C. Maw

AM Peak 05:30 - 09:00

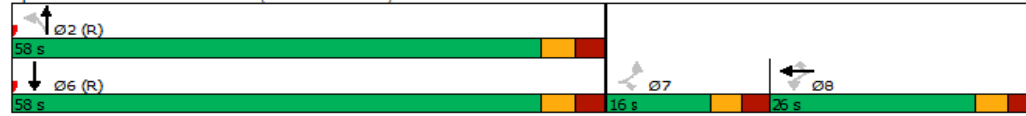


Phase Number	2	6	7	8
Movement	NBTL	SBT	EBL	WBTL
Lead/Lag			Lead	Lag
Lead-Lag Optimize			Yes	Yes
Recall Mode	C-Max	C-Max	None	None
Maximum Split (s)	58	58	16	26
Maximum Split (%)	58.0%	58.0%	16.0%	26.0%
Minimum Split (s)	25	25	14	25
Yellow Time (s)	3.3	3.3	3	3.3
All-Red Time (s)	3	3	2.7	2.7
Minimum Initial (s)	15	15	8	8
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	13	13		14
Flash Dont Walk (s)	5	5		5

Intersection Summary

Cycle Length	100
Control Type	Actuated-Coordinated
Natural Cycle	80
Offset: 38 (38%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	

Splits and Phases: 241: RR 29 (LIVERPOOL RD) & PRIVATE ENTRANCE/401 WB RAMP



PM Peak 14:30 - 21:00

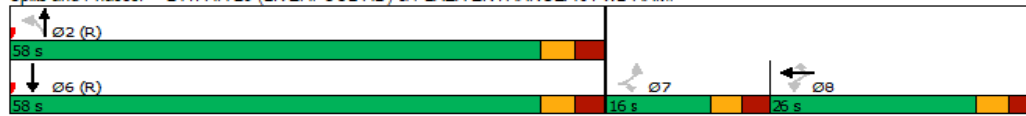


Phase Number	2	6	7	8
Movement	NBTL	SBT	EBL	WBTL
Lead/Lag			Lead	Lag
Lead-Lag Optimize			Yes	Yes
Recall Mode	C-Max	C-Max	None	None
Maximum Split (s)	58	58	16	26
Maximum Split (%)	58.0%	58.0%	16.0%	26.0%
Minimum Split (s)	25	25	14	25
Yellow Time (s)	3.3	3.3	3	3.3
All-Red Time (s)	3	3	2.7	2.7
Minimum Initial (s)	15	15	8	8
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	13	13		14
Flash Dont Walk (s)	5	5		5

Intersection Summary

Cycle Length	100
Control Type	Actuated-Coordinated
Natural Cycle	80
Offset: 8 (8%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	

Splits and Phases: 241: RR 29 (LIVERPOOL RD) & PLAZA ENTRANCE/401 WB RAMP



Weekend Peak 08:00 - 19:00

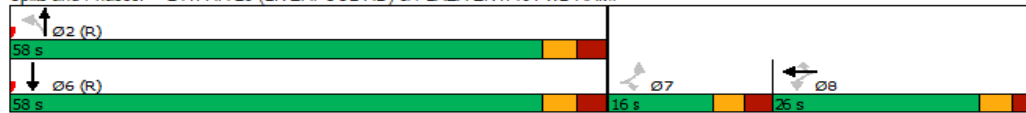


Phase Number	2	6	7	8
Movement	NBTL	SBT	EBL	WBTL
Lead/Lag			Lead	Lag
Lead-Lag Optimize			Yes	Yes
Recall Mode	C-Max	C-Max	None	None
Maximum Split (s)	58	58	16	26
Maximum Split (%)	58.0%	58.0%	16.0%	26.0%
Minimum Split (s)	25	25	14	25
Yellow Time (s)	3.3	3.3	3	3.3
All-Red Time (s)	3	3	2.7	2.7
Minimum Initial (s)	15	15	8	8
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	13	13		14
Flash Dont Walk (s)	5	5		5

Intersection Summary

Cycle Length	100
Control Type	Actuated-Coordinated
Natural Cycle	80
Offset: 37 (37%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	

Splits and Phases: 241: RR 29 (LIVERPOOL RD) & PLAZA ENT/401 WB RAMP



**Please note a concerted effort has been made to ensure the accuracy and completeness of the data provided, however, inadvertent errors or omissions can still occur. Please bring any errors or omissions to the Region's attention.*



INTERSECTION SIGNAL TIMING REPORT

Location	Hwy. 2 and Dixie Rd.				
Date	2021-06-08	C&E No.	34466194	Prepared by	C. Maw
Prepared for	WSP Canada Inc.				

AM Peak 05:30 - 09:00

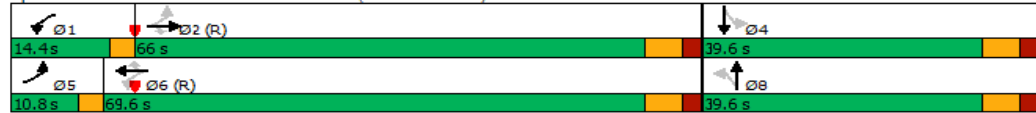


Phase Number	1	2	4	5	6	8
Movement	WBL	EBTL	SBTL	EBL	WBTL	NBTL
Lead/Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	None	None	C-Max	None
Maximum Split (s)	14.4	66	39.6	10.8	69.6	39.6
Maximum Split (%)	12.0%	55.0%	33.0%	9.0%	58.0%	33.0%
Minimum Split (s)	8	28	41	8	28	41
Yellow Time (s)	3	4.2	4.4	3	4.2	4.4
All-Red Time (s)	0	2.4	2.7	0	2.4	2.7
Minimum Initial (s)	5	20	8	5	20	8
Vehicle Extension (s)	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0
Walk Time (s)		7	7		7	7
Flash Dont Walk (s)		14	26		14	26

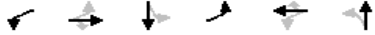
Intersection Summary

Cycle Length	120
Control Type	Actuated-Coordinated
Natural Cycle	80
Offset: 112.8 (94%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	

Splits and Phases: 245: DIXIE RD & HWY 2 (KINGSTON RD)



PM Peak 14:30 - 20:00

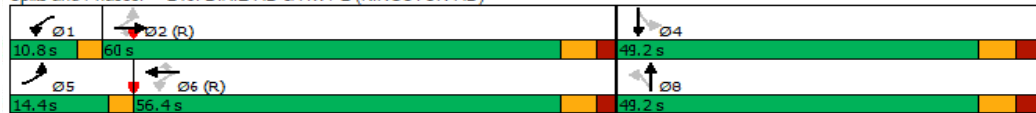


Phase Number	1	2	4	5	6	8
Movement	WBL	EBTL	SBTL	EBL	WBTL	NBTL
Lead/Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	None	None	C-Max	None
Maximum Split (s)	10.8	60	49.2	14.4	56.4	49.2
Maximum Split (%)	9.0%	50.0%	41.0%	12.0%	47.0%	41.0%
Minimum Split (s)	8	28	41	8	28	41
Yellow Time (s)	3	4.2	4.4	3	4.2	4.4
All-Red Time (s)	0	2.4	2.7	0	2.4	2.7
Minimum Initial (s)	5	20	8	5	20	8
Vehicle Extension (s)	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0
Walk Time (s)		7	7		7	7
Flash Dont Walk (s)		14	26		14	26

Intersection Summary

Cycle Length	120
Control Type	Actuated-Coordinated
Natural Cycle	100
Offset: 28.8 (24%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	

Splits and Phases: 245: DIXIE RD & HWY 2 (KINGSTON RD)



Weekend Peak 08:00 - 21:00

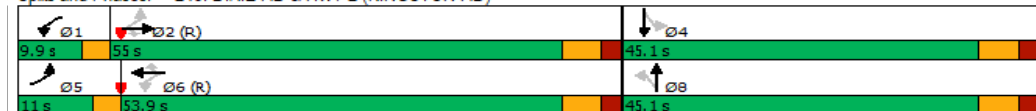


Phase Number	1	2	4	5	6	8
Movement	WBL	EBTL	SBTL	EBL	WBTL	NBTL
Lead/Lag	Lead	Lag		Lead	Lag	
Lead-Lag Optimize	Yes	Yes		Yes	Yes	
Recall Mode	None	C-Max	None	None	C-Max	None
Maximum Split (s)	9.9	55	45.1	11	53.9	45.1
Maximum Split (%)	9.0%	50.0%	41.0%	10.0%	49.0%	41.0%
Minimum Split (s)	8	28	41	8	28	41
Yellow Time (s)	3	4.2	4.4	3	4.2	4.4
All-Red Time (s)	0	2.4	2.7	0	2.4	2.7
Minimum Initial (s)	5	20	8	5	20	8
Vehicle Extension (s)	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0
Walk Time (s)		7	7		7	7
Flash Dont Walk (s)		14	26		14	26

Intersection Summary

Cycle Length	110
Control Type	Actuated-Coordinated
Natural Cycle	90
Offset: 5.5 (5%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	

Splits and Phases: 245: DIXIE RD & HWY 2 (KINGSTON RD)



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INTERSECTION SIGNAL TIMING REPORT

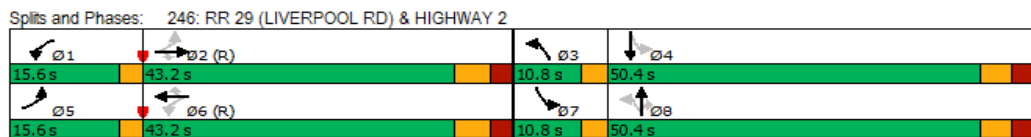
Location	Kingston Rd. (Hwy. 2) and Liverpool Rd. (RR 29)		
Date	2021-06-08	C&E No.	34466194
Prepared for	WSP Canada Inc.		
Prepared by	C. Maw		

AM Peak 05:30 - 09:00



Phase Number	1	2	3	4	5	6	7	8
Movement	WBL	EBTL	NBL	SBTL	EBL	WBTL	SBL	NBTL
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	Max	None	C-Max	None	Max
Maximum Split (s)	15.6	43.2	10.8	50.4	15.6	43.2	10.8	50.4
Maximum Split (%)	13.0%	36.0%	9.0%	42.0%	13.0%	36.0%	9.0%	42.0%
Minimum Split (s)	8	36	8	41	8	36	8	41
Yellow Time (s)	3	4.3	3	3.8	3	4.3	3	3.8
All-Red Time (s)	0	2.8	0	3.2	0	2.8	0	3.2
Minimum Initial (s)	5	20	5	8	5	20	5	8
Vehicle Extension (s)	3	3	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0	0	0
Walk Time (s)		7		7		7		7
Flash Dont Walk (s)		21		27		21		27

Intersection Summary	
Cycle Length	120
Control Type	Actuated-Coordinated
Natural Cycle	95
Offset: 80.4 (67%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	

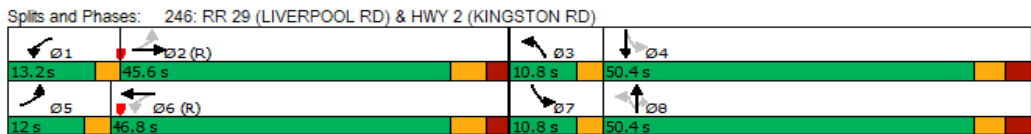


PM Peak 14:30 - 20:00

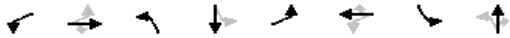


Phase Number	1	2	3	4	5	6	7	8
Movement	WBL	EBTL	NBL	SBTL	EBL	WBTL	SBL	NBTL
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	Max	None	C-Max	None	Max
Maximum Split (s)	13.2	45.6	10.8	50.4	12	46.8	10.8	50.4
Maximum Split (%)	11.0%	38.0%	9.0%	42.0%	10.0%	39.0%	9.0%	42.0%
Minimum Split (s)	8	36	8	41	8	36	8	41
Yellow Time (s)	3	4.3	3	3.8	3	4.3	3	3.8
All-Red Time (s)	0	2.8	0	3.2	0	2.8	0	3.2
Minimum Initial (s)	5	20	5	8	5	20	5	8
Vehicle Extension (s)	3	3	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0	0	0
Walk Time (s)		7		7		7		7
Flash Dont Walk (s)		21		27		21		27

Intersection Summary	
Cycle Length	120
Control Type	Actuated-Coordinated
Natural Cycle	105
Offset: 98.4 (82%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	

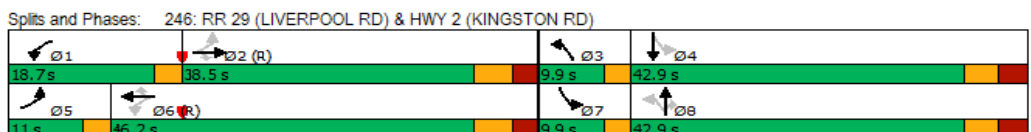


Weekend Peak 08:00 - 21:00



Phase Number	1	2	3	4	5	6	7	8
Movement	WBL	EBTL	NBL	SBTL	EBL	WBTL	SBL	NBTL
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	Max	None	C-Max	None	Max
Maximum Split (s)	18.7	38.5	9.9	42.9	11	46.2	9.9	42.9
Maximum Split (%)	17.0%	35.0%	9.0%	39.0%	10.0%	42.0%	9.0%	39.0%
Minimum Split (s)	8	36	8	41	8	36	8	41
Yellow Time (s)	3	4.3	3	3.8	3	4.3	3	3.8
All-Red Time (s)	0	2.8	0	3.2	0	2.8	0	3.2
Minimum Initial (s)	5	20	5	8	5	20	5	8
Vehicle Extension (s)	3	3	3	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0	0	0	0
Walk Time (s)		7		7		7		7
Flash Dont Walk (s)		21		27		21		27

Intersection Summary	
Cycle Length	110
Control Type	Actuated-Coordinated
Natural Cycle	105
Offset: 28.6 (26%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	



**Please note a concerted effort has been made to ensure the accuracy and completeness of the data provided, however, inadvertent errors or omissions can still occur. Please bring any errors or omissions to the Region's attention.*



INTERSECTION SIGNAL TIMING REPORT

Location	Kingston Rd. and Walnut Ln.				
Date	2021-06-08	C&E No.	34466194	Prepared by	C. Maw
Prepared for	WSP Canada Inc.				

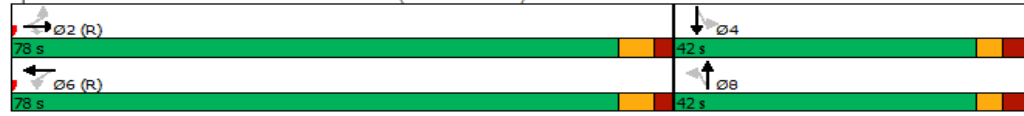
AM Peak 05:30 - 09:00



Phase Number	2	4	6	8
Movement	EBTL	SBTL	WBTL	NBTL
Lead/Lag				
Lead-Lag Optimize				
Recall Mode	C-Max	None	C-Max	None
Maximum Split (s)	78	42	78	42
Maximum Split (%)	65.0%	35.0%	65.0%	35.0%
Minimum Split (s)	33	36	33	36
Yellow Time (s)	4.4	3.3	4.4	3.3
All-Red Time (s)	2.2	3.2	2.2	3.2
Minimum Initial (s)	20	8	20	8
Vehicle Extension (s)	3	3	3	3
Minimum Gap (s)	3	3	3	3
Time Before Reduce (s)	0	0	0	0
Time To Reduce (s)	0	0	0	0
Walk Time (s)	7	7	7	7
Flash Dont Walk (s)	19	22	19	22

Intersection Summary	
Cycle Length	120
Control Type	Actuated-Coordinated
Natural Cycle	70
Offset: 116.4 (97%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	

Splits and Phases: 265: WALNUT LANE & HWY 2 (KINGSTON RD)/HIGHWAY 2



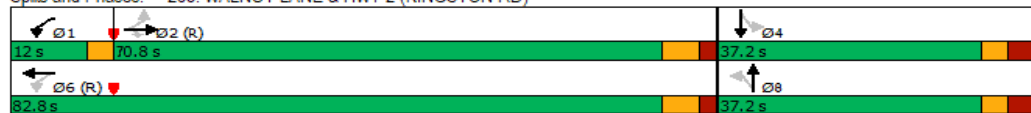
PM Peak 14:30 - 20:00



Phase Number	1	2	4	6	8
Movement	WBL	EBTL	SBTL	WBTL	NBTL
Lead/Lag	Lead	Lag			
Lead-Lag Optimize	Yes	Yes			
Recall Mode	None	C-Max	None	C-Max	None
Maximum Split (s)	12	70.8	37.2	82.8	37.2
Maximum Split (%)	10.0%	59.0%	31.0%	69.0%	31.0%
Minimum Split (s)	8	33	36	33	36
Yellow Time (s)	3	4.4	3.3	4.4	3.3
All-Red Time (s)	0	2.2	3.2	2.2	3.2
Minimum Initial (s)	5	20	8	20	8
Vehicle Extension (s)	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0
Walk Time (s)		7	7	7	7
Flash Dont Walk (s)		19	22	19	22

Intersection Summary	
Cycle Length	120
Control Type	Actuated-Coordinated
Natural Cycle	90
Offset: 6 (5%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	

Splits and Phases: 265: WALNUT LANE & HWY 2 (KINGSTON RD)



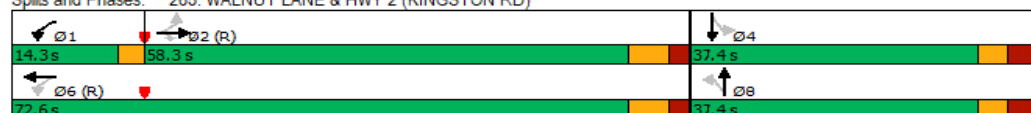
Weekend Peak 08:00 - 21:00



Phase Number	1	2	4	6	8
Movement	WBL	EBTL	SBTL	WBTL	NBTL
Lead/Lag	Lead	Lag			
Lead-Lag Optimize	Yes	Yes			
Recall Mode	None	C-Max	None	C-Max	None
Maximum Split (s)	14.3	58.3	37.4	72.6	37.4
Maximum Split (%)	13.0%	53.0%	34.0%	66.0%	34.0%
Minimum Split (s)	8	33	36	33	36
Yellow Time (s)	3	4.4	3.3	4.4	3.3
All-Red Time (s)	0	2.2	3.2	2.2	3.2
Minimum Initial (s)	5	20	8	20	8
Vehicle Extension (s)	3	3	3	3	3
Minimum Gap (s)	3	3	3	3	3
Time Before Reduce (s)	0	0	0	0	0
Time To Reduce (s)	0	0	0	0	0
Walk Time (s)		7	7	7	7
Flash Dont Walk (s)		19	22	19	22

Intersection Summary	
Cycle Length	110
Control Type	Actuated-Coordinated
Natural Cycle	90
Offset: 18.7 (17%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green	

Splits and Phases: 265: WALNUT LANE & HWY 2 (KINGSTON RD)



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APPENDIX

B LEVEL OF SERVICE DEFINITIONS

LEVEL OF SERVICE DEFINITIONS AT SIGNALIZED INTERSECTIONS⁽¹⁾

Level of service for signalized intersections is defined in terms of delay, which is a measure of driver discomfort and frustration, fuel consumption, and lost travel time. Specifically, level-of-service (LOS) criteria are stated in terms of the average control delay per vehicle, typically for a 15-min analysis period. The criteria are given in the table below. Delay may be measured in the field or estimated using software such as Highway Capacity Software. Delay is a complex measure and is dependent upon a number of variables, including quality of progression, the cycle length, the green ratio, and the v/c ratio for the lane group in question.

Level of Service	Features	Control Delay per vehicle (sec)
A	LOS A describes operations with very low delay, up to 10 sec per vehicle. This level of service occurs when progression is extremely favourable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.	≤ 10
B	LOS B describes operations with delay greater than 10 and up to 20 sec per vehicle. This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop than with LOS A, causing higher levels of average delay.	> 10 and ≤ 20
C	LOS C describes operations with delay greater than 20 and up to 35 sec per vehicle. These higher delays may result from fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, though many still pass through the intersection without stopping.	> 20 and ≤ 35
D	LOS D describes operations with delay greater than 35 and up to 55 sec per vehicle. At level D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavourable progression, long cycle lengths, of high v/c ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.	> 35 and ≤ 55
E	LOS E describes operations with delay greater than 55 and up to 80 sec per vehicle. This level is considered by many agencies to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent occurrences.	> 55 and ≤ 80
F	LOS F describes operations with delay in excess of 80 sec per vehicle. This level, considered to be unacceptable to most drivers, often occurs with oversaturation, that is, when arrival flow rates exceed the capacity of the intersection. It may also occur at high v/c ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.	> 80

(1) Highway Capacity Manual 2000

LEVEL OF SERVICE DEFINITIONS AT UNSIGNALIZED INTERSECTIONS⁽¹⁾

The level of service criteria for unsignalized intersections are given in the table below. As used here, total delay is defined as the total elapsed time from when a vehicle stops at the end of the queue until the vehicle departs from the stop line; this time includes the time required for the vehicle to travel from the last-in-queue position to the first-in-queue position. The average total delay for any particular minor movement is a function of the service rate or capacity of the approach and the degree of saturation.

Level of Service	Features	Average Total Delay (sec/veh)
A	Little or no traffic delay occurs. Approaches appear open, turning movements are easily made, and drivers have freedom of operation.	≤ 10
B	Short traffic delays occur. Many drivers begin to feel somewhat restricted in terms of freedom of operation.	> 10 and ≤ 15
C	Average traffic delays occur. Operations are generally stable, but drivers emerging from the minor street may experience difficulty in completing their movement. This may occasionally impact on the stability of flow on the major street.	> 15 and ≤ 25
D	Long traffic delays occur. Motorists emerging from the minor street experience significant restriction and frustration. Drivers on the major street will experience congestion and delay as drivers emerging from the minor street interfere with the major through movements.	> 25 and ≤ 35
E	Very long traffic delays occur. Operations approach the capacity of the intersection.	> 35 and ≤ 50
F	Saturation occurs, with vehicle demand exceeding the available capacity. Very long traffic delays occur.	> 50























(1) Highway Capacity Manual 2000.

APPENDIX

C EXISTING TRAFFIC CONDITIONS

Lanes, Volumes, Timings
1: Walnut Lane & Kingston Road

<Existing>AM
12-13-2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	762	19	143	523	30	52	6	77	14	6	29
Future Volume (vph)	20	762	19	143	523	30	52	6	77	14	6	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.0	3.6	3.5	3.0	3.6	3.7	3.3	3.5	3.7	3.2	3.7	3.7
Storage Length (m)	26.0		25.8	37.0		0.0	63.2		0.0	18.5		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	24.0			26.0			24.4			18.1		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		0.96	0.99	1.00		0.99	0.99		1.00	0.98	
Frt			0.850		0.992			0.860			0.875	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1685	3471	1470	1652	3390	0	1745	1551	0	1725	1596	0
Flt Permitted	0.435			0.342			0.734			0.701		
Satd. Flow (perm)	768	3471	1414	592	3390	0	1334	1551	0	1270	1596	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			32		8			80			30	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		129.3			694.6			124.5			224.5	
Travel Time (s)		7.8			41.7			11.2			20.2	
Confl. Peds. (#/hr)	4		8	8		4	9		2	2		9
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	4%	6%	2%	5%	14%	0%	0%	3%	0%	0%	4%
Bus Blockages (#/hr)	0	0	6	0	0	0	0	0	0	0	0	0
Adj. Flow (vph)	21	794	20	149	545	31	54	6	80	15	6	30
Shared Lane Traffic (%)												
Lane Group Flow (vph)	21	794	20	149	576	0	54	86	0	15	36	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.1			3.1			3.3			3.3	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			1.6			4.9			4.9	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.09	1.00	1.05	1.09	1.00	0.99	1.04	1.01	0.99	1.06	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	0	0	0	0	0		1	1		0	0	
Detector Template												
Leading Detector (m)	0.0	0.0	0.0	0.0	0.0		7.5	7.5		0.0	0.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		-1.5	-1.5		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		-1.5	-1.5		0.0	0.0	
Detector 1 Size(m)	6.1	1.8	6.1	6.1	1.8		9.0	9.0		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8				4
Permitted Phases	2		2	6			8			4		

Lanes, Volumes, Timings
1: Walnut Lane & Kingston Road

<Existing>AM
12-13-2024

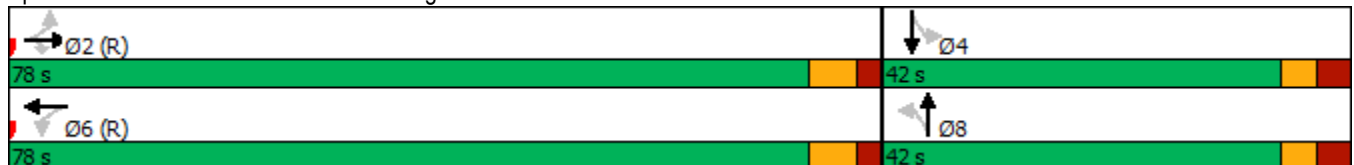


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	2	2	2	6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	20.0	20.0	20.0	20.0	20.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	33.0	33.0	33.0	33.0	33.0		36.0	36.0		36.0	36.0	
Total Split (s)	78.0	78.0	78.0	78.0	78.0		42.0	42.0		42.0	42.0	
Total Split (%)	65.0%	65.0%	65.0%	65.0%	65.0%		35.0%	35.0%		35.0%	35.0%	
Maximum Green (s)	71.4	71.4	71.4	71.4	71.4		35.5	35.5		35.5	35.5	
Yellow Time (s)	4.4	4.4	4.4	4.4	4.4		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.2	2.2	2.2	2.2	2.2		3.2	3.2		3.2	3.2	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.6		6.5	6.5		6.5	6.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max		None	None		None	None	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	19.0	19.0	19.0	19.0	19.0		22.0	22.0		22.0	22.0	
Pedestrian Calls (#/hr)	7	7	7	5	5		5	5		14	14	
Act Effct Green (s)	89.9	89.9	89.9	89.9	89.9		17.0	17.0		17.0	17.0	
Actuated g/C Ratio	0.75	0.75	0.75	0.75	0.75		0.14	0.14		0.14	0.14	
v/c Ratio	0.04	0.31	0.02	0.34	0.23		0.29	0.30		0.08	0.14	
Control Delay	4.9	4.8	0.7	6.2	3.3		46.0	12.0		39.8	16.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	4.9	4.8	0.7	6.2	3.3		46.0	12.0		39.8	16.3	
LOS	A	A	A	A	A		D	B		D	B	
Approach Delay		4.7			3.9			25.1			23.2	
Approach LOS		A			A			C			C	

Intersection Summary

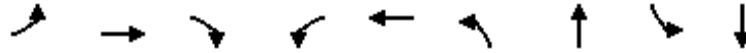
Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 116.4 (97%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 70
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.34
 Intersection Signal Delay: 6.5
 Intersection LOS: A
 Intersection Capacity Utilization 66.5%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 1: Walnut Lane & Kingston Road



Queues
1: Walnut Lane & Kingston Road

<Existing>AM
12-13-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	21	794	20	149	576	54	86	15	36
v/c Ratio	0.04	0.31	0.02	0.34	0.23	0.29	0.30	0.08	0.14
Control Delay	4.9	4.8	0.7	6.2	3.3	46.0	12.0	39.8	16.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.9	4.8	0.7	6.2	3.3	46.0	12.0	39.8	16.3
Queue Length 50th (m)	0.8	20.8	0.0	3.4	6.5	12.3	1.3	3.3	1.3
Queue Length 95th (m)	2.7	25.0	0.6	m12.1	19.4	21.1	13.8	8.4	9.5
Internal Link Dist (m)		105.3			670.6		100.5		200.5
Turn Bay Length (m)	26.0		25.8	37.0		63.2		18.5	
Base Capacity (vph)	575	2601	1067	443	2542	394	515	375	493
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.31	0.02	0.34	0.23	0.14	0.17	0.04	0.07

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings
3: Dixie Road & Kingston Road

<Existing>AM
12-13-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	727	81	78	469	61	37	15	29	117	35	144
Future Volume (vph)	80	727	81	78	469	61	37	15	29	117	35	144
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	2.8	3.6	3.4	2.8	3.5	3.1	3.6	4.0	3.7	3.8	4.2	3.7
Grade (%)		6%			0%			0%				0%
Storage Length (m)	145.4		64.5	51.0		79.5	13.0		0.0	16.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	66.4			48.0			18.0			25.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99		0.97	1.00		0.96	1.00	0.99		1.00	0.99	
Frt			0.850			0.850		0.901			0.879	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1564	3367	1466	1645	3368	1459	1752	1771	0	1827	1760	0
Flt Permitted	0.468			0.334			0.463			0.726		
Satd. Flow (perm)	764	3367	1420	577	3368	1406	852	1771	0	1393	1760	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			92			65		31				153
Link Speed (k/h)		60			60			40				60
Link Distance (m)		888.0			199.8			43.8				235.1
Travel Time (s)		53.3			12.0			3.9				14.1
Confl. Peds. (#/hr)	6		4	4		6	3		2	2		3
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	2%	4%	2%	0%	6%	2%	3%	0%	0%	1%	0%	0%
Bus Blockages (#/hr)	0	0	6	0	0	6	0	0	0	0	0	0
Adj. Flow (vph)	85	773	86	83	499	65	39	16	31	124	37	153
Shared Lane Traffic (%)												
Lane Group Flow (vph)	85	773	86	83	499	65	39	47	0	124	190	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		2.8			2.8			3.8			3.8	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane					Yes							
Headway Factor	1.17	1.04	1.10	1.13	1.01	1.11	1.00	0.94	0.99	0.97	0.92	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	0	0	0	0	0	0	0	0		1	1	
Detector Template												
Leading Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		7.5	7.5	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		-1.5	-1.5	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		-1.5	-1.5	
Detector 1 Size(m)	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8		9.0	9.0	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8				4

Lanes, Volumes, Timings
3: Dixie Road & Kingston Road

<Existing>AM
12-13-2024

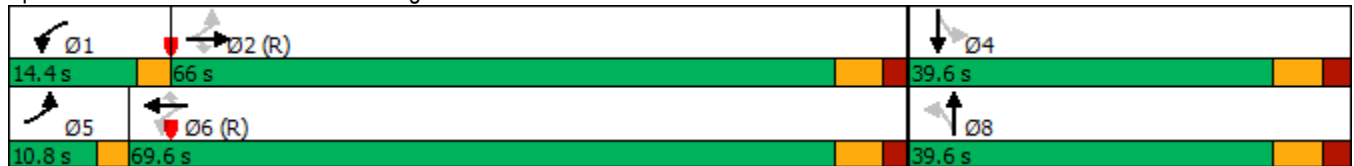


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2		2	6		6	8			4		
Detector Phase	5	2	2	1	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	8.0	8.0		8.0	8.0	
Minimum Split (s)	8.0	27.6	27.6	8.0	27.6	27.6	40.1	40.1		40.1	40.1	
Total Split (s)	10.8	66.0	66.0	14.4	69.6	69.6	39.6	39.6		39.6	39.6	
Total Split (%)	9.0%	55.0%	55.0%	12.0%	58.0%	58.0%	33.0%	33.0%		33.0%	33.0%	
Maximum Green (s)	7.8	59.4	59.4	11.4	63.0	63.0	32.5	32.5		32.5	32.5	
Yellow Time (s)	3.0	4.2	4.2	3.0	4.2	4.2	4.4	4.4		4.4	4.4	
All-Red Time (s)	0.0	2.4	2.4	0.0	2.4	2.4	2.7	2.7		2.7	2.7	
Lost Time Adjust (s)	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	6.6	6.6	3.0	6.6	6.6	7.1	7.1		7.1	7.1	
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None		None	None	
Walk Time (s)		7.0	7.0		7.0	7.0	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		14.0	14.0		14.0	14.0	26.0	26.0		26.0	26.0	
Pedestrian Calls (#/hr)		6	6		1	1	7	7		4	4	
Act Effct Green (s)	89.3	79.9	79.9	89.8	80.1	80.1	18.0	18.0		18.0	18.0	
Actuated g/C Ratio	0.74	0.67	0.67	0.75	0.67	0.67	0.15	0.15		0.15	0.15	
v/c Ratio	0.14	0.34	0.09	0.17	0.22	0.07	0.31	0.16		0.60	0.48	
Control Delay	7.0	19.3	7.4	4.3	6.9	1.9	48.1	19.9		57.5	14.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	7.0	19.3	7.4	4.3	6.9	1.9	48.1	19.9		57.5	14.5	
LOS	A	B	A	A	A	A	D	B		E	B	
Approach Delay		17.1			6.0			32.7			31.5	
Approach LOS		B			A			C			C	

Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	112.8 (94%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle:	80
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.60
Intersection Signal Delay:	16.4
Intersection LOS:	B
Intersection Capacity Utilization:	64.3%
ICU Level of Service:	C
Analysis Period (min):	15

Splits and Phases: 3: Dixie Road & Kingston Road

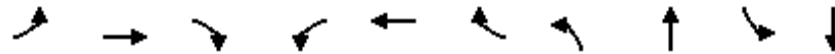


Queues

<Existing>AM

3: Dixie Road & Kingston Road

12-13-2024



























Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	85	773	86	83	499	65	39	47	124	190
v/c Ratio	0.14	0.34	0.09	0.17	0.22	0.07	0.31	0.16	0.60	0.48
Control Delay	7.0	19.3	7.4	4.3	6.9	1.9	48.1	19.9	57.5	14.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.0	19.3	7.4	4.3	6.9	1.9	48.1	19.9	57.5	14.5
Queue Length 50th (m)	4.6	66.7	5.0	3.3	16.8	0.3	8.5	3.3	28.2	7.8
Queue Length 95th (m)	21.9	115.6	24.4	7.8	27.4	2.9	16.5	12.0	40.7	24.4
Internal Link Dist (m)		864.0			175.8			19.8		211.1
Turn Bay Length (m)	145.4		64.5	51.0		79.5	13.0		16.0	
Base Capacity (vph)	623	2241	976	543	2249	960	230	502	377	588
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.34	0.09	0.15	0.22	0.07	0.17	0.09	0.33	0.32

Intersection Summary

Lanes, Volumes, Timings
6: Liverpool Road & Kingston Road

<Existing>AM
12-13-2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	113	501	237	133	463	48	269	367	150	78	518	106
Future Volume (vph)	113	501	237	133	463	48	269	367	150	78	518	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.1	3.4	3.6	3.3	3.7	3.4	3.8	4.1	4.8	4.7	3.8	3.3
Storage Length (m)	188.8		97.9	170.7		117.0	185.5		52.0	49.0		60.5
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	31.6			22.7			20.8			25.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.97	0.99		0.96	0.98		0.93	0.97		0.95
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1671	3299	1538	1694	3510	1579	1774	3700	1647	2026	3618	1516
Flt Permitted	0.408			0.362			0.366			0.521		
Satd. Flow (perm)	709	3299	1487	640	3510	1517	673	3700	1536	1081	3618	1444
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			244			91			155			109
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		694.6			396.1			257.7			350.8	
Travel Time (s)		41.7			23.8			18.6			25.3	
Confl. Peds. (#/hr)	21		17	17		21	34		44	44		34
Confl. Bikes (#/hr)						1						
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
Heavy Vehicles (%)	2%	7%	5%	3%	4%	0%	4%	3%	8%	0%	2%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	7	0	0	0
Adj. Flow (vph)	116	516	244	137	477	49	277	378	155	80	534	109
Shared Lane Traffic (%)												
Lane Group Flow (vph)	116	516	244	137	477	49	277	378	155	80	534	109
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.3			3.3			4.7			4.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane		Yes									Yes	
Headway Factor	1.08	1.03	1.00	1.04	0.99	1.03	0.97	0.93	0.88	0.86	0.97	1.04
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	

Lanes, Volumes, Timings
6: Liverpool Road & Kingston Road

<Existing>AM
12-13-2024

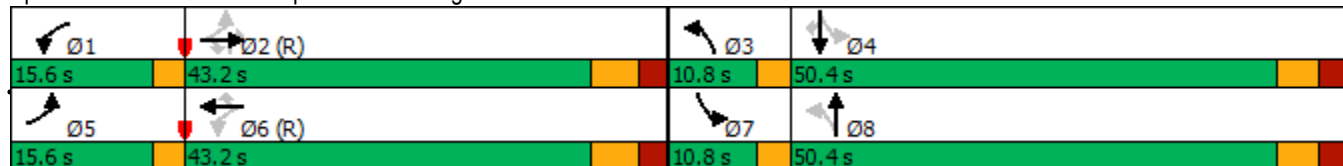


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type	Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	custom	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		2	4		4
Detector Phase	5	2	2	1	6	6	3	8	2	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	5.0	8.0	20.0	5.0	8.0	8.0
Minimum Split (s)	8.0	35.1	35.1	8.0	35.1	35.1	8.0	41.0	35.1	8.0	41.0	41.0
Total Split (s)	15.6	43.2	43.2	15.6	43.2	43.2	10.8	50.4	43.2	10.8	50.4	50.4
Total Split (%)	13.0%	36.0%	36.0%	13.0%	36.0%	36.0%	9.0%	42.0%	36.0%	9.0%	42.0%	42.0%
Maximum Green (s)	12.6	36.1	36.1	12.6	36.1	36.1	7.8	43.4	36.1	7.8	43.4	43.4
Yellow Time (s)	3.0	4.3	4.3	3.0	4.3	4.3	3.0	3.8	4.3	3.0	3.8	3.8
All-Red Time (s)	0.0	2.8	2.8	0.0	2.8	2.8	0.0	3.2	2.8	0.0	3.2	3.2
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	0.0
Total Lost Time (s)	3.0	7.1	7.1	3.0	7.1	7.1	3.0	7.0	7.1	3.0	7.0	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
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	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	C-Max	None	Max	Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		21.0	21.0		21.0	21.0		27.0	21.0		27.0	27.0
Pedestrian Calls (#/hr)		44	44		31	31		61	44		40	40
Act Effct Green (s)	52.2	38.0	38.0	53.4	38.6	38.6	55.9	45.7	38.0	54.7	43.4	43.4
Actuated g/C Ratio	0.44	0.32	0.32	0.44	0.32	0.32	0.47	0.38	0.32	0.46	0.36	0.36
v/c Ratio	0.30	0.49	0.38	0.36	0.42	0.09	0.72	0.27	0.26	0.15	0.41	0.18
Control Delay	20.8	38.4	16.0	21.7	33.8	1.2	33.7	26.9	6.0	17.4	29.9	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.8	38.4	16.0	21.7	33.8	1.2	33.7	26.9	6.0	17.4	29.9	5.5
LOS	C	D	B	C	C	A	C	C	A	B	C	A
Approach Delay		29.8			28.8			25.2			24.8	
Approach LOS		C			C			C			C	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 80.4 (67%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 95
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.72
 Intersection Signal Delay: 27.2
 Intersection LOS: C
 Intersection Capacity Utilization 92.4%
 ICU Level of Service F
 Analysis Period (min) 15

Splits and Phases: 6: Liverpool Road & Kingston Road



Queues
6: Liverpool Road & Kingston Road

<Existing>AM
12-13-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	116	516	244	137	477	49	277	378	155	80	534	109
v/c Ratio	0.30	0.49	0.38	0.36	0.42	0.09	0.72	0.27	0.26	0.15	0.41	0.18
Control Delay	20.8	38.4	16.0	21.7	33.8	1.2	33.7	26.9	6.0	17.4	29.9	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.8	38.4	16.0	21.7	33.8	1.2	33.7	26.9	6.0	17.4	29.9	5.5
Queue Length 50th (m)	21.3	53.2	23.3	18.3	46.3	0.0	38.7	33.0	0.0	9.8	49.1	0.0
Queue Length 95th (m)	24.4	84.7	54.4	30.7	63.4	1.7	#58.6	45.1	14.8	18.4	64.3	11.6
Internal Link Dist (m)		670.6			372.1			233.7			326.8	
Turn Bay Length (m)	188.8		97.9	170.7		117.0	185.5		52.0	49.0		60.5
Base Capacity (vph)	421	1044	637	402	1130	549	385	1409	592	558	1308	591
Starvation Cap Reductn	0	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.49	0.38	0.34	0.42	0.09	0.72	0.27	0.26	0.14	0.41	0.18

Intersection Summary

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

Lanes, Volumes, Timings
8: Liverpool Road & Private Access/Pickering Parkway

<Existing>AM
12-13-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	17	36	192	19	59	48	681	272	146	668	24
Future Volume (vph)	10	17	36	192	19	59	48	681	272	146	668	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.1	3.1	3.7	3.0	3.4	3.2	2.8	3.6	3.5	3.2	3.5	3.5
Storage Length (m)	0.0		0.0	57.0		62.1	54.4		75.7	132.5		35.5
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (m)	2.5			12.0			29.5			28.9		
Lane Util. Factor	1.00	0.95	0.95	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99					0.98	0.99		0.97	1.00		0.96
Frt		0.898				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1705	3062	0	3113	1858	1204	1645	3505	1523	1675	3500	1521
Flt Permitted	0.000			0.000			0.353			0.296		
Satd. Flow (perm)	0	3062	0	0	1858	1181	607	3505	1483	520	3500	1458
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		40				141			299			144
Link Speed (k/h)		30			50			50				50
Link Distance (m)		82.8			328.5			162.3				257.7
Travel Time (s)		9.9			23.7			11.7				18.6
Confl. Peds. (#/hr)	7					7	10		11	11		10
Confl. Bikes (#/hr)									1			
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
Heavy Vehicles (%)	0%	0%	0%	5%	0%	23%	0%	3%	4%	3%	2%	5%
Bus Blockages (#/hr)	0	0	0	0	0	10	0	0	2	0	0	0
Adj. Flow (vph)	11	19	40	211	21	65	53	748	299	160	734	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	11	59	0	211	21	65	53	748	299	160	734	26
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		6.0			6.0			3.8			3.8	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.08	1.08	0.99	1.09	1.03	1.12	1.13	1.00	1.03	1.06	1.01	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	

Lanes, Volumes, Timings
 8: Liverpool Road & Private Access/Pickering Parkway

<Existing>AM
 12-13-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type	Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	7		4	8		5	2		1	6	
Permitted Phases	7			8		8	2		2	6		6
Detector Phase	3	7		4	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0	8.0	5.0	20.0	20.0	5.0	20.0	20.0
Minimum Split (s)	15.0	15.0		15.0	34.0	34.0	8.0	30.0	30.0	8.0	30.0	30.0
Total Split (s)	17.0	17.0		34.0	34.0	34.0	9.0	37.0	37.0	12.0	40.0	40.0
Total Split (%)	17.0%	17.0%		34.0%	34.0%	34.0%	9.0%	37.0%	37.0%	12.0%	40.0%	40.0%
Maximum Green (s)	10.4	10.4		27.4	27.4	27.4	6.0	30.7	30.7	9.0	33.7	33.7
Yellow Time (s)	3.3	3.3		3.3	3.3	3.3	3.0	4.2	4.2	3.0	4.2	4.2
All-Red Time (s)	3.3	3.3		3.3	3.3	3.3	0.0	2.1	2.1	0.0	2.1	2.1
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)	6.6	6.6		6.6	6.6	6.6	3.0	6.3	6.3	3.0	6.3	6.3
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
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
Recall Mode	None	None		None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)					19.0	19.0			17.0	17.0		
Flash Dont Walk (s)					8.0	8.0			6.0	6.0		
Pedestrian Calls (#/hr)					0	0			21	21		
Act Effect Green (s)	8.0	8.0		12.1	12.1	12.1	61.2	52.0	52.0	66.4	56.1	56.1
Actuated g/C Ratio	0.08	0.08		0.12	0.12	0.12	0.61	0.52	0.52	0.66	0.56	0.56
v/c Ratio	0.08	0.21		0.56	0.09	0.24	0.12	0.41	0.33	0.36	0.37	0.03
Control Delay	44.1	22.2		46.9	38.5	2.2	7.7	14.3	1.7	9.9	14.8	0.0
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	44.1	22.2		46.9	38.5	2.2	7.7	14.3	1.7	9.9	14.8	0.0
LOS	D	C		D	D	A	A	B	A	A	B	A
Approach Delay				25.6			36.5			10.6		
Approach LOS				C			D			B		

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 34 (34%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.56

Intersection Signal Delay: 15.4

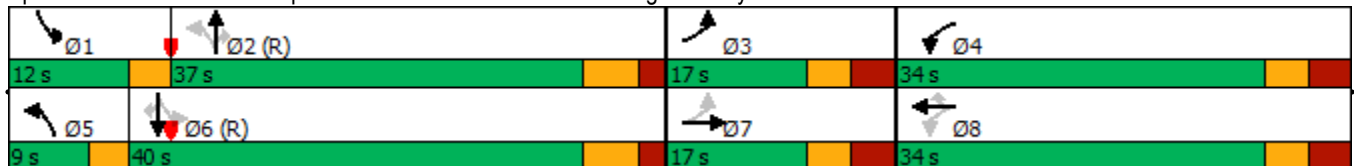
Intersection LOS: B

Intersection Capacity Utilization 55.6%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 8: Liverpool Road & Private Access/Pickering Parkway



8: Liverpool Road & Private Access/Pickering Parkway

12-13-2024



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	11	59	211	21	65	53	748	299	160	734	26
v/c Ratio	0.08	0.21	0.56	0.09	0.24	0.12	0.41	0.33	0.36	0.37	0.03
Control Delay	44.1	22.2	46.9	38.5	2.2	7.7	14.3	1.7	9.9	14.8	0.0
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	44.1	22.2	46.9	38.5	2.2	7.7	14.3	1.7	9.9	14.8	0.0
Queue Length 50th (m)	2.0	1.8	20.2	3.7	0.0	3.5	37.6	0.0	11.3	43.8	0.0
Queue Length 95th (m)	7.4	8.0	30.3	10.1	0.0	m6.7	43.6	5.3	21.7	62.3	0.0
Internal Link Dist (m)		58.8		304.5			138.3			233.7	
Turn Bay Length (m)			57.0		62.1	54.4		75.7	132.5		35.5
Base Capacity (vph)	177	354	852	509	425	434	1823	915	450	1963	881
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	0.06	0.17	0.25	0.04	0.15	0.12	0.41	0.33	0.36	0.37	0.03

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings
 9: Liverpool Road & Private Access/Hwy 401 WB Off-Ramp

<Existing>AM
 12-13-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖		↗	↖	↖	↗	↖	↕			↕	
Traffic Volume (vph)	6	0	2	188	2	338	8	630	0	0	580	0
Future Volume (vph)	6	0	2	188	2	338	8	630	0	0	580	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.5	3.7	4.5	3.7	3.7	3.5	3.0	3.5	3.7	3.7	3.4	3.7
Storage Length (m)	0.0		0.0	0.0		125.0	26.5		0.0	0.0		0.0
Storage Lanes	1		1	1		1	1		0	0		0
Taper Length (m)	2.5			2.5			52.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor							0.99					
Frt			0.850			0.850						
Flt Protected	0.950			0.950	0.953		0.950					
Satd. Flow (prot)	1986	0	1184	1700	1706	1551	1348	3433	0	0	3394	0
Flt Permitted	0.950			0.950	0.953		0.420					
Satd. Flow (perm)	1986	0	1184	1700	1706	1551	591	3433	0	0	3394	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			101			329						
Link Speed (k/h)		30			50			50				50
Link Distance (m)		75.1			226.7			371.5				162.3
Travel Time (s)		9.0			16.3			26.7				11.7
Confl. Peds. (#/hr)							7		14	14		7
Confl. Bikes (#/hr)									4			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	0%	2%	50%	2%	0%	3%	25%	4%	4%	2%	4%	0%
Adj. Flow (vph)	6	0	2	196	2	352	8	656	0	0	604	0
Shared Lane Traffic (%)				50%								
Lane Group Flow (vph)	6	0	2	98	100	352	8	656	0	0	604	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		4.5			4.5			3.0			3.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	0.88	0.99	0.88	0.99	0.99	1.01	1.09	1.01	0.99	0.99	1.03	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1		1	1	2	1	1	2				2
Detector Template	Left		Right	Left	Thru	Right	Left	Thru				Thru
Leading Detector (m)	2.0		2.0	2.0	10.0	2.0	2.0	10.0				10.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0	0.0	0.0				0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0	0.0	0.0				0.0
Detector 1 Size(m)	2.0		2.0	2.0	0.6	2.0	2.0	0.6				0.6
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex				Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0				0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0				0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0				0.0
Detector 2 Position(m)					9.4			9.4				9.4
Detector 2 Size(m)					0.6			0.6				0.6
Detector 2 Type					Cl+Ex			Cl+Ex				Cl+Ex

Lanes, Volumes, Timings
 9: Liverpool Road & Private Access/Hwy 401 WB Off-Ramp

<Existing>AM
 12-13-2024

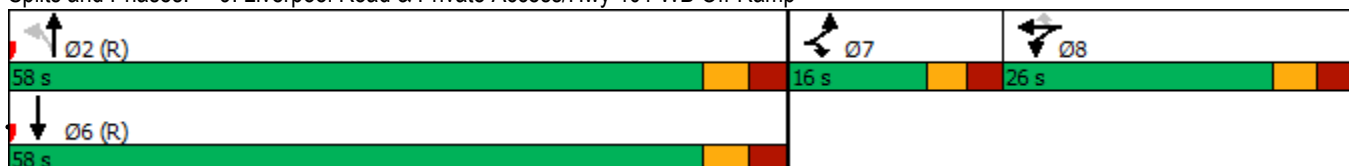


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0				0.0
Turn Type	Prot		Prot	Split	NA	Perm	Perm	NA				NA
Protected Phases	7		7	8	8			2				6
Permitted Phases						8	2					
Detector Phase	7		7	8	8	8	2	2				6
Switch Phase												
Minimum Initial (s)	8.0		8.0	8.0	8.0	8.0	15.0	15.0				15.0
Minimum Split (s)	14.0		14.0	25.0	25.0	25.0	25.0	25.0				25.0
Total Split (s)	16.0		16.0	26.0	26.0	26.0	58.0	58.0				58.0
Total Split (%)	16.0%		16.0%	26.0%	26.0%	26.0%	58.0%	58.0%				58.0%
Maximum Green (s)	10.3		10.3	20.0	20.0	20.0	51.7	51.7				51.7
Yellow Time (s)	3.0		3.0	3.3	3.3	3.3	3.3	3.3				3.3
All-Red Time (s)	2.7		2.7	2.7	2.7	2.7	3.0	3.0				3.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0				0.0
Total Lost Time (s)	5.7		5.7	6.0	6.0	6.0	6.3	6.3				6.3
Lead/Lag	Lead		Lead	Lag	Lag	Lag						
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0	3.0				3.0
Recall Mode	None		None	None	None	None	C-Max	C-Max				C-Max
Walk Time (s)				14.0	14.0	14.0	13.0	13.0				13.0
Flash Dont Walk (s)				5.0	5.0	5.0	5.0	5.0				5.0
Pedestrian Calls (#/hr)				0	0	0	15	15				17
Act Effct Green (s)	8.0		8.0	12.2	12.2	12.2	72.7	72.7				72.7
Actuated g/C Ratio	0.08		0.08	0.12	0.12	0.12	0.73	0.73				0.73
v/c Ratio	0.04		0.01	0.47	0.48	0.74	0.02	0.26				0.24
Control Delay	43.2		0.0	47.2	47.5	15.7	7.5	6.3				5.8
Queue Delay	0.0		0.0	0.0	0.0	0.0	0.0	0.0				0.0
Total Delay	43.2		0.0	47.2	47.5	15.7	7.5	6.3				5.8
LOS	D		A	D	D	B	A	A				A
Approach Delay		32.4			27.1			6.3				5.8
Approach LOS		C			C			A				A

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 38 (38%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
 Natural Cycle: 65
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.74
 Intersection Signal Delay: 12.5
 Intersection LOS: B
 Intersection Capacity Utilization 55.3%
 ICU Level of Service B
 Analysis Period (min) 15

Splits and Phases: 9: Liverpool Road & Private Access/Hwy 401 WB Off-Ramp

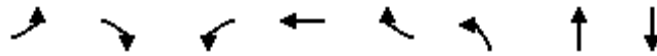


Queues

<Existing>AM

9: Liverpool Road & Private Access/Hwy 401 WB Off-Ramp

12-13-2024



Lane Group	EBL	EBR	WBL	WBT	WBR	NBL	NBT	SBT
Lane Group Flow (vph)	6	2	98	100	352	8	656	604
v/c Ratio	0.04	0.01	0.47	0.48	0.74	0.02	0.26	0.24
Control Delay	43.2	0.0	47.2	47.5	15.7	7.5	6.3	5.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.2	0.0	47.2	47.5	15.7	7.5	6.3	5.8
Queue Length 50th (m)	1.1	0.0	19.1	19.5	4.1	0.3	15.7	14.8
Queue Length 95th (m)	5.0	0.0	32.4	33.0	29.1	2.9	47.2	54.1
Internal Link Dist (m)				202.7			347.5	138.3
Turn Bay Length (m)					125.0	26.5		
Base Capacity (vph)	204	212	340	341	573	429	2496	2468
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.01	0.29	0.29	0.61	0.02	0.26	0.24

Intersection Summary

Lanes, Volumes, Timings
 10: Kingston Road & Fairport Road

<Existing>AM
 12-13-2024



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↗↗	↖↖	↗	↘	↙
Traffic Volume (vph)	96	681	563	99	182	229
Future Volume (vph)	96	681	563	99	182	229
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.0	3.6	3.5	3.7	3.6	4.5
Grade (%)		6%	0%		0%	
Storage Length (m)	75.0			18.5	15.5	0.0
Storage Lanes	1			1	1	1
Taper Length (m)	2.5				31.3	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1602	3335	3466	1471	1736	1708
Flt Permitted	0.382				0.950	
Satd. Flow (perm)	644	3335	3466	1471	1736	1708
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				57		254
Link Speed (k/h)		60	60		40	
Link Distance (m)		424.0	888.0		284.9	
Travel Time (s)		25.4	53.3		25.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	5%	3%	7%	4%	4%
Bus Blockages (#/hr)	0	0	0	9	0	0
Adj. Flow (vph)	107	757	626	110	202	254
Shared Lane Traffic (%)						
Lane Group Flow (vph)	107	757	626	110	202	254
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.0	3.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		1.6	1.6		1.6	
Two way Left Turn Lane		Yes				
Headway Factor	1.14	1.04	1.01	1.03	1.00	0.88
Turning Speed (k/h)	24			14	24	14
Number of Detectors	1	2	2	1	1	1
Detector Template	Left	Thru	Thru	Right	Left	Right
Leading Detector (m)	2.0	10.0	10.0	2.0	2.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	0.6	2.0	2.0	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						

Lanes, Volumes, Timings
 10: Kingston Road & Fairport Road

<Existing>AM
 12-13-2024

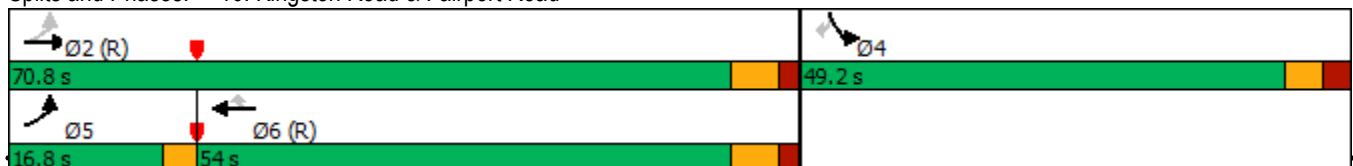


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Detector 2 Extend (s)		0.0	0.0			
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2			6		4
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	5.0	20.0	20.0	20.0	8.0	8.0
Minimum Split (s)	8.0	32.3	32.3	32.3	29.0	29.0
Total Split (s)	16.8	70.8	54.0	54.0	49.2	49.2
Total Split (%)	14.0%	59.0%	45.0%	45.0%	41.0%	41.0%
Maximum Green (s)	13.8	64.5	47.7	47.7	43.2	43.2
Yellow Time (s)	3.0	4.3	4.3	4.3	3.3	3.3
All-Red Time (s)	0.0	2.0	2.0	2.0	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.3	6.3	6.3	6.0	6.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Vehicle Extension (s)	3.0	0.2	0.2	0.2	3.0	3.0
Recall Mode	None	C-Max	C-Max	C-Max	None	None
Walk Time (s)		7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		19.0	19.0	19.0	16.0	16.0
Pedestrian Calls (#/hr)		0	1	1	2	2
Act Effct Green (s)	91.5	88.2	77.6	77.6	19.5	19.5
Actuated g/C Ratio	0.76	0.74	0.65	0.65	0.16	0.16
v/c Ratio	0.19	0.31	0.28	0.11	0.72	0.52
Control Delay	8.1	12.2	7.6	3.5	61.5	8.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.1	12.2	7.6	3.5	61.5	8.9
LOS	A	B	A	A	E	A
Approach Delay		11.7	7.0		32.2	
Approach LOS		B	A		C	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 60 (50%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
 Natural Cycle: 70
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.72
 Intersection Signal Delay: 14.5
 Intersection LOS: B
 Intersection Capacity Utilization 45.7%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 10: Kingston Road & Fairport Road



Queues
10: Kingston Road & Fairport Road

<Existing>AM
12-13-2024



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	107	757	626	110	202	254
v/c Ratio	0.19	0.31	0.28	0.11	0.72	0.52
Control Delay	8.1	12.2	7.6	3.5	61.5	8.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.1	12.2	7.6	3.5	61.5	8.9
Queue Length 50th (m)	3.1	51.2	34.6	0.0	45.6	0.0
Queue Length 95th (m)	27.4	112.5	22.9	5.2	66.3	20.5
Internal Link Dist (m)		400.0	864.0		260.9	
Turn Bay Length (m)	75.0			18.5	15.5	
Base Capacity (vph)	601	2452	2240	970	624	777
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.31	0.28	0.11	0.32	0.33
Intersection Summary						

Lanes, Volumes, Timings
 11: Hwy 401 WB Ramps & Kingston Road

<Existing>AM
 12-13-2024



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↙	↑↑	↙↙	↙
Traffic Volume (vph)	715	12	284	527	461	65
Future Volume (vph)	715	12	284	527	461	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.0	3.7	2.7	3.8	3.8	3.7
Grade (%)	6%			0%	0%	
Storage Length (m)		0.0	47.5		0.0	52.0
Storage Lanes		0	1		2	1
Taper Length (m)			22.3		2.5	
Lane Util. Factor	0.95	0.95	1.00	0.95	0.97	1.00
Frt	0.998					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3479	0	1593	3548	3442	1633
Flt Permitted			0.295		0.950	
Satd. Flow (perm)	3479	0	495	3548	3442	1633
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	2					71
Link Speed (k/h)	60			60	50	
Link Distance (m)	268.7			424.0	216.6	
Travel Time (s)	16.1			25.4	15.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	0%	2%	4%	4%	0%
Adj. Flow (vph)	777	13	309	573	501	71
Shared Lane Traffic (%)						
Lane Group Flow (vph)	790	0	309	573	501	71
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.1			3.1	7.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	0.98	1.03	1.14	0.97	0.97	0.99
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	10.0		2.0	10.0	2.0	2.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Size(m)	0.6		2.0	0.6	2.0	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		

Lanes, Volumes, Timings
 11: Hwy 401 WB Ramps & Kingston Road

<Existing>AM
 12-13-2024

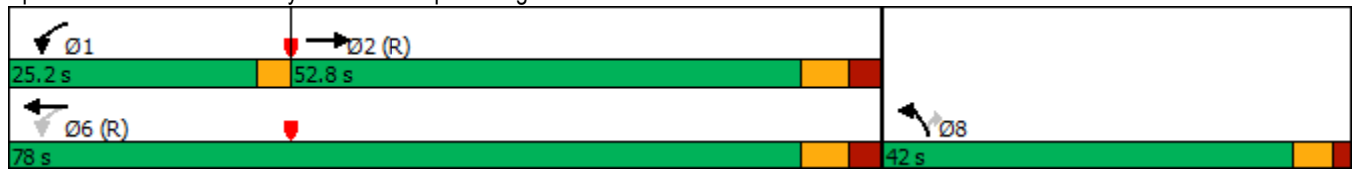


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases			6			8
Detector Phase	2		1	6	8	8
Switch Phase						
Minimum Initial (s)	20.0		5.0	20.0	8.0	8.0
Minimum Split (s)	49.2		8.0	49.2	31.4	31.4
Total Split (s)	52.8		25.2	78.0	42.0	42.0
Total Split (%)	44.0%		21.0%	65.0%	35.0%	35.0%
Maximum Green (s)	45.6		22.2	70.8	36.6	36.6
Yellow Time (s)	4.2		3.0	4.2	3.7	3.7
All-Red Time (s)	3.0		0.0	3.0	1.7	1.7
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	7.2		3.0	7.2	5.4	5.4
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	0.2		3.0	0.2	3.0	3.0
Recall Mode	C-Max		None	C-Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	35.0			35.0	19.0	19.0
Pedestrian Calls (#/hr)	0			3	3	3
Act Effct Green (s)	67.4		88.7	84.5	22.9	22.9
Actuated g/C Ratio	0.56		0.74	0.70	0.19	0.19
v/c Ratio	0.40		0.63	0.23	0.76	0.19
Control Delay	18.3		8.9	3.0	53.8	9.8
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	18.3		8.9	3.0	53.8	9.8
LOS	B		A	A	D	A
Approach Delay	18.3			5.0	48.4	
Approach LOS	B			A	D	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 96 (80%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.76
 Intersection Signal Delay: 20.8
 Intersection LOS: C
 Intersection Capacity Utilization 62.9%
 ICU Level of Service B
 Analysis Period (min) 15

Splits and Phases: 11: Hwy 401 WB Ramps & Kingston Road



Queues
11: Hwy 401 WB Ramps & Kingston Road

<Existing>AM
12-13-2024



Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	790	309	573	501	71
v/c Ratio	0.40	0.63	0.23	0.76	0.19
Control Delay	18.3	8.9	3.0	53.8	9.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	18.3	8.9	3.0	53.8	9.8
Queue Length 50th (m)	47.7	5.1	5.7	58.1	0.0
Queue Length 95th (m)	60.2	9.9	12.4	72.3	11.5
Internal Link Dist (m)	244.7		400.0	192.6	
Turn Bay Length (m)		47.5			52.0
Base Capacity (vph)	1955	569	2499	1049	547
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.40	0.54	0.23	0.48	0.13
Intersection Summary					

Lanes, Volumes, Timings
 12: Plaza Entrance/Delta Blvd & Kingston Road

<Existing>AM
 12-13-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	76	942	37	96	895	74	140	6	92	42	13	124
Future Volume (vph)	76	942	37	96	895	74	140	6	92	42	13	124
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.2	3.4	3.5	3.1	3.4	3.4	3.6	4.6	3.7	3.2	2.8	3.7
Grade (%)		6%			0%			0%			0%	
Storage Length (m)	51.8		148.5	100.0		18.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	35.3			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00					0.95	0.99	0.99		1.00	0.98	
Frt			0.850			0.850		0.860			0.865	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1673	3292	1549	1671	3427	1533	1805	1756	0	1643	1472	0
Flt Permitted	0.239			0.229			0.578			0.686		
Satd. Flow (perm)	419	3292	1549	403	3427	1456	1092	1756	0	1183	1472	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			60			87			103			139
Link Speed (k/h)		60			60			30				40
Link Distance (m)		222.7			268.7			130.9				169.9
Travel Time (s)		13.4			16.1			15.7				15.3
Confl. Peds. (#/hr)	13					13	6		3	3		6
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	0%	4%	0%	2%	3%	3%	0%	0%	2%	5%	0%	0%
Adj. Flow (vph)	85	1058	42	108	1006	83	157	7	103	47	15	139
Shared Lane Traffic (%)												
Lane Group Flow (vph)	85	1058	42	108	1006	83	157	110	0	47	154	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.6				3.6
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		1.6			1.6			1.6				1.6
Two way Left Turn Lane					Yes							
Headway Factor	1.10	1.07	1.06	1.08	1.03	1.03	1.00	0.87	0.99	1.06	1.13	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4				9.4
Detector 2 Size(m)		0.6			0.6			0.6				0.6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex

Lanes, Volumes, Timings
 12: Plaza Entrance/Delta Blvd & Kingston Road

<Existing>AM
 12-13-2024

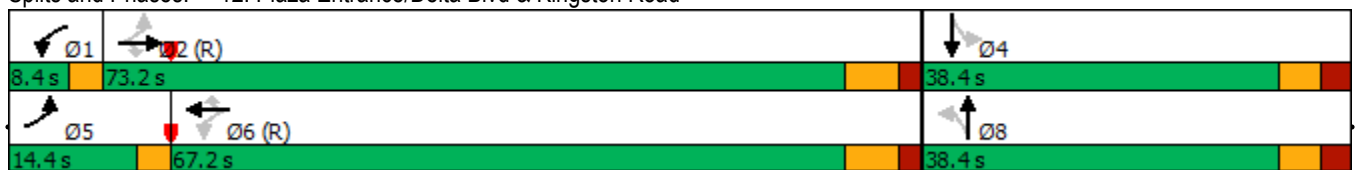


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8				4
Permitted Phases	2		2	6		6	8			4		
Detector Phase	5	2	2	1	6	6	8	8		4		4
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	8.0	8.0		8.0		8.0
Minimum Split (s)	8.0	31.9	31.9	8.0	31.9	31.9	37.6	37.6		37.6		37.6
Total Split (s)	14.4	73.2	73.2	8.4	67.2	67.2	38.4	38.4		38.4		38.4
Total Split (%)	12.0%	61.0%	61.0%	7.0%	56.0%	56.0%	32.0%	32.0%		32.0%		32.0%
Maximum Green (s)	11.4	66.3	66.3	5.4	60.3	60.3	31.8	31.8		31.8		31.8
Yellow Time (s)	3.0	4.7	4.7	3.0	4.7	4.7	3.8	3.8		3.8		3.8
All-Red Time (s)	0.0	2.2	2.2	0.0	2.2	2.2	2.8	2.8		2.8		2.8
Lost Time Adjust (s)	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	6.9	6.9	3.0	6.9	6.9	6.6	6.6		6.6		6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Vehicle Extension (s)	3.0	0.2	0.2	3.0	0.2	0.2	3.0	3.0		3.0		3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None		None		None
Walk Time (s)		7.0	7.0		7.0	7.0	7.0	7.0		7.0		7.0
Flash Dont Walk (s)		18.0	18.0		18.0	18.0	24.0	24.0		24.0		24.0
Pedestrian Calls (#/hr)		1	1		16	16	0	0		1		1
Act Effct Green (s)	87.7	76.7	76.7	84.7	76.5	76.5	21.4	21.4		21.4		21.4
Actuated g/C Ratio	0.73	0.64	0.64	0.71	0.64	0.64	0.18	0.18		0.18		0.18
v/c Ratio	0.22	0.50	0.04	0.32	0.46	0.09	0.81	0.28		0.22		0.41
Control Delay	6.6	12.6	2.1	14.9	29.2	12.4	75.2	9.9		41.8		11.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	6.6	12.6	2.1	14.9	29.2	12.4	75.2	9.9		41.8		11.4
LOS	A	B	A	B	C	B	E	A		D		B
Approach Delay		11.8			26.7			48.3				18.5
Approach LOS		B			C			D				B

Intersection Summary

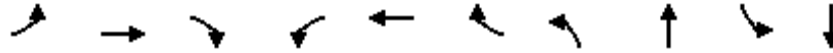
Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 105.6 (88%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.81
 Intersection Signal Delay: 21.9 Intersection LOS: C
 Intersection Capacity Utilization 71.2% ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 12: Plaza Entrance/Delta Blvd & Kingston Road



Queues
12: Plaza Entrance/Delta Blvd & Kingston Road

<Existing>AM
12-13-2024



























Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	85	1058	42	108	1006	83	157	110	47	154
v/c Ratio	0.22	0.50	0.04	0.32	0.46	0.09	0.81	0.28	0.22	0.41
Control Delay	6.6	12.6	2.1	14.9	29.2	12.4	75.2	9.9	41.8	11.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.6	12.6	2.1	14.9	29.2	12.4	75.2	9.9	41.8	11.4
Queue Length 50th (m)	5.3	59.7	0.3	12.3	106.7	3.7	35.9	1.4	9.6	3.0
Queue Length 95th (m)	13.4	87.1	m3.5	26.5	136.5	16.6	53.9	14.5	18.5	18.4
Internal Link Dist (m)		198.7			244.7			106.9		145.9
Turn Bay Length (m)	51.8		148.5	100.0		18.0				
Base Capacity (vph)	430	2103	1011	341	2185	959	289	541	313	492
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.50	0.04	0.32	0.46	0.09	0.54	0.20	0.15	0.31

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings
13: Whites Road & Kingston Road

<Existing>AM
12-13-2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	78	311	294	234	478	281	146	390	390	156	796	175
Future Volume (vph)	78	311	294	234	478	281	146	390	390	156	796	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.6	4.2	3.5	3.7	4.0	3.5	3.9	3.7	3.5	3.9	4.0
Grade (%)		6%			0%			0%			0%	
Storage Length (m)	127.0		123.0	87.1		35.0	72.0		35.0	88.5		47.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	64.0			39.6			66.8			32.6		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Ped Bike Factor	0.98		0.98	0.99		0.95	1.00		0.97	0.99		0.97
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1633	3335	1607	1767	3510	1606	1700	5057	1558	1750	5057	1625
Flt Permitted	0.418			0.483			0.232			0.495		
Satd. Flow (perm)	706	3335	1567	892	3510	1527	413	5057	1509	902	5057	1574
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			218			284			288			190
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		286.1			222.7			158.6			385.2	
Travel Time (s)		17.2			13.4			9.5			23.1	
Confl. Peds. (#/hr)	38		13	13		38	20		20	20		20
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 (%)	6%	5%	4%	1%	4%	5%	5%	6%	4%	2%	6%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	2	0	0	2
Adj. Flow (vph)	85	338	320	254	520	305	159	424	424	170	865	190
Shared Lane Traffic (%)												
Lane Group Flow (vph)	85	338	320	254	520	305	159	424	424	170	865	190
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.04	0.96	1.01	0.99	0.94	1.01	0.96	1.00	1.01	0.96	0.95
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	

Lanes, Volumes, Timings
13: Whites Road & Kingston Road

<Existing>AM
12-13-2024

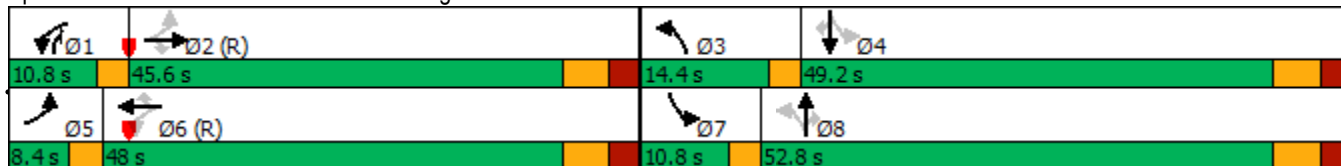


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type	Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8	1	7	4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	1	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	5.0	8.0	5.0	5.0	8.0	8.0
Minimum Split (s)	8.0	43.0	43.0	8.0	43.0	43.0	8.0	44.1	8.0	8.0	44.1	44.1
Total Split (s)	8.4	45.6	45.6	10.8	48.0	48.0	14.4	52.8	10.8	10.8	49.2	49.2
Total Split (%)	7.0%	38.0%	38.0%	9.0%	40.0%	40.0%	12.0%	44.0%	9.0%	9.0%	41.0%	41.0%
Maximum Green (s)	5.4	38.6	38.6	7.8	41.0	41.0	11.4	45.7	7.8	7.8	42.1	42.1
Yellow Time (s)	3.0	4.2	4.2	3.0	4.2	4.2	3.0	4.3	3.0	3.0	4.3	4.3
All-Red Time (s)	0.0	2.8	2.8	0.0	2.8	2.8	0.0	2.8	0.0	0.0	2.8	2.8
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	0.0
Total Lost Time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.1	3.0	3.0	7.1	7.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	0.2	0.2	3.0	0.2	0.2	3.0	0.2	3.0	3.0	0.2	0.2
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	None	None	Max	Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		29.0	29.0		29.0	29.0		30.0			30.0	30.0
Pedestrian Calls (#/hr)		31	31		75	75		65			37	37
Act Effct Green (s)	48.0	38.6	38.6	52.9	42.7	42.7	59.9	45.7	57.6	54.9	43.0	43.0
Actuated g/C Ratio	0.40	0.32	0.32	0.44	0.36	0.36	0.50	0.38	0.48	0.46	0.36	0.36
v/c Ratio	0.26	0.32	0.49	0.56	0.42	0.42	0.50	0.22	0.48	0.36	0.48	0.28
Control Delay	22.2	31.7	13.2	16.6	18.5	4.3	22.0	25.5	7.7	19.4	31.0	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.2	31.7	13.2	16.6	18.5	4.3	22.0	25.5	7.7	19.4	31.0	4.9
LOS	C	C	B	B	B	A	C	C	A	B	C	A
Approach Delay		22.7			14.0			17.4			25.4	
Approach LOS		C			B			B			C	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 1.2 (1%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 105
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.56
 Intersection Signal Delay: 19.9
 Intersection LOS: B
 Intersection Capacity Utilization 100.9%
 ICU Level of Service G
 Analysis Period (min) 15

Splits and Phases: 13: Whites Road & Kingston Road



Queues
13: Whites Road & Kingston Road

<Existing>AM
12-13-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	85	338	320	254	520	305	159	424	424	170	865	190
v/c Ratio	0.26	0.32	0.49	0.56	0.42	0.42	0.50	0.22	0.48	0.36	0.48	0.28
Control Delay	22.2	31.7	13.2	16.6	18.5	4.3	22.0	25.5	7.7	19.4	31.0	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	22.2	31.7	13.2	16.6	18.5	4.3	22.0	25.5	7.7	19.4	31.0	4.9
Queue Length 50th (m)	11.5	31.4	17.4	23.5	49.2	15.6	19.8	24.4	16.8	21.2	58.0	0.0
Queue Length 95th (m)	21.3	44.0	43.5	21.4	27.7	0.7	32.5	32.5	39.9	34.1	70.8	15.0
Internal Link Dist (m)		262.1			198.7			134.6			361.2	
Turn Bay Length (m)	127.0		123.0	87.1		35.0	72.0		35.0	88.5		47.0
Base Capacity (vph)	324	1072	651	450	1248	725	330	1925	877	468	1813	686
Starvation Cap Reductn	0	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.32	0.49	0.56	0.42	0.42	0.48	0.22	0.48	0.36	0.48	0.28

Intersection Summary

Lanes, Volumes, Timings
 14: Whites Road & Highway 401 EB Off Ramp

<Existing>AM
 12-13-2024



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	585	268	0	693	417	0
Future Volume (vph)	585	268	0	693	417	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.7	3.6	3.8	3.7
Storage Length (m)	0.0	225.0	0.0			0.0
Storage Lanes	2	1	0			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	0.97	0.91	1.00	0.95	0.95	1.00
Ped Bike Factor						
Frt	0.993	0.850				
Flt Protected	0.954					
Satd. Flow (prot)	3387	1400	0	3374	3481	0
Flt Permitted	0.954					
Satd. Flow (perm)	3387	1400	0	3374	3481	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	5	256				
Link Speed (k/h)	50			60	60	
Link Distance (m)	295.9			185.9	316.9	
Travel Time (s)	21.3			11.2	19.0	
Confl. Peds. (#/hr)			7			7
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	3%	5%	2%	7%	6%	2%
Adj. Flow (vph)	622	285	0	737	444	0
Shared Lane Traffic (%)		10%				
Lane Group Flow (vph)	651	256	0	737	444	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.2			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	0.99	1.00	0.97	0.99
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	2.0	2.0		10.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	2.0		0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						

Lanes, Volumes, Timings
 14: Whites Road & Highway 401 EB Off Ramp

<Existing>AM
 12-13-2024

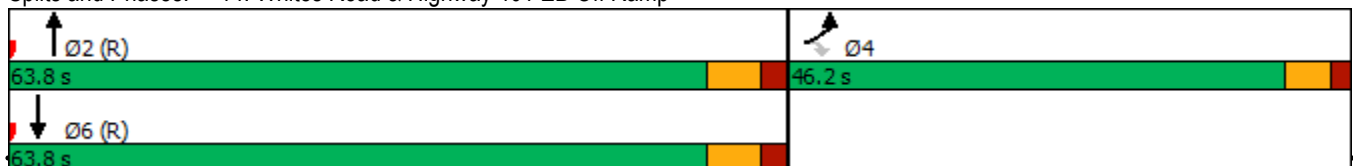


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	8.0	8.0		20.0	20.0	
Minimum Split (s)	28.5	28.5		27.7	27.7	
Total Split (s)	46.2	46.2		63.8	63.8	
Total Split (%)	42.0%	42.0%		58.0%	58.0%	
Maximum Green (s)	40.7	40.7		57.1	57.1	
Yellow Time (s)	3.7	3.7		4.5	4.5	
All-Red Time (s)	1.8	1.8		2.2	2.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.5	5.5		6.7	6.7	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		0.2	0.2	
Recall Mode	None	None		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	16.0	16.0		14.0	14.0	
Pedestrian Calls (#/hr)	3	3		0	0	
Act Effct Green (s)	27.3	27.3		70.5	70.5	
Actuated g/C Ratio	0.25	0.25		0.64	0.64	
v/c Ratio	0.77	0.47		0.34	0.20	
Control Delay	44.5	6.8		10.2	9.0	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	44.5	6.8		10.2	9.0	
LOS	D	A		B	A	
Approach Delay	33.8			10.2	9.0	
Approach LOS	C			B	A	

Intersection Summary

Area Type: Other
 Cycle Length: 110
 Actuated Cycle Length: 110
 Offset: 79.2 (72%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.77
 Intersection Signal Delay: 20.2
 Intersection LOS: C
 Intersection Capacity Utilization 48.8%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 14: Whites Road & Highway 401 EB Off Ramp



Queues

<Existing>AM

14: Whites Road & Highway 401 EB Off Ramp

12-13-2024



Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	651	256	737	444
v/c Ratio	0.77	0.47	0.34	0.20
Control Delay	44.5	6.8	10.2	9.0
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	44.5	6.8	10.2	9.0
Queue Length 50th (m)	66.5	0.0	35.3	19.0
Queue Length 95th (m)	79.4	19.3	54.4	31.0
Internal Link Dist (m)	271.9		161.9	292.9
Turn Bay Length (m)		225.0		
Base Capacity (vph)	1256	679	2163	2232
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.52	0.38	0.34	0.20

Intersection Summary

Lanes, Volumes, Timings
 15: Dixie Road & Shopping Plaza Entrance

<Existing>AM
 12-13-2024



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	81	0	0	194	0
Future Volume (vph)	0	81	0	0	194	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.1	3.7	4.0	3.7	3.7	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.865					
Flt Protected						0.950
Satd. Flow (prot)	1701	0	1984	0	0	1867
Flt Permitted						0.950
Satd. Flow (perm)	1701	0	1984	0	0	1867
Link Speed (k/h)	30		40			40
Link Distance (m)	193.0		106.8			43.8
Travel Time (s)	23.2		9.6			3.9
Confl. Peds. (#/hr)		5			8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	0%	0%	1%	0%
Adj. Flow (vph)	0	88	0	0	211	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	88	0	0	0	0	211
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	4.1		3.6			3.6
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	0.93	0.99	0.94	0.99	0.99	0.94
Turning Speed (k/h)	97	97		97	97	
Sign Control	Stop		Free			Free
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	24.2%		ICU Level of Service A			
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
 15: Dixie Road & Shopping Plaza Entrance

<Existing>AM
 12-13-2024



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	81	0	0	194	0
Future Volume (Veh/h)	0	81	0	0	194	0
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	88	0	0	211	0
Pedestrians	8				5	
Lane Width (m)	4.1				4.0	
Walking Speed (m/s)	1.1				1.1	
Percent Blockage	1				1	
Right turn flare (veh)						
Median type			None		None	
Median storage veh						
Upstream signal (m)					44	
pX, platoon unblocked	0.99					
vC, conflicting volume	430	13			8	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	421	13			8	
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			87	
cM capacity (veh/h)	503	1053			1605	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	88	0	211			
Volume Left	0	0	211			
Volume Right	88	0	0			
cSH	1053	1700	1605			
Volume to Capacity	0.08	0.00	0.13			
Queue Length 95th (m)	2.1	0.0	3.4			
Control Delay (s)	8.7	0.0	7.6			
Lane LOS	A		A			
Approach Delay (s)	8.7	0.0	7.6			
Approach LOS	A					
Intersection Summary						
Average Delay			7.9			
Intersection Capacity Utilization			24.2%	ICU Level of Service		A
Analysis Period (min)	15					

Lanes, Volumes, Timings
1: Walnut Lane & Kingston Road

<Existing>PM
12-13-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	1402	45	166	761	40	117	19	180	24	16	26
Future Volume (vph)	38	1402	45	166	761	40	117	19	180	24	16	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.0	3.6	3.5	3.0	3.6	3.7	3.3	3.5	3.7	3.2	3.7	3.7
Storage Length (m)	26.0		25.8	37.0		0.0	63.2		0.0	18.5		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	24.0			26.0			24.4			18.1		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		0.96		1.00		0.98	0.98		1.00	0.98	
Frt			0.850		0.993			0.865			0.906	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1685	3539	1578	1685	3512	0	1745	1599	0	1725	1709	0
Flt Permitted	0.341			0.121			0.729			0.386		
Satd. Flow (perm)	602	3539	1520	215	3512	0	1317	1599	0	698	1709	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			59		9			158			27	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		129.3			694.6			124.5			224.5	
Travel Time (s)		7.8			41.7			11.2			20.2	
Confl. Peds. (#/hr)	5		7	7		5	14		5	5		14
Confl. Bikes (#/hr)			1									
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
Heavy Vehicles (%)	0%	2%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	3	0	0	0	0	0	0	0	0	0
Adj. Flow (vph)	39	1445	46	171	785	41	121	20	186	25	16	27
Shared Lane Traffic (%)												
Lane Group Flow (vph)	39	1445	46	171	826	0	121	206	0	25	43	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.1			3.1			3.3			3.3	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			1.6			4.9			4.9	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.09	1.00	1.03	1.09	1.00	0.99	1.04	1.01	0.99	1.06	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	0	0	0	0	0		1	1		0	0	
Detector Template												
Leading Detector (m)	0.0	0.0	0.0	0.0	0.0		7.5	7.5		0.0	0.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		-1.5	-1.5		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		-1.5	-1.5		0.0	0.0	
Detector 1 Size(m)	6.1	1.8	6.1	6.1	1.8		9.0	9.0		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Perm	NA	Perm	pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases		2		1	6			8			4	

Lanes, Volumes, Timings
1: Walnut Lane & Kingston Road

<Existing>PM
12-13-2024

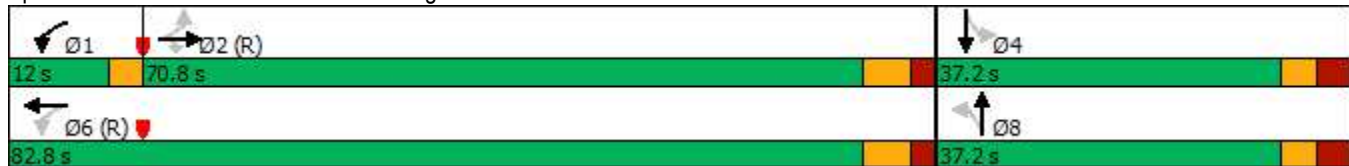


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2		2	6			8			4		
Detector Phase	2	2	2	1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	20.0	20.0	20.0	5.0	20.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	33.0	33.0	33.0	8.0	33.0		36.0	36.0		36.0	36.0	
Total Split (s)	70.8	70.8	70.8	12.0	82.8		37.2	37.2		37.2	37.2	
Total Split (%)	59.0%	59.0%	59.0%	10.0%	69.0%		31.0%	31.0%		31.0%	31.0%	
Maximum Green (s)	64.2	64.2	64.2	9.0	76.2		30.7	30.7		30.7	30.7	
Yellow Time (s)	4.4	4.4	4.4	3.0	4.4		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.2	2.2	2.2	0.0	2.2		3.2	3.2		3.2	3.2	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.6	6.6	6.6	3.0	6.6		6.5	6.5		6.5	6.5	
Lead/Lag	Lag	Lag	Lag	Lead								
Lead-Lag Optimize?	Yes	Yes	Yes	Yes								
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max	C-Max	None	C-Max		None	None		None	None	
Walk Time (s)	7.0	7.0	7.0		7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	19.0	19.0	19.0		19.0		22.0	22.0		22.0	22.0	
Pedestrian Calls (#/hr)	8	8	8		4		2	2		9	9	
Act Effct Green (s)	77.6	77.6	77.6	93.0	89.4		17.5	17.5		17.5	17.5	
Actuated g/C Ratio	0.65	0.65	0.65	0.78	0.74		0.15	0.15		0.15	0.15	
v/c Ratio	0.10	0.63	0.05	0.63	0.32		0.63	0.56		0.25	0.16	
Control Delay	9.4	9.1	3.5	30.6	5.4		61.2	18.0		47.9	21.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	9.4	9.1	3.5	30.6	5.4		61.2	18.0		47.9	21.6	
LOS	A	A	A	C	A		E	B		D	C	
Approach Delay		9.0			9.7			33.9			31.3	
Approach LOS		A			A			C			C	

Intersection Summary

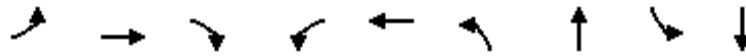
Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 6 (5%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.63
 Intersection Signal Delay: 12.5
 Intersection LOS: B
 Intersection Capacity Utilization 83.7%
 ICU Level of Service E
 Analysis Period (min) 15

Splits and Phases: 1: Walnut Lane & Kingston Road



Queues
1: Walnut Lane & Kingston Road

<Existing>PM
12-13-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	39	1445	46	171	826	121	206	25	43
v/c Ratio	0.10	0.63	0.05	0.63	0.32	0.63	0.56	0.25	0.16
Control Delay	9.4	9.1	3.5	30.6	5.4	61.2	18.0	47.9	21.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.4	9.1	3.5	30.6	5.4	61.2	18.0	47.9	21.6
Queue Length 50th (m)	1.3	41.5	0.1	13.5	24.6	27.5	10.2	5.4	3.3
Queue Length 95th (m)	m8.0	101.2	m2.6	m35.5	40.3	41.9	29.4	12.4	12.1
Internal Link Dist (m)		105.3			670.6		100.5		200.5
Turn Bay Length (m)	26.0		25.8	37.0		63.2		18.5	
Base Capacity (vph)	389	2289	1004	276	2617	336	526	178	457
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.63	0.05	0.62	0.32	0.36	0.39	0.14	0.09

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings
3: Dixie Road & Kingston Road

<Existing>PM
12-13-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	204	1290	100	40	731	135	111	54	63	119	28	92
Future Volume (vph)	204	1290	100	40	731	135	111	54	63	119	28	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	2.8	3.6	3.4	2.8	3.5	3.1	3.6	4.0	3.7	3.8	4.2	3.7
Grade (%)		6%			0%			0%			0%	
Storage Length (m)	145.4		64.5	51.0		79.5	13.0		0.0	16.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	66.4			48.0			18.0			25.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00		0.96			0.98	1.00	0.99		0.99	0.99	
Frt			0.850			0.850		0.920			0.885	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1579	3433	1472	1597	3500	1495	1770	1787	0	1827	1731	0
Flt Permitted	0.316			0.158			0.658			0.666		
Satd. Flow (perm)	525	3433	1416	266	3500	1461	1221	1787	0	1272	1731	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			75			142		54				97
Link Speed (k/h)		60			60			40				60
Link Distance (m)		888.0			199.8			43.8				235.1
Travel Time (s)		53.3			12.0			3.9				14.1
Confl. Peds. (#/hr)	1		6	6		1	4		7	7		4
Confl. Bikes (#/hr)			1									
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	2%	2%	3%	2%	0%	2%	0%	2%	1%	0%	3%
Bus Blockages (#/hr)	0	0	5	0	0	5	0	0	0	0	0	0
Adj. Flow (vph)	215	1358	105	42	769	142	117	57	66	125	29	97
Shared Lane Traffic (%)												
Lane Group Flow (vph)	215	1358	105	42	769	142	117	123	0	125	126	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		2.8			2.8			3.8				3.8
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			4.9			4.9				4.9
Two way Left Turn Lane					Yes							
Headway Factor	1.17	1.04	1.10	1.13	1.01	1.10	1.00	0.94	0.99	0.97	0.92	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	0	0	0	0	0	0	0	0		1	1	
Detector Template												
Leading Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		7.5	7.5	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		-1.5	-1.5	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		-1.5	-1.5	
Detector 1 Size(m)	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8		9.0	9.0	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	

Lanes, Volumes, Timings
3: Dixie Road & Kingston Road

<Existing>PM
12-13-2024

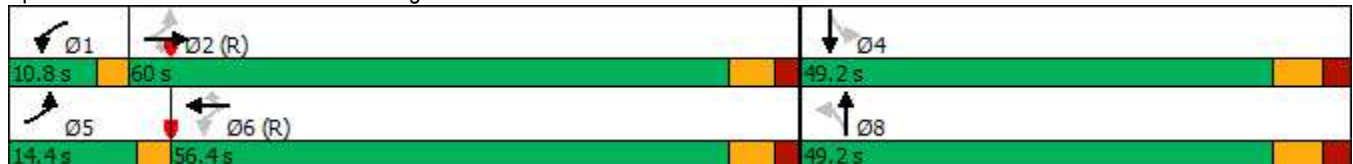


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	5	2		1	6			8				4
Permitted Phases	2		2	6		6	8			4		
Detector Phase	5	2	2	1	6	6	8	8		4		4
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	8.0	8.0		8.0		8.0
Minimum Split (s)	8.0	27.6	27.6	8.0	27.6	27.6	40.1	40.1		40.1		40.1
Total Split (s)	14.4	60.0	60.0	10.8	56.4	56.4	49.2	49.2		49.2		49.2
Total Split (%)	12.0%	50.0%	50.0%	9.0%	47.0%	47.0%	41.0%	41.0%		41.0%		41.0%
Maximum Green (s)	11.4	53.4	53.4	7.8	49.8	49.8	42.1	42.1		42.1		42.1
Yellow Time (s)	3.0	4.2	4.2	3.0	4.2	4.2	4.4	4.4		4.4		4.4
All-Red Time (s)	0.0	2.4	2.4	0.0	2.4	2.4	2.7	2.7		2.7		2.7
Lost Time Adjust (s)	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	6.6	6.6	3.0	6.6	6.6	7.1	7.1		7.1		7.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None		None		None
Walk Time (s)		7.0	7.0		7.0	7.0	7.0	7.0		7.0		7.0
Flash Dont Walk (s)		14.0	14.0		14.0	14.0	26.0	26.0		26.0		26.0
Pedestrian Calls (#/hr)		4	4		6	6	2	2		3		3
Act Effct Green (s)	91.1	79.9	79.9	85.0	75.0	75.0	18.8	18.8		18.8		18.8
Actuated g/C Ratio	0.76	0.67	0.67	0.71	0.62	0.62	0.16	0.16		0.16		0.16
v/c Ratio	0.45	0.59	0.11	0.16	0.35	0.15	0.62	0.38		0.63		0.36
Control Delay	7.1	20.2	4.3	5.9	9.1	1.3	59.2	26.9		59.6		14.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	7.1	20.2	4.3	5.9	9.1	1.3	59.2	26.9		59.6		14.9
LOS	A	C	A	A	A	A	E	C		E		B
Approach Delay		17.5			7.8			42.6				37.1
Approach LOS		B			A			D				D

Intersection Summary

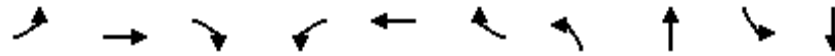
Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 28.8 (24%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.63
 Intersection Signal Delay: 18.1
 Intersection LOS: B
 Intersection Capacity Utilization 70.4%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 3: Dixie Road & Kingston Road



Queues
3: Dixie Road & Kingston Road

<Existing>PM
12-13-2024



























Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	215	1358	105	42	769	142	117	123	125	126
v/c Ratio	0.45	0.59	0.11	0.16	0.35	0.15	0.62	0.38	0.63	0.36
Control Delay	7.1	20.2	4.3	5.9	9.1	1.3	59.2	26.9	59.6	14.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.1	20.2	4.3	5.9	9.1	1.3	59.2	26.9	59.6	14.9
Queue Length 50th (m)	10.3	158.2	5.0	1.7	43.7	1.0	26.5	14.7	28.4	6.0
Queue Length 95th (m)	33.0	187.5	m14.3	4.6	61.8	2.6	39.2	27.5	41.3	19.5
Internal Link Dist (m)		864.0			175.8			19.8		211.1
Turn Bay Length (m)	145.4		64.5	51.0		79.5	13.0		16.0	
Base Capacity (vph)	498	2284	967	278	2186	966	428	661	446	670
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.59	0.11	0.15	0.35	0.15	0.27	0.19	0.28	0.19

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings
6: Liverpool Road & Kingston Road

<Existing>PM
12-13-2024

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	192	952	310	201	544	61	323	736	257	90	426	103
Future Volume (vph)	192	952	310	201	544	61	323	736	257	90	426	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.1	3.4	3.6	3.3	3.7	3.4	3.8	4.1	4.8	4.7	3.8	3.3
Storage Length (m)	188.8		97.9	170.7		117.0	185.5		52.0	49.0		60.5
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	31.6			22.7			20.8			25.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.95	0.99		0.96	0.98		0.91	0.98		0.96
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1688	3461	1599	1728	3579	1579	1791	3773	1732	2026	3654	1561
Flt Permitted	0.360			0.101			0.447			0.248		
Satd. Flow (perm)	633	3461	1517	183	3579	1520	830	3773	1576	519	3654	1495
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			291			91			230			105
Link Speed (k/h)		60			60			50				50
Link Distance (m)		694.6			396.1			257.7				350.8
Travel Time (s)		41.7			23.8			18.6				25.3
Confl. Peds. (#/hr)	20		31	31		20	29		62	62		29
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	1%	2%	1%	1%	2%	0%	3%	1%	4%	0%	1%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	4	0	0	0
Adj. Flow (vph)	196	971	316	205	555	62	330	751	262	92	435	105
Shared Lane Traffic (%)												
Lane Group Flow (vph)	196	971	316	205	555	62	330	751	262	92	435	105
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.3			3.3			4.7				4.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		1.6			1.6			1.6				1.6
Two way Left Turn Lane		Yes										Yes
Headway Factor	1.08	1.03	1.00	1.04	0.99	1.03	0.97	0.93	0.87	0.86	0.97	1.04
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4				9.4
Detector 2 Size(m)		0.6			0.6			0.6				0.6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex

Lanes, Volumes, Timings
6: Liverpool Road & Kingston Road

<Existing>PM
12-13-2024

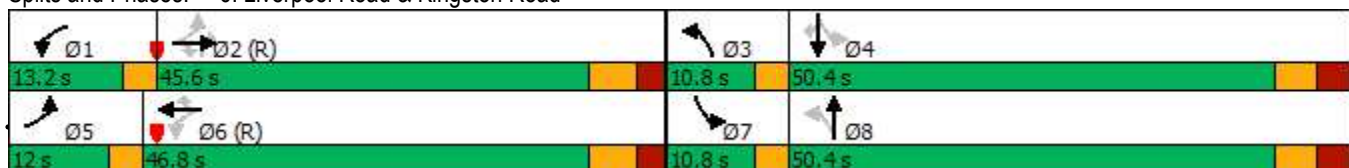


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	custom	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		2	4		4
Detector Phase	5	2	2	1	6	6	3	8	2	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	5.0	8.0	20.0	5.0	8.0	8.0
Minimum Split (s)	8.0	35.1	35.1	8.0	35.1	35.1	8.0	41.0	35.1	8.0	41.0	41.0
Total Split (s)	12.0	45.6	45.6	13.2	46.8	46.8	10.8	50.4	45.6	10.8	50.4	50.4
Total Split (%)	10.0%	38.0%	38.0%	11.0%	39.0%	39.0%	9.0%	42.0%	38.0%	9.0%	42.0%	42.0%
Maximum Green (s)	9.0	38.5	38.5	10.2	39.7	39.7	7.8	43.4	38.5	7.8	43.4	43.4
Yellow Time (s)	3.0	4.3	4.3	3.0	4.3	4.3	3.0	3.8	4.3	3.0	3.8	3.8
All-Red Time (s)	0.0	2.8	2.8	0.0	2.8	2.8	0.0	3.2	2.8	0.0	3.2	3.2
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	0.0
Total Lost Time (s)	3.0	7.1	7.1	3.0	7.1	7.1	3.0	7.0	7.1	3.0	7.0	7.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
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	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	C-Max	None	Max	Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		21.0	21.0		21.0	21.0		27.0	21.0		27.0	27.0
Pedestrian Calls (#/hr)		15	15		20	20		28	15		15	15
Act Effct Green (s)	51.6	38.5	38.5	54.0	39.7	39.7	55.6	43.8	38.5	54.8	43.4	43.4
Actuated g/C Ratio	0.43	0.32	0.32	0.45	0.33	0.33	0.46	0.36	0.32	0.46	0.36	0.36
v/c Ratio	0.56	0.87	0.46	0.96	0.47	0.11	0.74	0.55	0.40	0.28	0.33	0.17
Control Delay	27.9	50.5	14.0	80.8	33.4	2.7	34.2	32.1	7.7	19.0	28.6	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.9	50.5	14.0	80.8	33.4	2.7	34.2	32.1	7.7	19.0	28.6	5.5
LOS	C	D	B	F	C	A	C	C	A	B	C	A
Approach Delay		39.7			42.9			27.9			23.4	
Approach LOS		D			D			C			C	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 98.4 (82%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 95
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.96
 Intersection Signal Delay: 34.2
 Intersection LOS: C
 Intersection Capacity Utilization 102.1%
 ICU Level of Service G
 Analysis Period (min) 15

Splits and Phases: 6: Liverpool Road & Kingston Road



Queues
6: Liverpool Road & Kingston Road

<Existing>PM
12-13-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	196	971	316	205	555	62	330	751	262	92	435	105
v/c Ratio	0.56	0.87	0.46	0.96	0.47	0.11	0.74	0.55	0.40	0.28	0.33	0.17
Control Delay	27.9	50.5	14.0	80.8	33.4	2.7	34.2	32.1	7.7	19.0	28.6	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.9	50.5	14.0	80.8	33.4	2.7	34.2	32.1	7.7	19.0	28.6	5.5
Queue Length 50th (m)	35.4	128.1	33.1	31.8	54.2	0.0	47.7	73.5	5.2	11.4	38.7	0.0
Queue Length 95th (m)	48.3	#152.2	65.8	#79.0	70.5	4.6	#70.0	92.4	24.7	20.5	51.9	11.3
Internal Link Dist (m)		670.6			372.1			233.7			326.8	
Turn Bay Length (m)	188.8		97.9	170.7		117.0	185.5		52.0	49.0		60.5
Base Capacity (vph)	351	1110	684	213	1184	563	447	1376	661	336	1321	607
Starvation Cap Reductn	0	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.87	0.46	0.96	0.47	0.11	0.74	0.55	0.40	0.27	0.33	0.17

Intersection Summary

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

Lanes, Volumes, Timings
 8: Liverpool Road & Private Access/Pickering Parkway

<Existing>PM
 12-13-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	87	69	130	398	58	174	106	992	396	191	855	46
Future Volume (vph)	87	69	130	398	58	174	106	992	396	191	855	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.1	3.1	3.7	3.0	3.4	3.2	2.8	3.6	3.5	3.2	3.5	3.5
Storage Length (m)	0.0		0.0	57.0		62.1	54.4		75.7	132.5		35.5
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (m)	2.5			12.0			29.5			28.9		
Lane Util. Factor	1.00	0.95	0.95	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor		0.96		0.97			0.99		0.96			0.93
Frt		0.902				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1705	2959	0	3204	1858	1399	1645	3539	1569	1708	3535	1597
Flt Permitted	0.000			0.000			0.208			0.147		
Satd. Flow (perm)	0	2959	0	0	1858	1399	357	3539	1502	264	3535	1482
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		134				179			408			144
Link Speed (k/h)		30			50			50				50
Link Distance (m)		82.8			328.5			162.3				257.7
Travel Time (s)		9.9			23.7			11.7				18.6
Confl. Peds. (#/hr)			21	21			21		21	21		21
Confl. Bikes (#/hr)			2						5			6
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
Heavy Vehicles (%)	0%	0%	0%	2%	0%	5%	0%	2%	1%	1%	1%	0%
Bus Blockages (#/hr)	0	0	0	0	0	12	0	0	2	0	0	0
Adj. Flow (vph)	90	71	134	410	60	179	109	1023	408	197	881	47
Shared Lane Traffic (%)												
Lane Group Flow (vph)	90	205	0	410	60	179	109	1023	408	197	881	47
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		6.0			6.0			3.8			3.8	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.08	1.08	0.99	1.09	1.03	1.13	1.13	1.00	1.03	1.06	1.01	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	

Lanes, Volumes, Timings
 8: Liverpool Road & Private Access/Pickering Parkway

<Existing>PM
 12-13-2024

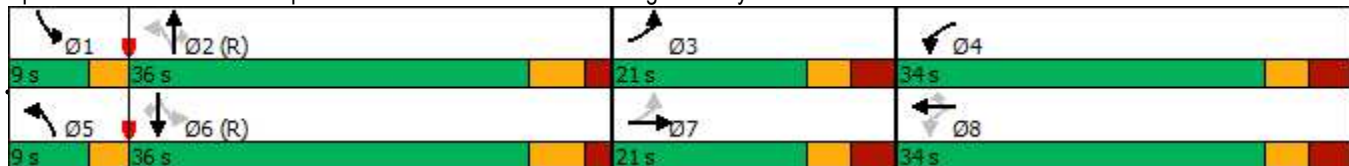


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type	Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	7		4	8		5	2		1	6	
Permitted Phases	7			8		8	2		2	6		6
Detector Phase	3	7		4	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0	8.0	5.0	20.0	20.0	5.0	8.0	8.0
Minimum Split (s)	15.0	15.0		34.0	34.0	34.0	8.0	30.0	30.0	8.0	30.0	30.0
Total Split (s)	21.0	21.0		34.0	34.0	34.0	9.0	36.0	36.0	9.0	36.0	36.0
Total Split (%)	21.0%	21.0%		34.0%	34.0%	34.0%	9.0%	36.0%	36.0%	9.0%	36.0%	36.0%
Maximum Green (s)	14.4	14.4		27.4	27.4	27.4	6.0	29.7	29.7	6.0	29.7	29.7
Yellow Time (s)	3.3	3.3		3.3	3.3	3.3	3.0	4.2	4.2	3.0	4.2	4.2
All-Red Time (s)	3.3	3.3		3.3	3.3	3.3	0.0	2.1	2.1	0.0	2.1	2.1
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)	6.6	6.6		6.6	6.6	6.6	3.0	6.3	6.3	3.0	6.3	6.3
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
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
Recall Mode	None	None		None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)					19.0	19.0			17.0	17.0		
Flash Dont Walk (s)					8.0	8.0			6.0	6.0		
Pedestrian Calls (#/hr)					20	20			28	28		
Act Effct Green (s)	10.8	10.8		20.3	20.3	20.3	49.7	40.4	40.4	49.7	40.4	40.4
Actuated g/C Ratio	0.11	0.11		0.20	0.20	0.20	0.50	0.40	0.40	0.50	0.40	0.40
v/c Ratio	0.49	0.47		0.63	0.16	0.42	0.43	0.72	0.48	0.91	0.62	0.07
Control Delay	50.5	18.9		40.2	31.3	7.7	13.9	22.2	2.4	63.1	28.0	0.2
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.5	18.9		40.2	31.3	7.7	13.9	22.2	2.4	63.1	28.0	0.2
LOS	D	B		D	C	A	B	C	A	E	C	A
Approach Delay				28.5			30.4			16.4		
Approach LOS				C			C			B		

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 15 (15%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.91
 Intersection Signal Delay: 25.1
 Intersection LOS: C
 Intersection Capacity Utilization 76.4%
 ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 8: Liverpool Road & Private Access/Pickering Parkway



8: Liverpool Road & Private Access/Pickering Parkway

12-13-2024



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	90	205	410	60	179	109	1023	408	197	881	47
v/c Ratio	0.49	0.47	0.63	0.16	0.42	0.43	0.72	0.48	0.91	0.62	0.07
Control Delay	50.5	18.9	40.2	31.3	7.7	13.9	22.2	2.4	63.1	28.0	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.5	18.9	40.2	31.3	7.7	13.9	22.2	2.4	63.1	28.0	0.2
Queue Length 50th (m)	16.7	6.7	38.8	10.0	0.0	5.3	48.1	0.0	18.3	66.7	0.0
Queue Length 95th (m)	30.9	16.6	48.2	18.5	15.4	m12.7 m#	129.8	m6.4	#66.1	107.1	0.0
Internal Link Dist (m)		58.8		304.5			138.3			233.7	
Turn Bay Length (m)			57.0		62.1	54.4		75.7	132.5		35.5
Base Capacity (vph)	245	540	877	509	513	254	1428	849	217	1426	683
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	0.37	0.38	0.47	0.12	0.35	0.43	0.72	0.48	0.91	0.62	0.07

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings
 9: Liverpool Road & Private Access/Hwy 401 WB Off-Ramp

<Existing>PM
 12-13-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖		↗	↖	↖	↗	↖	↕			↕	↗
Traffic Volume (vph)	36	0	16	278	8	405	25	1055	0	0	887	2
Future Volume (vph)	36	0	16	278	8	405	25	1055	0	0	887	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.5	3.7	4.5	3.7	3.7	3.5	3.0	3.5	3.7	3.7	3.4	3.7
Storage Length (m)	0.0		0.0	0.0		125.0	26.5		0.0	0.0		0.0
Storage Lanes	1		1	1		1	1		0	0		0
Taper Length (m)	2.5			2.5			52.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor							0.99				1.00	
Frt			0.850			0.850						
Flt Protected	0.950			0.950	0.955		0.950					
Satd. Flow (prot)	1986	0	1777	1734	1743	1581	1685	3535	0	0	3460	0
Flt Permitted	0.950			0.950	0.955		0.244					
Satd. Flow (perm)	1986	0	1777	1734	1743	1581	429	3535	0	0	3460	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			101			156						
Link Speed (k/h)		30			50			50				50
Link Distance (m)		75.1			226.7			371.5				162.3
Travel Time (s)		9.0			16.3			26.7				11.7
Confl. Peds. (#/hr)							17		15	15		17
Confl. Bikes (#/hr)									6			7
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
Heavy Vehicles (%)	0%	2%	0%	0%	0%	1%	0%	1%	6%	2%	2%	0%
Adj. Flow (vph)	39	0	17	299	9	435	27	1134	0	0	954	2
Shared Lane Traffic (%)				49%								
Lane Group Flow (vph)	39	0	17	152	156	435	27	1134	0	0	956	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		4.5			4.5			3.0				3.0
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		1.6			1.6			1.6				1.6
Two way Left Turn Lane												
Headway Factor	0.88	0.99	0.88	0.99	0.99	1.01	1.09	1.01	0.99	0.99	1.03	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1		1	1	2	1	1	2				2
Detector Template	Left		Right	Left	Thru	Right	Left	Thru				Thru
Leading Detector (m)	2.0		2.0	2.0	10.0	2.0	2.0	10.0				10.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0	0.0	0.0				0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0	0.0	0.0				0.0
Detector 1 Size(m)	2.0		2.0	2.0	0.6	2.0	2.0	0.6				0.6
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex				Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0				0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0				0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0				0.0
Detector 2 Position(m)					9.4			9.4				9.4
Detector 2 Size(m)					0.6			0.6				0.6
Detector 2 Type					Cl+Ex			Cl+Ex				Cl+Ex

Lanes, Volumes, Timings
 9: Liverpool Road & Private Access/Hwy 401 WB Off-Ramp

<Existing>PM
 12-13-2024

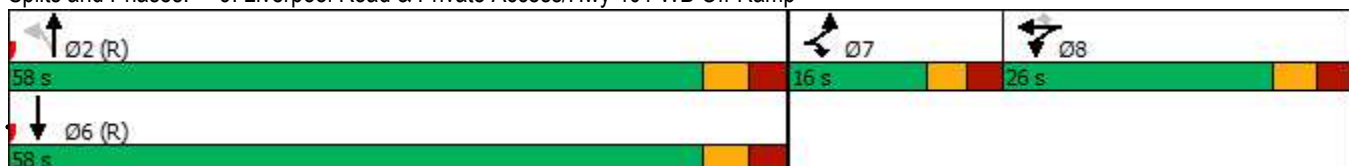


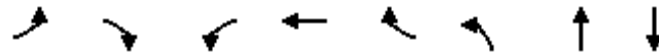
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0				0.0
Turn Type	Prot		Prot	Split	NA	Perm	Perm	NA				NA
Protected Phases	7		7	8	8			2				6
Permitted Phases						8	2					
Detector Phase	7		7	8	8	8	2	2				6
Switch Phase												
Minimum Initial (s)	8.0		8.0	8.0	8.0	8.0	15.0	15.0				15.0
Minimum Split (s)	14.0		14.0	25.0	25.0	25.0	25.0	25.0				25.0
Total Split (s)	16.0		16.0	26.0	26.0	26.0	58.0	58.0				58.0
Total Split (%)	16.0%		16.0%	26.0%	26.0%	26.0%	58.0%	58.0%				58.0%
Maximum Green (s)	10.3		10.3	20.0	20.0	20.0	51.7	51.7				51.7
Yellow Time (s)	3.0		3.0	3.3	3.3	3.3	3.3	3.3				3.3
All-Red Time (s)	2.7		2.7	2.7	2.7	2.7	3.0	3.0				3.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	0.0	0.0				0.0
Total Lost Time (s)	5.7		5.7	6.0	6.0	6.0	6.3	6.3				6.3
Lead/Lag	Lead		Lead	Lag	Lag	Lag						
Lead-Lag Optimize?	Yes		Yes	Yes	Yes	Yes						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0	3.0	3.0				3.0
Recall Mode	None		None	None	None	None	C-Max	C-Max				C-Max
Walk Time (s)				14.0	14.0	14.0	13.0	13.0				13.0
Flash Dont Walk (s)				5.0	5.0	5.0	5.0	5.0				5.0
Pedestrian Calls (#/hr)				0	0	0	14	14				7
Act Effct Green (s)	8.4		8.4	20.0	20.0	20.0	59.1	59.1				59.1
Actuated g/C Ratio	0.08		0.08	0.20	0.20	0.20	0.59	0.59				0.59
v/c Ratio	0.23		0.07	0.44	0.45	0.99	0.11	0.54				0.47
Control Delay	46.2		0.6	39.7	39.9	66.7	12.9	14.8				8.3
Queue Delay	0.0		0.0	0.0	0.0	0.0	0.0	0.0				0.0
Total Delay	46.2		0.6	39.7	39.9	66.7	12.9	14.8				8.3
LOS	D		A	D	D	E	B	B				A
Approach Delay		32.4			55.6			14.7				8.3
Approach LOS		C			E			B				A

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 8 (8%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
 Natural Cycle: 65
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.99
 Intersection Signal Delay: 23.4
 Intersection LOS: C
 Intersection Capacity Utilization 71.2%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 9: Liverpool Road & Private Access/Hwy 401 WB Off-Ramp





Lane Group	EBL	EBR	WBL	WBT	WBR	NBL	NBT	SBT
Lane Group Flow (vph)	39	17	152	156	435	27	1134	956
v/c Ratio	0.23	0.07	0.44	0.45	0.99	0.11	0.54	0.47
Control Delay	46.2	0.6	39.7	39.9	66.7	12.9	14.8	8.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.2	0.6	39.7	39.9	66.7	12.9	14.8	8.3
Queue Length 50th (m)	7.2	0.0	27.3	28.2	57.5	2.4	74.2	37.3
Queue Length 95th (m)	17.0	0.0	47.3	48.2	#119.4	7.4	97.5	45.8
Internal Link Dist (m)				202.7			347.5	138.3
Turn Bay Length (m)					125.0	26.5		
Base Capacity (vph)	204	273	346	348	441	253	2088	2044
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.06	0.44	0.45	0.99	0.11	0.54	0.47

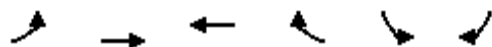
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Lanes, Volumes, Timings
10: Kingston Road & Fairport Road

<Existing>PM
12-13-2024



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	205	1371	718	223	271	137
Future Volume (vph)	205	1371	718	223	271	137
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.0	3.6	3.5	3.7	3.6	4.5
Grade (%)		6%	0%		0%	
Storage Length (m)	75.0			18.5	15.5	0.0
Storage Lanes	1			1	1	1
Taper Length (m)	2.5				31.3	
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Ped Bike Factor	1.00			0.98		0.98
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1618	3433	3466	1559	1805	1777
Flt Permitted	0.315				0.950	
Satd. Flow (perm)	536	3433	3466	1524	1805	1750
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				112		143
Link Speed (k/h)		60	60		40	
Link Distance (m)		424.0	888.0		284.9	
Travel Time (s)		25.4	53.3		25.6	
Confl. Peds. (#/hr)	1			1		2
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Heavy Vehicles (%)	1%	2%	3%	1%	0%	0%
Bus Blockages (#/hr)	0	0	0	9	0	0
Adj. Flow (vph)	214	1428	748	232	282	143
Shared Lane Traffic (%)						
Lane Group Flow (vph)	214	1428	748	232	282	143
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.0	3.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		1.6	1.6		1.6	
Two way Left Turn Lane		Yes				
Headway Factor	1.14	1.04	1.01	1.03	1.00	0.88
Turning Speed (k/h)	24			14	24	14
Number of Detectors	1	2	2	1	1	1
Detector Template	Left	Thru	Thru	Right	Left	Right
Leading Detector (m)	2.0	10.0	10.0	2.0	2.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	0.6	2.0	2.0	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			

Lanes, Volumes, Timings
10: Kingston Road & Fairport Road

<Existing>PM
12-13-2024

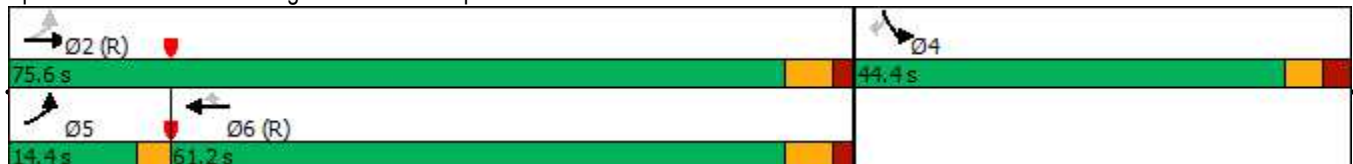


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Detector 2 Type	Cl+Ex		Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)	0.0		0.0			
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2			6		4
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	5.0	20.0	20.0	20.0	8.0	8.0
Minimum Split (s)	8.0	32.3	32.3	32.3	29.0	29.0
Total Split (s)	14.4	75.6	61.2	61.2	44.4	44.4
Total Split (%)	12.0%	63.0%	51.0%	51.0%	37.0%	37.0%
Maximum Green (s)	11.4	69.3	54.9	54.9	38.4	38.4
Yellow Time (s)	3.0	4.3	4.3	4.3	3.3	3.3
All-Red Time (s)	0.0	2.0	2.0	2.0	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.3	6.3	6.3	6.0	6.0
Lead/Lag	Lead		Lag		Lag	
Lead-Lag Optimize?	Yes		Yes		Yes	
Vehicle Extension (s)	3.0	0.2	0.2	0.2	3.0	3.0
Recall Mode	None	C-Max	C-Max	C-Max	None	None
Walk Time (s)	7.0		7.0		7.0	
Flash Dont Walk (s)	19.0		19.0		16.0	
Pedestrian Calls (#/hr)	0		0		0	
Act Effct Green (s)	86.8	83.5	70.6	70.6	24.2	24.2
Actuated g/C Ratio	0.72	0.70	0.59	0.59	0.20	0.20
v/c Ratio	0.45	0.60	0.37	0.25	0.78	0.31
Control Delay	4.9	11.2	8.7	3.3	59.5	7.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.9	11.2	8.7	3.3	59.5	7.4
LOS	A	B	A	A	E	A
Approach Delay	10.4		7.4		42.0	
Approach LOS	B		A		D	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 72 (60%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
 Natural Cycle: 70
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.78
 Intersection Signal Delay: 13.8
 Intersection Capacity Utilization 63.4%
 Analysis Period (min) 15
 Intersection LOS: B
 ICU Level of Service B

Splits and Phases: 10: Kingston Road & Fairport Road



Queues
10: Kingston Road & Fairport Road

<Existing>PM
12-13-2024



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Group Flow (vph)	214	1428	748	232	282	143
v/c Ratio	0.45	0.60	0.37	0.25	0.78	0.31
Control Delay	4.9	11.2	8.7	3.3	59.5	7.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	4.9	11.2	8.7	3.3	59.5	7.4
Queue Length 50th (m)	6.6	175.0	28.0	3.7	63.4	0.0
Queue Length 95th (m)	m19.8	203.4	25.2	7.8	86.2	15.1
Internal Link Dist (m)		400.0	864.0		260.9	
Turn Bay Length (m)	75.0			18.5	15.5	
Base Capacity (vph)	490	2389	2039	942	577	657
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.44	0.60	0.37	0.25	0.49	0.22

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings
 11: Hwy 401 WB Ramps & Kingston Road

<Existing>PM
 12-13-2024



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↙	↑↑	↙↙	↙
Traffic Volume (vph)	1473	23	184	670	662	100
Future Volume (vph)	1473	23	184	670	662	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.0	3.7	2.7	3.8	3.8	3.7
Grade (%)	6%			0%	0%	
Storage Length (m)		0.0	47.5		0.0	52.0
Storage Lanes		0	1		2	1
Taper Length (m)			22.3		2.5	
Lane Util. Factor	0.95	0.95	1.00	0.95	0.97	1.00
Ped Bike Factor					1.00	0.98
Frt	0.998					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3577	0	1577	3618	3544	1617
Flt Permitted			0.073		0.950	
Satd. Flow (perm)	3577	0	121	3618	3536	1591
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	2					90
Link Speed (k/h)	60			60	50	
Link Distance (m)	268.7			424.0	216.6	
Travel Time (s)	16.1			25.4	15.6	
Confl. Peds. (#/hr)					1	3
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	2%	5%	3%	2%	1%	1%
Adj. Flow (vph)	1503	23	188	684	676	102
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1526	0	188	684	676	102
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.1			3.1	7.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	0.98	1.03	1.14	0.97	0.97	0.99
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	10.0		2.0	10.0	2.0	2.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Size(m)	0.6		2.0	0.6	2.0	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		

Lanes, Volumes, Timings
 11: Hwy 401 WB Ramps & Kingston Road

<Existing>PM
 12-13-2024

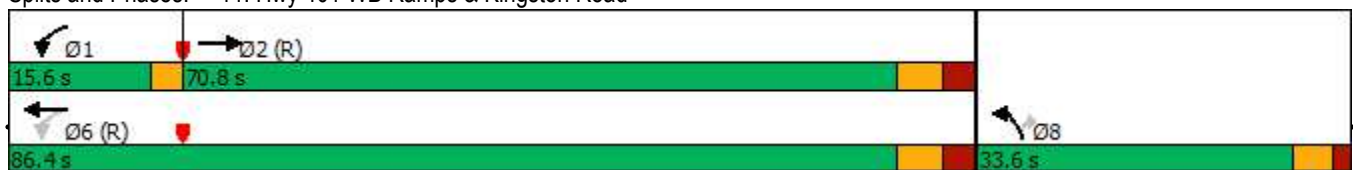


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		pm+pt	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases			6			8
Detector Phase	2		1	6	8	8
Switch Phase						
Minimum Initial (s)	20.0		5.0	20.0	8.0	8.0
Minimum Split (s)	49.2		8.0	49.2	31.4	31.4
Total Split (s)	70.8		15.6	86.4	33.6	33.6
Total Split (%)	59.0%		13.0%	72.0%	28.0%	28.0%
Maximum Green (s)	63.6		12.6	79.2	28.2	28.2
Yellow Time (s)	4.2		3.0	4.2	3.7	3.7
All-Red Time (s)	3.0		0.0	3.0	1.7	1.7
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	7.2		3.0	7.2	5.4	5.4
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Vehicle Extension (s)	0.2		3.0	0.2	3.0	3.0
Recall Mode	C-Max		None	C-Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	35.0			35.0	19.0	19.0
Pedestrian Calls (#/hr)	0			0	14	14
Act Effct Green (s)	66.1		85.2	81.0	26.4	26.4
Actuated g/C Ratio	0.55		0.71	0.68	0.22	0.22
v/c Ratio	0.77		0.82	0.28	0.87	0.24
Control Delay	13.9		45.5	15.3	57.5	11.2
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	13.9		45.5	15.3	57.5	11.2
LOS	B		D	B	E	B
Approach Delay	13.9			21.8	51.5	
Approach LOS	B			C	D	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 8.4 (7%), Referenced to phase 2:EBT and 6:WBTL, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.87
 Intersection Signal Delay: 25.2
 Intersection LOS: C
 Intersection Capacity Utilization 84.6%
 ICU Level of Service E
 Analysis Period (min) 15

Splits and Phases: 11: Hwy 401 WB Ramps & Kingston Road



Queues
 11: Hwy 401 WB Ramps & Kingston Road

<Existing>PM
 12-13-2024



Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1526	188	684	676	102
v/c Ratio	0.77	0.82	0.28	0.87	0.24
Control Delay	13.9	45.5	15.3	57.5	11.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	13.9	45.5	15.3	57.5	11.2
Queue Length 50th (m)	124.2	26.4	58.0	78.1	2.2
Queue Length 95th (m)	139.8	#60.5	74.1	99.4	16.1
Internal Link Dist (m)	244.7		400.0	192.6	
Turn Bay Length (m)		47.5			52.0
Base Capacity (vph)	1972	238	2441	832	442
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.77	0.79	0.28	0.81	0.23

Intersection Summary

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

Lanes, Volumes, Timings
 12: Plaza Entrance/Delta Blvd & Kingston Road

<Existing>PM
 12-13-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	1344	38	89	1129	121	198	15	138	82	13	143
Future Volume (vph)	130	1344	38	89	1129	121	198	15	138	82	13	143
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.2	3.4	3.5	3.1	3.4	3.4	3.6	4.6	3.7	3.2	2.8	3.7
Grade (%)		6%			0%			0%			0%	
Storage Length (m)	51.8		148.5	100.0		18.0	0.0		0.0	0.0		0.0
Storage Lanes	1		1	1		1	1		0	1		0
Taper Length (m)	35.3			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor			0.98			0.94	1.00				0.99	
Frt			0.850			0.850		0.864			0.862	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1656	3357	1549	1705	3461	1579	1770	1824	0	1725	1474	0
Flt Permitted	0.175			0.132			0.589			0.596		
Satd. Flow (perm)	305	3357	1515	237	3461	1488	1096	1824	0	1082	1474	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			60			87		137			146	
Link Speed (k/h)		60			60			30			40	
Link Distance (m)		222.7			268.7			130.9			169.9	
Travel Time (s)		13.4			16.1			15.7			15.3	
Confl. Peds. (#/hr)	16		1	1		16	1					1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	1%	2%	0%	0%	2%	0%	2%	0%	0%	0%	0%	0%
Adj. Flow (vph)	133	1371	39	91	1152	123	202	15	141	84	13	146
Shared Lane Traffic (%)												
Lane Group Flow (vph)	133	1371	39	91	1152	123	202	156	0	84	159	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane					Yes							
Headway Factor	1.10	1.07	1.06	1.08	1.03	1.03	1.00	0.87	0.99	1.06	1.13	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	

Lanes, Volumes, Timings
 12: Plaza Entrance/Delta Blvd & Kingston Road

<Existing>PM
 12-13-2024

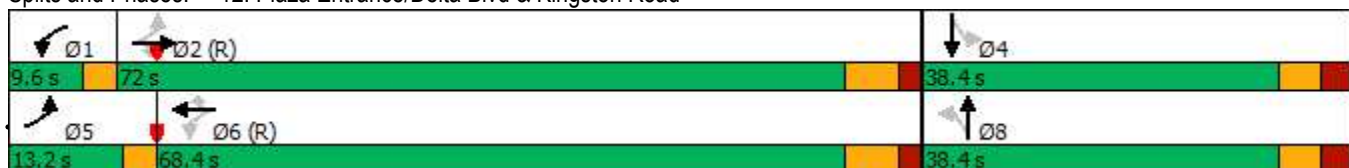


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8				4
Permitted Phases	2		2	6		6	8			4		
Detector Phase	5	2	2	1	6	6	8	8		4		4
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	8.0	8.0		8.0		8.0
Minimum Split (s)	8.0	31.9	31.9	8.0	31.9	31.9	37.6	37.6		37.6		37.6
Total Split (s)	13.2	72.0	72.0	9.6	68.4	68.4	38.4	38.4		38.4		38.4
Total Split (%)	11.0%	60.0%	60.0%	8.0%	57.0%	57.0%	32.0%	32.0%		32.0%		32.0%
Maximum Green (s)	10.2	65.1	65.1	6.6	61.5	61.5	31.8	31.8		31.8		31.8
Yellow Time (s)	3.0	4.7	4.7	3.0	4.7	4.7	3.8	3.8		3.8		3.8
All-Red Time (s)	0.0	2.2	2.2	0.0	2.2	2.2	2.8	2.8		2.8		2.8
Lost Time Adjust (s)	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	6.9	6.9	3.0	6.9	6.9	6.6	6.6		6.6		6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Vehicle Extension (s)	3.0	0.2	0.2	3.0	0.2	0.2	3.0	3.0		3.0		3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None		None		None
Walk Time (s)		7.0	7.0		7.0	7.0	7.0	7.0		7.0		7.0
Flash Dont Walk (s)		18.0	18.0		18.0	18.0	24.0	24.0		24.0		24.0
Pedestrian Calls (#/hr)		0	0		13	13	3	3		6		6
Act Effct Green (s)	83.9	71.7	71.7	80.0	69.7	69.7	25.3	25.3		25.3		25.3
Actuated g/C Ratio	0.70	0.60	0.60	0.67	0.58	0.58	0.21	0.21		0.21		0.21
v/c Ratio	0.43	0.68	0.04	0.39	0.57	0.14	0.87	0.32		0.37		0.37
Control Delay	8.5	13.8	0.9	9.5	7.9	1.8	79.0	9.8		43.4		9.7
Queue Delay	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0		0.0		0.0
Total Delay	8.5	13.8	0.9	9.5	7.9	1.8	79.0	9.8		43.4		9.7
LOS	A	B	A	A	A	A	E	A		D		A
Approach Delay		13.1			7.5			48.9				21.4
Approach LOS		B			A			D				C

Intersection Summary

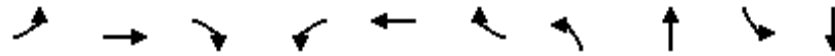
Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 111.6 (93%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.87
 Intersection Signal Delay: 15.1
 Intersection LOS: B
 Intersection Capacity Utilization 83.3%
 ICU Level of Service E
 Analysis Period (min) 15

Splits and Phases: 12: Plaza Entrance/Delta Blvd & Kingston Road



Queues
12: Plaza Entrance/Delta Blvd & Kingston Road

<Existing>PM
12-13-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	133	1371	39	91	1152	123	202	156	84	159
v/c Ratio	0.43	0.68	0.04	0.39	0.57	0.14	0.87	0.32	0.37	0.37
Control Delay	8.5	13.8	0.9	9.5	7.9	1.8	79.0	9.8	43.4	9.7
Queue Delay	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.5	13.8	0.9	9.5	7.9	1.8	79.0	9.8	43.4	9.7
Queue Length 50th (m)	8.4	88.9	0.0	2.5	77.1	1.9	45.9	3.6	16.9	2.5
Queue Length 95th (m)	m12.3	106.5	m0.0	m4.9	116.1	m7.7	#74.4	19.3	30.2	18.6
Internal Link Dist (m)		198.7			244.7			106.9		145.9
Turn Bay Length (m)	51.8		148.5	100.0		18.0				
Base Capacity (vph)	331	2006	929	238	2008	900	290	584	286	497
Starvation Cap Reductn	0	49	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.40	0.70	0.04	0.38	0.57	0.14	0.70	0.27	0.29	0.32

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings
13: Whites Road & Kingston Road

<Existing>PM
12-13-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	155	722	358	231	724	490	228	684	655	189	617	186
Future Volume (vph)	155	722	358	231	724	490	228	684	655	189	617	186
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.6	4.2	3.5	3.7	4.0	3.5	3.9	3.7	3.5	3.9	4.0
Grade (%)		6%			0%			0%			0%	
Storage Length (m)	127.0		123.0	87.1		35.0	72.0		35.0	88.5		47.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	64.0			39.6			66.8			32.6		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Ped Bike Factor	0.98		0.96	0.99		0.91	0.99		0.93	0.98		0.95
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1681	3400	1622	1733	3579	1654	1767	5255	1588	1750	5105	1627
Flt Permitted	0.284			0.213			0.337			0.322		
Satd. Flow (perm)	491	3400	1554	385	3579	1512	618	5255	1471	580	5105	1550
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			216			216			68			192
Link Speed (k/h)		60			60			60			60	
Link Distance (m)		286.1			222.7			158.6			385.2	
Travel Time (s)		17.2			13.4			9.5			23.1	
Confl. Peds. (#/hr)	75		31	31		75	37		65	65		37
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
Heavy Vehicles (%)	3%	3%	3%	3%	2%	2%	1%	2%	2%	2%	5%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	2	0	0	4
Adj. Flow (vph)	160	744	369	238	746	505	235	705	675	195	636	192
Shared Lane Traffic (%)												
Lane Group Flow (vph)	160	744	369	238	746	505	235	705	675	195	636	192
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.5			3.5	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.04	0.96	1.01	0.99	0.94	1.01	0.96	1.00	1.01	0.96	0.96
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	

Lanes, Volumes, Timings
13: Whites Road & Kingston Road

<Existing>PM
12-13-2024

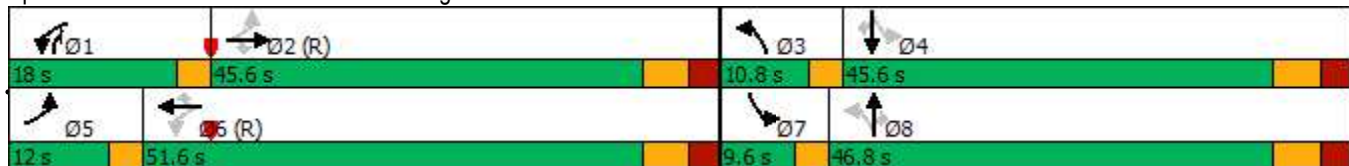


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type	Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8	1	7	4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	1	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	5.0	8.0	5.0	5.0	8.0	8.0
Minimum Split (s)	8.0	43.0	43.0	8.0	43.0	43.0	8.0	44.1	8.0	8.0	44.1	44.1
Total Split (s)	12.0	45.6	45.6	18.0	51.6	51.6	10.8	46.8	18.0	9.6	45.6	45.6
Total Split (%)	10.0%	38.0%	38.0%	15.0%	43.0%	43.0%	9.0%	39.0%	15.0%	8.0%	38.0%	38.0%
Maximum Green (s)	9.0	38.6	38.6	15.0	44.6	44.6	7.8	39.7	15.0	6.6	38.5	38.5
Yellow Time (s)	3.0	4.2	4.2	3.0	4.2	4.2	3.0	4.3	3.0	3.0	4.3	4.3
All-Red Time (s)	0.0	2.8	2.8	0.0	2.8	2.8	0.0	2.8	0.0	0.0	2.8	2.8
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	0.0
Total Lost Time (s)	3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.1	3.0	3.0	7.1	7.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	0.2	0.2	3.0	0.2	0.2	3.0	0.2	3.0	3.0	0.2	0.2
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	None	None	Max	Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0			7.0	7.0
Flash Dont Walk (s)		29.0	29.0		29.0	29.0		30.0			30.0	30.0
Pedestrian Calls (#/hr)		13	13		38	38		20			20	20
Act Effct Green (s)	52.8	40.0	40.0	60.4	44.8	44.8	51.6	39.7	57.4	49.2	38.5	38.5
Actuated g/C Ratio	0.44	0.33	0.33	0.50	0.37	0.37	0.43	0.33	0.48	0.41	0.32	0.32
v/c Ratio	0.53	0.66	0.56	0.69	0.56	0.72	0.69	0.41	0.90	0.65	0.39	0.31
Control Delay	23.9	37.9	16.9	33.9	18.0	11.6	35.2	31.9	40.1	34.2	32.5	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.9	37.9	16.9	33.9	18.0	11.6	35.2	31.9	40.1	34.2	32.5	5.5
LOS	C	D	B	C	B	B	D	C	D	C	C	A
Approach Delay		30.0			18.4			35.8			27.7	
Approach LOS		C			B			D			C	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 1.2 (1%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 105
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.90
 Intersection Signal Delay: 28.1
 Intersection LOS: C
 Intersection Capacity Utilization 104.7%
 ICU Level of Service G
 Analysis Period (min) 15

Splits and Phases: 13: Whites Road & Kingston Road



Queues
13: Whites Road & Kingston Road

<Existing>PM
12-13-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	160	744	369	238	746	505	235	705	675	195	636	192
v/c Ratio	0.53	0.66	0.56	0.69	0.56	0.72	0.69	0.41	0.90	0.65	0.39	0.31
Control Delay	23.9	37.9	16.9	33.9	18.0	11.6	35.2	31.9	40.1	34.2	32.5	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.9	37.9	16.9	33.9	18.0	11.6	35.2	31.9	40.1	34.2	32.5	5.5
Queue Length 50th (m)	20.0	79.7	28.5	22.2	26.5	8.4	34.7	46.8	114.8	28.1	42.4	0.0
Queue Length 95th (m)	32.7	101.2	59.2	53.7	50.9	38.4	53.1	58.2	#193.8	44.3	53.5	15.8
Internal Link Dist (m)		262.1			198.7			134.6				361.2
Turn Bay Length (m)	127.0		123.0	87.1		35.0	72.0		35.0	88.5		47.0
Base Capacity (vph)	305	1132	661	362	1335	699	340	1738	770	302	1637	627
Starvation Cap Reductn	0	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.66	0.56	0.66	0.56	0.72	0.69	0.41	0.88	0.65	0.39	0.31

Intersection Summary

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

Lanes, Volumes, Timings
 14: Whites Road & Highway 401 EB Off Ramp

<Existing>PM
 12-13-2024



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	1183	589	0	841	547	0
Future Volume (vph)	1183	589	0	841	547	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.7	3.6	3.8	3.7
Storage Length (m)	0.0	225.0	0.0			0.0
Storage Lanes	2	1	0			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	0.97	0.91	1.00	0.95	0.95	1.00
Ped Bike Factor	1.00	0.98				
Frt	0.993	0.850				
Flt Protected	0.955					
Satd. Flow (prot)	3453	1427	0	3539	3618	0
Flt Permitted	0.955					
Satd. Flow (perm)	3453	1404	0	3539	3618	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	7	138				
Link Speed (k/h)	50			60	60	
Link Distance (m)	295.9			185.9	316.9	
Travel Time (s)	21.3			11.2	19.0	
Confl. Peds. (#/hr)		3	4			4
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Heavy Vehicles (%)	1%	3%	2%	2%	2%	2%
Adj. Flow (vph)	1245	620	0	885	576	0
Shared Lane Traffic (%)		10%				
Lane Group Flow (vph)	1307	558	0	885	576	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.2			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	0.99	1.00	0.97	0.99
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	2.0	2.0		10.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	2.0		0.6	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						

Lanes, Volumes, Timings
 14: Whites Road & Highway 401 EB Off Ramp

<Existing>PM
 12-13-2024

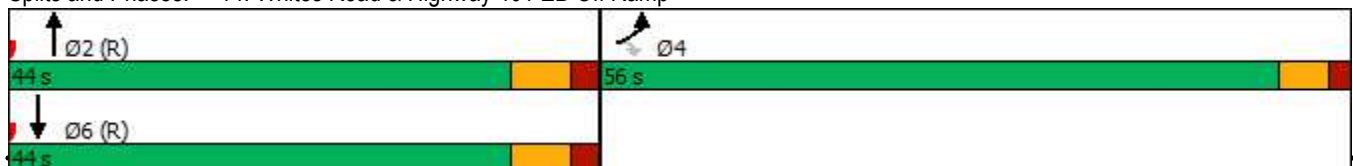


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	8.0	8.0		20.0	20.0	
Minimum Split (s)	28.5	28.5		27.7	27.7	
Total Split (s)	56.0	56.0		44.0	44.0	
Total Split (%)	56.0%	56.0%		44.0%	44.0%	
Maximum Green (s)	50.5	50.5		37.3	37.3	
Yellow Time (s)	3.7	3.7		4.5	4.5	
All-Red Time (s)	1.8	1.8		2.2	2.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.5	5.5		6.7	6.7	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		0.2	0.2	
Recall Mode	None	None		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	16.0	16.0		14.0	14.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effct Green (s)	46.0	46.0		41.8	41.8	
Actuated g/C Ratio	0.46	0.46		0.42	0.42	
v/c Ratio	0.82	0.78		0.60	0.38	
Control Delay	27.9	24.5		25.6	21.9	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	27.9	24.5		25.6	21.9	
LOS	C	C		C	C	
Approach Delay	26.9			25.6	21.9	
Approach LOS	C			C	C	

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 8 (8%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.82
 Intersection Signal Delay: 25.7
 Intersection LOS: C
 Intersection Capacity Utilization 73.4%
 ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 14: Whites Road & Highway 401 EB Off Ramp



Queues

<Existing>PM

14: Whites Road & Highway 401 EB Off Ramp

12-13-2024



Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	1307	558	885	576
v/c Ratio	0.82	0.78	0.60	0.38
Control Delay	27.9	24.5	25.6	21.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	27.9	24.5	25.6	21.9
Queue Length 50th (m)	106.7	72.7	69.8	40.6
Queue Length 95th (m)	124.5	113.7	95.5	57.8
Internal Link Dist (m)	271.9		161.9	292.9
Turn Bay Length (m)		225.0		
Base Capacity (vph)	1747	777	1478	1511
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.75	0.72	0.60	0.38
Intersection Summary				

Lanes, Volumes, Timings
 15: Dixie Road & Shopping Plaza Entrance

<Existing>PM
 12-13-2024



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	228	0	0	168	0
Future Volume (vph)	0	228	0	0	168	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.1	3.7	4.0	3.7	3.7	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.865					
Flt Protected						0.950
Satd. Flow (prot)	1701	0	1946	0	0	1848
Flt Permitted						0.950
Satd. Flow (perm)	1701	0	1946	0	0	1848
Link Speed (k/h)	30		40		48	
Link Distance (m)	193.0		106.8		43.8	
Travel Time (s)	23.2		9.6		3.3	
Confl. Peds. (#/hr)	11			12		
Confl. Bikes (#/hr)						1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	248	0	0	183	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	248	0	0	0	0	183
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	4.1		3.6		3.6	
Link Offset(m)	0.0		0.0		0.0	
Crosswalk Width(m)	1.6		1.6		1.6	
Two way Left Turn Lane						
Headway Factor	0.93	0.99	0.94	0.99	0.99	0.94
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free		Free	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	31.2%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
 15: Dixie Road & Shopping Plaza Entrance

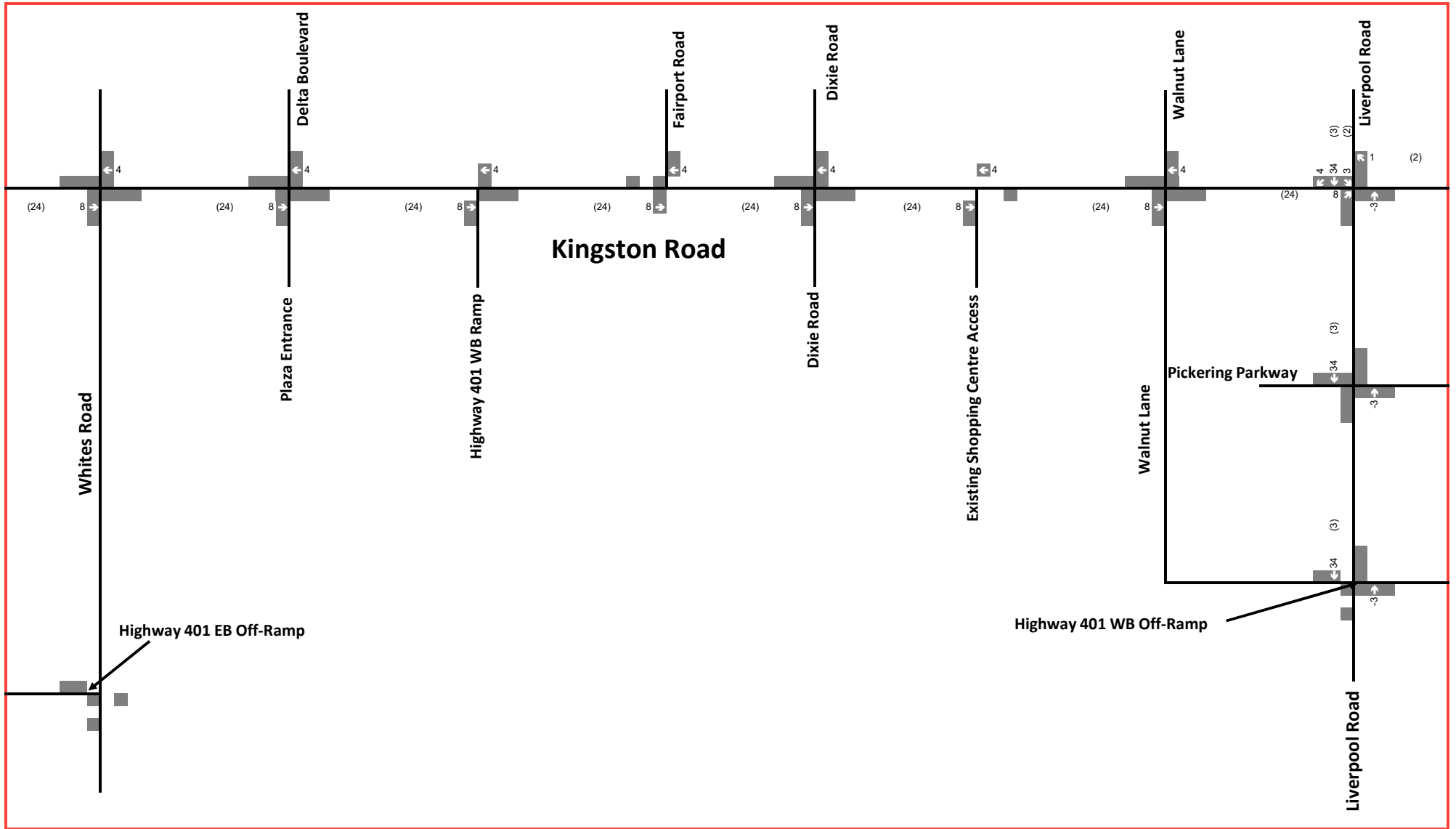
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Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	228	0	0	168	0
Future Volume (Veh/h)	0	228	0	0	168	0
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	248	0	0	183	0
Pedestrians	12				11	
Lane Width (m)	4.1				4.0	
Walking Speed (m/s)	1.1				1.1	
Percent Blockage	1				1	
Right turn flare (veh)						
Median type			None		None	
Median storage veh						
Upstream signal (m)						44
pX, platoon unblocked						
vC, conflicting volume	378	23			12	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	378	23			12	
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	76			88	
cM capacity (veh/h)	545	1029			1587	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	248	0	183			
Volume Left	0	0	183			
Volume Right	248	0	0			
cSH	1029	1700	1587			
Volume to Capacity	0.24	0.00	0.12			
Queue Length 95th (m)	7.2	0.0	3.0			
Control Delay (s)	9.6	0.0	7.6			
Lane LOS	A		A			
Approach Delay (s)	9.6	0.0	7.6			
Approach LOS	A					
Intersection Summary						
Average Delay			8.7			
Intersection Capacity Utilization			31.2%	ICU Level of Service		A
Analysis Period (min)	15					

APPENDIX

D BACKGROUND DEVELOPMENTS VOLUMES



Legend

xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes

Background Development Volume 1
1294 Kingston Road, 1848 & 1852 Liverpool Road



Legend

xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes

Background Development Volume 2

1854-1858 Liverpool Road



Legend

xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes

Background Development Volume 3

Expansion of 1355 King Road



Legend

xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes

Background Development Volume 4

Home Life Care Services at 1234 Kingston Road

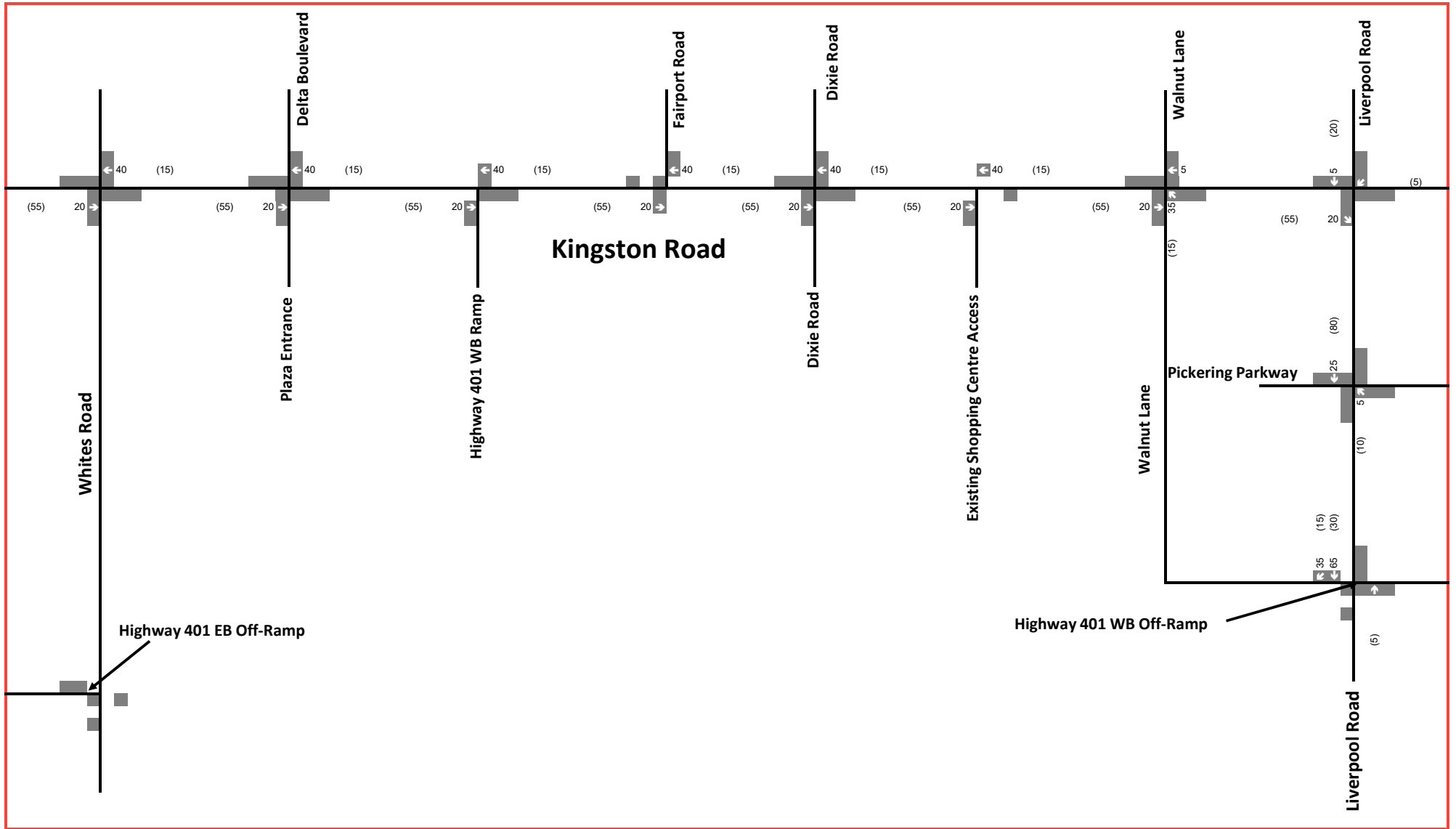


Legend

xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes

Background Development Volume 5

Tribute-Liverpool & Highway 401



Legend

xx A.M. Peak Hour Traffic Volumes (xx) P.M. Peak Hour Traffic Volumes

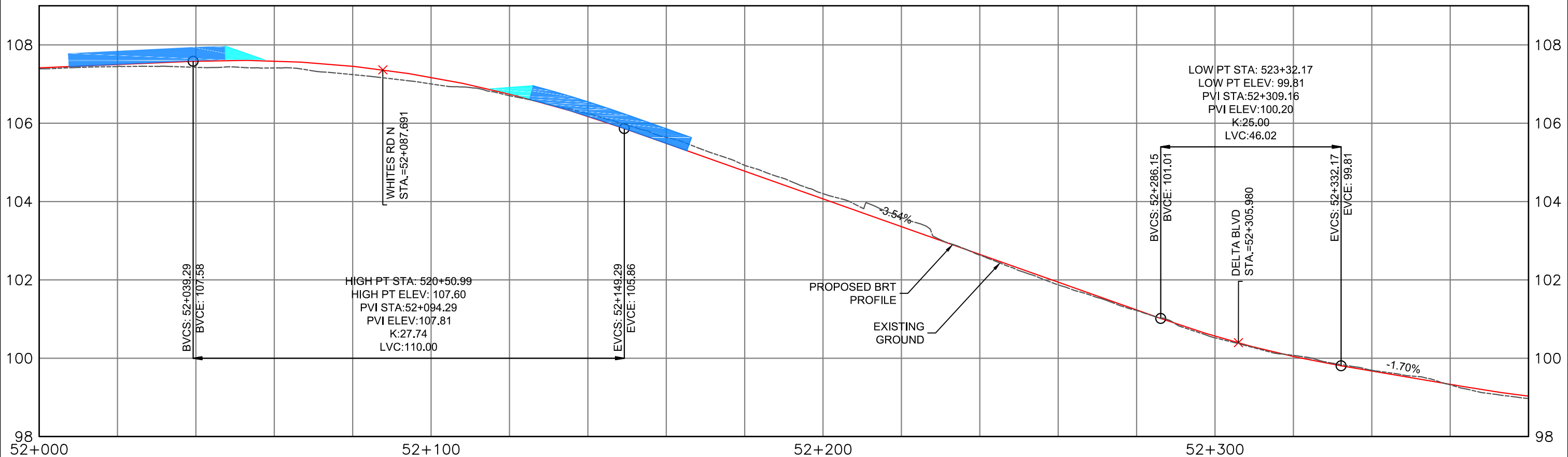
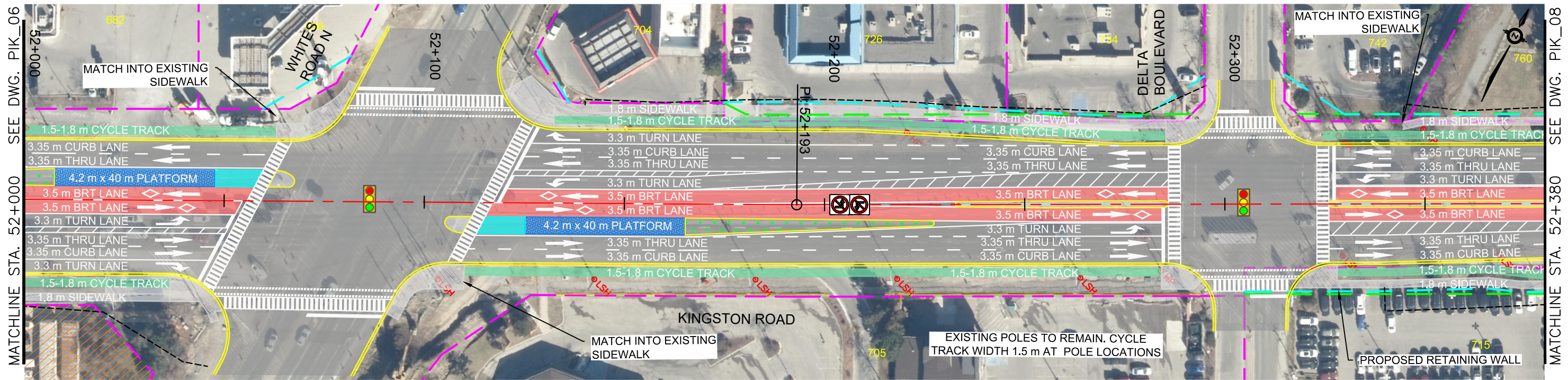
Background Development Volume 6

1790 Liverpool Road

APPENDIX

E KINGSTON BRT PRELIMINARY DESIGNS

January 14, 2022, 4:19 PM Login name: adrian.chiu Drawing Name: J:\119887_Mx_DS_BRT\5.9 Drawings\59civil\layouts\CPG_DSBRT_CO-200_PLAN&PROFILE_PIK.dwg



ALL DIMENSIONS SHOWN ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE NOTED.

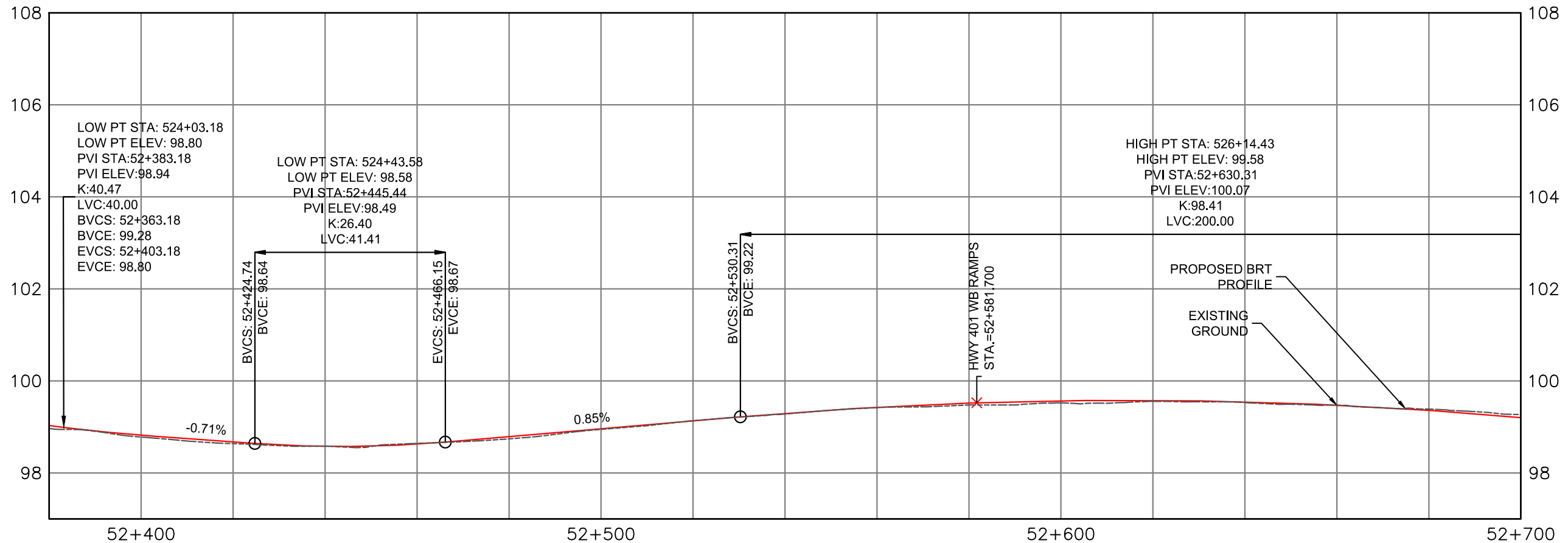
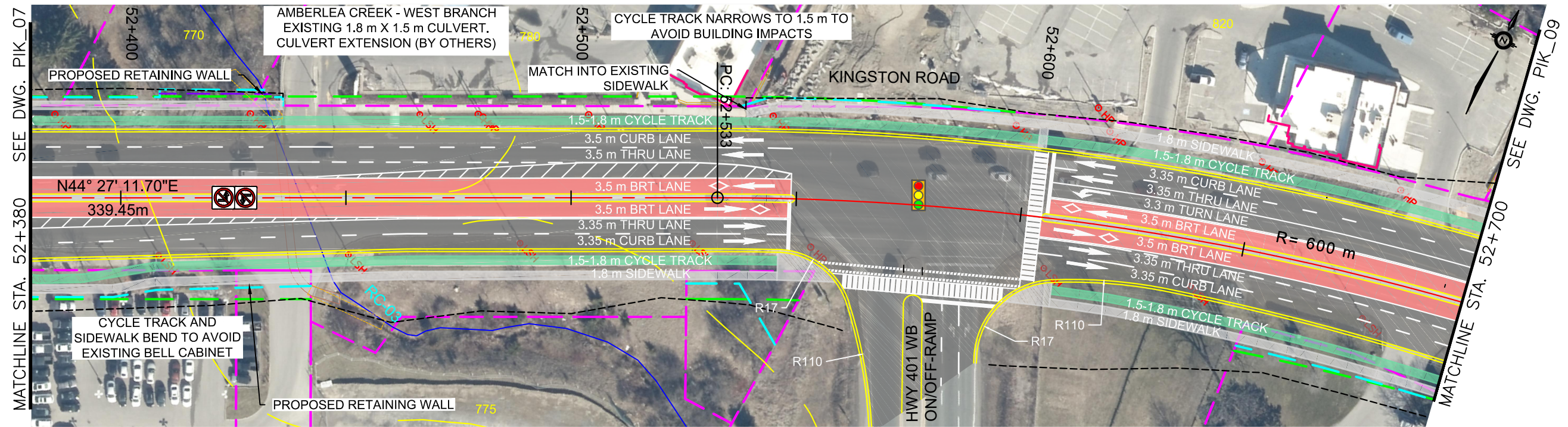
DRAWN BY: A.C 08/17/21	DESIGNED BY: M.H 08/17/21
CHECKED BY: M.H 08/17/21	APPROVED BY: M.P 08/17/21
SCALE: HOR 1:1000 VER 1:100	FULL SIZE ONLY 20m 2m



DURHAM-SCARBOROUGH BUS RAPID TRANSIT
ENVIRONMENTAL ASSESSMENT
PLAN AND PROFILE
STA. 52+000 TO STA. 52+380

CONTRACT NO. RQQ-2018-PPDD-244	DWG. NO. CPG_DSBRT_CO-200_PLAN&PROFILE_PIK	REV. 01	SHEET PIK_07
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January 14, 2022, 4:19 PM Login name: adrian.chiu
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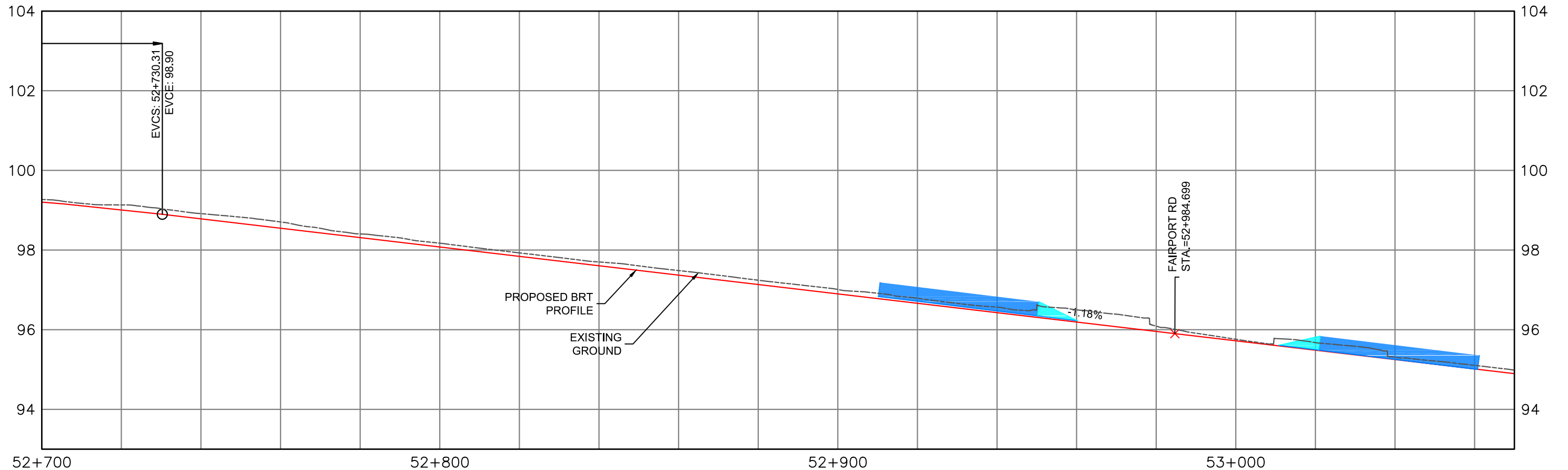
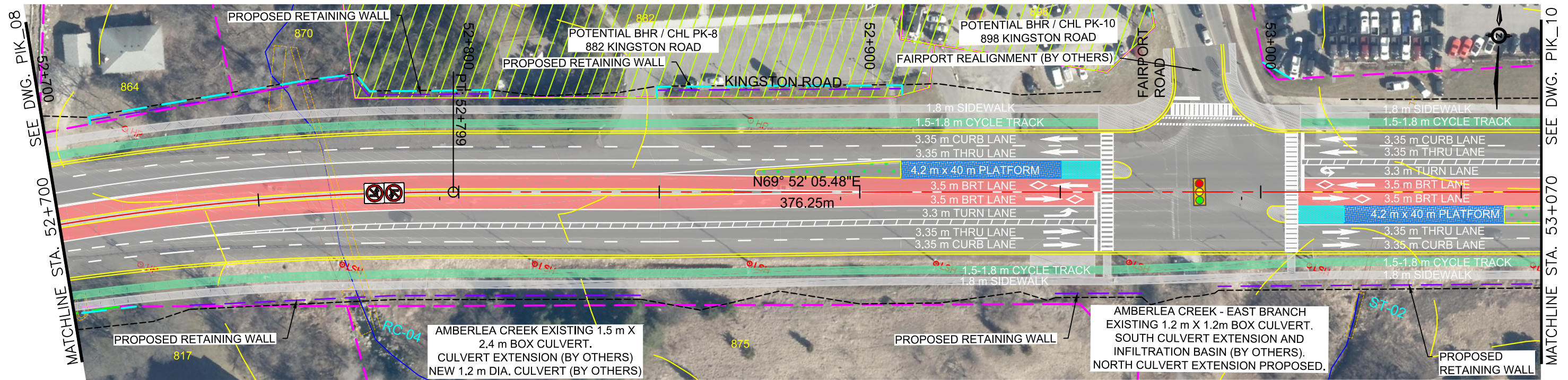
ALL DIMENSIONS SHOWN ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE NOTED.

DRAWN BY: A.C 08/17/21	DESIGNED BY: M.H 08/17/21
CHECKED BY: M.H 08/17/21	APPROVED BY: M.P 08/17/21
SCALE: HOR 1:1000 VER 1:100	FULL SIZE ONLY 20m 2m

DURHAM - SCARBOROUGH				
Bus Rapid Transit				

DURHAM-SCARBOROUGH BUS RAPID TRANSIT ENVIRONMENTAL ASSESSMENT PLAN AND PROFILE STA. 52+380 TO STA. 52+700			
CONTRACT NO. RQQ-2018-PPDD-244	DWG. NO. CPG_DSBRTO-200_PLAN&PROFILE_PIK	REV. 01	SHEET PIK_08

January 14, 2022, 4:19 PM Login name: adrian.chiu
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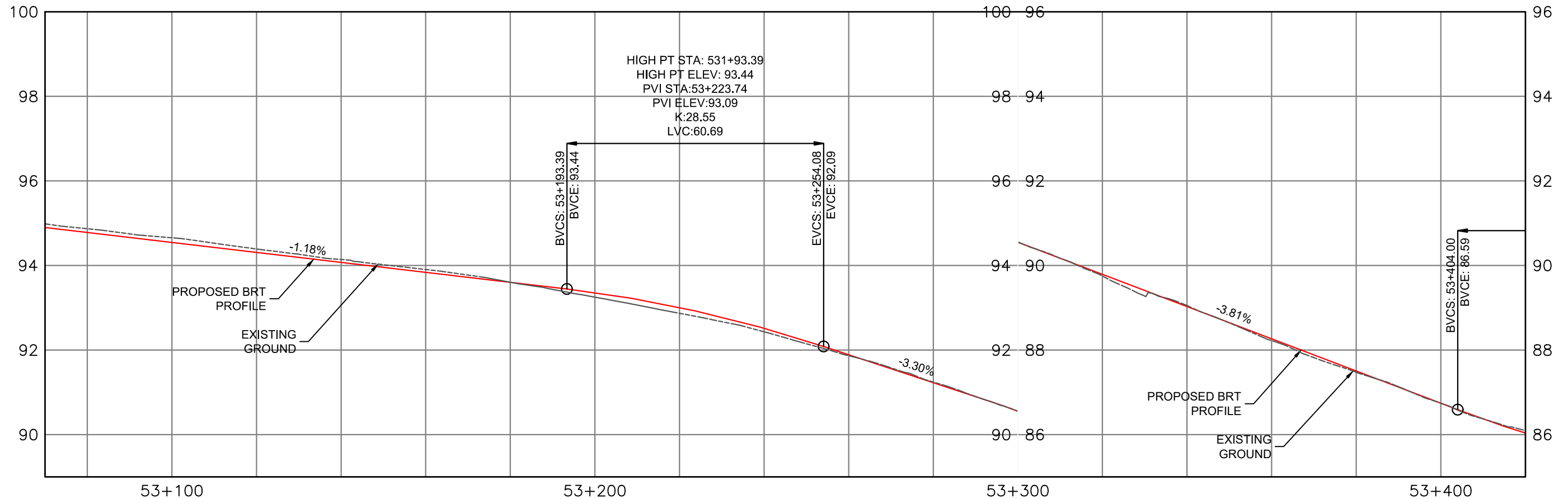
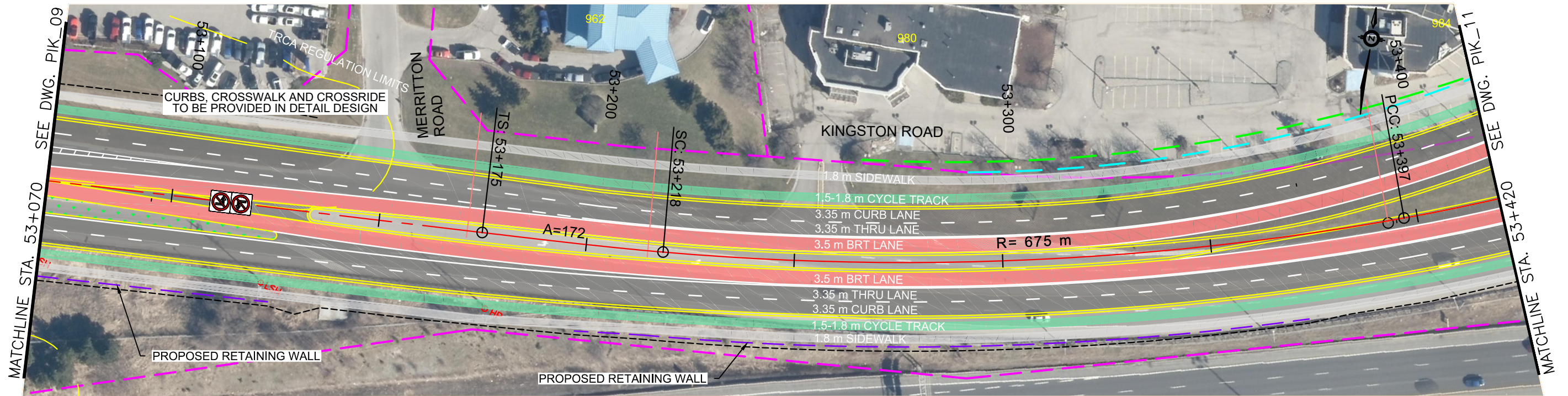
ALL DIMENSIONS SHOWN ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE NOTED.

DRAWN BY: A.C 08/17/21	DESIGNED BY: M.H 08/17/21
CHECKED BY: M.H 08/17/21	APPROVED BY: M.P 08/17/21
SCALE: HOR 1:1000 VER 1:100	FULL SIZE ONLY 20m 2m

DURHAM - SCARBOROUGH				
Bus Rapid Transit				

DURHAM-SCARBOROUGH BUS RAPID TRANSIT ENVIRONMENTAL ASSESSMENT PLAN AND PROFILE STA. 52+700 TO STA. 53+070			
CONTRACT NO. RQQ-2018-PPDD-244	DWG. NO. CPG_DSBRT_CO-200_PLAN&PROFILE_PIK	REV. 01	SHEET PIK_09

January 14, 2022, 4:19 PM Login name: adrian.chiu
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ALL DIMENSIONS SHOWN ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE NOTED.

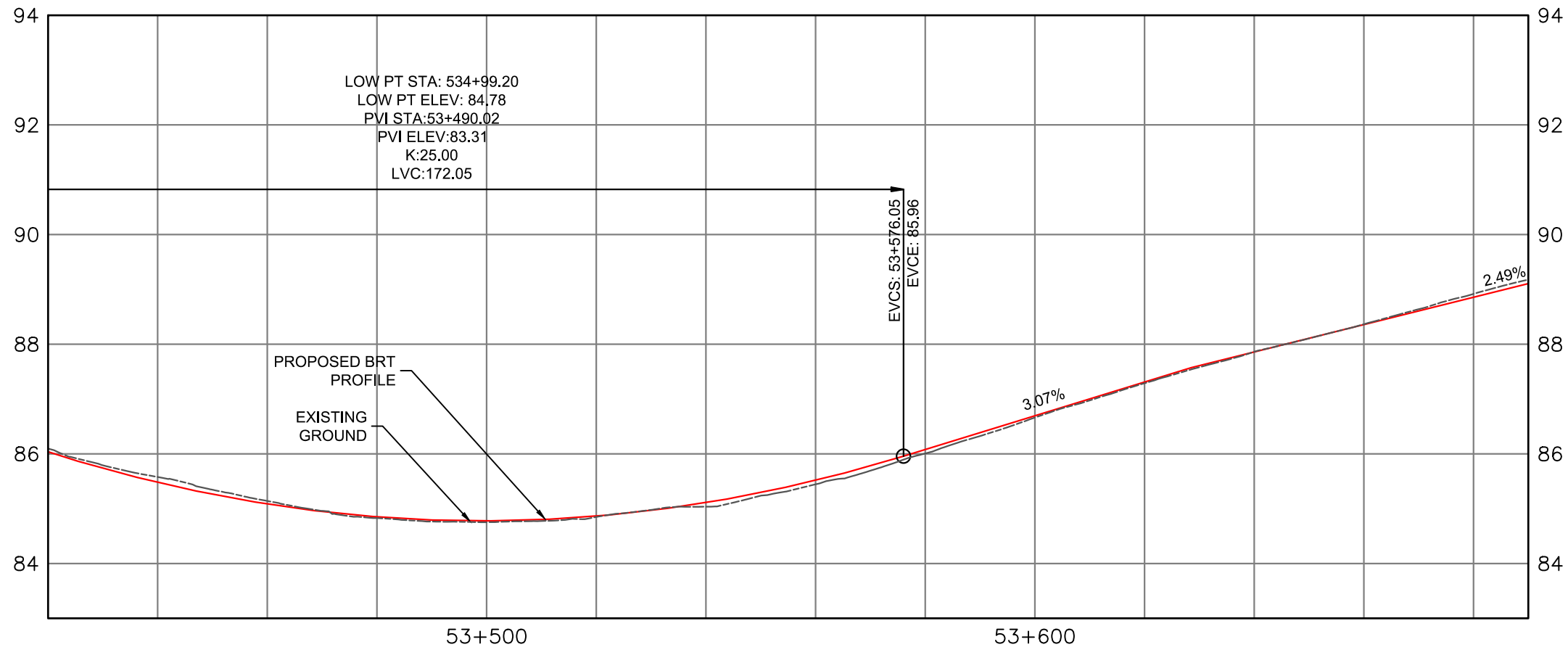
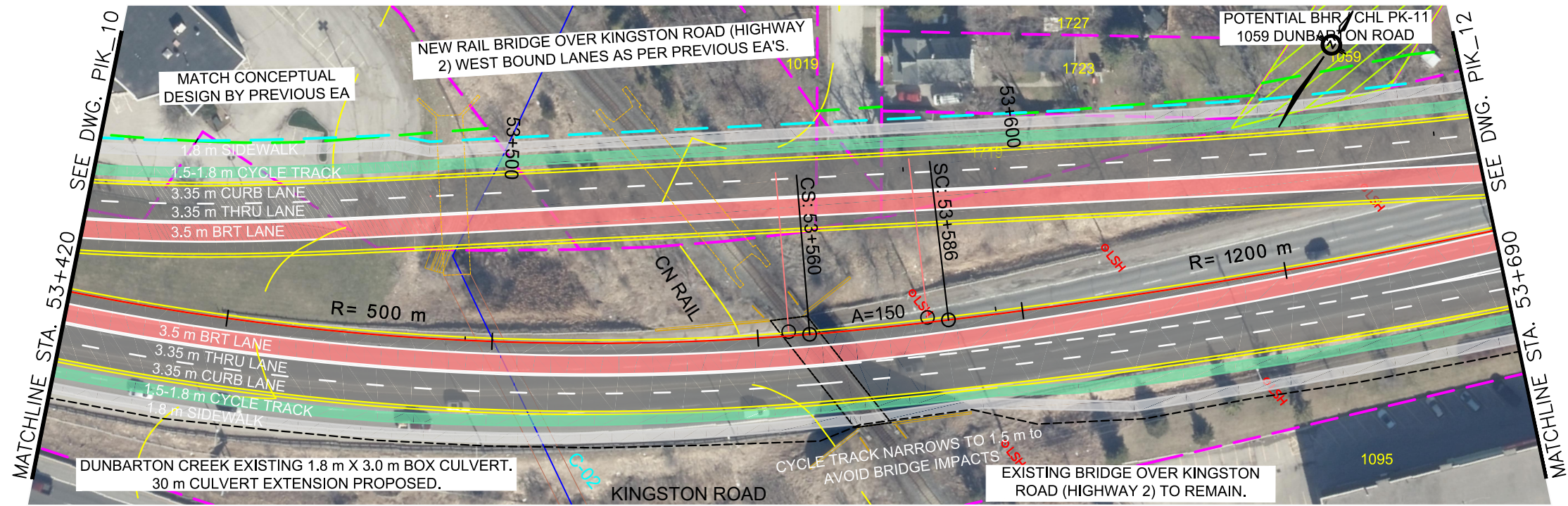
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CHECKED BY: M.H 08/17/21	APPROVED BY: M.P 08/17/21
SCALE: HOR 1:1000 VER 1:100	FULL SIZE ONLY 20m 2m



DURHAM - SCARBOROUGH
 Bus Rapid Transit

DURHAM-SCARBOROUGH BUS RAPID TRANSIT ENVIRONMENTAL ASSESSMENT PLAN AND PROFILE STA. 53+070 TO STA. 53+420			
CONTRACT NO. RQQ-2018-PPDD-244	DWG. NO. CPG_DSBRT_CO-200_PLAN&PROFILE_PIK	REV. 01	SHEET PIK_10

January 14, 2022, 4:19 PM Login name: adrian.chiu Drawing Name: J:\119887_Mx_DS_BRT\5.9 Drawings\59civil\layouts\CPG_DSBRT_CO-200_PLAN&PROFILE_PIK.dwg



ALL DIMENSIONS SHOWN ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE NOTED.

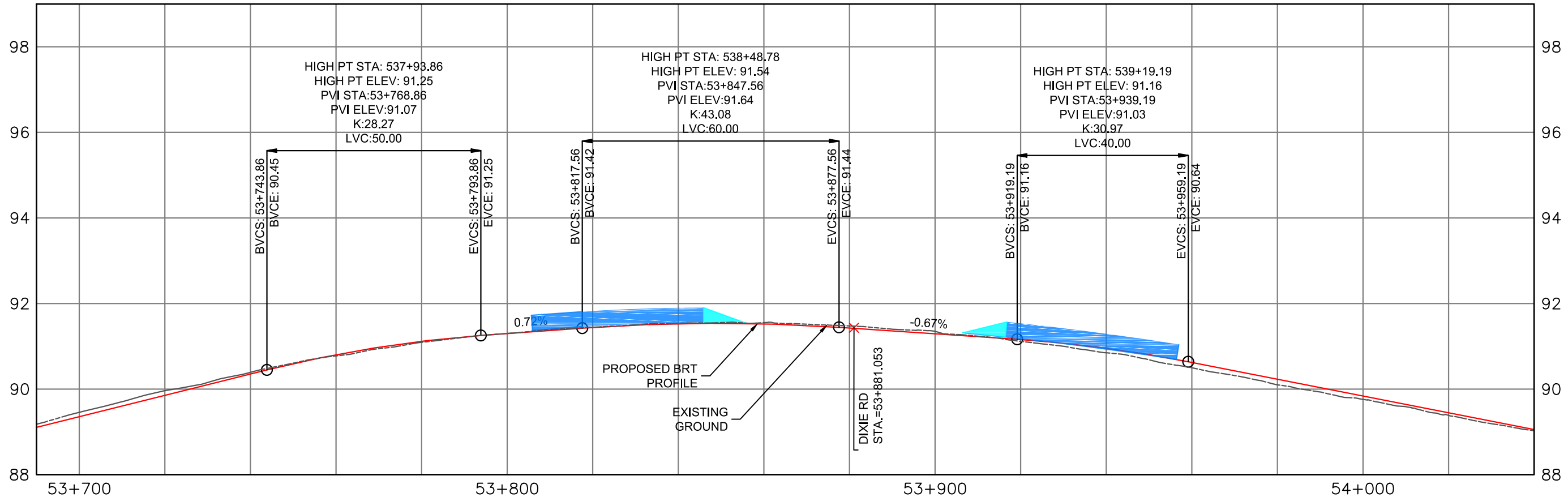
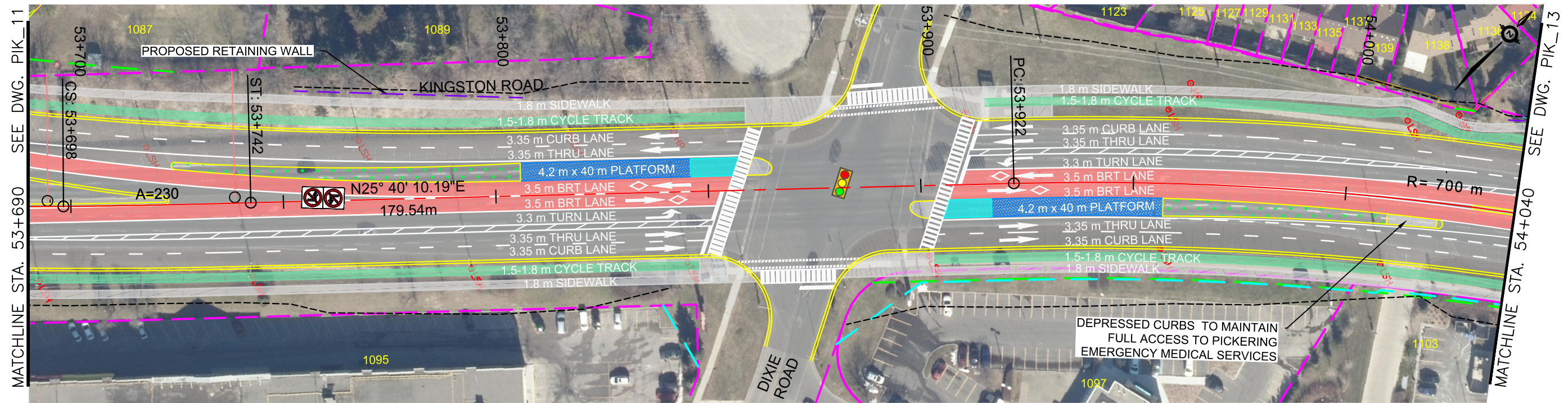
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CHECKED BY: M.H 08/17/21	APPROVED BY: M.P 08/17/21
SCALE: HOR 1:1000 VER 1:100	FULL SIZE ONLY 1p 20m 2m



DURHAM-SCARBOROUGH BUS RAPID TRANSIT ENVIRONMENTAL ASSESSMENT PLAN AND PROFILE STA. 53+420 TO STA. 53+690			
CONTRACT NO. RQQ-2018-PPDD-244	DWG. NO. CPG_DSBRT_CO-200_PLAN&PROFILE_PIK	REV. 01	SHEET PIK_11

DURHAM - SCARBOROUGH
Bus Rapid Transit

January 14, 2022, 4:19 PM Login name: adrian.chiu
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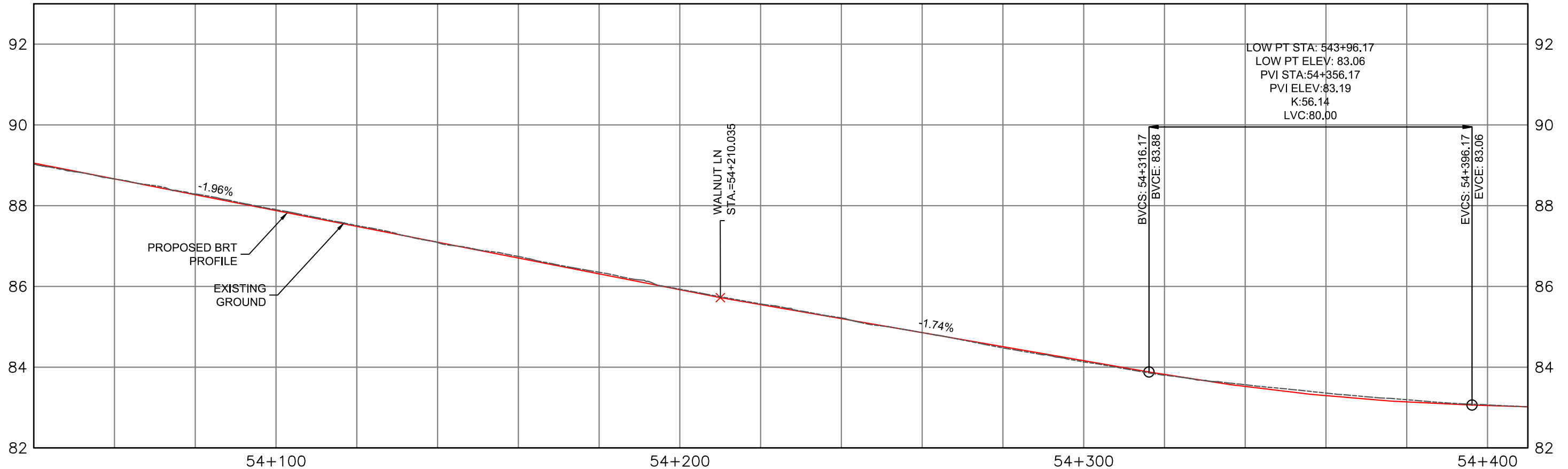
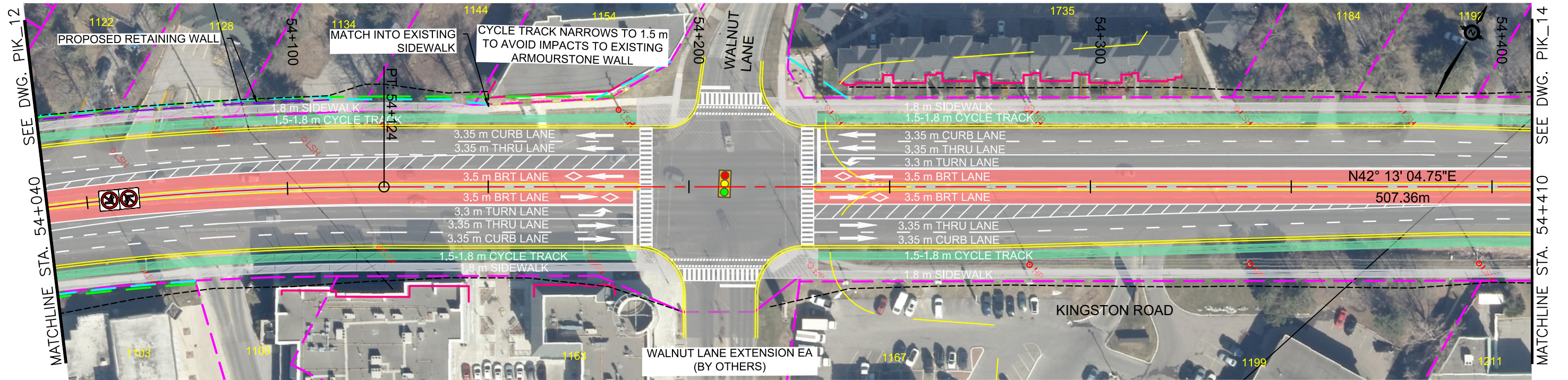
ALL DIMENSIONS SHOWN ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE NOTED.

DRAWN BY: A.C 08/17/21	DESIGNED BY: M.H 08/17/21
CHECKED BY: M.H 08/17/21	APPROVED BY: M.P 08/17/21
SCALE: HOR 1:1000 VER 1:100	FULL SIZE ONLY 20m 2m

DURHAM - SCARBOROUGH
Bus Rapid Transit

DURHAM-SCARBOROUGH BUS RAPID TRANSIT ENVIRONMENTAL ASSESSMENT PLAN AND PROFILE STA. 53+690 TO STA. 54+040			
CONTRACT NO. RQQ-2018-PPDD-244	DWG. NO. CPG_DSBRT_CO-200_PLAN&PROFILE_PIK	REV. 01	SHEET PIK_12

January 14, 2022, 4:19 PM Login name: adrian.chiu
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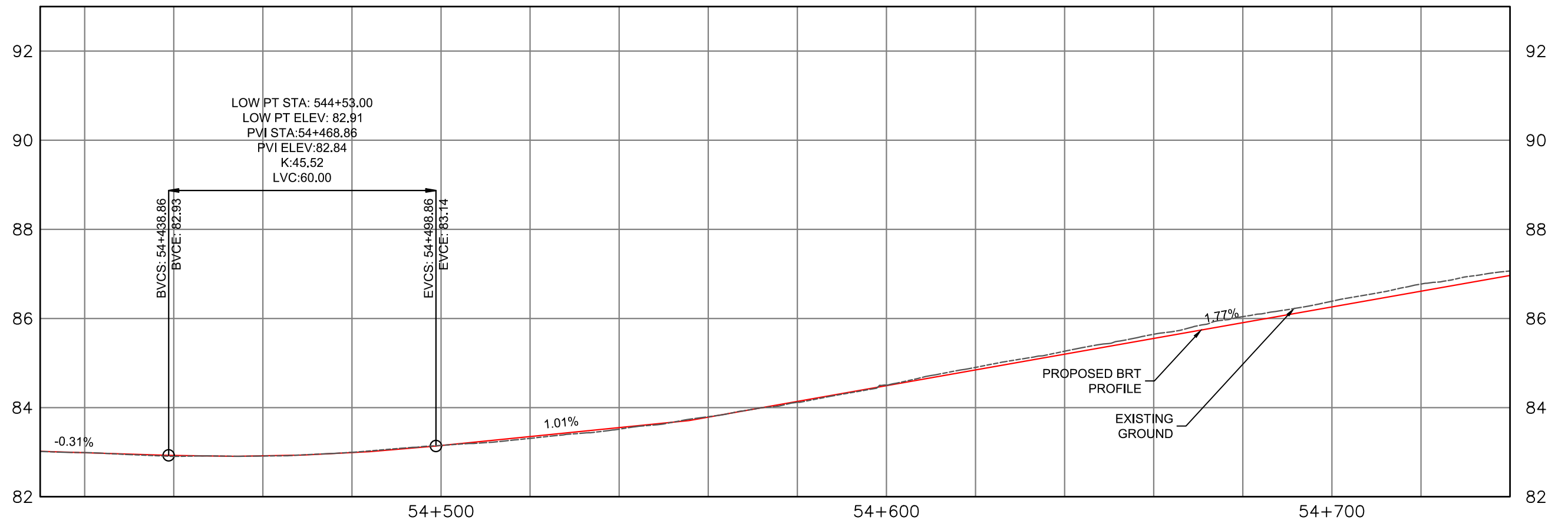
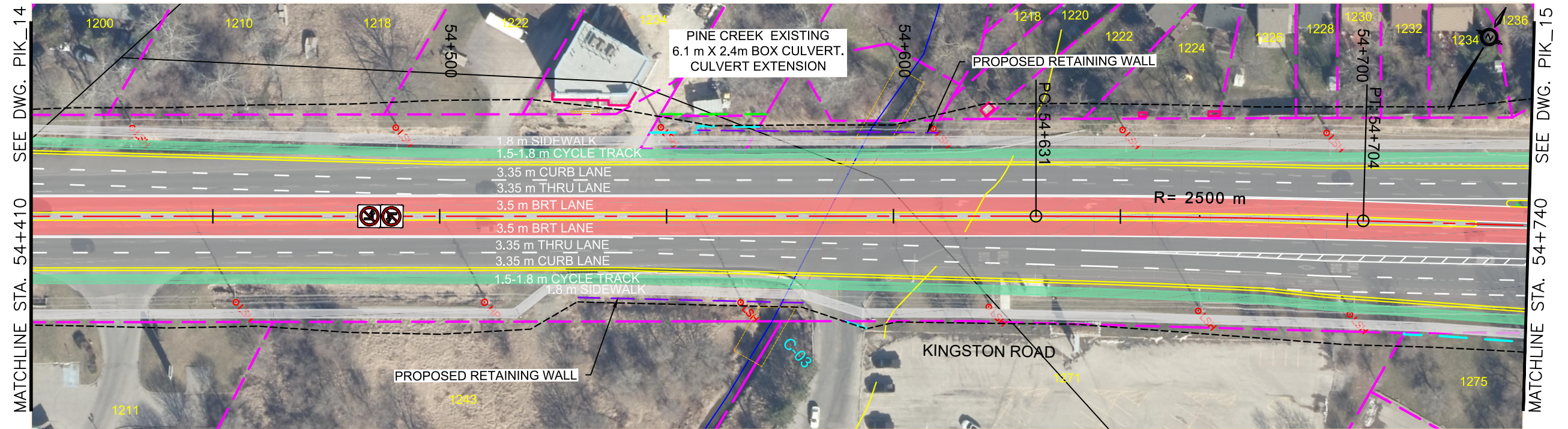
ALL DIMENSIONS SHOWN ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE NOTED.

DRAWN BY: A.C 08/17/21	DESIGNED BY: M.H 08/17/21
CHECKED BY: M.H 08/17/21	APPROVED BY: M.P 08/17/21
SCALE: HOR 1:1000 VER 1:100	FULL SIZE ONLY 0 10 20m

DURHAM - SCARBOROUGH
Bus Rapid Transit

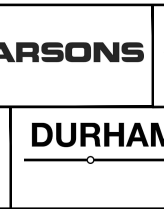
DURHAM-SCARBOROUGH BUS RAPID TRANSIT ENVIRONMENTAL ASSESSMENT PLAN AND PROFILE STA. 54+040 TO STA. 54+410			
CONTRACT NO. RQQ-2018-PPDD-244	DWG. NO. CPG_DSBRTO-200_PLAN&PROFILE_PIK	REV. 01	SHEET PIK_13

January 14, 2022, 4:19 PM Login name: adrian.chiu
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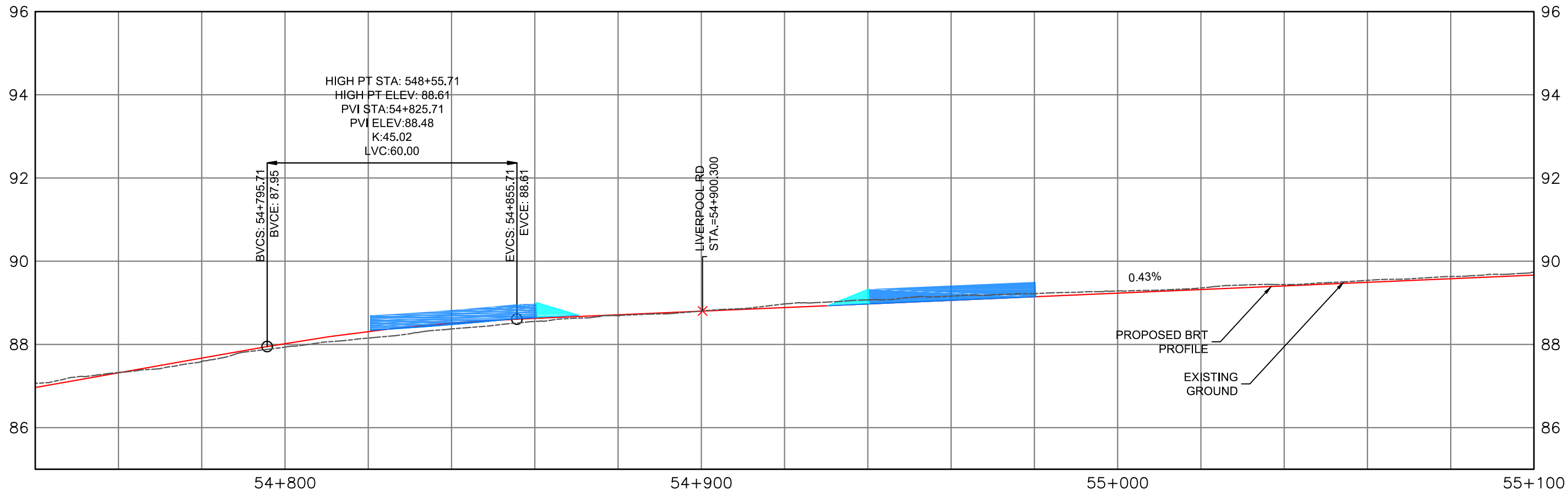
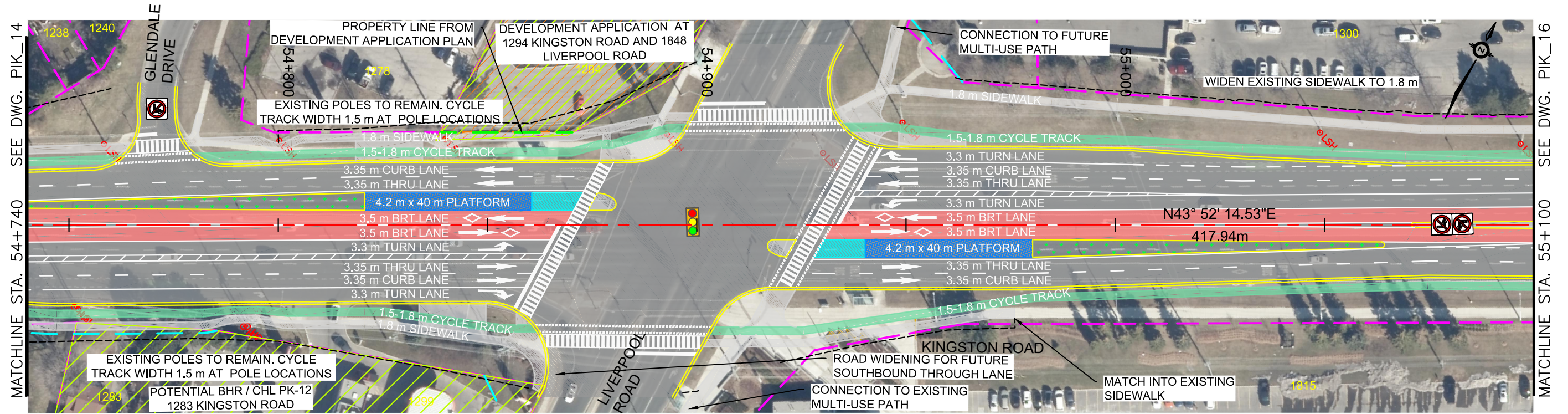
ALL DIMENSIONS SHOWN ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE NOTED.

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CHECKED BY: M.H 08/17/21	APPROVED BY: M.P 08/17/21
SCALE: HOR 1:1000 VER 1:100	FULL SIZE ONLY 0 10 20m



DURHAM-SCARBOROUGH BUS RAPID TRANSIT ENVIRONMENTAL ASSESSMENT PLAN AND PROFILE STA. 54+410 TO STA. 54+740			
CONTRACT NO. RQQ-2018-PPDD-244	DWG. NO. CPG_DSBRT_CO-200_PLAN&PROFILE_PIK	REV. 01	SHEET PIK_14

January 14, 2022, 4:19 PM Login name: adrian.chiu
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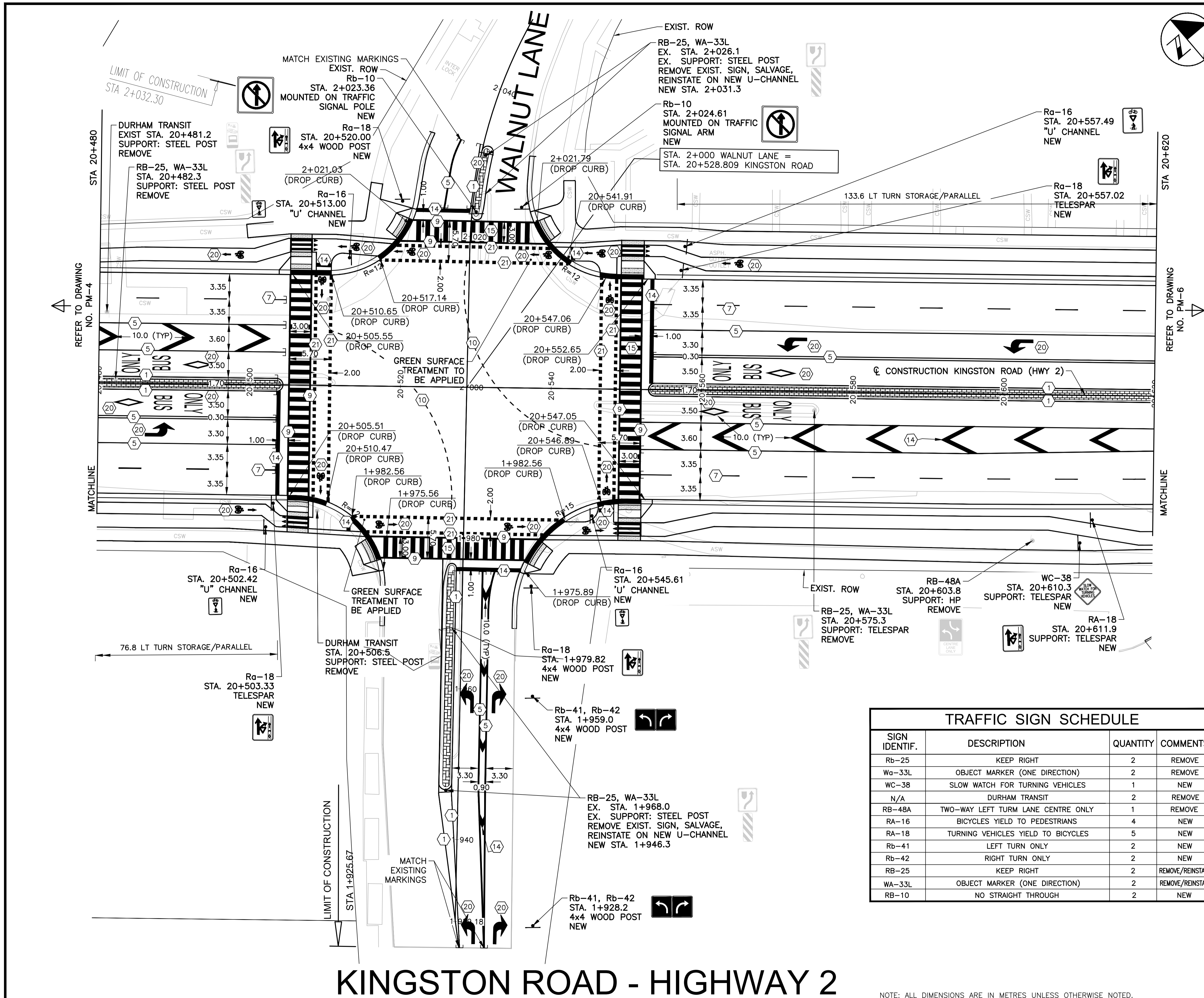


ALL DIMENSIONS SHOWN ARE IN METRES AND/OR MILLIMETRES UNLESS OTHERWISE NOTED.

DRAWN BY: A.C 08/17/21	DESIGNED BY: M.H 08/17/21
CHECKED BY: M.H 08/17/21	APPROVED BY: M.P 08/17/21
SCALE: HOR 1:1000 VER 1:100	FULL SIZE ONLY 1p 20m 2m

DURHAM - SCARBOROUGH				
Bus Rapid Transit				

DURHAM-SCARBOROUGH BUS RAPID TRANSIT ENVIRONMENTAL ASSESSMENT PLAN AND PROFILE STA. 54+740 TO STA. 55+100			
CONTRACT NO. RQQ-2018-PPDD-244	DWG. NO. CPG_DSBRT_CO-200_PLAN&PROFILE_PIK	REV. 01	SHEET PIK_15



PAVEMENT MARKING SCHEDULE			
IDENTIFICATION	TYPE	COLOUR	WIDTH (cm)
1	SOLID	YELLOW	10
2	DOUBLE SOLID	YELLOW	10
3	3-6-3 BROKEN	YELLOW	10
4	SOLID;3-6-3 BROKEN	YELLOW	10
5	SOLID	WHITE	10
6	3-3-3 BROKEN	WHITE	10
7	3-6-3 BROKEN	WHITE	10
8	3-9-3 BROKEN	WHITE	10
9	SOLID	WHITE	20
10	1-1-1 BROKEN	WHITE	20
11	3-3-3 BROKEN	WHITE	20
12	3-3-3 BROKEN	WHITE	30
13	SOLID	WHITE	30
14	SOLID	WHITE	45
15	SOLID	WHITE	60
16	1-1-1 BROKEN	WHITE	10
20	SYMBOLS	-	-
21	0.4-0.4-0.4 BROKEN	WHITE	40
]	OR	-	-
[OR	-	-
	LIMITS OF MARKINGS	-	-

- PAVEMENT MARKING DENOTATIONS :**
- 3-3-3, 3-6-3, 3,9,3; LINE-GAP-LINE SPACING IN METRES
 - ① PERMANENT
 - ① TEMPORARY
 - ▽ TEMPORARY-REMOVABLE
 - ① DURABLE
 - ① EXISTING MARKING TO BE REMOVED
- NOTES :**
- ALL MARKINGS AND SIGNS SHALL CONFORM WITH THE ONTARIO TRAFFIC MANUAL (OTM) BOOK 11.
 - PROPOSED MARKINGS TO MATCH EXIST. AT ALL WORK AND/OR ROAD RECONSTRUCTION LIMITS.
 - LONGITUDINAL MARKINGS - PAINT ON BASE COURSE AND PLASTIC ON TOP COURSE.
 - TRANSVERSE MARKINGS - SYMBOLS PLASTIC ON BOTH BASE AND TOP COURSE.
 - SIGN MOUNTING HEIGHTS, AND LATERAL OFFSETS SHALL BE IN ACCORDANCE WITH THE ONTARIO TRAFFIC MANUAL (OTM) BOOK 1B, SECTION 12.
 - ALL SIGNAGE FOR BICYCLE PATHS INTERSECTING WITH SIDEWALKS SHOULD BE AS PER OTM BOOK 1B AND WILL BE DETAILED IN 90% SUBMISSION PACKAGE.

NO.	DATE	NAME	REVISIONS
3	12.14.2023	A.N.	90% DESIGN RESUBMISSION
2	12.15.2022	W.K.	90% DESIGN SUBMISSION
1	08.15.2022	W.K.	60% DESIGN SUBMISSION



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Do not scale this document. All measurements must be obtained from stated dimensions.

UTILITIES VERIFIED			
ROGERS	2022 JUNE 20		
BELL CANADA	2022 JUNE 20		
ENBRIDGE	2022 JUNE 20		

APPROXIMATE UTILITY LOCATIONS ARE SHOWN PER MARK-UPS RECEIVED FROM THIRD PARTIES ON THE DATES NOTED ABOVE. CONTRACTOR TO BE RESPONSIBLE FOR LOCATION OF ALL EXISTING U/G & OVERHEAD UTILITIES. VARIOUS UTILITIES REQUIRE ADVANCE NOTICE PRIOR TO DIGGING, FOR STAKE OUT. THE REGION ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OF THE LOCATION OF EXISTING UTILITIES AS INDICATED ON THIS DRAWING.

SURVEY DATA DATE
2021 12 17

SCALE
HORIZONTAL
0 5m 5m

DRAWN:	D. RAHIKKA	DATE:	2023 12
DESIGN:	W. KACZOREK	DATE:	2022 12
CHECKED:	E. YANG	DATE:	2023 12
APPROVED:	E. YANG	DATE:	2023 12

THE REGIONAL MUNICIPALITY OF DURHAM

WORKS DEPARTMENT

WHITBY ONTARIO

KINGSTON ROAD - HIGHWAY 2
PAVEMENT MARKINGS AND SIGNAGE
FROM 48.8m W. OF WALNUT LN. TO 91.2m E. OF WALNUT LN.

CONCESSION	REG. RD. NO.	AREA MUNICIPALITY
-	HWY 2	CITY OF PICKERING
DRAWING NUMBER	CONTRACT NUMBER	SHEET NUMBER
PM-5	D2023-10	144 OF 369

TRAFFIC SIGN SCHEDULE			
SIGN IDENTIF.	DESCRIPTION	QUANTITY	COMMENTS
Rb-25	KEEP RIGHT	2	REMOVE
Wa-33L	OBJECT MARKER (ONE DIRECTION)	2	REMOVE
WC-38	SLOW WATCH FOR TURNING VEHICLES	1	NEW
N/A	DURHAM TRANSIT	2	REMOVE
RB-48A	TWO-WAY LEFT TURN LANE CENTRE ONLY	1	REMOVE
RA-16	BICYCLES YIELD TO PEDESTRIANS	4	NEW
RA-18	TURNING VEHICLES YIELD TO BICYCLES	5	NEW
Rb-41	LEFT TURN ONLY	2	NEW
Rb-42	RIGHT TURN ONLY	2	NEW
RB-25	KEEP RIGHT	2	REMOVE/REINSTATE
WA-33L	OBJECT MARKER (ONE DIRECTION)	2	REMOVE/REINSTATE
RB-10	NO STRAIGHT THROUGH	2	NEW

NOTE: ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE NOTED.

APPENDIX

F

FUTURE

BACKGROUND

TRAFFIC

CONDITIONS

F-1 *2028 FUTURE
BACKGROUND
CONDITIONS*

Lanes, Volumes, Timings
1: Walnut Lane & Kingston Road

<2028 Future Background>AM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Traffic Volume (vph)	20	754	75	103	443	30	243	0	143	14	6	29
Future Volume (vph)	20	754	75	103	443	30	243	0	143	14	6	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.0	3.6	3.5	3.0	3.6	3.7	3.3	3.5	3.7	3.2	3.7	3.7
Storage Length (m)	26.0		25.8	37.0		0.0	63.2		0.0	18.5		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	24.0			26.0			24.4			18.1		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		0.99	1.00		0.99		0.99	1.00	0.98	
Frt		0.986			0.990				0.850		0.877	
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1685	3405	0	1652	3379	0	1745	0	1585	1725	1601	0
Fit Permitted	0.950			0.950			0.732			0.950		
Satd. Flow (perm)	1677	3405	0	1643	3379	0	1330	0	1563	1720	1601	0
Right Turn on Red			Yes			Yes		Yes			Yes	
Satd. Flow (RTOR)		10			8				155		32	
Link Speed (k/h)		60			60				40		40	
Link Distance (m)		129.3			694.6				114.0		179.7	
Travel Time (s)		7.8			41.7				10.3		16.2	
Conf. Peds. (#/hr)	4		8	8		4	9		2	2		9
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%	4%	6%	2%	5%	14%	0%	0%	3%	0%	0%	4%
Bus Blockages (#/hr)	0	0	6	0	0	0	0	0	0	0	0	0
Adj. Flow (vph)	22	820	82	112	482	33	264	0	155	15	7	32
Shared Lane Traffic (%)												
Lane Group Flow (vph)	22	902	0	112	515	0	264	0	155	15	39	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.1			3.1				3.3		3.3	
Link Offset(m)		0.0			0.0				0.0		0.0	
Crosswalk Width(m)		4.9			1.6				4.9		4.9	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.09	1.00	1.01	1.09	1.00	0.99	1.04	1.01	0.99	1.06	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	0	0		0	0		1		1	0		0
Detector Template									Right			
Leading Detector (m)	0.0	0.0		0.0	0.0		7.5		6.1	0.0	0.0	0.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		-1.5		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		-1.5		0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8		9.0		6.1	6.1	1.8	1.8
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	0.0
Turn Type	Prot	NA		Prot	NA		Perm		Perm	Perm	NA	NA
Protected Phases	5	2		1	6							4
Permitted Phases							8		8		4	

Lanes, Volumes, Timings
1: Walnut Lane & Kingston Road

<2028 Future Background>AM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2		1	6		8		8	4	4	
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0		8.0		8.0	8.0	8.0	
Minimum Split (s)	10.0	33.0		10.0	33.0		39.0		39.0	39.0	39.0	
Total Split (s)	10.0	52.0		19.0	61.0		49.0		49.0	49.0	49.0	
Total Split (%)	8.3%	43.3%		15.8%	50.8%		40.8%		40.8%	40.8%	40.8%	
Maximum Green (s)	5.0	45.4		14.0	54.4		41.0		41.0	41.0	41.0	
Yellow Time (s)	3.0	4.4		3.0	4.4		3.3		3.3	3.3	3.3	
All-Red Time (s)	2.0	2.2		2.0	2.2		4.7		4.7	4.7	4.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	
Total Lost Time (s)	5.0	6.6		5.0	6.6		8.0		8.0	8.0	8.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0		3.0	3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None		None	None	None	
Walk Time (s)		7.0			7.0		7.0		7.0	7.0	7.0	
Flash Dont Walk (s)		19.0			19.0		22.0		22.0	22.0	22.0	
Pedestrian Calls (#/hr)		7			5		5		5	14	14	
Act Effct Green (s)	6.7	58.2		12.8	68.7		29.3		29.3	29.3	29.3	
Actuated g/C Ratio	0.06	0.48		0.11	0.57		0.24		0.24	0.24	0.24	
v/c Ratio	0.24	0.54		0.64	0.27		0.81		0.31	0.04	0.09	
Control Delay	51.5	38.5		49.1	18.5		61.3		6.4	30.7	12.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	
Total Delay	51.5	38.5		49.1	18.5		61.3		6.4	30.7	12.8	
LOS	D	D		D	B		E		A	C	B	
Approach Delay		38.8			24.0		41.0				17.8	
Approach LOS		D			C		D				B	
Intersection Summary												
Area Type:	Other											
Cycle Length:	120											
Actuated Cycle Length:	120											
Offset:	111 (93%), Referenced to phase 2:EBT and 6:WBT, Start of Green											
Natural Cycle:	85											
Control Type:	Actuated-Coordinated											
Maximum v/c Ratio:	0.81											
Intersection Signal Delay:	34.1						Intersection LOS: C					
Intersection Capacity Utilization:	62.1%						ICU Level of Service B					
Analysis Period (min):	15											
Splits and Phases:	1: Walnut Lane & Kingston Road											

Queues <2028 Future Background>AM
1: Walnut Lane & Kingston Road 12-20-2024

Lane Group	EBL	EBT	WBL	WBT	NBL	NBR	SBL	SBT
Lane Group Flow (vph)	22	902	112	515	264	155	15	39
w/c Ratio	0.24	0.54	0.64	0.27	0.81	0.31	0.04	0.09
Control Delay	51.5	38.5	49.1	18.5	61.3	6.4	30.7	12.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.5	38.5	49.1	18.5	61.3	6.4	30.7	12.8
Queue Length 50th (m)	5.0	101.4	26.1	50.2	58.8	0.0	2.7	1.3
Queue Length 95th (m)	m12.2	138.0	44.6	71.8	80.8	14.2	7.3	8.8
Internal Link Dist (m)		105.3		670.6				155.7
Turn Bay Length (m)	26.0		37.0		63.2		18.5	
Base Capacity (vph)	93	1657	201	1938	454	636	587	568
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced w/c Ratio	0.24	0.54	0.56	0.27	0.58	0.24	0.03	0.07

Intersection Summary
m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings <2028 Future Background>AM
3: Dixie Road & Kingston Road 12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	760	81	78	554	86	37	15	29	131	35	144
Future Volume (vph)	80	760	81	78	554	86	37	15	29	131	35	144
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	2.8	3.6	3.4	2.8	3.5	3.1	3.6	4.0	3.7	3.8	4.2	3.7
Grade (%)		6%			0%			0%			0%	
Storage Length (m)	145.4		64.5	51.0		79.5	13.0		0.0	16.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	66.4			48.0			18.0			25.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		1.00	1.00		1.00	0.99		1.00	0.99	
Frt		0.986			0.980			0.900				0.879
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1564	3316	0	1645	3301	0	1752	1769	0	1827	1759	0
Fit Permitted	0.950			0.950			0.540			0.726		
Satd. Flow (perm)	1554	3316	0	1639	3301	0	993	1769	0	1393	1759	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12			17			32				157
Link Speed (k/h)		60			60			40				60
Link Distance (m)		896.3			191.2			44.0				236.2
Travel Time (s)		53.8			11.5			4.0				14.2
Confl. Peds. (#/hr)	6		4	4		6	3		2	2		3
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 (%)	2%	4%	2%	0%	6%	2%	3%	0%	0%	1%	0%	0%
Bus Blockages (#/hr)	0	0	6	0	0	6	0	0	0	0	0	0
Adj. Flow (vph)	87	826	88	85	602	93	40	16	32	142	38	157
Shared Lane Traffic (%)												
Lane Group Flow (vph)	87	914	0	85	695	0	40	48	0	142	195	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		2.8			2.8			3.8				3.8
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			4.9			4.9				4.9
Two way Left Turn Lane					Yes							
Headway Factor	1.17	1.04	1.07	1.13	1.01	1.08	1.00	0.94	0.99	0.97	0.92	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	0	0		0	0		0	0		1		1
Detector Template												
Leading Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		7.5		7.5
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		-1.5		-1.5
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		-1.5		-1.5
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		9.0		9.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0		0.0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm		NA
Protected Phases	5	2		1	6			8				4

Lanes, Volumes, Timings
3: Dixie Road & Kingston Road

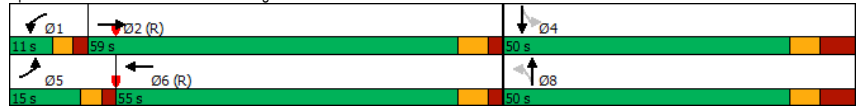
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases							8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	10.0	28.0		10.0	28.0		43.0	43.0		41.0	41.0	
Total Split (s)	15.0	59.0		11.0	55.0		50.0	50.0		50.0	50.0	
Total Split (%)	12.5%	49.2%		9.2%	45.8%		41.7%	41.7%		41.7%	41.7%	
Maximum Green (s)	10.0	52.4		6.0	48.4		40.5	40.5		40.5	40.5	
Yellow Time (s)	3.0	4.2		3.0	4.2		4.4	4.4		4.4	4.4	
All-Red Time (s)	2.0	2.4		2.0	2.4		5.1	5.1		5.1	5.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.6		5.0	6.6		9.5	9.5		9.5	9.5	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes			Yes								
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		14.0			14.0		23.0	23.0		23.0	23.0	
Pedestrian Calls (#/hr)		6			1		7	7		4	4	
Act Effect Green (s)	9.5	74.2		6.0	70.7		18.7	18.7		18.7	18.7	
Actuated g/C Ratio	0.08	0.62		0.05	0.59		0.16	0.16		0.16	0.16	
v/c Ratio	0.71	0.44		1.04	0.36		0.26	0.16		0.65	0.48	
Control Delay	83.0	13.7		147.9	17.9		45.6	19.8		60.5	14.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	83.0	13.7		147.9	17.9		45.6	19.8		60.5	14.4	
LOS	F	B		F	B		D	B		E	B	
Approach Delay		19.8			32.1			31.5			33.8	
Approach LOS		B			C			C			C	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 44.8 (37%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 85
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.04
 Intersection Signal Delay: 26.7 Intersection LOS: C
 Intersection Capacity Utilization 72.4% ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 3: Dixie Road & Kingston Road



Queues
3: Dixie Road & Kingston Road

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Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	87	914	85	695	40	48	142	195
v/c Ratio	0.71	0.44	1.04	0.36	0.26	0.16	0.65	0.48
Control Delay	83.0	13.7	147.9	17.9	45.6	19.8	60.5	14.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	83.0	13.7	147.9	17.9	45.6	19.8	60.5	14.4
Queue Length 50th (m)	20.2	53.6	~21.8	53.5	8.5	3.3	32.2	7.9
Queue Length 95th (m)	#43.5	88.2	m#53.5	71.2	16.9	12.4	47.4	25.6
Internal Link Dist (m)		872.3		167.2		20.0		212.2
Turn Bay Length (m)	145.4		51.0		13.0		16.0	
Base Capacity (vph)	130	2054	82	1951	335	618	470	697
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.67	0.44	1.04	0.36	0.12	0.08	0.30	0.28

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.
 m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings

6: Liverpool Road & Kingston Road

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	167	523	218	137	465	50	134	379	146	84	645	117
Future Volume (vph)	167	523	218	137	465	50	134	379	146	84	645	117
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.1	3.4	3.6	3.3	3.7	3.4	3.8	4.1	4.8	4.7	3.8	3.3
Storage Length (m)	188.8		97.9	170.7		117.0	185.5		52.0	49.0		60.5
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	31.6			22.7			20.8			25.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.97	0.99		0.96	0.99		0.93	0.98		0.96
Frt			0.850			0.850			0.850			0.850
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1671	3299	1538	1694	3510	1579	1774	3700	1647	2026	3618	1516
Fit Permitted	0.950			0.950			0.284			0.491		
Satd. Flow (perm)	1649	3299	1487	1677	3510	1517	525	3700	1536	1024	3618	1452
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			176			174			159			155
Link Speed (kh)		60			60			50			50	
Link Distance (m)		694.6			396.4			257.7			348.6	
Travel Time (s)		41.7			23.8			18.6			25.1	
Confl. Peds. (#/hr)	21		17	17		21	34		44	44		34
Confl. Bikes (#/hr)						1						
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 (%)	2%	7%	5%	3%	4%	0%	4%	3%	8%	0%	2%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	7	0	0	0
Adj. Flow (vph)	182	568	237	149	505	54	146	412	159	91	701	127
Shared Lane Traffic (%)												
Lane Group Flow (vph)	182	568	237	149	505	54	146	412	159	91	701	127
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.3			3.3			4.7			4.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane		Yes									Yes	
Headway Factor	1.08	1.03	1.00	1.04	0.99	1.03	0.97	0.93	0.88	0.86	0.97	1.04
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	

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WSP

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Lanes, Volumes, Timings

6: Liverpool Road & Kingston Road

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type	CI+Ex			CI+Ex			CI+Ex			CI+Ex		
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	custom	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6	8		2	4		4
Detector Phase	5	2	2	1	6	6	3	8	2	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	5.0	8.0	20.0	5.0	8.0	8.0
Minimum Split (s)	10.0	36.0	36.0	10.0	36.0	36.0	8.0	51.0	36.0	8.0	51.0	51.0
Total Split (s)	25.0	42.0	42.0	19.0	36.0	36.0	8.0	51.0	42.0	8.0	51.0	51.0
Total Split (%)	20.8%	35.0%	35.0%	15.8%	30.0%	30.0%	6.7%	42.5%	35.0%	6.7%	42.5%	42.5%
Maximum Green (s)	20.0	34.9	34.9	14.0	28.9	28.9	5.0	41.9	34.9	5.0	41.9	41.9
Yellow Time (s)	3.0	4.3	4.3	3.0	4.3	4.3	3.0	3.8	4.3	3.0	3.8	3.8
All-Red Time (s)	2.0	2.8	2.8	2.0	2.8	2.8	0.0	5.3	2.8	0.0	5.3	5.3
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	0.0
Total Lost Time (s)	5.0	7.1	7.1	5.0	7.1	7.1	3.0	9.1	7.1	3.0	9.1	9.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
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	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	C-Max	None	Max	Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		21.0	21.0		21.0	21.0		33.0	21.0		33.0	33.0
Pedestrian Calls (#/hr)		44	44		31	31		61	44		40	40
Act Effect Green (s)	17.1	35.6	35.6	13.3	31.8	31.8	53.0	41.9	35.6	53.0	41.9	41.9
Actuated g/C Ratio	0.14	0.30	0.30	0.11	0.26	0.26	0.44	0.35	0.30	0.44	0.35	0.35
v/c Ratio	0.77	0.58	0.42	0.80	0.54	0.10	0.52	0.32	0.28	0.18	0.56	0.21
Control Delay	94.3	24.2	9.6	81.0	41.1	0.4	27.2	29.5	6.2	19.0	33.6	3.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	94.3	24.2	9.6	81.0	41.1	0.4	27.2	29.5	6.2	19.0	33.6	3.1
LOS	F	C	A	F	D	A	C	C	A	B	C	A
Approach Delay		33.6			46.4			23.8				27.9
Approach LOS		C			D			C				C

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6: Liverpool Road & Kingston Road 12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	182	568	237	149	505	54	146	412	159	91	701	127
w/c Ratio	0.77	0.58	0.42	0.80	0.54	0.10	0.52	0.32	0.28	0.18	0.56	0.21
Control Delay	94.3	24.2	9.6	81.0	41.1	0.4	27.2	29.5	6.2	19.0	33.6	3.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	94.3	24.2	9.6	81.0	41.1	0.4	27.2	29.5	6.2	19.0	33.6	3.1
Queue Length 50th (m)	45.6	10.6	0.0	34.5	54.6	0.0	19.5	37.1	0.0	11.7	69.6	0.0
Queue Length 95th (m)	69.1	51.0	27.9	#65.7	73.4	0.0	32.4	50.2	15.4	21.1	88.5	8.1
Internal Link Dist (m)	670.6		372.4				233.7		324.6			
Turn Bay Length (m)	188.8	97.9	170.7	117.0		185.5	52.0		49.0	60.5		
Base Capacity (vph)	278	978	565	197	931	530	283	1291	567	494	1263	607
Starvation Cap Reductn	0	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced w/c Ratio	0.65	0.58	0.42	0.76	0.54	0.10	0.52	0.32	0.28	0.18	0.56	0.21

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

Lanes, Volumes, Timings <2028 Future Background>AM
8: Liverpool Road & Private Access/Pickering Parkway 12-20-2024



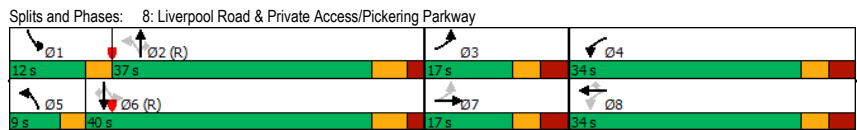
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔↔	↔	↔↔	↔	↔	↔↔	↔↔	↔	↔	↔↔	↔
Traffic Volume (vph)	10	17	36	194	19	59	53	528	272	146	782	24
Future Volume (vph)	10	17	36	194	19	59	53	528	272	146	782	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.1	3.1	3.7	3.0	3.4	3.2	2.8	3.6	3.5	3.2	3.5	3.5
Storage Length (m)	0.0	0.0	57.0	62.1	54.4	75.7	132.5	35.5	1	1	1	1
Storage Lanes	1	0	1	1	1	1	1	1	1	1	1	1
Taper Length (m)	2.5	12.0		29.5		28.9						
Lane Util. Factor	1.00	0.95	0.95	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99	0.897		0.850		0.850		0.850		0.850		
Flt Protected	0.950	0.950		0.950		0.950		0.950		0.950		
Satd. Flow (prot)	1705	3058	0	3113	1858	1204	1645	3505	1523	1675	3500	1521
Flt Permitted	0.000	0.000		0.297		0.382						
Satd. Flow (perm)	0	3058	0	0	1858	1181	512	3505	1483	670	3500	1458
Right Turn on Red	Yes		Yes		Yes		Yes		Yes			
Satd. Flow (RTOR)	39		141		296		144					
Link Speed (k/h)	30		50		50		50					
Link Distance (m)	82.8		328.5		162.3		257.7					
Travel Time (s)	9.9		23.7		11.7		18.6					
Confl. Peds. (#/hr)	7		7		10		11		11			
Confl. Bikes (#/hr)	1		1		1		1		1			
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%	5%	0%	23%	0%	3%	4%	3%	2%	5%
Bus Blockages (#/hr)	0	0	0	0	0	10	0	2	0	0	0	0
Adj. Flow (vph)	11	18	39	211	21	64	58	574	296	159	850	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	11	57	0	211	21	64	58	574	296	159	850	26
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	6.0		6.0		3.8		3.8					
Link Offset(m)	0.0		0.0		0.0		0.0					
Crosswalk Width(m)	1.6		1.6		1.6		1.6					
Two way Left Turn Lane												
Headway Factor	1.08	1.08	0.99	1.09	1.03	1.12	1.13	1.00	1.03	1.06	1.01	1.01
Turning Speed (k/h)	24	24	14	24	14	24	14	24	14	24	14	14
Number of Detectors	1	2	1	2	1	1	2	1	1	1	2	1
Detector Template	Left	Thru	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Right
Leading Detector (m)	2.0	10.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4		9.4		9.4		9.4					
Detector 2 Size(m)	0.6		0.6		0.6		0.6					

Lanes, Volumes, Timings <2028 Future Background>AM
8: Liverpool Road & Private Access/Pickering Parkway 12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type	CI+Ex			CI+Ex			CI+Ex			CI+Ex		
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	7		4	8		5	2		1	6	
Permitted Phases	7			8		8	2			2	6	
Detector Phase	3	7		4	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0	8.0	5.0	20.0	20.0	5.0	20.0	20.0
Minimum Split (s)	15.0	15.0		15.0	34.0	34.0	8.0	30.0	30.0	8.0	30.0	30.0
Total Split (s)	17.0	17.0		34.0	34.0	34.0	9.0	37.0	37.0	12.0	40.0	40.0
Total Split (%)	17.0%	17.0%		34.0%	34.0%	34.0%	9.0%	37.0%	37.0%	12.0%	40.0%	40.0%
Maximum Green (s)	10.4	10.4		27.4	27.4	27.4	6.0	30.7	30.7	9.0	33.7	33.7
Yellow Time (s)	3.3	3.3		3.3	3.3	3.3	3.0	4.2	4.2	3.0	4.2	4.2
All-Red Time (s)	3.3	3.3		3.3	3.3	3.3	0.0	2.1	2.1	0.0	2.1	2.1
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)	6.6	6.6		6.6	6.6	6.6	3.0	6.3	6.3	3.0	6.3	6.3
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
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
Recall Mode	None	None		None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)				19.0	19.0		17.0	17.0		17.0	17.0	
Flash Dont Walk (s)				8.0	8.0		6.0	6.0		6.0	6.0	
Pedestrian Calls (#/hr)				0	0		21	21		21	21	
Act Effect Green (s)	8.0	8.0		12.1	12.1	12.1	61.3	52.1	52.1	66.4	56.1	56.1
Actuated g/C Ratio	0.08	0.08		0.12	0.12	0.12	0.61	0.52	0.52	0.66	0.56	0.56
v/c Ratio	0.08	0.20		0.56	0.09	0.24	0.15	0.31	0.32	0.30	0.43	0.03
Control Delay	44.1	22.1		46.9	38.5	2.1	6.7	14.2	3.8	9.1	15.5	0.0
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	44.1	22.1		46.9	38.5	2.1	6.7	14.2	3.8	9.1	15.5	0.0
LOS	D	C		D	D	A	A	B	A	A	B	A
Approach Delay	25.7			36.6			10.4			14.1		
Approach LOS	C			D			B			B		

Intersection Summary
 Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 34 (34%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.56
 Intersection Signal Delay: 15.9 Intersection LOS: B
 Intersection Capacity Utilization 55.7% ICU Level of Service B
 Analysis Period (min) 15



Queues <2028 Future Background>AM
8: Liverpool Road & Private Access/Pickering Parkway 12-20-2024



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	11	57	211	21	64	58	574	296	159	850	26
v/c Ratio	0.08	0.20	0.56	0.09	0.24	0.15	0.31	0.32	0.30	0.43	0.03
Control Delay	44.1	22.1	46.9	38.5	2.1	6.7	14.2	3.8	9.1	15.5	0.0
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	44.1	22.1	46.9	38.5	2.1	6.7	14.2	3.8	9.1	15.5	0.0
Queue Length 50th (m)	2.0	1.7	20.2	3.7	0.0	2.2	34.6	9.5	11.3	53.1	0.0
Queue Length 95th (m)	7.4	7.8	30.3	10.1	0.0	m5.6	54.3	19.8	21.5	74.2	0.0
Internal Link Dist (m)	58.8		304.5		138.3		233.7				
Turn Bay Length (m)	57.0		62.1		54.4		75.7		132.5		35.5
Base Capacity (vph)	177	352	852	509	425	381	1824	913	536	1963	881
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	0.06	0.16	0.25	0.04	0.15	0.15	0.31	0.32	0.30	0.43	0.03

Intersection Summary
 m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings

<2028 Future Background>AM

9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp

12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	160	188	69	310	162	511	0	0	672	97
Future Volume (vph)	0	0	160	188	69	310	162	511	0	0	672	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.5	3.7	3.7	3.4	3.7
Storage Length (m)	0.0	0.0	0.0	0.0	125.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0
Storage Lanes	0		1	1		1	1		0	0		1
Taper Length (m)	2.5			2.5		30.0			2.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	0.91	1.00
Ped Bike Factor							1.00					0.96
Frt			0.865		0.850							0.850
Fit Protected				0.950	0.977		0.950					
Satd. Flow (prot)	0	0	1108	1700	1767	1551	1460	3433	0	0	4877	1601
Fit Permitted				0.950	0.977		0.313					
Satd. Flow (perm)	0	0	1108	1700	1767	1551	479	3433	0	0	4877	1538
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)						337						105
Link Speed (kh)		50			50			50			50	
Link Distance (m)		433.1			226.7			372.2			162.3	
Travel Time (s)		31.2			16.3			26.8			11.7	
Confl. Peds. (#/hr)							7		14	14		7
Confl. Bikes (#/hr)								4				
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%	2%	50%	2%	0%	3%	25%	4%	4%	2%	4%	2%
Adj. Flow (vph)	0	0	174	204	75	337	176	555	0	0	730	105
Shared Lane Traffic (%)				32%								
Lane Group Flow (vph)	0	0	174	139	140	337	176	555	0	0	730	105
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	1.01	0.99	1.01	0.99	0.99	1.03	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors			1	1	2	1	1	2			2	1
Detector Template			Right	Left	Thru	Right	Left	Thru			Thru	Right
Leading Detector (m)			2.0	2.0	10.0	2.0	2.0	10.0			10.0	2.0
Trailing Detector (m)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Position(m)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Size(m)			2.0	2.0	0.6	2.0	2.0	0.6			0.6	2.0
Detector 1 Type			Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 2 Position(m)						9.4		9.4			9.4	
Detector 2 Size(m)						0.6		0.6			0.6	
Detector 2 Type						Cl+Ex		Cl+Ex			Cl+Ex	

Lanes, Volumes, Timings

<2028 Future Background>AM

9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp

12-20-2024

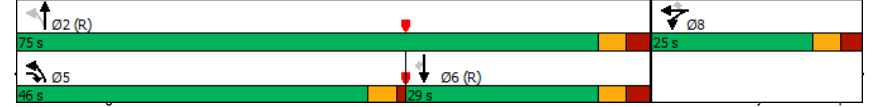


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)						0.0					0.0	0.0
Turn Type			Over	Split	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases			5	8	8		5	2			6	
Permitted Phases						8	2					6
Detector Phase			5	8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)			5.0	8.0	8.0	8.0	5.0	15.0			15.0	15.0
Minimum Split (s)			9.5	25.0	25.0	25.0	9.5	24.3			24.3	24.3
Total Split (s)			46.0	25.0	25.0	25.0	46.0	75.0			29.0	29.0
Total Split (%)			46.0%	25.0%	25.0%	25.0%	46.0%	75.0%			29.0%	29.0%
Maximum Green (s)			41.5	19.0	19.0	19.0	41.5	68.7			22.7	22.7
Yellow Time (s)			3.5	3.3	3.3	3.3	3.5	3.3			3.3	3.3
All-Red Time (s)			1.0	2.7	2.7	2.7	1.0	3.0			3.0	3.0
Lost Time Adjust (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Lost Time (s)			4.5	6.0	6.0	6.0	4.5	6.3			6.3	6.3
Lead/Lag			Lead				Lead				Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)			3.0	3.0	3.0	3.0	3.0	3.0			3.0	3.0
Recall Mode			None	None	None	None	None	C-Max			C-Max	C-Max
Walk Time (s)				14.0	14.0	14.0		13.0			13.0	13.0
Flash Dont Walk (s)				5.0	5.0	5.0		5.0			5.0	5.0
Pedestrian Calls (#/hr)				0	0	0		15			17	17
Act Effct Green (s)			21.4	13.7	13.7	13.7	75.8	74.0			48.1	48.1
Actuated g/C Ratio			0.21	0.14	0.14	0.14	0.76	0.74			0.48	0.48
v/c Ratio			0.73	0.60	0.58	0.67	0.31	0.22			0.31	0.13
Control Delay			53.6	50.7	49.5	11.3	5.3	4.7			10.8	2.0
Queue Delay			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay			53.6	50.7	49.5	11.3	5.3	4.7			10.8	2.0
LOS			D	D	D	B	A	A			B	A
Approach Delay			53.6			28.9		4.8			9.7	
Approach LOS			D			C		A			A	

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 38 (38%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 65
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.73
 Intersection Signal Delay: 16.4
 Intersection LOS: B
 Intersection Capacity Utilization 45.9%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp



Queues <2028 Future Background>AM
 9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp 12-20-2024

Lane Group	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	174	139	140	337	176	555	730	105
w/c Ratio	0.73	0.60	0.58	0.67	0.31	0.22	0.31	0.13
Control Delay	53.6	50.7	49.5	11.3	5.3	4.7	10.8	2.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.6	50.7	49.5	11.3	5.3	4.7	10.8	2.0
Queue Length 50th (m)	31.7	27.1	27.2	0.0	7.6	14.5	19.0	0.1
Queue Length 95th (m)	48.6	44.3	44.3	23.2	16.9	25.1	23.9	2.3
Internal Link Dist (m)	202.7				348.2	138.3		
Turn Bay Length (m)			125.0		50.0			
Base Capacity (vph)	459	323	335	567	770	2541	2346	794
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced w/c Ratio	0.38	0.43	0.42	0.59	0.23	0.22	0.31	0.13

Intersection Summary

Lanes, Volumes, Timings <2028 Future Background>AM
 10: Kingston Road & Fairport Road 12-20-2024

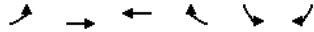
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø1
Lane Configurations	↘	↗	↗	↘	↘	↗	
Traffic Volume (vph)	96	714	648	99	182	229	
Future Volume (vph)	96	714	648	99	182	229	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (m)	3.0	3.6	3.5	3.7	3.6	4.5	
Grade (%)	6%		0%		0%		
Storage Length (m)	75.0				18.5	15.5	0.0
Storage Lanes	1				0	1	1
Taper Length (m)	2.5				31.3		
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00	
Frnt			0.980		0.850		
Fit Protected	0.950				0.950		
Satd. Flow (prot)	1602		3335		3379		0 1736 1708
Fit Permitted	0.950				0.950		
Satd. Flow (perm)	1602		3335		3379		0 1736 1708
Right Turn on Red					Yes		Yes
Satd. Flow (RTOR)			17				249
Link Speed (k/h)	60		60		40		
Link Distance (m)	424.0		896.3		280.0		
Travel Time (s)	25.4		53.8		25.2		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Heavy Vehicles (%)	2%	5%	3%	7%	4%	4%	
Bus Blockages (#/hr)	0		0		9		0 0
Adj. Flow (vph)	104	776	704	108	198	249	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	104	776	812	0	198	249	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Left	Left	Right	Left	Right	
Median Width(m)	3.0		3.0		3.6		
Link Offset(m)	0.0		0.0		0.0		
Crosswalk Width(m)	1.6		1.6		1.6		
Two way Left Turn Lane	Yes						
Headway Factor	1.14	1.04	1.01	0.99	1.00	0.88	
Turning Speed (k/h)	24				14	24	14
Number of Detectors	1	2	2		1	1	
Detector Template	Left	Thru	Thru		Left	Right	
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0	
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	0.6		2.0	2.0	
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)	9.4		9.4				
Detector 2 Size(m)	0.6		0.6				
Detector 2 Type	CI+Ex		CI+Ex				
Detector 2 Channel							

Lanes, Volumes, Timings

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10: Kingston Road & Fairport Road

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Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø1
Detector 2 Extend (s)		0.0	0.0				
Turn Type	Prot	NA	NA		Prot	Perm	
Protected Phases	5	2	6		4		1
Permitted Phases						4	
Detector Phase	5	2	6		4	4	
Switch Phase							
Minimum Initial (s)	5.0	20.0	20.0		8.0	8.0	5.0
Minimum Split (s)	10.0	32.3	32.3		38.1	38.1	8.0
Total Split (s)	22.0	79.0	65.0		43.0	43.0	8.0
Total Split (%)	16.9%	60.8%	50.0%		33.1%	33.1%	6%
Maximum Green (s)	17.0	72.7	58.7		35.7	35.7	5.0
Yellow Time (s)	3.0	4.3	4.3		3.3	3.3	3.0
All-Red Time (s)	2.0	2.0	2.0		4.0	4.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.3	6.3		7.3	7.3	
Lead/Lag	Lead	Lag	Lag				Lead
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	0.2	0.2		3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max		None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0	5.0
Flash Dont Walk (s)		19.0	19.0		23.0	23.0	0.0
Pedestrian Calls (#/hr)		0	1		2	2	20
Act Effect Green (s)	13.3	90.9	77.4		20.7	20.7	
Actuated g/C Ratio	0.10	0.70	0.60		0.16	0.16	
v/c Ratio	0.64	0.33	0.40		0.72	0.52	
Control Delay	91.2	1.3	15.8		65.5	9.1	
Queue Delay	0.0	0.0	0.0		0.0	0.0	
Total Delay	91.2	1.3	15.8		65.5	9.1	
LOS	F	A	B		E	A	
Approach Delay		11.9	15.8		34.1		
Approach LOS		B	B		C		

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 95 (73%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 85

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.72

Intersection Signal Delay: 18.0

Intersection LOS: B

Intersection Capacity Utilization 52.0%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 10: Kingston Road & Fairport Road



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WSP

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Queues

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10: Kingston Road & Fairport Road

12-20-2024



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	104	776	812	198	249
v/c Ratio	0.64	0.33	0.40	0.72	0.52
Control Delay	91.2	1.3	15.8	65.5	9.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	91.2	1.3	15.8	65.5	9.1
Queue Length 50th (m)	28.2	2.5	53.8	49.0	0.0
Queue Length 95th (m)	47.4	6.9	86.2	68.5	20.6
Internal Link Dist (m)		400.0	872.3	256.0	
Turn Bay Length (m)	75.0			15.5	
Base Capacity (vph)	209	2331	2018	476	649
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.50	0.33	0.40	0.42	0.38

Intersection Summary

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Synchro 11 Report
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Lanes, Volumes, Timings

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11: Hwy 401 WB Ramps & Kingston Road

12-20-2024

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↘	↑↑	↘	↑
Traffic Volume (vph)	748	12	284	612	461	65
Future Volume (vph)	748	12	284	612	461	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.0	3.7	2.7	3.8	3.8	3.7
Grade (%)	6%			0%	0%	
Storage Length (m)		0.0	47.5		0.0	52.0
Storage Lanes		0	1		2	1
Taper Length (m)			22.3		2.5	
Lane Util. Factor	0.95	0.95	1.00	0.95	0.97	1.00
Frt	0.998					0.850
Fit Protected			0.950		0.950	
Satd. Flow (prot)	3479	0	1593	3548	3442	1633
Fit Permitted			0.950		0.950	
Satd. Flow (perm)	3479	0	1593	3548	3442	1633
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	1					71
Link Speed (k/h)	60			60	50	
Link Distance (m)	268.7			424.0	216.6	
Travel Time (s)	16.1			25.4	15.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	0%	2%	4%	4%	0%
Adj. Flow (vph)	813	13	309	665	501	71
Shared Lane Traffic (%)						
Lane Group Flow (vph)	826	0	309	665	501	71
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.1			3.1	7.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	0.98	1.03	1.14	0.97	0.97	0.99
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	10.0		2.0	10.0	2.0	2.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Size(m)	0.6		2.0	0.6	2.0	2.0
Detector 1 Type	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	CI+Ex			CI+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		

Lanes, Volumes, Timings

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11: Hwy 401 WB Ramps & Kingston Road

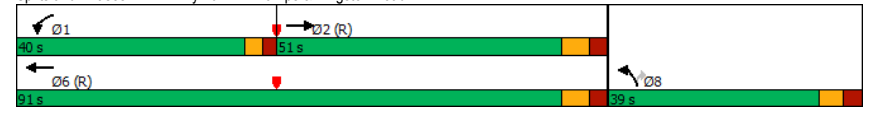
12-20-2024

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Turn Type	NA		Prot	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases						8
Detector Phase	2		1	6	8	8
Switch Phase						
Minimum Initial (s)	20.0		5.0	20.0	8.0	8.0
Minimum Split (s)	50.0		10.0	50.0	39.0	39.0
Total Split (s)	51.0		40.0	91.0	39.0	39.0
Total Split (%)	39.2%		30.8%	70.0%	30.0%	30.0%
Maximum Green (s)	43.8		35.0	83.8	32.3	32.3
Yellow Time (s)	4.2		3.0	4.2	3.7	3.7
All-Red Time (s)	3.0		2.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	7.2		5.0	7.2	6.7	6.7
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?						
Vehicle Extension (s)	0.2		3.0	0.2	3.0	3.0
Recall Mode	C-Max		None	C-Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	35.0			35.0	24.0	24.0
Pedestrian Calls (#/hr)	0			3	3	3
Act Effect Green (s)	57.3		29.4	91.7	24.4	24.4
Actuated g/C Ratio	0.44		0.23	0.71	0.19	0.19
v/c Ratio	0.54		0.86	0.27	0.78	0.20
Control Delay	12.8		68.1	10.7	58.6	10.2
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	12.8		68.1	10.7	58.6	10.2
LOS	B		E	B	E	B
Approach Delay	12.8			28.9	52.6	
Approach LOS	B			C	D	

Intersection Summary

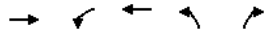
Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 81 (62%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.86
 Intersection Signal Delay: 29.0
 Intersection Capacity Utilization 65.7%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service C

Splits and Phases: 11: Hwy 401 WB Ramps & Kingston Road



Queues
11: Hwy 401 WB Ramps & Kingston Road

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Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	826	309	665	501	71
w/c Ratio	0.54	0.86	0.27	0.78	0.20
Control Delay	12.8	68.1	10.7	58.6	10.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	12.8	68.1	10.7	58.6	10.2
Queue Length 50th (m)	20.4	82.8	29.2	63.7	0.0
Queue Length 95th (m)	46.4	112.2	71.1	77.4	12.0
Internal Link Dist (m)	244.7		400.0	192.6	
Turn Bay Length (m)		47.5			52.0
Base Capacity (vph)	1534	428	2502	855	459
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced w/c Ratio	0.54	0.72	0.27	0.59	0.15

Intersection Summary

Lanes, Volumes, Timings
12: Plaza Entrance/Delta Blvd & Kingston Road

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	76	975	37	96	980	74	140	6	92	42	13	124
Future Volume (vph)	76	975	37	96	980	74	140	6	92	42	13	124
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.2	3.4	3.5	3.1	3.4	3.4	3.6	4.6	3.7	3.2	2.8	3.7
Grade (%)		6%			0%			0%				0%
Storage Length (m)	51.8		148.5	100.0		18.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	35.3			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99				1.00		0.99	0.98		1.00		0.98
Frt		0.995			0.990			0.860				0.864
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1673	3280	0	1671	3380	0	1805	1755	0	1643	1468	0
Fit Permitted	0.950			0.950			0.662			0.688		
Satd. Flow (perm)	1662	3280	0	1671	3380	0	1249	1755	0	1185	1468	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			9			100				135
Link Speed (k/h)		60			60			30				40
Link Distance (m)		222.7			268.7			130.9				169.9
Travel Time (s)		13.4			16.1			15.7				15.3
Confl. Peds. (#/hr)	13					13	6		3	3		6
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%	4%	0%	2%	3%	3%	0%	0%	2%	5%	0%	0%
Adj. Flow (vph)	83	1060	40	104	1065	80	152	7	100	46	14	135
Shared Lane Traffic (%)												
Lane Group Flow (vph)	83	1100	0	104	1145	0	152	107	0	46	149	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.6				3.6
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		1.6			1.6			1.6				1.6
Two way Left Turn Lane					Yes							
Headway Factor	1.10	1.07	1.06	1.08	1.03	1.03	1.00	0.87	0.99	1.06	1.13	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	

Lanes, Volumes, Timings

<2028 Future Background>AM

12: Plaza Entrance/Delta Blvd & Kingston Road

12-20-2024

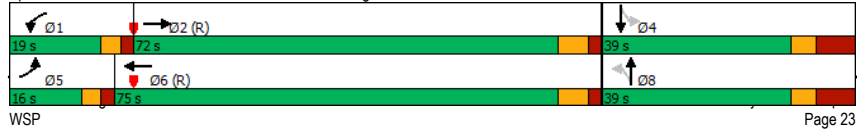


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	10.0	31.9		10.0	31.9		37.6	37.6		37.6	37.6	
Total Split (s)	16.0	72.0		19.0	75.0		39.0	39.0		39.0	39.0	
Total Split (%)	12.3%	55.4%		14.6%	57.7%		30.0%	30.0%		30.0%	30.0%	
Maximum Green (s)	11.0	65.1		14.0	68.1		29.0	29.0		29.0	29.0	
Yellow Time (s)	3.0	4.7		3.0	4.7		3.8	3.8		3.8	3.8	
All-Red Time (s)	2.0	2.2		2.0	2.2		6.2	6.2		6.2	6.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.9		5.0	6.9		10.0	10.0		10.0	10.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	0.2		3.0	0.2		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		18.0			18.0		20.0	20.0		20.0	20.0	
Pedestrian Calls (#/hr)		1			16		0	0		1	1	
Act Effct Green (s)	10.0	75.0		12.1	77.1		20.9	20.9		20.9	20.9	
Actuated g/C Ratio	0.08	0.58		0.09	0.59		0.16	0.16		0.16	0.16	
v/c Ratio	0.65	0.58		0.67	0.57		0.76	0.29		0.24	0.43	
Control Delay	81.6	27.7		68.1	30.5		74.1	11.5		48.1	12.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	81.6	27.7		68.1	30.5		74.1	11.5		48.1	12.9	
LOS	F	C		E	C		E	B		D	B	
Approach Delay		31.5			33.7			48.2			21.2	
Approach LOS		C			C			D			C	

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 66 (51%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.76
 Intersection Signal Delay: 33.2 Intersection LOS: C
 Intersection Capacity Utilization 79.5% ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 12: Plaza Entrance/Delta Blvd & Kingston Road



WSP

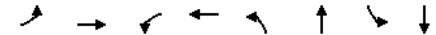
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Queues

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12: Plaza Entrance/Delta Blvd & Kingston Road

12-20-2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	83	1100	104	1145	152	107	46	149
v/c Ratio	0.65	0.58	0.67	0.57	0.76	0.29	0.24	0.43
Control Delay	81.6	27.7	68.1	30.5	74.1	11.5	48.1	12.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	81.6	27.7	68.1	30.5	74.1	11.5	48.1	12.9
Queue Length 50th (m)	21.6	124.4	26.0	123.8	37.6	1.5	10.4	3.1
Queue Length 95th (m)	#40.6	158.0	43.2	179.0	57.4	16.2	20.7	20.6
Internal Link Dist (m)		198.7		244.7		106.9		145.9
Turn Bay Length (m)	51.8		100.0					
Base Capacity (vph)	141	1894	179	2009	278	469	264	432
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.58	0.58	0.57	0.55	0.23	0.17	0.34

Intersection Summary

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

1105-1163 Kingston Road
 WSP

Synchro 11 Report
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Lanes, Volumes, Timings
13: Whites Road & Kingston Road

<2028 Future Background>AM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	78	344	294	234	563	281	146	390	390	156	796	175
Future Volume (vph)	78	344	294	234	563	281	146	390	390	156	796	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.6	4.2	3.5	3.7	4.0	3.5	3.9	3.7	3.5	3.9	4.0
Grade (%)	6%			0%			0%			0%		
Storage Length (m)	127.0			123.0			87.1			47.0		
Storage Lanes	1			1			1			1		
Taper Length (m)	64.0			39.6			66.8			32.6		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Ped Bike Factor	0.98			0.97			0.99			0.97		
Frt	0.850			0.850			0.850			0.850		
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1633	3335	1607	1767	3510	1606	1700	5057	1558	1750	5057	1625
Flt Permitted	0.950			0.950			0.232			0.495		
Satd. Flow (perm)	1605	3335	1565	1752	3510	1522	413	5057	1509	902	5057	1574
Right Turn on Red	Yes			Yes			Yes			Yes		
Satd. Flow (RTOR)	155			239			193			173		
Link Speed (kh)	60			60			60			60		
Link Distance (m)	297.5			222.7			158.6			385.2		
Travel Time (s)	17.9			13.4			9.5			23.1		
Confl. Peds. (#/hr)	38			13			20			20		
Peak Hour Factor	0.92			0.92			0.92			0.92		
Heavy Vehicles (%)	6%			4%			5%			6%		
Bus Blockages (#/hr)	0			0			0			2		
Adj. Flow (vph)	85	374	320	254	612	305	159	424	424	170	865	190
Shared Lane Traffic (%)	0											
Lane Group Flow (vph)	85	374	320	254	612	305	159	424	424	170	865	190
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width(m)	3.5			3.5			3.5			3.5		
Link Offset(m)	0.0			0.0			0.0			0.0		
Crosswalk Width(m)	1.6			1.6			1.6			1.6		
Two way Left Turn Lane												
Headway Factor	1.06	1.04	0.96	1.01	0.99	0.94	1.01	0.96	1.00	1.01	0.96	0.95
Turning Speed (k/h)	24			14			24			14		
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0											
Detector 1 Queue (s)	0.0											
Detector 1 Delay (s)	0.0											
Detector 2 Position(m)	9.4			9.4			9.4			9.4		
Detector 2 Size(m)	0.6			0.6			0.6			0.6		

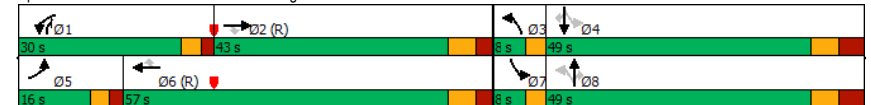
Lanes, Volumes, Timings
13: Whites Road & Kingston Road

<2028 Future Background>AM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type	CI+Ex			CI+Ex			CI+Ex			CI+Ex		
Detector 2 Channel	0.0											
Detector 2 Extend (s)	0.0											
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8	1	7	4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2	2	1	6	6	3	8	1	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	5.0	8.0	5.0	5.0	8.0	8.0
Minimum Split (s)	10.0	43.0	43.0	10.0	43.0	43.0	8.0	49.0	10.0	8.0	49.0	49.0
Total Split (s)	16.0	43.0	43.0	30.0	57.0	57.0	8.0	49.0	30.0	8.0	49.0	49.0
Total Split (%)	12.3%	33.1%	33.1%	23.1%	43.8%	43.8%	6.2%	37.7%	23.1%	6.2%	37.7%	37.7%
Maximum Green (s)	11.0	36.0	36.0	25.0	50.0	50.0	5.0	40.6	25.0	5.0	40.6	40.6
Yellow Time (s)	3.0	4.2	4.2	3.0	4.2	4.2	3.0	4.3	3.0	3.0	4.3	4.3
All-Red Time (s)	2.0	2.8	2.8	2.0	2.8	2.8	0.0	4.1	2.0	0.0	4.1	4.1
Lost Time Adjust (s)	0.0											
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	3.0	8.4	5.0	3.0	8.4	8.4
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	0.2	0.2	3.0	0.2	0.2	3.0	0.2	3.0	3.0	0.2	0.2
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	None	None	Max	Max
Walk Time (s)	7.0			7.0			7.0			7.0		
Flash Dont Walk (s)	29.0			29.0			33.0			33.0		
Pedestrian Calls (#/hr)	31			31			75			65		
Act Effect Green (s)	10.1	38.7	38.7	22.3	50.9	50.9	51.0	40.6	66.3	51.0	40.6	40.6
Actuated g/C Ratio	0.08	0.30	0.30	0.17	0.39	0.39	0.39	0.31	0.51	0.39	0.31	0.31
v/c Ratio	0.67	0.38	0.56	0.84	0.45	0.41	0.75	0.27	0.49	0.44	0.55	0.31
Control Delay	83.0	38.2	24.0	62.4	28.8	15.4	52.0	34.1	10.7	30.5	38.7	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	83.0	38.2	24.0	62.4	28.8	15.4	52.0	34.1	10.7	30.5	38.7	7.6
LOS	F	D	C	E	C	B	D	C	B	C	D	A
Approach Delay	37.2			32.6			27.1			32.7		
Approach LOS	D			C			C			C		

Intersection Summary	
Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle:	120
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.84
Intersection Signal Delay:	32.2
Intersection Capacity Utilization:	105.3%
Intersection LOS:	C
ICU Level of Service:	G
Analysis Period (min):	15

Splits and Phases: 13: Whites Road & Kingston Road



Queues <2028 Future Background>AM
13: Whites Road & Kingston Road 12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	85	374	320	254	612	305	159	424	424	170	865	190
w/c Ratio	0.67	0.38	0.56	0.84	0.45	0.41	0.75	0.27	0.49	0.44	0.55	0.31
Control Delay	83.0	38.2	24.0	62.4	28.8	15.4	52.0	34.1	10.7	30.5	38.7	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	83.0	38.2	24.0	62.4	28.8	15.4	52.0	34.1	10.7	30.5	38.7	7.6
Queue Length 50th (m)	21.4	40.8	35.7	68.1	62.3	36.1	25.9	29.8	30.7	27.8	67.3	3.0
Queue Length 95th (m)	#42.5	55.7	67.2	#95.1	93.1	69.4	#50.2	39.1	52.8	44.1	81.1	19.8
Internal Link Dist (m)		273.5		198.7			134.6				361.2	
Turn Bay Length (m)	127.0		123.0	87.1		35.0	72.0		35.0	88.5		47.0
Base Capacity (vph)	138	992	574	339	1373	740	211	1579	900	386	1579	610
Starvation Cap Reductn	0	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced w/c Ratio	0.62	0.38	0.56	0.75	0.45	0.41	0.75	0.27	0.47	0.44	0.55	0.31

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

Lanes, Volumes, Timings <2028 Future Background>AM
14: Whites Road & Highway 401 EB Off Ramp 12-20-2024



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↑↑↑	↑		↑↑	↑↑	
Traffic Volume (vph)	585	268	0	693	417	0
Future Volume (vph)	585	268	0	693	417	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.7	3.6	3.8	3.7
Storage Length (m)	0.0	225.0	0.0			0.0
Storage Lanes	2	1	0			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	0.97	0.91	1.00	0.95	0.95	1.00
Ped Bike Factor						
Frt	0.993	0.850				
Flt Protected	0.954					
Satd. Flow (prot)	3387	1400	0	3374	3481	0
Flt Permitted	0.954					
Satd. Flow (perm)	3387	1400	0	3374	3481	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	5	262				
Link Speed (k/h)	50			60	60	
Link Distance (m)	295.9			185.9	316.9	
Travel Time (s)	21.3			11.2	19.0	
Confl. Peds. (#/hr)			7			7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	5%	2%	7%	6%	2%
Adj. Flow (vph)	636	291	0	753	453	0
Shared Lane Traffic (%)		10%				
Lane Group Flow (vph)	665	262	0	753	453	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.2			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	0.99	1.00	0.97	0.99
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	2.0	2.0		10.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	2.0		0.6	0.6	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				CI+Ex	CI+Ex	
Detector 2 Channel						

Lanes, Volumes, Timings

<2028 Future Background>AM

14: Whites Road & Highway 401 EB Off Ramp

12-20-2024

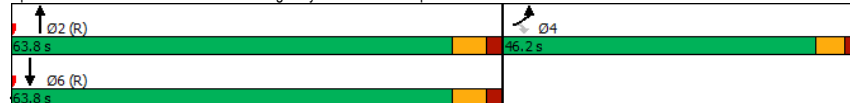


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	8.0	8.0		20.0	20.0	
Minimum Split (s)	28.5	28.5		27.7	27.7	
Total Split (s)	46.2	46.2		63.8	63.8	
Total Split (%)	42.0%	42.0%		58.0%	58.0%	
Maximum Green (s)	40.7	40.7		57.1	57.1	
Yellow Time (s)	3.7	3.7		4.5	4.5	
All-Red Time (s)	1.8	1.8		2.2	2.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.5	5.5		6.7	6.7	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		0.2	0.2	
Recall Mode	None	None		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	16.0	16.0		14.0	14.0	
Pedestrian Calls (#/hr)	3	3		0	0	
Act Effect Green (s)	27.7	27.7		70.1	70.1	
Actuated g/C Ratio	0.25	0.25		0.64	0.64	
v/c Ratio	0.78	0.48		0.35	0.20	
Control Delay	44.3	6.7		10.5	9.2	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	44.3	6.7		10.5	9.2	
LOS	D	A		B	A	
Approach Delay	33.7			10.5	9.2	
Approach LOS	C			B	A	

Intersection Summary

Area Type: Other
 Cycle Length: 110
 Actuated Cycle Length: 110
 Offset: 79.2 (72%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.78
 Intersection Signal Delay: 20.3 Intersection LOS: C
 Intersection Capacity Utilization 48.8% ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 14: Whites Road & Highway 401 EB Off Ramp



Queues

<2028 Future Background>AM

14: Whites Road & Highway 401 EB Off Ramp

12-20-2024



Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	665	262	753	453
v/c Ratio	0.78	0.48	0.35	0.20
Control Delay	44.3	6.7	10.5	9.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	44.3	6.7	10.5	9.2
Queue Length 50th (m)	68.0	0.0	36.7	19.6
Queue Length 95th (m)	80.8	19.4	56.4	32.1
Internal Link Dist (m)	271.9		161.9	292.9
Turn Bay Length (m)		225.0		
Base Capacity (vph)	1256	683	2150	2218
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.53	0.38	0.35	0.20

Intersection Summary

Lanes, Volumes, Timings
15: Dixie Road & Shopping Plaza Entrance

<2028 Future Background>AM
12-20-2024

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	81	0	0	194	0
Future Volume (vph)	0	81	0	0	194	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.1	3.7	4.0	3.7	3.7	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.865					
Fit Protected				0.950		
Satd. Flow (prot)	1701	0	1946	0	0	1867
Fit Permitted	0.950					
Satd. Flow (perm)	1701	0	1946	0	0	1867
Link Speed (k/h)	30	40		40		
Link Distance (m)	193.0	106.6		44.0		
Travel Time (s)	23.2	9.6		4.0		
Confl. Peds. (#/hr)	5		8			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	1%	2%
Adj. Flow (vph)	0	88	0	0	211	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	88	0	0	0	0	211
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	4.1	3.6		3.6		
Link Offset(m)	0.0	0.0		0.0		
Crosswalk Width(m)	1.6	1.6		1.6		
Two way Left Turn Lane						
Headway Factor	0.93	0.99	0.94	0.99	0.99	0.94
Turning Speed (k/h)	24	14	14		24	
Sign Control	Stop	Free		Free		

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	24.2%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
15: Dixie Road & Shopping Plaza Entrance

<2028 Future Background>AM
12-20-2024

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	81	0	0	194	0
Future Volume (Veh/h)	0	81	0	0	194	0
Sign Control	Stop	Free		Free		
Grade	0%					
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	88	0	0	211	0
Pedestrians	8			5		
Lane Width (m)	4.1	3.7		4.0		
Walking Speed (m/s)	1.1					1.1
Percent Blockage	1					1
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	44					
pX, platoon unblocked						
vC, conflicting volume	430	13	8			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	430	13	8			
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	87			
cM capacity (veh/h)	501	1053	1605			

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	88	0	211
Volume Left	0	0	211
Volume Right	88	0	0
cSH	1053	1700	1605
Volume to Capacity	0.08	0.00	0.13
Queue Length 95th (m)	2.1	0.0	3.4
Control Delay (s)	8.7	0.0	7.6
Lane LOS	A	A	A
Approach Delay (s)	8.7	0.0	7.6
Approach LOS	A	A	A

Intersection Summary			
Average Delay	7.9		
Intersection Capacity Utilization	24.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings
3: Dixie Road & Kingston Road

<2028 Future Background_PHF>AM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	760	81	78	554	86	37	15	29	131	35	144
Future Volume (vph)	80	760	81	78	554	86	37	15	29	131	35	144
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	2.8	3.6	3.4	2.8	3.5	3.1	3.6	4.0	3.7	3.8	4.2	3.7
Grade (%)	6%		0%		0%		0%		0%		0%	
Storage Length (m)	145.4		64.5	51.0		79.5	13.0		0.0	16.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	66.4			48.0			18.0			25.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		1.00	1.00		1.00	0.99		1.00	0.99	
Frt	0.986		0.980		0.901		0.879					
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1564	3316	0	1645	3301	0	1752	1771	0	1827	1759	0
Flt Permitted	0.950			0.950			0.581			0.728		
Satd. Flow (perm)	1553	3316	0	1639	3301	0	1069	1771	0	1397	1759	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12			17			29			144	
Link Speed (kh)	60		60		60		40		60		60	
Link Distance (m)	896.3		191.2		44.0		236.2					
Travel Time (s)	53.8		11.5		4.0		14.2					
Confl. Peds. (#/hr)	6		4	4		6	3		2	2		3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	4%	2%	0%	6%	2%	3%	0%	0%	1%	0%	0%
Bus Blockages (#/hr)	0	0	6	0	0	6	0	0	0	0	0	0
Adj. Flow (vph)	80	760	81	78	554	86	37	15	29	131	35	144
Shared Lane Traffic (%)												
Lane Group Flow (vph)	80	841	0	78	640	0	37	44	0	131	179	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	2.8		2.8		3.8		3.8		4.9		4.9	
Link Offset(m)	0.0		0.0		0.0		0.0					
Crosswalk Width(m)	4.9		4.9		4.9		4.9					
Two way Left Turn Lane			Yes									
Headway Factor	1.17	1.04	1.07	1.13	1.01	1.08	1.00	0.94	0.99	0.97	0.92	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	0	0		0	0		0	0		1	1	
Detector Template												
Leading Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		7.5	7.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		-1.5	-1.5	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		-1.5	-1.5	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		9.0	9.0	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	

Lanes, Volumes, Timings
3: Dixie Road & Kingston Road

<2028 Future Background_PHF>AM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases							8		4			
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	10.0	28.0		10.0	28.0		43.0	43.0		41.0	41.0	
Total Split (s)	15.0	59.0		11.0	55.0		50.0	50.0		50.0	50.0	
Total Split (%)	12.5%	49.2%		9.2%	45.8%		41.7%	41.7%		41.7%	41.7%	
Maximum Green (s)	10.0	52.4		6.0	48.4		40.5	40.5		40.5	40.5	
Yellow Time (s)	3.0	4.2		3.0	4.2		4.4	4.4		4.4	4.4	
All-Red Time (s)	2.0	2.4		2.0	2.4		5.1	5.1		5.1	5.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.6		5.0	6.6		9.5	9.5		9.5	9.5	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes				Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)	7.0		7.0		7.0		7.0		7.0		7.0	
Flash Dont Walk (s)	14.0		14.0		23.0		23.0		23.0		23.0	
Pedestrian Calls (#/hr)	6		1		7		7		4		4	
Act Effect Green (s)	9.3	74.9		6.0	74.0		18.0	18.0		18.0	18.0	
Actuated g/C Ratio	0.08	0.62		0.05	0.62		0.15	0.15		0.15	0.15	
v/c Ratio	0.66	0.41		0.95	0.31		0.23	0.15		0.63	0.46	
Control Delay	78.8	12.9		125.0	16.4		45.1	20.4		59.6	14.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	78.8	12.9		125.0	16.4		45.1	20.4		59.6	14.6	
LOS	E	B		F	B		D	C		E	B	
Approach Delay	18.6		28.2		31.7		33.6					
Approach LOS	B		C		C		C					
Intersection Summary												
Area Type:	Other											
Cycle Length:	120											
Actuated Cycle Length:	120											
Offset:	44.8 (37%), Referenced to phase 2:EBT and 6:WBT, Start of Green											
Natural Cycle:	85											
Control Type:	Actuated-Coordinated											
Maximum v/c Ratio:	0.95											
Intersection Signal Delay:	24.8						Intersection LOS: C					
Intersection Capacity Utilization:	72.4%						ICU Level of Service C					
Analysis Period (min):	15											
Splits and Phases:	3: Dixie Road & Kingston Road											

Lanes, Volumes, Timings
1: Walnut Lane & Kingston Road

<2028 Future Background>PM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Traffic Volume (vph)	38	1420	270	119	646	43	293	0	265	24	16	26
Future Volume (vph)	38	1420	270	119	646	43	293	0	265	24	16	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.0	3.6	3.5	3.0	3.6	3.7	3.3	3.5	3.7	3.2	3.7	3.7
Storage Length (m)	26.0		25.8	37.0		0.0	63.2		0.0	18.5		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	24.0			26.0			24.4			18.1		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.99		1.00	1.00		0.98		0.98	0.99	0.98	
Frt		0.976			0.991			0.850			0.907	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1685	3444	0	1685	3505	0	1745	0	1633	1725	1709	0
Flt Permitted	0.950			0.950			0.728			0.950		
Satd. Flow (perm)	1677	3444	0	1682	3505	0	1313	0	1603	1713	1709	0
Right Turn on Red			Yes			Yes		Yes			Yes	
Satd. Flow (RTOR)		26			9				93			28
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		129.3			694.6			114.0			179.7	
Travel Time (s)		7.8			41.7			10.3			16.2	
Confl. Peds. (#/hr)	5		7	7		5	14		5	5		14
Confl. Bikes (#/hr)			1									
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%	2%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	3	0	0	0	0	0	0	0	0	0
Adj. Flow (vph)	41	1543	293	129	702	47	318	0	288	26	17	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	41	1836	0	129	749	0	318	0	288	26	45	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.1			3.1			3.3			3.3	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			1.6			4.9			4.9	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.09	1.00	1.01	1.09	1.00	0.99	1.04	1.01	0.99	1.06	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	0	0		0	0		1		1	0		0
Detector Template								Right				
Leading Detector (m)	0.0	0.0		0.0	0.0		7.5		6.1	0.0		0.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		-1.5		0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		-1.5		0.0	0.0		0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8		9.0		6.1	6.1		1.8
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Turn Type	Prot	NA		Prot	NA		Perm		Perm	Perm		NA
Protected Phases	5	2		1	6							4

Lanes, Volumes, Timings
1: Walnut Lane & Kingston Road

<2028 Future Background>PM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases									8		8	4
Detector Phase	5	2			1	6		8		8	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0		8.0		8.0	8.0	8.0	
Minimum Split (s)	10.0	33.0		10.0	33.0		38.0		38.0	38.0	38.0	
Total Split (s)	10.0	76.0		15.0	81.0		39.0		39.0	39.0	39.0	
Total Split (%)	7.7%	58.5%		11.5%	62.3%		30.0%		30.0%	30.0%	30.0%	
Maximum Green (s)	5.0	69.4		10.0	74.4		31.0		31.0	31.0	31.0	
Yellow Time (s)	3.0	4.4		3.0	4.4		3.3		3.3	3.3	3.3	
All-Red Time (s)	2.0	2.2		2.0	2.2		4.7		4.7	4.7	4.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	
Total Lost Time (s)	5.0	6.6		5.0	6.6		8.0		8.0	8.0	8.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0		3.0	3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None		None	None	None	
Walk Time (s)		7.0			7.0		7.0		7.0	7.0	7.0	
Flash Dont Walk (s)		19.0			19.0		22.0		22.0	22.0	22.0	
Pedestrian Calls (#/hr)		8			4		2		2	9	9	
Act Effect Green (s)	5.0	69.4		10.0	76.4		31.0		31.0	31.0	31.0	
Actuated g/C Ratio	0.04	0.53		0.08	0.59		0.24		0.24	0.24	0.24	
v/c Ratio	0.64	0.99		1.00	0.36		1.02		0.64	0.06	0.11	
Control Delay	85.6	41.2		149.5	5.4		103.9		36.8	39.0	20.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	
Total Delay	85.6	41.2		149.5	5.4		103.9		36.8	39.0	20.3	
LOS	F	D		F	A		F		D	D	C	
Approach Delay		42.2			26.6			72.0				27.1
Approach LOS		D			C			E				C

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 77 (59%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 115
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.02
 Intersection Signal Delay: 43.1
 Intersection LOS: D
 Intersection Capacity Utilization 91.5%
 ICU Level of Service F
 Analysis Period (min) 15

Splits and Phases: 1: Walnut Lane & Kingston Road



Queues <2028 Future Background>PM
1: Walnut Lane & Kingston Road 12-20-2024

Lane Group	EBL	EBT	WBL	WBT	NBL	NBR	SBL	SBT
Lane Group Flow (vph)	41	1836	129	749	318	288	26	45
w/c Ratio	0.64	0.99	1.00	0.36	1.02	0.64	0.06	0.11
Control Delay	85.6	41.2	149.5	5.4	103.9	36.8	39.0	20.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	85.6	41.2	149.5	5.4	103.9	36.8	39.0	20.3
Queue Length 50th (m)	0.0	130.0	35.2	14.2	~84.2	45.2	5.2	3.4
Queue Length 95th (m)	m0.0	#291.4	#76.3	21.3	#142.9	76.2	12.9	13.3
Internal Link Dist (m)		105.3		670.6				155.7
Turn Bay Length (m)	26.0		37.0		63.2		18.5	
Base Capacity (vph)	64	1850	129	2063	313	453	408	428
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced w/c Ratio	0.64	0.99	1.00	0.36	1.02	0.64	0.06	0.11

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.

m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings <2028 Future Background>PM
3: Dixie Road & Kingston Road 12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕↕	↔	↔	↕↕	↔	↔	↕↕	↔	↔	↕↕	↔
Traffic Volume (vph)	204	1509	100	40	770	164	111	54	63	142	28	92
Future Volume (vph)	204	1509	100	40	770	164	111	54	63	142	28	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	2.8	3.6	3.4	2.8	3.5	3.1	3.6	4.0	3.7	3.8	4.2	3.7
Grade (%)		6%			0%			0%				0%
Storage Length (m)	145.4		64.5	51.0		79.5	13.0		0.0	16.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	66.4			48.0			18.0			25.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	1.00		1.00	0.99		0.99	0.99	0.99
Frt		0.991			0.974			0.920				0.885
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1579	3394	0	1597	3407	0	1770	1786	0	1827	1730	0
Fit Permitted	0.950			0.950			0.674			0.676		
Satd. Flow (perm)	1578	3394	0	1594	3407	0	1250	1786	0	1290	1730	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			24			42			100	
Link Speed (k/h)		60			60			40			60	
Link Distance (m)		896.3			191.2			44.0			236.2	
Travel Time (s)		53.8			11.5			4.0			14.2	
Confl. Peds. (#/hr)	1		6	6		1	4		7	7		4
Confl. Bikes (#/hr)			1									
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 (%)	1%	2%	2%	3%	2%	0%	2%	0%	2%	1%	0%	3%
Bus Blockages (#/hr)	0	0	5	0	0	5	0	0	0	0	0	0
Adj. Flow (vph)	222	1640	109	43	837	178	121	59	68	154	30	100
Shared Lane Traffic (%)												
Lane Group Flow (vph)	222	1749	0	43	1015	0	121	127	0	154	130	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		2.8			2.8			3.8			3.8	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane					Yes							
Headway Factor	1.17	1.04	1.07	1.13	1.01	1.08	1.00	0.94	0.99	0.97	0.92	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	0	0		0	0		0	0		1	1	
Detector Template												
Leading Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		7.5	7.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		-1.5	-1.5	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		-1.5	-1.5	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		9.0	9.0	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	

Lanes, Volumes, Timings
3: Dixie Road & Kingston Road

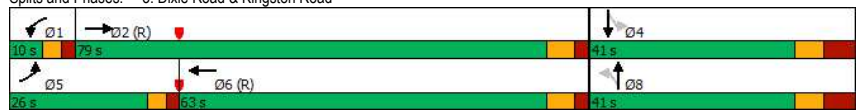
<2028 Future Background>PM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	5	2		1	6			8			4	4
Permitted Phases							8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	10.0	28.0		10.0	28.0		41.0	41.0		41.0	41.0	
Total Split (s)	26.0	79.0		10.0	63.0		41.0	41.0		41.0	41.0	
Total Split (%)	20.0%	60.8%		7.7%	48.5%		31.5%	31.5%		31.5%	31.5%	
Maximum Green (s)	21.0	72.4		5.0	56.4		31.5	31.5		31.5	31.5	
Yellow Time (s)	3.0	4.2		3.0	4.2		4.4	4.4		4.4	4.4	
All-Red Time (s)	2.0	2.4		2.0	2.4		5.1	5.1		5.1	5.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.6		5.0	6.6		9.5	9.5		9.5	9.5	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		14.0			14.0		23.0	23.0		23.0	23.0	
Pedestrian Calls (#/hr)		4			6		2	2		3	3	
Act Effct Green (s)	20.3	84.9		5.0	67.7		21.0	21.0		21.0	21.0	
Actuated g/C Ratio	0.16	0.65		0.04	0.52		0.16	0.16		0.16	0.16	
v/c Ratio	0.90	0.79		0.70	0.57		0.60	0.39		0.74	0.36	
Control Delay	73.9	26.0		112.9	25.5		61.9	34.2		71.9	15.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	73.9	26.0		112.9	25.5		61.9	34.2		71.9	15.9	
LOS	E	C		F	C		E	C		E	B	
Approach Delay		31.4			29.0			47.7			46.2	
Approach LOS		C			C			D			D	

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 115 (88%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.90
 Intersection Signal Delay: 33.0 Intersection LOS: C
 Intersection Capacity Utilization 82.5% ICU Level of Service E
 Analysis Period (min) 15

Splits and Phases: 3: Dixie Road & Kingston Road



Queues
3: Dixie Road & Kingston Road

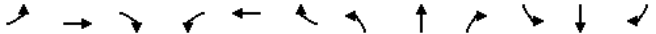
<2028 Future Background>PM
12-20-2024

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	222	1749	43	1015	121	127	154	130
v/c Ratio	0.90	0.79	0.70	0.57	0.60	0.39	0.74	0.36
Control Delay	73.9	26.0	112.9	25.5	61.9	34.2	71.9	15.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.9	26.0	112.9	25.5	61.9	34.2	71.9	15.9
Queue Length 50th (m)	51.9	216.1	11.9	122.1	29.2	19.4	38.1	6.7
Queue Length 95th (m)	m#88.3	258.6	m#24.5	m146.3	45.6	35.4	57.0	22.4
Internal Link Dist (m)		872.3		167.2		20.0		212.2
Turn Bay Length (m)	145.4		51.0		13.0		16.0	
Base Capacity (vph)	255	2220	61	1785	302	464	312	494
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.87	0.79	0.70	0.57	0.40	0.27	0.49	0.26

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Queues <2028 Future Background>PM
6: Liverpool Road & Kingston Road 12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	265	1117	358	230	592	73	168	835	252	103	568	117
w/c Ratio	0.83	1.05	0.56	0.87	0.61	0.14	0.56	0.70	0.42	0.49	0.49	0.21
Control Delay	47.7	69.0	25.2	84.1	45.4	0.6	34.2	43.1	13.4	31.8	38.0	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.7	69.0	25.2	84.1	45.4	0.6	34.2	43.1	13.4	31.8	38.0	3.6
Queue Length 50th (m)	59.4	~172.3	71.1	57.7	70.6	0.0	27.0	99.0	14.0	15.8	62.0	0.0
Queue Length 95th (m)	m60.8	m#179.4	m75.5	#98.7	93.7	0.0	42.7	121.7	37.0	27.4	79.5	8.5
Internal Link Dist (m)		670.6			372.4			233.7			324.6	
Turn Bay Length (m)	188.8		97.9	170.7		117.0	185.5		52.0	49.0		60.5
Base Capacity (vph)	376	1065	641	279	973	529	302	1187	604	210	1149	569
Starvation Cap Reductn	0	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced w/c Ratio	0.70	1.05	0.56	0.82	0.61	0.14	0.56	0.70	0.42	0.49	0.49	0.21

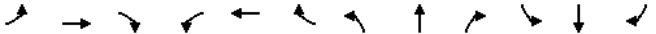
Intersection Summary

~ 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.

m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings <2028 Future Background>PM
8: Liverpool Road & Private Access/Pickering Parkway 12-20-2024



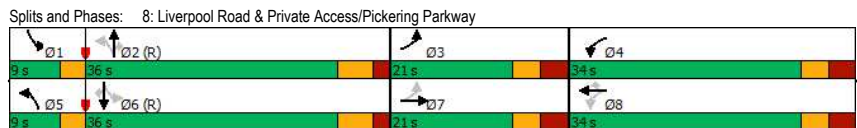
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔↔		↔↔	↔	↔	↔↔	↔↔	↔	↔	↔↔	↔
Traffic Volume (vph)	87	69	130	412	58	174	116	832	401	196	986	46
Future Volume (vph)	87	69	130	412	58	174	116	832	401	196	986	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.1	3.1	3.7	3.0	3.4	3.2	2.8	3.6	3.5	3.2	3.5	3.5
Storage Length (m)	0.0	0.0	57.0		62.1	54.4		75.7	132.5		35.5	
Storage Lanes	1		0	1		1		1	1		1	
Taper Length (m)	2.5			12.0				29.5			28.9	
Lane Util. Factor	1.00	0.95	0.95	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor		0.96		0.98					0.96	1.00		0.93
Frt		0.902				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950		0.950		0.950	
Satd. Flow (prot)	1705	2959	0	3204	1858	1399	1645	3539	1569	1708	3535	1597
Flt Permitted	0.000			0.000			0.123		0.193			
Satd. Flow (perm)	0	2959	0	0	1858	1399	213	3539	1502	345	3535	1482
Right Turn on Red			Yes			Yes		Yes		Yes		Yes
Satd. Flow (RTOR)		141				189		436				144
Link Speed (k/h)	30			50			50			50		
Link Distance (m)	82.8			328.5			162.3			257.7		
Travel Time (s)	9.9			23.7			11.7			18.6		
Confl. Peds. (#/hr)			21	21			21		21	21		21
Confl. Bikes (#/hr)			2				5					6
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%	2%	0%	5%	0%	2%	1%	1%	1%	0%
Bus Blockages (#/hr)	0	0	0	0	0	12	0	0	2	0	0	0
Adj. Flow (vph)	95	75	141	448	63	189	126	904	436	213	1072	50
Shared Lane Traffic (%)												
Lane Group Flow (vph)	95	216	0	448	63	189	126	904	436	213	1072	50
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		6.0			6.0			3.8			3.8	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.08	1.08	0.99	1.09	1.03	1.13	1.13	1.00	1.03	1.06	1.01	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	

Lanes, Volumes, Timings <2028 Future Background>PM
8: Liverpool Road & Private Access/Pickering Parkway 12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type	CI+Ex			CI+Ex			CI+Ex			CI+Ex		
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	7		4	8		5	2		1	6	
Permitted Phases	7			8		8	2			2	6	
Detector Phase	3	7		4	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0	8.0	5.0	20.0	20.0	5.0	8.0	8.0
Minimum Split (s)	15.0	15.0		34.0	34.0	34.0	8.0	30.0	30.0	8.0	30.0	30.0
Total Split (s)	21.0	21.0		34.0	34.0	34.0	9.0	36.0	36.0	9.0	36.0	36.0
Total Split (%)	21.0%	21.0%		34.0%	34.0%	34.0%	9.0%	36.0%	36.0%	9.0%	36.0%	36.0%
Maximum Green (s)	14.4	14.4		27.4	27.4	27.4	6.0	29.7	29.7	6.0	29.7	29.7
Yellow Time (s)	3.3	3.3		3.3	3.3	3.3	3.0	4.2	4.2	3.0	4.2	4.2
All-Red Time (s)	3.3	3.3		3.3	3.3	3.3	0.0	2.1	2.1	0.0	2.1	2.1
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)	6.6	6.6		6.6	6.6	6.6	3.0	6.3	6.3	3.0	6.3	6.3
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
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
Recall Mode	None	None		None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)				19.0	19.0		17.0	17.0		17.0	17.0	
Flash Dont Walk (s)				8.0	8.0		6.0	6.0		6.0	6.0	
Pedestrian Calls (#/hr)				20	20		28	28		15	15	
Act Effect Green (s)	11.0	11.0		20.9	20.9	20.9	48.9	39.6	39.6	48.9	39.6	39.6
Actuated g/C Ratio	0.11	0.11		0.21	0.21	0.21	0.49	0.40	0.40	0.49	0.40	0.40
v/c Ratio	0.51	0.48		0.67	0.16	0.43	0.67	0.65	0.51	0.85	0.77	0.07
Control Delay	51.0	18.9		40.8	31.2	7.5	32.3	26.7	8.0	51.2	32.8	0.2
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.0	18.9		40.8	31.2	7.5	32.3	26.7	8.0	51.2	32.8	0.2
LOS	D	B		D	C	A	C	C	A	D	C	A
Approach Delay	28.7			31.0			21.6			34.5		
Approach LOS	C			C			C			C		

Intersection Summary
 Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 15 (15%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.85
 Intersection Signal Delay: 28.4 Intersection LOS: C
 Intersection Capacity Utilization 72.6% ICU Level of Service C
 Analysis Period (min) 15



Queues <2028 Future Background>PM
8: Liverpool Road & Private Access/Pickering Parkway 12-20-2024



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	95	216	448	63	189	126	904	436	213	1072	50
v/c Ratio	0.51	0.48	0.67	0.16	0.43	0.67	0.65	0.51	0.85	0.77	0.07
Control Delay	51.0	18.9	40.8	31.2	7.5	32.3	26.7	8.0	51.2	32.8	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.0	18.9	40.8	31.2	7.5	32.3	26.7	8.0	51.2	32.8	0.2
Queue Length 50th (m)	17.7	7.1	42.3	10.3	0.0	13.8	77.3	23.1	20.8	90.0	0.0
Queue Length 95th (m)	32.2	17.3	52.8	19.3	15.9	m#35.7	#115.8	53.8	#67.2	#154.5	0.0
Internal Link Dist (m)	58.8		304.5		138.3		233.7				
Turn Bay Length (m)	57.0		62.1		54.4		75.7		132.5		35.5
Base Capacity (vph)	245	546	877	509	520	189	1400	857	250	1399	673
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	0.39	0.40	0.51	0.12	0.36	0.67	0.65	0.51	0.85	0.77	0.07

Intersection Summary
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings

<2028 Future Background>PM

9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp

12-20-2024



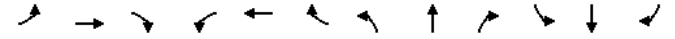
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	237	278	168	293	121	1058	0	0	929	71
Future Volume (vph)	0	0	237	278	168	293	121	1058	0	0	929	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.5	3.7	3.7	3.4	3.7
Storage Length (m)	0.0	0.0	0.0	0.0		125.0	50.0		0.0	0.0		0.0
Storage Lanes	0		1	1		1	1		0	0		1
Taper Length (m)	2.5			2.5			30.0			2.5		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	0.91	1.00
Ped Bike Factor							0.99					0.92
Frt			0.865			0.850						0.850
Fit Protected				0.950	0.987		0.950					
Satd. Flow (prot)	0	0	1662	1734	1801	1581	1825	3535	0	0	4972	1633
Fit Permitted				0.950	0.987		0.191					
Satd. Flow (perm)	0	0	1662	1734	1801	1581	365	3535	0	0	4972	1508
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)						85						82
Link Speed (kh)		50			50			50				50
Link Distance (m)		433.1			226.7			372.2				162.3
Travel Time (s)		31.2			16.3			26.8				11.7
Conf. Peds. (#/hr)							17		15	15		17
Conf. Bikes (#/hr)								6				7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	0%	0%	0%	1%	0%	1%	6%	2%	2%	0%
Adj. Flow (vph)	0	0	258	302	183	318	132	1150	0	0	1010	77
Shared Lane Traffic (%)				21%								
Lane Group Flow (vph)	0	0	258	239	246	318	132	1150	0	0	1010	77
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7				3.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		1.6			1.6			1.6				1.6
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	1.01	0.99	1.01	0.99	0.99	1.03	0.99
Turning Speed (k/h)	97		97	24		14	97		14	24		97
Number of Detectors			1	1	2	1	1	2			2	1
Detector Template			Right	Left	Thru	Right	Left	Thru			Thru	Right
Leading Detector (m)			2.0	2.0	10.0	2.0	2.0	10.0			10.0	2.0
Trailing Detector (m)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Position(m)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Size(m)			2.0	2.0	0.6	2.0	2.0	0.6			0.6	2.0
Detector 1 Type			Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 2 Position(m)						9.4		9.4				9.4
Detector 2 Size(m)						0.6		0.6				0.6
Detector 2 Type						Cl+Ex		Cl+Ex				Cl+Ex

Lanes, Volumes, Timings

<2028 Future Background>PM

9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp

12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)						0.0					0.0	0.0
Turn Type			Over	Split	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases			5	8	8		5	2			6	
Permitted Phases						8	2					6
Detector Phase			5	8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)			5.0	8.0	8.0	8.0	5.0	15.0			15.0	15.0
Minimum Split (s)			9.5	25.0	25.0	25.0	9.5	24.3			24.3	24.3
Total Split (s)			33.0	36.0	36.0	36.0	33.0	64.0			31.0	31.0
Total Split (%)			33.0%	36.0%	36.0%	36.0%	33.0%	64.0%			31.0%	31.0%
Maximum Green (s)			28.5	30.0	30.0	30.0	28.5	57.7			24.7	24.7
Yellow Time (s)			3.5	3.3	3.3	3.3	3.5	3.3			3.3	3.3
All-Red Time (s)			1.0	2.7	2.7	2.7	1.0	3.0			3.0	3.0
Lost Time Adjust (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Lost Time (s)			4.5	6.0	6.0	6.0	4.5	6.3			6.3	6.3
Lead/Lag			Lead				Lead				Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)			3.0	3.0	3.0	3.0	3.0	3.0			3.0	3.0
Recall Mode			None	None	None	None	None	C-Max			C-Max	C-Max
Walk Time (s)				14.0	14.0	14.0		13.0			13.0	13.0
Flash Dont Walk (s)				5.0	5.0	5.0		5.0			5.0	5.0
Pedestrian Calls (#/hr)				0	0	0		14			7	7
Act Effct Green (s)			20.7	21.5	21.5	21.5	68.0	66.2			41.0	41.0
Actuated g/C Ratio			0.21	0.22	0.22	0.22	0.68	0.66			0.41	0.41
v/c Ratio			0.75	0.64	0.64	0.78	0.24	0.49			0.50	0.12
Control Delay			50.5	42.8	42.3	39.9	7.9	10.3			27.7	13.5
Queue Delay			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay			50.5	42.8	42.3	39.9	7.9	10.3			27.7	13.5
LOS			D	D	D	D	A	B			C	B
Approach Delay			50.5			41.5		10.1			26.7	
Approach LOS			D			D		B			C	

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 8 (8%), Referenced to phase 2:NBTL and 6:SBT, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 25.7 Intersection LOS: C

Intersection Capacity Utilization 58.7% ICU Level of Service B

Analysis Period (min) 15



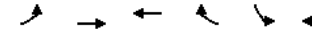
Queues <2028 Future Background>PM
 9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp 12-20-2024



Lane Group	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	258	239	246	318	132	1150	1010	77
w/c Ratio	0.75	0.64	0.64	0.78	0.24	0.49	0.50	0.12
Control Delay	50.5	42.8	42.3	39.9	7.9	10.3	27.7	13.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.5	42.8	42.3	39.9	7.9	10.3	27.7	13.5
Queue Length 50th (m)	47.2	44.5	45.7	43.2	7.9	53.1	46.9	0.9
Queue Length 95th (m)	67.7	63.0	64.2	66.2	18.3	86.8	79.1	m7.4
Internal Link Dist (m)	202.7				348.2	138.3		
Turn Bay Length (m)			125.0	50.0				
Base Capacity (vph)	473	520	540	533	664	2341	2040	667
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced w/c Ratio	0.55	0.46	0.46	0.60	0.20	0.49	0.50	0.12

Intersection Summary
 m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings <2028 Future Background>PM
 10: Kingston Road & Fairport Road 12-20-2024



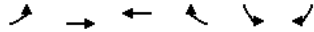
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø1
Lane Configurations		↑↑	↑↑		↓	↓	
Traffic Volume (vph)	205	1590	757	223	271	137	
Future Volume (vph)	205	1590	757	223	271	137	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (m)	3.0	3.6	3.5	3.7	3.6	4.5	
Grade (%)	6%		0%		0%		
Storage Length (m)	75.0		18.5		15.5		0.0
Storage Lanes	1		0		1		1
Taper Length (m)	2.5				31.3		
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00	
Ped Bike Factor	1.00		0.99		0.99		
Frt			0.966		0.850		
Fit Protected	0.950				0.950		
Satd. Flow (prot)	1618	3433	3346	0	1805	1777	
Fit Permitted	0.950				0.950		
Satd. Flow (perm)	1617	3433	3346	0	1805	1751	
Right Turn on Red			Yes		Yes		
Satd. Flow (RTOR)			39		149		
Link Speed (k/h)	60		60		40		
Link Distance (m)	424.0		896.3		280.0		
Travel Time (s)	25.4		53.8		25.2		
Confl. Peds. (#/hr)	1		1		2		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Heavy Vehicles (%)	1%	2%	3%	1%	0%	0%	
Bus Blockages (#/hr)	0		0		9		0
Adj. Flow (vph)	223	1728	823	242	295	149	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	223	1728	1065	0	295	149	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Left	Left	Right	Left	Right	
Median Width(m)	3.0		3.0		3.6		
Link Offset(m)	0.0		0.0		0.0		
Crosswalk Width(m)	1.6		1.6		1.6		
Two way Left Turn Lane	Yes						
Headway Factor	1.14	1.04	1.01	0.99	1.00	0.88	
Turning Speed (k/h)	24		14		24		14
Number of Detectors	1	2	2		1	1	
Detector Template	Left	Thru	Thru		Left	Right	
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0	
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	0.6		2.0	2.0	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)	9.4		9.4				
Detector 2 Size(m)	0.6		0.6				

Lanes, Volumes, Timings

<2028 Future Background>PM

10: Kingston Road & Fairport Road

12-20-2024



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø1
Detector 2 Type	CI+Ex		CI+Ex				
Detector 2 Channel							
Detector 2 Extend (s)	0.0		0.0				
Turn Type	Prot	NA	NA		Prot	Perm	
Protected Phases	5	2	6		4		1
Permitted Phases						4	
Detector Phase	5	2	6		4	4	
Switch Phase							
Minimum Initial (s)	5.0	20.0	20.0		8.0	8.0	5.0
Minimum Split (s)	10.0	33.0	33.0		38.0	38.0	8.0
Total Split (s)	25.0	84.0	67.0		38.0	38.0	8.0
Total Split (%)	19.2%	64.6%	51.5%		29.2%	29.2%	6%
Maximum Green (s)	20.0	77.7	60.7		30.7	30.7	5.0
Yellow Time (s)	3.0	4.3	4.3		3.3	3.3	3.0
All-Red Time (s)	2.0	2.0	2.0		4.0	4.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.3	6.3		7.3	7.3	
Lead/Lag	Lead	Lag	Lag				Lead
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	0.2	0.2		3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max		None	None	None
Walk Time (s)	7.0		7.0		7.0	7.0	5.0
Flash Dont Walk (s)	19.0		19.0		23.0	23.0	0.0
Pedestrian Calls (#/hr)	0		0		0	0	20
Act Effect Green (s)	19.5	86.0	66.3		25.6	25.6	
Actuated g/C Ratio	0.15	0.66	0.51		0.20	0.20	
v/c Ratio	0.92	0.76	0.62		0.83	0.32	
Control Delay	48.9	40.2	9.7		69.5	8.0	
Queue Delay	0.0	0.0	0.0		0.0	0.0	
Total Delay	48.9	40.2	9.7		69.5	8.0	
LOS	D	D	A		E	A	
Approach Delay	41.2		9.7		48.9		
Approach LOS	D		A		D		

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 27 (21%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 95
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.92
 Intersection Signal Delay: 32.5
 Intersection Capacity Utilization 70.9%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service C

Splits and Phases: 10: Kingston Road & Fairport Road



Queues

<2028 Future Background>PM

10: Kingston Road & Fairport Road

12-20-2024



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	223	1728	1065	295	149
v/c Ratio	0.92	0.76	0.62	0.83	0.32
Control Delay	48.9	40.2	9.7	69.5	8.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	48.9	40.2	9.7	69.5	8.0
Queue Length 50th (m)	51.0	247.6	26.8	72.7	0.0
Queue Length 95th (m)	m50.4	m241.9	32.8	101.2	16.7
Internal Link Dist (m)	400.0		872.3	256.0	
Turn Bay Length (m)	75.0		15.5		
Base Capacity (vph)	248	2270	1724	426	527
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.90	0.76	0.62	0.69	0.28

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings

<2028 Future Background>PM

11: Hwy 401 WB Ramps & Kingston Road

12-20-2024

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↕↕		↖	↕↕	↖↖	↖
Traffic Volume (vph)	1692	23	184	709	662	100
Future Volume (vph)	1692	23	184	709	662	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.0	3.7	2.7	3.8	3.8	3.7
Grade (%)	6%			0%	0%	
Storage Length (m)		0.0	47.5		0.0	52.0
Storage Lanes		0	1		2	1
Taper Length (m)			22.3		2.5	
Lane Util. Factor	0.95	0.95	1.00	0.95	0.97	1.00
Ped Bike Factor					1.00	0.98
Frt	0.998					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3577	0	1577	3618	3544	1617
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3577	0	1577	3618	3537	1591
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	1					84
Link Speed (k/h)	60			60	50	
Link Distance (m)	268.7			424.0	216.6	
Travel Time (s)	16.1			25.4	15.6	
Confl. Peds. (#/hr)					1	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	5%	3%	2%	1%	1%
Adj. Flow (vph)	1839	25	200	771	720	109
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1864	0	200	771	720	109
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.1			3.1	7.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	0.98	1.03	1.14	0.97	0.97	0.99
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	10.0		2.0	10.0	2.0	2.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Size(m)	0.6		2.0	0.6	2.0	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		

Lanes, Volumes, Timings

<2028 Future Background>PM

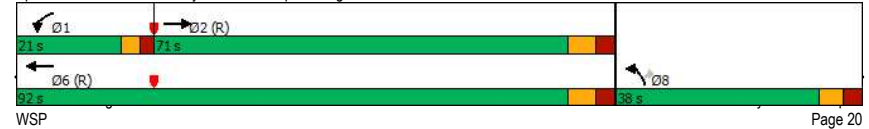
11: Hwy 401 WB Ramps & Kingston Road

12-20-2024

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA			Prot	NA	Prot
Protected Phases	2			1	6	8
Permitted Phases						8
Detector Phase	2			1	6	8
Switch Phase						
Minimum Initial (s)	20.0			5.0	20.0	8.0
Minimum Split (s)	50.0			10.0	50.0	38.0
Total Split (s)	71.0			21.0	92.0	38.0
Total Split (%)	54.6%			16.2%	70.8%	29.2%
Maximum Green (s)	63.8			16.0	84.8	31.3
Yellow Time (s)	4.2			3.0	4.2	3.7
All-Red Time (s)	3.0			2.0	3.0	3.0
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	7.2			5.0	7.2	6.7
Lead/Lag	Lag			Lead		
Lead-Lag Optimize?						
Vehicle Extension (s)	0.2			3.0	0.2	3.0
Recall Mode	C-Max			None	C-Max	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	35.0			35.0	24.0	24.0
Pedestrian Calls (#/hr)	0			0	14	14
Act Effct Green (s)	65.4			16.0	86.4	29.7
Actuated g/C Ratio	0.50			0.12	0.66	0.23
v/c Ratio	1.04			1.03	0.32	0.89
Control Delay	66.9			128.5	1.8	62.5
Queue Delay	0.0			0.0	0.0	0.0
Total Delay	66.9			128.5	1.8	62.5
LOS	E			F	A	E
Approach Delay	66.9			27.9	56.1	
Approach LOS	E			C	E	

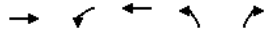
Intersection Summary	
Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	69 (53%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle:	130
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.04
Intersection Signal Delay:	54.2
Intersection Capacity Utilization:	93.0%
Analysis Period (min):	15
Intersection LOS:	D
ICU Level of Service:	F

Splits and Phases: 11: Hwy 401 WB Ramps & Kingston Road



Queues
11: Hwy 401 WB Ramps & Kingston Road

<2028 Future Background>PM
12-20-2024



Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1864	200	771	720	109
w/c Ratio	1.04	1.03	0.32	0.89	0.25
Control Delay	66.9	128.5	1.8	62.5	14.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	66.9	128.5	1.8	62.5	14.0
Queue Length 50th (m)	-284.5	-47.6	6.4	91.1	5.0
Queue Length 95th (m)	#328.0	#101.8	6.1	#114.7	19.8
Internal Link Dist (m)	244.7		400.0	192.6	
Turn Bay Length (m)		47.5			52.0
Base Capacity (vph)	1799	194	2404	853	446
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced w/c Ratio	1.04	1.03	0.32	0.84	0.24

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.

Lanes, Volumes, Timings
12: Plaza Entrance/Delta Blvd & Kingston Road

<2028 Future Background>PM
12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	130	1563	38	89	1168	121	198	15	138	82	13	143
Future Volume (vph)	130	1563	38	89	1168	121	198	15	138	82	13	143
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.2	3.4	3.5	3.1	3.4	3.4	3.6	4.6	3.7	3.2	2.8	3.7
Grade (%)		6%			0%			0%				0%
Storage Length (m)	51.8		148.5	100.0		18.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	35.3			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		1.00	0.99		1.00					0.99
Frt		0.996			0.986			0.864				0.862
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1656	3343	0	1705	3399	0	1770	1824	0	1725	1474	0
Fit Permitted	0.950			0.950			0.630			0.637		
Satd. Flow (perm)	1647	3343	0	1704	3399	0	1172	1824	0	1157	1474	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			13			129				149
Link Speed (k/h)		60			60			30				40
Link Distance (m)		222.7			268.7			130.9				169.9
Travel Time (s)		13.4			16.1			15.7				15.3
Confl. Peds. (#/hr)	16		1	1		16	1					1
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 (%)	1%	2%	0%	0%	2%	0%	2%	0%	0%	0%	0%	0%
Adj. Flow (vph)	141	1699	41	97	1270	132	215	16	150	89	14	155
Shared Lane Traffic (%)												
Lane Group Flow (vph)	141	1740	0	97	1402	0	215	166	0	89	169	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.6				3.6
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		1.6			1.6			1.6				1.6
Two way Left Turn Lane					Yes							
Headway Factor	1.10	1.07	1.06	1.08	1.03	1.03	1.00	0.87	0.99	1.06	1.13	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	

Lanes, Volumes, Timings

<2028 Future Background>PM

12: Plaza Entrance/Delta Blvd & Kingston Road

12-20-2024

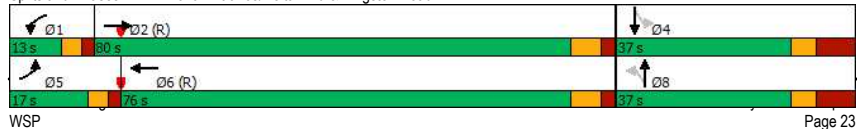


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	10.0	32.0		10.0	32.0		37.0	37.0		37.0	37.0	
Total Split (s)	17.0	80.0		13.0	76.0		37.0	37.0		37.0	37.0	
Total Split (%)	13.1%	61.5%		10.0%	58.5%		28.5%	28.5%		28.5%	28.5%	
Maximum Green (s)	12.0	73.1		8.0	69.1		27.0	27.0		27.0	27.0	
Yellow Time (s)	3.0	4.7		3.0	4.7		3.8	3.8		3.8	3.8	
All-Red Time (s)	2.0	2.2		2.0	2.2		6.2	6.2		6.2	6.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.9		5.0	6.9		10.0	10.0		10.0	10.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	0.2		3.0	0.2		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		18.0			18.0		20.0	20.0		20.0	20.0	
Pedestrian Calls (#/hr)		0			13		3	3		6	6	
Act Effct Green (s)	12.0	74.3		8.0	70.3		25.8	25.8		25.8	25.8	
Actuated g/C Ratio	0.09	0.57		0.06	0.54		0.20	0.20		0.20	0.20	
v/c Ratio	0.93	0.91		0.93	0.76		0.93	0.36		0.39	0.41	
Control Delay	84.2	22.6		124.2	20.0		93.7	14.4		50.3	12.5	
Queue Delay	0.0	1.2		0.0	0.0		0.0	74.4		139.0	0.0	
Total Delay	84.2	23.8		124.2	20.0		93.7	88.7		189.3	12.5	
LOS	F	C		F	C		F	F		F	B	
Approach Delay		28.3			26.8			91.6			73.5	
Approach LOS		C			C			F			E	

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 6 (5%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.93
 Intersection Signal Delay: 36.6 Intersection LOS: D
 Intersection Capacity Utilization 96.9% ICU Level of Service F
 Analysis Period (min) 15

Splits and Phases: 12: Plaza Entrance/Delta Blvd & Kingston Road

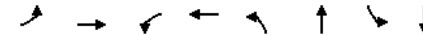


Queues

<2028 Future Background>PM

12: Plaza Entrance/Delta Blvd & Kingston Road

12-20-2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	141	1740	97	1402	215	166	89	169
v/c Ratio	0.93	0.91	0.93	0.76	0.93	0.36	0.39	0.41
Control Delay	84.2	22.6	124.2	20.0	93.7	14.4	50.3	12.5
Queue Delay	0.0	1.2	0.0	0.0	0.0	74.4	139.0	0.0
Total Delay	84.2	23.8	124.2	20.0	93.7	88.7	189.3	12.5
Queue Length 50th (m)	36.9	135.0	26.3	72.7	54.0	7.7	19.7	4.2
Queue Length 95th (m)	m39.6	m138.3	m#47.8	95.4	#99.2	26.9	36.4	23.7
Internal Link Dist (m)		198.7		244.7		106.9		145.9
Turn Bay Length (m)	51.8		100.0					
Base Capacity (vph)	152	1912	104	1843	243	481	240	424
Starvation Cap Reductn	0	37	0	0	0	0	0	0
Spillback Cap Reductn	0	56	0	0	0	362	220	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.94	0.93	0.76	0.88	1.39	4.45	0.40

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings
13: Whites Road & Kingston Road

<2028 Future Background>PM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	155	941	358	231	763	490	228	684	655	189	617	186
Future Volume (vph)	155	941	358	231	763	490	228	684	655	189	617	186
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.6	4.2	3.5	3.7	4.0	3.5	3.9	3.7	3.5	3.9	4.0
Grade (%)	6%			0%			0%			0%		
Storage Length (m)	127.0			123.0			87.1			47.0		
Storage Lanes	1			1			1			1		
Taper Length (m)	64.0			39.6			66.8			32.6		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Ped Bike Factor	0.97			0.96			0.99			0.95		
Frt	0.850			0.850			0.850			0.850		
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1681	3400	1622	1733	3579	1654	1767	5255	1588	1750	5105	1627
Flt Permitted	0.950			0.950			0.331			0.292		
Satd. Flow (perm)	1638	3400	1549	1719	3579	1502	608	5255	1470	527	5105	1550
Right Turn on Red	Yes			Yes			Yes			Yes		
Satd. Flow (RTOR)	171			136			59			202		
Link Speed (kh)	60			60			60			60		
Link Distance (m)	297.5			222.7			158.6			385.2		
Travel Time (s)	17.9			13.4			9.5			23.1		
Confl. Peds. (#/hr)	75			31			37			65		
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 (%)	3%	3%	3%	3%	2%	2%	1%	2%	2%	2%	5%	2%
Bus Blockages (#/hr)	0			0			0			0		
Adj. Flow (vph)	168	1023	389	251	829	533	248	743	712	205	671	202
Shared Lane Traffic (%)												
Lane Group Flow (vph)	168	1023	389	251	829	533	248	743	712	205	671	202
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width(m)	3.5			3.5			3.5			3.5		
Link Offset(m)	0.0			0.0			0.0			0.0		
Crosswalk Width(m)	1.6			1.6			1.6			1.6		
Two way Left Turn Lane												
Headway Factor	1.06	1.04	0.96	1.01	0.99	0.94	1.01	0.96	1.00	1.01	0.96	0.96
Turning Speed (k/h)	24			14			24			14		
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0											
Detector 1 Queue (s)	0.0											
Detector 1 Delay (s)	0.0											
Detector 2 Position(m)	9.4			9.4			9.4			9.4		
Detector 2 Size(m)	0.6			0.6			0.6			0.6		

1105-1163 Kingston Road
WSP

Synchro 11 Report
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Lanes, Volumes, Timings
13: Whites Road & Kingston Road

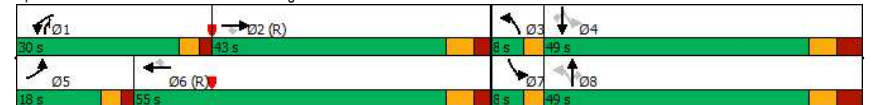
<2028 Future Background>PM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type	Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8	1	7	4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2	2	1	6	6	3	8	1	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	5.0	8.0	5.0	5.0	8.0	8.0
Minimum Split (s)	10.0	43.0	43.0	10.0	43.0	43.0	8.0	49.0	10.0	8.0	49.0	49.0
Total Split (s)	18.0	43.0	43.0	30.0	55.0	55.0	8.0	49.0	30.0	8.0	49.0	49.0
Total Split (%)	13.8%	33.1%	33.1%	23.1%	42.3%	42.3%	6.2%	37.7%	23.1%	6.2%	37.7%	37.7%
Maximum Green (s)	13.0	36.0	36.0	25.0	48.0	48.0	5.0	40.6	25.0	5.0	40.6	40.6
Yellow Time (s)	3.0	4.2	4.2	3.0	4.2	4.2	3.0	4.3	3.0	3.0	4.3	4.3
All-Red Time (s)	2.0	2.8	2.8	2.0	2.8	2.8	0.0	4.1	2.0	0.0	4.1	4.1
Lost Time Adjust (s)	0.0											
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	3.0	8.4	5.0	3.0	8.4	8.4
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	0.2	0.2	3.0	0.2	0.2	3.0	0.2	3.0	3.0	0.2	0.2
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	None	None	Max	Max
Walk Time (s)	7.0			7.0			7.0			7.0		
Flash Dont Walk (s)	29.0			29.0			33.0			33.0		
Pedestrian Cross (#/hr)	13			13			38			20		
Act Effect Green (s)	13.0	38.3	38.3	22.7	48.0	48.0	51.0	40.6	66.7	51.0	40.6	40.6
Actuated g/C Ratio	0.10	0.29	0.29	0.17	0.37	0.37	0.39	0.31	0.51	0.39	0.31	0.31
v/c Ratio	1.00	1.02	0.68	0.83	0.63	0.83	0.88	0.45	0.89	0.81	0.42	0.32
Control Delay	127.6	79.3	29.2	83.6	25.4	25.9	63.3	36.9	37.4	55.8	36.4	5.8
Queue Delay	0.0	6.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	127.6	86.2	29.2	83.6	25.4	25.9	63.3	36.9	37.4	55.8	36.4	5.8
LOS	F	F	C	F	C	C	E	D	D	E	D	A
Approach Delay	76.6			34.6			40.9			34.3		
Approach LOS	E			C			D			C		

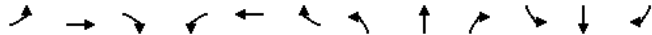
Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 32 (25%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 120
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.02
 Intersection Signal Delay: 47.5
 Intersection Capacity Utilization 109.1%
 Analysis Period (min) 15
 Intersection LOS: D
 ICU Level of Service H

Splits and Phases: 13: Whites Road & Kingston Road



Queues <2028 Future Background>PM
13: Whites Road & Kingston Road 12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	168	1023	389	251	829	533	248	743	712	205	671	202
w/c Ratio	1.00	1.02	0.68	0.83	0.63	0.83	0.88	0.45	0.89	0.81	0.42	0.32
Control Delay	127.6	79.3	29.2	83.6	25.4	25.9	63.3	36.9	37.4	55.8	36.4	5.8
Queue Delay	0.0	6.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	127.6	86.2	29.2	83.6	25.4	25.9	63.3	36.9	37.4	55.8	36.4	5.8
Queue Length 50th (m)	43.7	~154.6	51.2	60.7	53.7	43.3	42.7	55.8	123.7	34.3	49.8	0.0
Queue Length 95th (m)	#89.4	#195.8	88.5	m80.9	m79.6	m#129.0	#83.4	68.3	#188.7	#65.5	61.7	17.0
Internal Link Dist (m)		273.5		198.7			134.6			361.2		
Turn Bay Length (m)	127.0		123.0	87.1		35.0	72.0		35.0	88.5		47.0
Base Capacity (vph)	168	1001	576	333	1321	640	283	1641	830	253	1594	622
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	20	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced w/c Ratio	1.00	1.04	0.68	0.75	0.63	0.83	0.88	0.45	0.86	0.81	0.42	0.32

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.

m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings <2028 Future Background>PM
14: Whites Road & Highway 401 EB Off Ramp 12-20-2024



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↑↑↑	↑		↑↑	↑↑	
Traffic Volume (vph)	1183	589	0	841	547	0
Future Volume (vph)	1183	589	0	841	547	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.7	3.6	3.8	3.7
Storage Length (m)	0.0	225.0	0.0			0.0
Storage Lanes	2	1	0			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	0.97	0.91	1.00	0.95	0.95	1.00
Ped Bike Factor	1.00	0.98				
Frt	0.993	0.850				
Flt Protected	0.955					
Satd. Flow (prot)	3453	1427	0	3539	3618	0
Flt Permitted	0.955					
Satd. Flow (perm)	3453	1404	0	3539	3618	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	7	129				
Link Speed (k/h)	50			60	60	
Link Distance (m)	295.9			185.9	316.9	
Travel Time (s)	21.3			11.2	19.0	
Confl. Peds. (#/hr)		3	4			4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	3%	2%	2%	2%	2%
Adj. Flow (vph)	1286	640	0	914	595	0
Shared Lane Traffic (%)		10%				
Lane Group Flow (vph)	1350	576	0	914	595	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.2			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	0.99	1.00	0.97	0.99
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	2.0	2.0		10.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	2.0		0.6	0.6	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				CI+Ex	CI+Ex	
Detector 2 Channel						

Lanes, Volumes, Timings

<2028 Future Background>PM

14: Whites Road & Highway 401 EB Off Ramp

12-20-2024

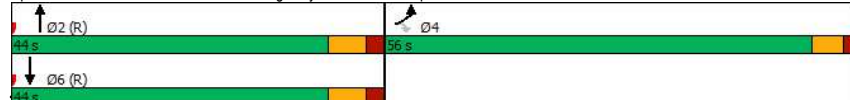


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	8.0	8.0		20.0	20.0	
Minimum Split (s)	28.5	28.5		27.7	27.7	
Total Split (s)	56.0	56.0		44.0	44.0	
Total Split (%)	56.0%	56.0%		44.0%	44.0%	
Maximum Green (s)	50.5	50.5		37.3	37.3	
Yellow Time (s)	3.7	3.7		4.5	4.5	
All-Red Time (s)	1.8	1.8		2.2	2.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.5	5.5		6.7	6.7	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		0.2	0.2	
Recall Mode	None	None		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	16.0	16.0		14.0	14.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effect Green (s)	46.8	46.8		41.0	41.0	
Actuated g/C Ratio	0.47	0.47		0.41	0.41	
v/c Ratio	0.83	0.79		0.63	0.40	
Control Delay	28.2	25.9		26.6	22.6	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	28.2	25.9		26.6	22.6	
LOS	C	C		C	C	
Approach Delay	27.5			26.6	22.6	
Approach LOS	C			C	C	

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 8 (8%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.83
 Intersection Signal Delay: 26.4
 Intersection LOS: C
 Intersection Capacity Utilization 73.4%
 ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 14: Whites Road & Highway 401 EB Off Ramp



Queues

<2028 Future Background>PM

14: Whites Road & Highway 401 EB Off Ramp

12-20-2024



Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	1350	576	914	595
v/c Ratio	0.83	0.79	0.63	0.40
Control Delay	28.2	25.9	26.6	22.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	28.2	25.9	26.6	22.6
Queue Length 50th (m)	110.4	77.9	74.2	42.8
Queue Length 95th (m)	131.2	123.7	99.3	59.7
Internal Link Dist (m)	271.9		161.9	292.9
Turn Bay Length (m)		225.0		
Base Capacity (vph)	1747	772	1451	1484
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.77	0.75	0.63	0.40

Intersection Summary

Lanes, Volumes, Timings
15: Dixie Road & Shopping Plaza Entrance

<2028 Future Background>PM
12-20-2024

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	228	0	0	168	0
Future Volume (vph)	0	228	0	0	168	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.1	3.7	4.0	3.7	3.7	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.865					
Fit Protected				0.950		
Satd. Flow (prot)	1701	0	1946	0	0	1848
Fit Permitted	0.950					
Satd. Flow (perm)	1701	0	1946	0	0	1848
Link Speed (k/h)	30	40		40		
Link Distance (m)	193.0	106.6		44.0		
Travel Time (s)	23.2	9.6		4.0		
Confl. Peds. (#/hr)	11		12			
Confl. Bikes (#/hr)	1					
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	248	0	0	183	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	248	0	0	0	0	183
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	4.1	3.6		3.6		
Link Offset(m)	0.0	0.0		0.0		
Crosswalk Width(m)	1.6	1.6		1.6		
Two way Left Turn Lane						
Headway Factor	0.93	0.99	0.94	0.99	0.99	0.94
Turning Speed (k/h)	97	97	97		97	
Sign Control	Stop	Free		Free		

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	31.2%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
15: Dixie Road & Shopping Plaza Entrance

<2028 Future Background>PM
12-20-2024

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	228	0	0	168	0
Future Volume (Veh/h)	0	228	0	0	168	0
Sign Control	Stop	Free		Free		
Grade	0%	0%		0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	248	0	0	183	0
Pedestrians	12					11
Lane Width (m)	4.1					4.0
Walking Speed (m/s)	1.1					1.1
Percent Blockage	1					1
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	44					
pX, platoon unblocked						
vC, conflicting volume	378	23			12	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	378	23			12	
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	76			88	
cM capacity (veh/h)	545	1029			1587	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	248	0	183
Volume Left	0	0	183
Volume Right	248	0	0
cSH	1029	1700	1587
Volume to Capacity	0.24	0.00	0.12
Queue Length 95th (m)	7.2	0.0	3.0
Control Delay (s)	9.6	0.0	7.6
Lane LOS	A	A	A
Approach Delay (s)	9.6	0.0	7.6
Approach LOS	A		

Intersection Summary			
Average Delay	8.7		
Intersection Capacity Utilization	31.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings
1: Walnut Lane & Kingston Road

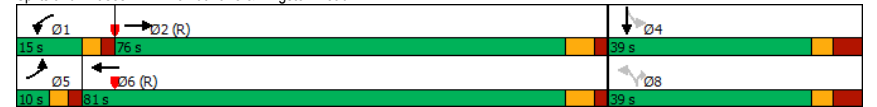
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12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Traffic Volume (vph)	38	1420	270	119	646	43	293	0	265	24	16	26
Future Volume (vph)	38	1420	270	119	646	43	293	0	265	24	16	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.0	3.6	3.5	3.0	3.6	3.7	3.3	3.5	3.7	3.2	3.7	3.7
Storage Length (m)	26.0		25.8	37.0		0.0	63.2		0.0	18.5		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	24.0			26.0			24.4			18.1		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.99		1.00	1.00		0.98		0.98	0.99	0.98	
Frt		0.976			0.991				0.850		0.907	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1685	3444	0	1685	3505	0	1745	0	1633	1725	1710	0
Flt Permitted	0.950			0.950			0.730			0.950		
Satd. Flow (perm)	1677	3444	0	1682	3505	0	1317	0	1603	1713	1710	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		26			9				100			26
Link Speed (k/h)		60			60				40			40
Link Distance (m)		129.3			694.6				114.0			179.7
Travel Time (s)		7.8			41.7				10.3			16.2
Conf. Peds. (#/hr)	5		7	7		5	14		5	5		14
Conf. Bikes (#/hr)			1									
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	2%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	3	0	0	0	0	0	0	0	0	0
Adj. Flow (vph)	38	1420	270	119	646	43	293	0	265	24	16	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	1690	0	119	689	0	293	0	265	24	42	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.1			3.1				3.3			3.3
Link Offset(m)		0.0			0.0				0.0			0.0
Crosswalk Width(m)		4.9			1.6				4.9			4.9
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.09	1.00	1.01	1.09	1.00	0.99	1.04	1.01	0.99	1.06	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	0	0		0	0		1		1	0		0
Detector Template									Right			
Leading Detector (m)	0.0	0.0		0.0	0.0		7.5		6.1	0.0		0.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		-1.5		0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		-1.5		0.0	0.0		0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8		9.0		6.1	6.1		1.8
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Turn Type	Prot	NA		Prot	NA		Perm		Perm	Perm		NA
Protected Phases	5	2		1	6							4

Lanes, Volumes, Timings
1: Walnut Lane & Kingston Road

<2028 Future Background_PHF>PM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases										8	8	4
Detector Phase	5	2			1	6			8	8	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0			5.0	20.0			8.0	8.0	8.0	8.0
Minimum Split (s)	10.0	33.0			10.0	33.0			38.0	38.0	38.0	38.0
Total Split (s)	10.0	76.0			15.0	81.0			39.0	39.0	39.0	39.0
Total Split (%)	7.7%	58.5%			11.5%	62.3%			30.0%	30.0%	30.0%	30.0%
Maximum Green (s)	5.0	69.4			10.0	74.4			31.0	31.0	31.0	31.0
Yellow Time (s)	3.0	4.4			3.0	4.4			3.3	3.3	3.3	3.3
All-Red Time (s)	2.0	2.2			2.0	2.2			4.7	4.7	4.7	4.7
Lost Time Adjust (s)	0.0	0.0			0.0	0.0			0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.6			5.0	6.6			8.0	8.0	8.0	8.0
Lead/Lag	Lead	Lag			Lead	Lag						
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0			3.0	3.0			3.0	3.0	3.0	3.0
Recall Mode	None	C-Max			None	C-Max			None	None	None	None
Walk Time (s)		7.0			7.0	7.0			7.0	7.0	7.0	7.0
Flash Dont Walk (s)		19.0			19.0	19.0			22.0	22.0	22.0	22.0
Pedestrian Calls (#/hr)		8				4			2	9		9
Act Effect Green (s)	5.0	70.1			10.0	77.1			30.3	30.3	30.3	30.3
Actuated g/C Ratio	0.04	0.54			0.08	0.59			0.23	0.23	0.23	0.23
v/c Ratio	0.59	0.91			0.92	0.33			0.95	0.59	0.06	0.10
Control Delay	81.2	29.8			134.1	5.0			90.1	32.8	38.9	20.6
Queue Delay	0.0	0.0			0.0	0.0			0.0	0.0	0.0	0.0
Total Delay	81.2	29.8			134.1	5.0			90.1	32.8	38.9	20.6
LOS	F	C			F	A			F	C	D	C
Approach Delay		30.9				24.0			62.9			27.2
Approach LOS		C				C			E			C
Intersection Summary												
Area Type:	Other											
Cycle Length:	130											
Actuated Cycle Length:	130											
Offset:	77 (59%), Referenced to phase 2:EBT and 6:WBT, Start of Green											
Natural Cycle:	105											
Control Type:	Actuated-Coordinated											
Maximum v/c Ratio:	0.95											
Intersection Signal Delay:	34.7						Intersection LOS: C					
Intersection Capacity Utilization:	91.5%						ICU Level of Service F					
Analysis Period (min):	15											
Splits and Phases:	1: Walnut Lane & Kingston Road											



Lanes, Volumes, Timings

<2028 Future Background_PHF>PM

6: Liverpool Road & Kingston Road

12-20-2024



Table with 13 columns (Lane Group) and 40 rows (Lane Configurations, Traffic Volume, Future Volume, Ideal Flow, Lane Width, Storage Length, etc.)

Lanes, Volumes, Timings

<2028 Future Background_PHF>PM

6: Liverpool Road & Kingston Road

12-20-2024

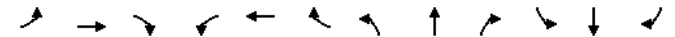
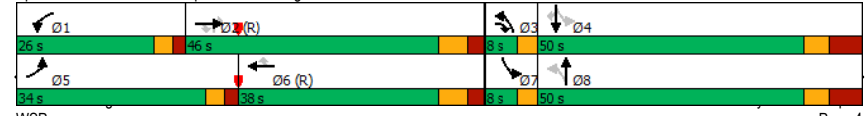


Table with 13 columns (Lane Group) and 32 rows (Detector 2 Channel, Turn Type, Protected Phases, Permitted Phases, Detector Phase, Switch Phase, etc.)

Intersection Summary

Summary table with 2 columns (Area Type, Other) and 16 rows (Cycle Length, Actuated Cycle Length, Offset, etc.)

Splits and Phases: 6: Liverpool Road & Kingston Road



Lanes, Volumes, Timings

<2028 Future Background_PHF>PM

11: Hwy 401 WB Ramps & Kingston Road

12-20-2024

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↕↕		↕	↕↕	↕↕	↕
Traffic Volume (vph)	1692	23	184	709	662	100
Future Volume (vph)	1692	23	184	709	662	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.0	3.7	2.7	3.8	3.8	3.7
Grade (%)	6%			0%	0%	
Storage Length (m)		0.0	47.5		0.0	52.0
Storage Lanes		0	1		2	1
Taper Length (m)			22.3		2.5	
Lane Util. Factor	0.95	0.95	1.00	0.95	0.97	1.00
Ped Bike Factor					1.00	0.98
Frt	0.998					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3577	0	1577	3618	3544	1617
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3577	0	1577	3618	3537	1591
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	1					84
Link Speed (k/h)	60			60	50	
Link Distance (m)	268.7			424.0	216.6	
Travel Time (s)	16.1			25.4	15.6	
Confl. Peds. (#/hr)					1	3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	5%	3%	2%	1%	1%
Adj. Flow (vph)	1692	23	184	709	662	100
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1715	0	184	709	662	100
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.1			3.1	7.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	0.98	1.03	1.14	0.97	0.97	0.99
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	10.0		2.0	10.0	2.0	2.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Size(m)	0.6		2.0	0.6	2.0	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		

Lanes, Volumes, Timings

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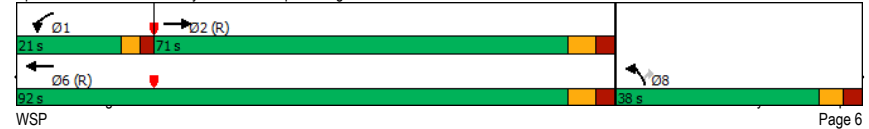
11: Hwy 401 WB Ramps & Kingston Road

12-20-2024

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		Prot	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases						8
Detector Phase	2		1	6	8	8
Switch Phase						
Minimum Initial (s)	20.0		5.0	20.0	8.0	8.0
Minimum Split (s)	50.0		10.0	50.0	38.0	38.0
Total Split (s)	71.0		21.0	92.0	38.0	38.0
Total Split (%)	54.6%		16.2%	70.8%	29.2%	29.2%
Maximum Green (s)	63.8		16.0	84.8	31.3	31.3
Yellow Time (s)	4.2		3.0	4.2	3.7	3.7
All-Red Time (s)	3.0		2.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	7.2		5.0	7.2	6.7	6.7
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?						
Vehicle Extension (s)	0.2		3.0	0.2	3.0	3.0
Recall Mode	C-Max		None	C-Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	35.0			35.0	24.0	24.0
Pedestrian Calls (#/hr)	0			0	14	14
Act Effct Green (s)	66.7		16.0	87.7	28.4	28.4
Actuated g/C Ratio	0.51		0.12	0.67	0.22	0.22
v/c Ratio	0.93		0.95	0.29	0.86	0.24
Control Delay	46.2		112.2	1.6	60.4	12.6
Queue Delay	0.8		0.0	0.0	0.0	0.0
Total Delay	47.0		112.2	1.6	60.4	12.6
LOS	D		F	A	E	B
Approach Delay	47.0			24.4	54.2	
Approach LOS	D			C	D	

Intersection Summary	
Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	69 (53%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle:	120
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.95
Intersection Signal Delay:	42.6
Intersection LOS:	D
Intersection Capacity Utilization:	93.0%
ICU Level of Service:	F
Analysis Period (min):	15

Splits and Phases: 11: Hwy 401 WB Ramps & Kingston Road



Lanes, Volumes, Timings
13: Whites Road & Kingston Road

<2028 Future Background_PHF>PM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	155	941	358	231	763	490	228	684	655	189	617	186
Future Volume (vph)	155	941	358	231	763	490	228	684	655	189	617	186
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.6	4.2	3.5	3.7	4.0	3.5	3.9	3.7	3.5	3.9	4.0
Grade (%)	6%			0%			0%			0%		
Storage Length (m)	127.0			123.0			87.1			47.0		
Storage Lanes	1			1			1			1		
Taper Length (m)	64.0			39.6			66.8			32.6		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Ped Bike Factor	0.97			0.96			0.99			0.95		
Frt	0.850			0.850			0.850			0.850		
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1681	3400	1622	1733	3579	1654	1767	5255	1588	1750	5105	1627
Flt Permitted	0.950			0.950			0.363			0.323		
Satd. Flow (perm)	1634	3400	1549	1717	3579	1502	666	5255	1470	582	5105	1550
Right Turn on Red	Yes			Yes			Yes			Yes		
Satd. Flow (RTOR)	187			147			59			186		
Link Speed (kh)	60			60			60			60		
Link Distance (m)	297.5			222.7			158.6			385.2		
Travel Time (s)	17.9			13.4			9.5			23.1		
Confl. Peds. (#/hr)	75	31	31	31	75	37	65	65	65	65	37	37
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	3%	3%	3%	2%	2%	1%	2%	2%	2%	5%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	2	0	0	4
Adj. Flow (vph)	155	941	358	231	763	490	228	684	655	189	617	186
Shared Lane Traffic (%)												
Lane Group Flow (vph)	155	941	358	231	763	490	228	684	655	189	617	186
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width(m)	3.5			3.5			3.5			3.5		
Link Offset(m)	0.0			0.0			0.0			0.0		
Crosswalk Width(m)	1.6			1.6			1.6			1.6		
Two way Left Turn Lane												
Headway Factor	1.06	1.04	0.96	1.01	0.99	0.94	1.01	0.96	1.00	1.01	0.96	0.96
Turning Speed (k/h)	24	14	14	24	14	24	14	24	14	24	14	24
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4			9.4			9.4		
Detector 2 Size(m)	0.6			0.6			0.6			0.6		

Lanes, Volumes, Timings
13: Whites Road & Kingston Road

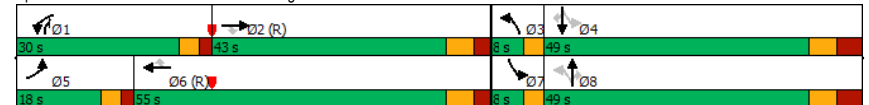
<2028 Future Background_PHF>PM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type	CI+Ex			CI+Ex			CI+Ex			CI+Ex		
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8	1	7	4	
Permitted Phases			2			6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	1	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	5.0	8.0	5.0	5.0	8.0	8.0
Minimum Split (s)	10.0	43.0	43.0	10.0	43.0	43.0	8.0	49.0	10.0	8.0	49.0	49.0
Total Split (s)	18.0	43.0	43.0	30.0	55.0	55.0	8.0	49.0	30.0	8.0	49.0	49.0
Total Split (%)	13.8%	33.1%	33.1%	23.1%	42.3%	42.3%	6.2%	37.7%	23.1%	6.2%	37.7%	37.7%
Maximum Green (s)	13.0	36.0	36.0	25.0	48.0	48.0	5.0	40.6	25.0	5.0	40.6	40.6
Yellow Time (s)	3.0	4.2	4.2	3.0	4.2	4.2	3.0	4.3	3.0	3.0	4.3	4.3
All-Red Time (s)	2.0	2.8	2.8	2.0	2.8	2.8	0.0	4.1	2.0	0.0	4.1	4.1
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	0.0
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	3.0	8.4	5.0	3.0	8.4	8.4
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	0.2	0.2	3.0	0.2	0.2	3.0	0.2	3.0	3.0	0.2	0.2
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	None	None	Max	Max
Walk Time (s)	7.0			7.0			7.0			7.0		
Flash Dont Walk (s)	29.0			29.0			29.0			33.0		
Pedestrian Calls (#/hr)	13			13			38			20		
Act Effect Green (s)	13.0	39.5	39.5	21.5	48.0	48.0	51.0	40.6	65.5	51.0	40.6	40.6
Actuated g/C Ratio	0.10	0.30	0.30	0.17	0.37	0.37	0.39	0.31	0.50	0.39	0.31	0.31
v/c Ratio	0.92	0.91	0.60	0.81	0.58	0.76	0.75	0.42	0.83	0.69	0.39	0.30
Control Delay	109.5	57.7	23.1	84.6	24.5	20.2	47.4	36.3	32.1	43.6	35.8	5.8
Queue Delay	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	109.5	59.1	23.1	84.6	24.5	20.2	47.4	36.3	32.1	43.6	35.8	5.8
LOS	F	E	C	F	C	C	D	D	C	D	D	A
Approach Delay	55.6			32.4			36.2			31.7		
Approach LOS	E			C			D			C		

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 32 (25%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 120
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.92
 Intersection Signal Delay: 39.5
 Intersection Capacity Utilization 109.1%
 Analysis Period (min) 15
 Intersection LOS: D
 ICU Level of Service H

Splits and Phases: 13: Whites Road & Kingston Road



***F-2 2033 FUTURE
BACKGROUND
CONDITIONS***

Lanes, Volumes, Timings
1: Walnut Lane & Kingston Road

<2033 Future Background>AM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Traffic Volume (vph)	20	754	75	103	443	30	243	0	143	14	6	29
Future Volume (vph)	20	754	75	103	443	30	243	0	143	14	6	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.0	3.6	3.5	3.0	3.6	3.7	3.3	3.5	3.7	3.2	3.7	3.7
Storage Length (m)	26.0		25.8	37.0		0.0	63.2		0.0	18.5		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	24.0			26.0			24.4			18.1		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		0.99	1.00		0.99		0.99	1.00	0.98	
Frt		0.986			0.990				0.850		0.877	
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1685	3405	0	1652	3379	0	1745	0	1585	1725	1601	0
Fit Permitted	0.950			0.950			0.732			0.950		
Satd. Flow (perm)	1677	3405	0	1643	3379	0	1330	0	1563	1720	1601	0
Right Turn on Red			Yes			Yes		Yes			Yes	
Satd. Flow (RTOR)		10			8				155		32	
Link Speed (k/h)		60			60				40		40	
Link Distance (m)		129.3			694.6			114.0			179.7	
Travel Time (s)		7.8			41.7			10.3			16.2	
Conf. Peds. (#/hr)	4		8	8		4	9		2	2		9
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%	4%	6%	2%	5%	14%	0%	0%	3%	0%	0%	4%
Bus Blockages (#/hr)	0	0	6	0	0	0	0	0	0	0	0	0
Adj. Flow (vph)	22	820	82	112	482	33	264	0	155	15	7	32
Shared Lane Traffic (%)												
Lane Group Flow (vph)	22	902	0	112	515	0	264	0	155	15	39	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.1			3.1			3.3			3.3	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			1.6			4.9			4.9	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.09	1.00	1.01	1.09	1.00	0.99	1.04	1.01	0.99	1.06	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	0	0		0	0		1		1	0	0	
Detector Template									Right			
Leading Detector (m)	0.0	0.0		0.0	0.0		7.5		6.1	0.0	0.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		-1.5		0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		-1.5		0.0	0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		9.0		6.1	6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	
Turn Type	Prot	NA		Prot	NA		Perm		Perm	Perm	NA	
Protected Phases	5	2		1	6				8		4	
Permitted Phases												

Lanes, Volumes, Timings
1: Walnut Lane & Kingston Road

<2033 Future Background>AM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2		1	6		8		8	4	4	
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0		8.0		8.0	8.0	8.0	
Minimum Split (s)	10.0	33.0		10.0	33.0		39.0		39.0	39.0	39.0	
Total Split (s)	10.0	52.0		19.0	61.0		49.0		49.0	49.0	49.0	
Total Split (%)	8.3%	43.3%		15.8%	50.8%		40.8%		40.8%	40.8%	40.8%	
Maximum Green (s)	5.0	45.4		14.0	54.4		41.0		41.0	41.0	41.0	
Yellow Time (s)	3.0	4.4		3.0	4.4		3.3		3.3	3.3	3.3	
All-Red Time (s)	2.0	2.2		2.0	2.2		4.7		4.7	4.7	4.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	
Total Lost Time (s)	5.0	6.6		5.0	6.6		8.0		8.0	8.0	8.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0		3.0	3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None		None	None	None	
Walk Time (s)		7.0			7.0		7.0		7.0	7.0	7.0	
Flash Dont Walk (s)		19.0			19.0		22.0		22.0	22.0	22.0	
Pedestrian Calls (#/hr)		7			5		5		5	14	14	
Act Effct Green (s)	6.7	58.2		12.8	68.7		29.3		29.3	29.3	29.3	
Actuated g/C Ratio	0.06	0.48		0.11	0.57		0.24		0.24	0.24	0.24	
v/c Ratio	0.24	0.54		0.64	0.27		0.81		0.31	0.04	0.09	
Control Delay	81.8	19.1		50.1	21.9		61.3		6.4	30.7	12.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	
Total Delay	81.8	19.1		50.1	21.9		61.3		6.4	30.7	12.8	
LOS	F	B		D	C		E		A	C	B	
Approach Delay		20.6			26.9		41.0				17.8	
Approach LOS		C			C		D				B	
Intersection Summary												
Area Type:	Other											
Cycle Length:	120											
Actuated Cycle Length:	120											
Offset:	1 (1%), Referenced to phase 2:EBT and 6:WBT, Start of Green											
Natural Cycle:	85											
Control Type:	Actuated-Coordinated											
Maximum v/c Ratio:	0.81											
Intersection Signal Delay:	26.7						Intersection LOS: C					
Intersection Capacity Utilization:	62.1%						ICU Level of Service B					
Analysis Period (min):	15											
Splits and Phases:	1: Walnut Lane & Kingston Road											

Queues <2033 Future Background>AM
1: Walnut Lane & Kingston Road 12-20-2024

Lane Group	EBL	EBT	WBL	WBT	NBL	NBR	SBL	SBT
Lane Group Flow (vph)	22	902	112	515	264	155	15	39
w/c Ratio	0.24	0.54	0.64	0.27	0.81	0.31	0.04	0.09
Control Delay	81.8	19.1	50.1	21.9	61.3	6.4	30.7	12.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	81.8	19.1	50.1	21.9	61.3	6.4	30.7	12.8
Queue Length 50th (m)	5.4	84.7	26.7	55.7	58.8	0.0	2.7	1.3
Queue Length 95th (m)	m13.0	120.8	43.4	73.3	80.8	14.2	7.3	8.8
Internal Link Dist (m)		105.3		670.6				155.7
Turn Bay Length (m)	26.0		37.0		63.2		18.5	
Base Capacity (vph)	93	1657	201	1938	454	636	587	568
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced w/c Ratio	0.24	0.54	0.56	0.27	0.58	0.24	0.03	0.07

Intersection Summary
m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings <2033 Future Background>AM
3: Dixie Road & Kingston Road 12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↕	↕	↕	↕	↕	↕	↕	↕	↕	↕
Traffic Volume (vph)	80	760	81	78	554	86	37	15	29	131	35	144
Future Volume (vph)	80	760	81	78	554	86	37	15	29	131	35	144
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	2.8	3.6	3.4	2.8	3.5	3.1	3.6	4.0	3.7	3.8	4.2	3.7
Grade (%)		6%			0%			0%				0%
Storage Length (m)	145.4		64.5	51.0		79.5	13.0		0.0	16.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	66.4			48.0			18.0			25.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		1.00	1.00		1.00	0.99		1.00	0.99	
Frt		0.986			0.980			0.900				0.879
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1564	3316	0	1645	3301	0	1752	1769	0	1827	1759	0
Fit Permitted	0.950			0.950			0.540			0.726		
Satd. Flow (perm)	1554	3316	0	1639	3301	0	993	1769	0	1393	1759	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12			17			32				157
Link Speed (k/h)		60			60			40				60
Link Distance (m)		896.3			191.2			44.0				236.2
Travel Time (s)		53.8			11.5			4.0				14.2
Confl. Peds. (#/hr)	6		4	4		6	3		2	2		3
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 (%)	2%	4%	2%	0%	6%	2%	3%	0%	0%	1%	0%	0%
Bus Blockages (#/hr)	0	0	6	0	0	6	0	0	0	0	0	0
Adj. Flow (vph)	87	826	88	85	602	93	40	16	32	142	38	157
Shared Lane Traffic (%)												
Lane Group Flow (vph)	87	914	0	85	695	0	40	48	0	142	195	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		2.8			2.8			3.8				3.8
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			4.9			4.9				4.9
Two way Left Turn Lane					Yes							
Headway Factor	1.17	1.04	1.07	1.13	1.01	1.08	1.00	0.94	0.99	0.97	0.92	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	0	0		0	0		0	0		1		1
Detector Template												
Leading Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		7.5		7.5
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		-1.5		-1.5
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		-1.5		-1.5
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		9.0		9.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0		0.0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm		NA
Protected Phases	5	2		1	6			8				4

Lanes, Volumes, Timings
3: Dixie Road & Kingston Road

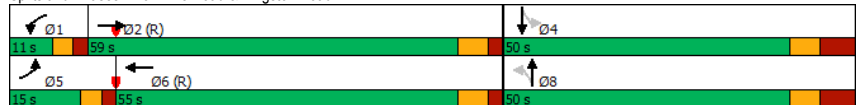
<2033 Future Background>AM
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases							8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	10.0	28.0		10.0	28.0		43.0	43.0		41.0	41.0	
Total Split (s)	15.0	59.0		11.0	55.0		50.0	50.0		50.0	50.0	
Total Split (%)	12.5%	49.2%		9.2%	45.8%		41.7%	41.7%		41.7%	41.7%	
Maximum Green (s)	10.0	52.4		6.0	48.4		40.5	40.5		40.5	40.5	
Yellow Time (s)	3.0	4.2		3.0	4.2		4.4	4.4		4.4	4.4	
All-Red Time (s)	2.0	2.4		2.0	2.4		5.1	5.1		5.1	5.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.6		5.0	6.6		9.5	9.5		9.5	9.5	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes			Yes								
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		14.0			14.0		23.0	23.0		23.0	23.0	
Pedestrian Calls (#/hr)		6			1		7	7		4	4	
Act Effect Green (s)	9.5	74.2		6.0	70.7		18.7	18.7		18.7	18.7	
Actuated g/C Ratio	0.08	0.62		0.05	0.59		0.16	0.16		0.16	0.16	
v/c Ratio	0.71	0.44		1.04	0.36		0.26	0.16		0.65	0.48	
Control Delay	83.0	13.7		171.5	5.6		45.6	19.8		60.5	14.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	83.0	13.7		171.5	5.6		45.6	19.8		60.5	14.4	
LOS	F	B		F	A		D	B		E	B	
Approach Delay		19.8			23.7			31.5			33.8	
Approach LOS		B			C			C			C	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 107.8 (90%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 85
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.04
 Intersection Signal Delay: 23.8 Intersection LOS: C
 Intersection Capacity Utilization 72.4% ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 3: Dixie Road & Kingston Road



Queues
3: Dixie Road & Kingston Road

<2033 Future Background>AM
12-20-2024

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	87	914	85	695	40	48	142	195
v/c Ratio	0.71	0.44	1.04	0.36	0.26	0.16	0.65	0.48
Control Delay	83.0	13.7	171.5	5.6	45.6	19.8	60.5	14.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	83.0	13.7	171.5	5.6	45.6	19.8	60.5	14.4
Queue Length 50th (m)	20.2	53.6	~20.9	23.3	8.5	3.3	32.2	7.9
Queue Length 95th (m)	#43.5	88.2	m#53.0	43.6	16.9	12.4	47.4	25.6
Internal Link Dist (m)		872.3		167.2		20.0		212.2
Turn Bay Length (m)	145.4		51.0		13.0		16.0	
Base Capacity (vph)	130	2054	82	1951	335	618	470	697
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.67	0.44	1.04	0.36	0.12	0.08	0.30	0.28

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.
 m Volume for 95th percentile queue is metered by upstream signal.

Queues <2033 Future Background>AM
6: Liverpool Road & Kingston Road 12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Group Flow (vph)	182	568	237	149	505	54	146	422	159	91	715	127	
w/c Ratio	0.77	0.58	0.42	0.80	0.54	0.10	0.53	0.33	0.28	0.19	0.57	0.21	
Control Delay	91.5	31.9	13.0	81.0	41.1	0.4	27.7	29.6	6.2	19.0	33.8	3.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	91.5	31.9	13.0	81.0	41.1	0.4	27.7	29.6	6.2	19.0	33.8	3.1	
Queue Length 50th (m)	45.6	23.2	1.6	34.5	54.6	0.0	19.5	38.1	0.0	11.7	71.3	0.0	
Queue Length 95th (m)	69.1	61.1	33.9	#65.7	73.4	0.0	32.4	51.3	15.4	21.1	90.4	8.1	
Internal Link Dist (m)	670.6		372.4			233.7		324.6					
Turn Bay Length (m)	188.8	97.9	170.7	117.0		185.5	52.0		49.0	60.5			
Base Capacity (vph)	278	978	563	197	931	530	277	1291	567	487	1263	607	
Starvation Cap Reductn	0	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	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0	
Reduced w/c Ratio	0.65	0.58	0.42	0.76	0.54	0.10	0.53	0.33	0.28	0.19	0.57	0.21	

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

Lanes, Volumes, Timings <2033 Future Background>AM
8: Liverpool Road & Private Access/Pickering Parkway 12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑↑	↑	↑	↑↑↑	↑↑	↑	↑↑	↑↑↑	↑
Traffic Volume (vph)	10	17	36	194	19	59	53	541	272	146	798	24
Future Volume (vph)	10	17	36	194	19	59	53	541	272	146	798	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.1	3.1	3.7	3.0	3.4	3.2	2.8	3.6	3.5	3.2	3.5	3.5
Storage Length (m)	0.0	0.0	57.0	62.1	54.4	75.7	132.5	35.5				
Storage Lanes	1	0	1	1	1	1	1	1	1	1	1	1
Taper Length (m)	2.5	12.0			29.5			28.9				
Lane Util. Factor	1.00	0.95	0.95	0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Ped Bike Factor	0.99	0.897			0.850			0.850			0.850	
Frt	0.897			0.850			0.850			0.850		
Flt Protected	0.950	0.950			0.950			0.950			0.950	
Satd. Flow (prot)	1705	3058	0	3113	1858	1204	1645	5036	1523	1675	5029	1521
Flt Permitted	0.000	0.000			0.314			0.393			0.393	
Satd. Flow (perm)	0	3058	0	0	1858	1181	540	5036	1483	689	5029	1458
Right Turn on Red	Yes			Yes			Yes			Yes		
Satd. Flow (RTOR)	39			141			296			144		
Link Speed (k/h)	30			50			50			50		
Link Distance (m)	82.8			328.5			162.3			257.7		
Travel Time (s)	9.9			23.7			11.7			18.6		
Confl. Peds. (#/hr)	7			7			10			11		
Confl. Bikes (#/hr)	1			1			1			1		
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%	5%	0%	23%	0%	3%	4%	3%	2%	5%
Bus Blockages (#/hr)	0	0	0	0	0	10	0	2	0	2	0	0
Adj. Flow (vph)	11	18	39	211	21	64	58	588	296	159	867	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	11	57	0	211	21	64	58	588	296	159	867	26
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	6.0			6.0			3.8			3.8		
Link Offset(m)	0.0			0.0			0.0			0.0		
Crosswalk Width(m)	1.6			1.6			1.6			1.6		
Two way Left Turn Lane												
Headway Factor	1.08	1.08	0.99	1.09	1.03	1.12	1.13	1.00	1.03	1.06	1.01	1.01
Turning Speed (k/h)	24	24	14	24	14	24	14	24	14	24	14	24
Number of Detectors	1	2	1	2	1	1	2	1	1	1	2	1
Detector Template	Left	Thru	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left
Leading Detector (m)	2.0	10.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4			9.4			9.4		
Detector 2 Size(m)	0.6			0.6			0.6			0.6		

Lanes, Volumes, Timings <2033 Future Background>AM
8: Liverpool Road & Private Access/Pickering Parkway 12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type	CI+Ex		CI+Ex		CI+Ex		CI+Ex		CI+Ex		CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0		0.0		0.0		0.0		0.0		0.0	
Turn Type	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm
Protected Phases	3	7	4	8	8	5	2	2	6	1	6	6
Permitted Phases	7	8	8	8	2	2	2	6	6	6	6	6
Detector Phase	3	7	4	8	8	5	2	2	1	6	6	6
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	5.0	20.0	20.0	5.0	20.0	20.0	20.0
Minimum Split (s)	15.0	15.0	15.0	34.0	34.0	34.0	8.0	30.0	30.0	8.0	30.0	30.0
Total Split (s)	17.0	17.0	34.0	34.0	34.0	9.0	37.0	37.0	12.0	40.0	40.0	40.0
Total Split (%)	17.0%	17.0%	34.0%	34.0%	34.0%	9.0%	37.0%	37.0%	12.0%	40.0%	40.0%	40.0%
Maximum Green (s)	10.4	10.4	27.4	27.4	27.4	6.0	30.7	30.7	9.0	33.7	33.7	33.7
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.0	4.2	4.2	3.0	4.2	4.2	4.2
All-Red Time (s)	3.3	3.3	3.3	3.3	3.3	0.0	2.1	2.1	0.0	2.1	2.1	2.1
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	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.6	3.0	6.3	6.3	3.0	6.3	6.3	6.3
Lead/Lag												
Lead-Lag Optimize?												
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	3.0
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max	C-Max
Walk Time (s)			19.0	19.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0
Flash Dont Walk (s)			8.0	8.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Pedestrian Calls (#/hr)			0	0	21	21	21	21	21	21	21	21
Act Effect Green (s)	8.0	8.0	12.1	12.1	12.1	61.3	52.1	52.1	66.4	56.1	56.1	56.1
Actuated g/C Ratio	0.08	0.08	0.12	0.12	0.12	0.61	0.52	0.52	0.66	0.56	0.56	0.56
v/c Ratio	0.08	0.20	0.56	0.09	0.24	0.15	0.22	0.32	0.30	0.31	0.03	0.03
Control Delay	44.1	22.1	46.9	38.5	2.1	6.7	13.1	4.0	9.0	13.7	0.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.1	22.1	46.9	38.5	2.1	6.7	13.1	4.0	9.0	13.7	0.0	0.0
LOS	D	C	D	D	A	A	B	A	A	B	B	A
Approach Delay	25.7		36.6		9.8		12.6					
Approach LOS	C		D		A		B					

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 34 (34%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.56

Intersection Signal Delay: 14.9

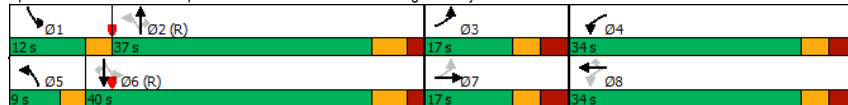
Intersection Capacity Utilization 55.7%

Analysis Period (min) 15

Intersection LOS: B

ICU Level of Service B

Splits and Phases: 8: Liverpool Road & Private Access/Pickering Parkway



Queues <2033 Future Background>AM
8: Liverpool Road & Private Access/Pickering Parkway 12-20-2024



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Group Flow (vph)	11	57	211	21	64	58	588	296	159	867	26	
v/c Ratio	0.08	0.20	0.56	0.09	0.24	0.15	0.22	0.32	0.30	0.31	0.03	
Control Delay	44.1	22.1	46.9	38.5	2.1	6.7	13.1	4.0	9.0	13.7	0.0	
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	44.1	22.1	46.9	38.5	2.1	6.7	13.1	4.0	9.0	13.7	0.0	
Queue Length 50th (m)	2.0	1.7	20.2	3.7	0.0	2.5	23.4	9.6	11.3	34.5	0.0	
Queue Length 95th (m)	7.4	7.8	30.3	10.1	0.0	m5.5	36.1	19.7	21.5	47.0	0.0	
Internal Link Dist (m)	58.8		304.5		138.3		233.7					
Turn Bay Length (m)	57.0		62.1		54.4		75.7		132.5		35.5	
Base Capacity (vph)	177	352	852	509	425	397	2621	913	547	2821	881	
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	0.06	0.16	0.25	0.04	0.15	0.15	0.22	0.32	0.29	0.31	0.03	

Intersection Summary
m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings

<2033 Future Background>AM

9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp

12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	160	188	69	310	162	523	0	0	686	97
Future Volume (vph)	0	0	160	188	69	310	162	523	0	0	686	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.5	3.7	3.7	3.4	3.7
Storage Length (m)	0.0	0.0	0.0	0.0		125.0	50.0		0.0	0.0		0.0
Storage Lanes	0		1	1		1	1		0	0		1
Taper Length (m)	2.5			2.5			30.0			2.5		
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	1.00	0.91	1.00
Ped Bike Factor							1.00					0.96
Frt			0.865			0.850						0.850
Fit Protected				0.950	0.977		0.950					
Satd. Flow (prot)	0	0	1108	1700	1767	1551	1460	4932	0	0	4877	1601
Fit Permitted				0.950	0.977		0.306					
Satd. Flow (perm)	0	0	1108	1700	1767	1551	468	4932	0	0	4877	1538
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)						337						105
Link Speed (kh)		50			50			50				50
Link Distance (m)		433.1			226.7			372.2				162.3
Travel Time (s)		31.2			16.3			26.8				11.7
Confl. Peds. (#/hr)							7		14	14		7
Confl. Bikes (#/hr)								4				
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%	2%	50%	2%	0%	3%	25%	4%	4%	2%	4%	2%
Adj. Flow (vph)	0	0	174	204	75	337	176	568	0	0	746	105
Shared Lane Traffic (%)				32%								
Lane Group Flow (vph)	0	0	174	139	140	337	176	568	0	0	746	105
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	1.01	0.99	1.01	0.99	0.99	1.03	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors			1	1	2	1	1	2			2	1
Detector Template			Right	Left	Thru	Right	Left	Thru			Thru	Right
Leading Detector (m)			2.0	2.0	10.0	2.0	2.0	10.0			10.0	2.0
Trailing Detector (m)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Position(m)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Size(m)			2.0	2.0	0.6	2.0	2.0	0.6			0.6	2.0
Detector 1 Type			Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 2 Position(m)						9.4		9.4			9.4	
Detector 2 Size(m)						0.6		0.6			0.6	
Detector 2 Type						Cl+Ex		Cl+Ex			Cl+Ex	

Lanes, Volumes, Timings

<2033 Future Background>AM

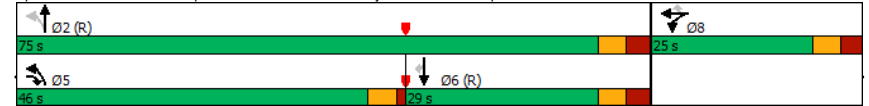
9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp

12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)						0.0					0.0	0.0
Turn Type			Over	Split	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases			5	8	8		5	2			6	
Permitted Phases						8	2					6
Detector Phase			5	8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)			5.0	8.0	8.0	8.0	5.0	15.0			15.0	15.0
Minimum Split (s)			9.5	25.0	25.0	25.0	9.5	24.3			24.3	24.3
Total Split (s)			46.0	25.0	25.0	25.0	46.0	75.0			29.0	29.0
Total Split (%)			46.0%	25.0%	25.0%	25.0%	46.0%	75.0%			29.0%	29.0%
Maximum Green (s)			41.5	19.0	19.0	19.0	41.5	68.7			22.7	22.7
Yellow Time (s)			3.5	3.3	3.3	3.3	3.5	3.3			3.3	3.3
All-Red Time (s)			1.0	2.7	2.7	2.7	1.0	3.0			3.0	3.0
Lost Time Adjust (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Lost Time (s)			4.5	6.0	6.0	6.0	4.5	6.3			6.3	6.3
Lead/Lag			Lead				Lead				Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)			3.0	3.0	3.0	3.0	3.0	3.0			3.0	3.0
Recall Mode			None	None	None	None	None	C-Max			C-Max	C-Max
Walk Time (s)				14.0	14.0	14.0		13.0			13.0	13.0
Flash Dont Walk (s)				5.0	5.0	5.0		5.0			5.0	5.0
Pedestrian Calls (#/hr)				0	0	0		15			17	17
Act Effct Green (s)			21.4	13.7	13.7	13.7	75.8	74.0			48.1	48.1
Actuated g/C Ratio			0.21	0.14	0.14	0.14	0.76	0.74			0.48	0.48
v/c Ratio			0.73	0.60	0.58	0.67	0.31	0.16			0.32	0.13
Control Delay			53.6	50.7	49.5	11.3	5.4	4.3			11.1	2.0
Queue Delay			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay			53.6	50.7	49.5	11.3	5.4	4.3			11.1	2.0
LOS			D	D	D	B	A	A			B	A
Approach Delay			53.6			28.9		4.5			10.0	
Approach LOS			D			C		A			A	

Intersection Summary	
Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	100
Offset:	38 (38%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle:	65
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.73
Intersection Signal Delay:	16.3
Intersection LOS:	B
Intersection Capacity Utilization:	45.9%
ICU Level of Service:	A
Analysis Period (min):	15

Splits and Phases: 9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp



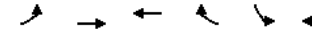
Queues <2033 Future Background>AM
 9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp 12-20-2024



Lane Group	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	174	139	140	337	176	568	746	105
w/c Ratio	0.73	0.60	0.58	0.67	0.31	0.16	0.32	0.13
Control Delay	53.6	50.7	49.5	11.3	5.4	4.3	11.1	2.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.6	50.7	49.5	11.3	5.4	4.3	11.1	2.0
Queue Length 50th (m)	31.7	27.1	27.2	0.0	7.6	9.7	19.2	0.2
Queue Length 95th (m)	48.6	44.3	44.3	23.2	16.9	16.5	24.2	2.2
Internal Link Dist (m)	202.7				348.2	138.3		
Turn Bay Length (m)			125.0	50.0				
Base Capacity (vph)	459	323	335	567	766	3651	2346	794
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced w/c Ratio	0.38	0.43	0.42	0.59	0.23	0.16	0.32	0.13

Intersection Summary

Lanes, Volumes, Timings <2033 Future Background>AM
 10: Kingston Road & Fairport Road 12-20-2024



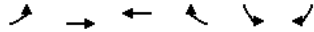
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø1
Lane Configurations	↘	↗	↗		↘	↗	
Traffic Volume (vph)	96	714	648	99	182	229	
Future Volume (vph)	96	714	648	99	182	229	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (m)	3.0	3.6	3.5	3.7	3.6	4.5	
Grade (%)	6%		0%		0%		
Storage Length (m)	75.0				18.5	15.5	0.0
Storage Lanes	1				0	1	1
Taper Length (m)	2.5				31.3		
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00	
Frnt			0.980				0.850
Fit Protected	0.950				0.950		
Satd. Flow (prot)	1602	3335	3379	0	1736	1708	
Fit Permitted	0.950				0.950		
Satd. Flow (perm)	1602	3335	3379	0	1736	1708	
Right Turn on Red			Yes		Yes		
Satd. Flow (RTOR)			17		249		
Link Speed (k/h)	60		60		40		
Link Distance (m)	424.0		896.3		280.0		
Travel Time (s)	25.4		53.8		25.2		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Heavy Vehicles (%)	2%	5%	3%	7%	4%	4%	
Bus Blockages (#/hr)	0	0	0	9	0	0	
Adj. Flow (vph)	104	776	704	108	198	249	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	104	776	812	0	198	249	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Left	Left	Right	Left	Right	
Median Width(m)	3.0		3.0		3.6		
Link Offset(m)	0.0		0.0		0.0		
Crosswalk Width(m)	1.6		1.6		1.6		
Two way Left Turn Lane	Yes						
Headway Factor	1.14	1.04	1.01	0.99	1.00	0.88	
Turning Speed (k/h)	24				14	24	14
Number of Detectors	1	2	2		1	1	
Detector Template	Left	Thru	Thru		Left	Right	
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0	
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	0.6		2.0	2.0	
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)	9.4		9.4				
Detector 2 Size(m)	0.6		0.6				
Detector 2 Type	CI+Ex		CI+Ex				
Detector 2 Channel							

Lanes, Volumes, Timings

<2033 Future Background>AM

10: Kingston Road & Fairport Road

12-20-2024



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø1
Detector 2 Extend (s)		0.0	0.0				
Turn Type	Prot	NA	NA		Prot	Perm	
Protected Phases	5	2	6		4		1
Permitted Phases						4	
Detector Phase	5	2	6		4	4	
Switch Phase							
Minimum Initial (s)	5.0	20.0	20.0		8.0	8.0	5.0
Minimum Split (s)	10.0	32.3	32.3		38.1	38.1	8.0
Total Split (s)	22.0	79.0	65.0		43.0	43.0	8.0
Total Split (%)	16.9%	60.8%	50.0%		33.1%	33.1%	6%
Maximum Green (s)	17.0	72.7	58.7		35.7	35.7	5.0
Yellow Time (s)	3.0	4.3	4.3		3.3	3.3	3.0
All-Red Time (s)	2.0	2.0	2.0		4.0	4.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.3	6.3		7.3	7.3	
Lead/Lag	Lead	Lag	Lag				Lead
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	0.2	0.2		3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max		None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0	5.0
Flash Dont Walk (s)		19.0	19.0		23.0	23.0	0.0
Pedestrian Calls (#/hr)		0	1		2	2	20
Act Effect Green (s)	13.3	90.9	77.4		20.7	20.7	
Actuated g/C Ratio	0.10	0.70	0.60		0.16	0.16	
v/c Ratio	0.64	0.33	0.40		0.72	0.52	
Control Delay	104.1	0.8	15.8		65.5	9.1	
Queue Delay	0.0	0.0	0.0		0.0	0.0	
Total Delay	104.1	0.8	15.8		65.5	9.1	
LOS	F	A	B		E	A	
Approach Delay		13.0	15.8		34.1		
Approach LOS		B	B		C		

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 105 (81%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 85
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.72
 Intersection Signal Delay: 18.5 Intersection LOS: B
 Intersection Capacity Utilization 52.0% ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 10: Kingston Road & Fairport Road



Queues

<2033 Future Background>AM

10: Kingston Road & Fairport Road

12-20-2024



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	104	776	812	198	249
v/c Ratio	0.64	0.33	0.40	0.72	0.52
Control Delay	104.1	0.8	15.8	65.5	9.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	104.1	0.8	15.8	65.5	9.1
Queue Length 50th (m)	26.1	2.5	53.8	49.0	0.0
Queue Length 95th (m)	42.6	2.5	86.2	68.5	20.6
Internal Link Dist (m)		400.0	872.3	256.0	
Turn Bay Length (m)	75.0			15.5	
Base Capacity (vph)	209	2331	2018	476	649
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.50	0.33	0.40	0.42	0.38

Intersection Summary

Lanes, Volumes, Timings
11: Hwy 401 WB Ramps & Kingston Road

<2033 Future Background>AM
12-20-2024

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↖	↑↑	↖	↗
Traffic Volume (vph)	748	12	284	612	461	65
Future Volume (vph)	748	12	284	612	461	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.0	3.7	2.7	3.8	3.8	3.7
Grade (%)	6%			0%	0%	
Storage Length (m)		0.0	47.5		0.0	52.0
Storage Lanes		0	1		2	1
Taper Length (m)			22.3		2.5	
Lane Util. Factor	0.95	0.95	1.00	0.95	0.97	1.00
Frt	0.998					0.850
Fit Protected			0.950		0.950	
Satd. Flow (prot)	3479	0	1593	3548	3442	1633
Fit Permitted			0.950		0.950	
Satd. Flow (perm)	3479	0	1593	3548	3442	1633
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	1					71
Link Speed (k/h)	60			60	50	
Link Distance (m)	268.7			424.0	216.6	
Travel Time (s)	16.1			25.4	15.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	0%	2%	4%	4%	0%
Adj. Flow (vph)	813	13	309	665	501	71
Shared Lane Traffic (%)						
Lane Group Flow (vph)	826	0	309	665	501	71
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.1			3.1	7.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	0.98	1.03	1.14	0.97	0.97	0.99
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	10.0		2.0	10.0	2.0	2.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Size(m)	0.6		2.0	0.6	2.0	2.0
Detector 1 Type	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	CI+Ex			CI+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		

Lanes, Volumes, Timings
11: Hwy 401 WB Ramps & Kingston Road

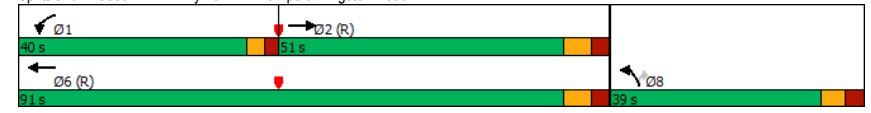
<2033 Future Background>AM
12-20-2024

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Turn Type	NA		Prot	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases						8
Detector Phase	2		1	6	8	8
Switch Phase						
Minimum Initial (s)	20.0		5.0	20.0	8.0	8.0
Minimum Split (s)	50.0		10.0	50.0	39.0	39.0
Total Split (s)	51.0		40.0	91.0	39.0	39.0
Total Split (%)	39.2%		30.8%	70.0%	30.0%	30.0%
Maximum Green (s)	43.8		35.0	83.8	32.3	32.3
Yellow Time (s)	4.2		3.0	4.2	3.7	3.7
All-Red Time (s)	3.0		2.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	7.2		5.0	7.2	6.7	6.7
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?						
Vehicle Extension (s)	0.2		3.0	0.2	3.0	3.0
Recall Mode	C-Max		None	C-Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	35.0			35.0	24.0	24.0
Pedestrian Calls (#/hr)	0			3	3	3
Act Effect Green (s)	57.3		29.4	91.7	24.4	24.4
Actuated g/C Ratio	0.44		0.23	0.71	0.19	0.19
v/c Ratio	0.54		0.86	0.27	0.78	0.20
Control Delay	12.2		59.8	15.2	58.6	10.2
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	12.2		59.8	15.2	58.6	10.2
LOS	B		E	B	E	B
Approach Delay	12.2			29.3	52.6	
Approach LOS	B			C	D	

Intersection Summary

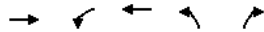
Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 66 (51%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.86
 Intersection Signal Delay: 29.0 Intersection LOS: C
 Intersection Capacity Utilization 65.7% ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 11: Hwy 401 WB Ramps & Kingston Road



Queues
11: Hwy 401 WB Ramps & Kingston Road

<2033 Future Background>AM
12-20-2024



Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	826	309	665	501	71
w/c Ratio	0.54	0.86	0.27	0.78	0.20
Control Delay	12.2	59.8	15.2	58.6	10.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	12.2	59.8	15.2	58.6	10.2
Queue Length 50th (m)	19.3	76.0	61.7	63.7	0.0
Queue Length 95th (m)	46.5	107.1	80.7	77.4	12.0
Internal Link Dist (m)	244.7		400.0	192.6	
Turn Bay Length (m)		47.5			52.0
Base Capacity (vph)	1534	428	2502	855	459
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced w/c Ratio	0.54	0.72	0.27	0.59	0.15

Intersection Summary

Lanes, Volumes, Timings
12: Plaza Entrance/Delta Blvd & Kingston Road

<2033 Future Background>AM
12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	76	975	37	96	980	74	140	6	92	42	13	124
Future Volume (vph)	76	975	37	96	980	74	140	6	92	42	13	124
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.2	3.4	3.5	3.1	3.4	3.4	3.6	4.6	3.7	3.2	2.8	3.7
Grade (%)		6%			0%			0%				0%
Storage Length (m)	51.8		148.5	100.0		18.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	35.3			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99				1.00		0.99	0.98		1.00		0.98
Frt		0.995			0.990			0.860				0.864
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1673	3280	0	1671	3380	0	1805	1755	0	1643	1468	0
Fit Permitted	0.950			0.950			0.662			0.688		
Satd. Flow (perm)	1662	3280	0	1671	3380	0	1249	1755	0	1185	1468	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			9			100				135
Link Speed (k/h)		60			60			30				40
Link Distance (m)		222.7			268.7			130.9				169.9
Travel Time (s)		13.4			16.1			15.7				15.3
Confl. Peds. (#/hr)	13					13	6		3	3		6
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%	4%	0%	2%	3%	3%	0%	0%	2%	5%	0%	0%
Adj. Flow (vph)	83	1060	40	104	1065	80	152	7	100	46	14	135
Shared Lane Traffic (%)												
Lane Group Flow (vph)	83	1100	0	104	1145	0	152	107	0	46	149	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.6				3.6
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		1.6			1.6			1.6				1.6
Two way Left Turn Lane					Yes							
Headway Factor	1.10	1.07	1.06	1.08	1.03	1.03	1.00	0.87	0.99	1.06	1.13	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	

Lanes, Volumes, Timings

<2033 Future Background>AM

12: Plaza Entrance/Delta Blvd & Kingston Road

12-20-2024

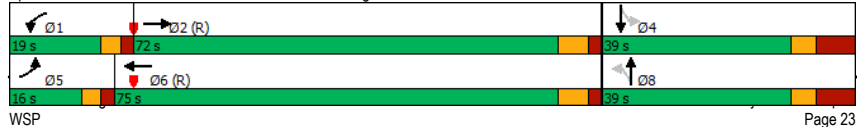


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	10.0	31.9		10.0	31.9		37.6	37.6		37.6	37.6	
Total Split (s)	16.0	72.0		19.0	75.0		39.0	39.0		39.0	39.0	
Total Split (%)	12.3%	55.4%		14.6%	57.7%		30.0%	30.0%		30.0%	30.0%	
Maximum Green (s)	11.0	65.1		14.0	68.1		29.0	29.0		29.0	29.0	
Yellow Time (s)	3.0	4.7		3.0	4.7		3.8	3.8		3.8	3.8	
All-Red Time (s)	2.0	2.2		2.0	2.2		6.2	6.2		6.2	6.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.9		5.0	6.9		10.0	10.0		10.0	10.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	0.2		3.0	0.2		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		18.0			18.0		20.0	20.0		20.0	20.0	
Pedestrian Calls (#/hr)		1			16		0	0		1	1	
Act Effct Green (s)	10.0	75.0		12.1	77.1		20.9	20.9		20.9	20.9	
Actuated g/C Ratio	0.08	0.58		0.09	0.59		0.16	0.16		0.16	0.16	
v/c Ratio	0.65	0.58		0.67	0.57		0.76	0.29		0.24	0.43	
Control Delay	83.2	29.8		78.6	28.2		74.1	11.5		48.1	12.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	83.2	29.8		78.6	28.2		74.1	11.5		48.1	12.9	
LOS	F	C		E	C		E	B		D	B	
Approach Delay		33.6			32.4			48.2			21.2	
Approach LOS		C			C			D			C	

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 49 (38%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.76
 Intersection Signal Delay: 33.6 Intersection LOS: C
 Intersection Capacity Utilization 79.5% ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 12: Plaza Entrance/Delta Blvd & Kingston Road

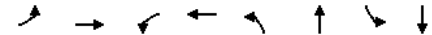


Queues

<2033 Future Background>AM

12: Plaza Entrance/Delta Blvd & Kingston Road

12-20-2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	83	1100	104	1145	152	107	46	149
v/c Ratio	0.65	0.58	0.67	0.57	0.76	0.29	0.24	0.43
Control Delay	83.2	29.8	78.6	28.2	74.1	11.5	48.1	12.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	83.2	29.8	78.6	28.2	74.1	11.5	48.1	12.9
Queue Length 50th (m)	22.0	125.7	27.2	152.0	37.6	1.5	10.4	3.1
Queue Length 95th (m)	#40.7	159.0	44.8	176.0	57.4	16.2	20.7	20.6
Internal Link Dist (m)		198.7		244.7		106.9		145.9
Turn Bay Length (m)	51.8		100.0					
Base Capacity (vph)	141	1894	179	2009	278	469	264	432
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.58	0.58	0.57	0.55	0.23	0.17	0.34

Intersection Summary

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

Lanes, Volumes, Timings
13: Whites Road & Kingston Road

<2033 Future Background>AM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	78	344	294	234	563	281	146	390	390	156	796	175
Future Volume (vph)	78	344	294	234	563	281	146	390	390	156	796	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.6	4.2	3.5	3.7	4.0	3.5	3.9	3.7	3.5	3.9	4.0
Grade (%)	6%			0%			0%			0%		
Storage Length (m)	127.0			123.0			87.1			47.0		
Storage Lanes	1			1			1			1		
Taper Length (m)	64.0			39.6			66.8			32.6		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Ped Bike Factor	0.98			0.97			0.99			0.97		
Frt	0.850			0.850			0.850			0.850		
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1633	3335	1607	1767	3510	1606	1700	5057	1558	1750	5057	1625
Flt Permitted	0.950			0.950			0.232			0.495		
Satd. Flow (perm)	1605	3335	1565	1752	3510	1522	413	5057	1509	902	5057	1574
Right Turn on Red	Yes			Yes			Yes			Yes		
Satd. Flow (RTOR)	155			239			193			173		
Link Speed (kh)	60			60			60			60		
Link Distance (m)	297.5			222.7			158.6			385.2		
Travel Time (s)	17.9			13.4			9.5			23.1		
Confl. Peds. (#/hr)	38			13			20			20		
Peak Hour Factor	0.92			0.92			0.92			0.92		
Heavy Vehicles (%)	6%			4%			5%			6%		
Bus Blockages (#/hr)	0			0			0			2		
Adj. Flow (vph)	85	374	320	254	612	305	159	424	424	170	865	190
Shared Lane Traffic (%)												
Lane Group Flow (vph)	85	374	320	254	612	305	159	424	424	170	865	190
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width(m)	3.5			3.5			3.5			3.5		
Link Offset(m)	0.0			0.0			0.0			0.0		
Crosswalk Width(m)	1.6			1.6			1.6			1.6		
Two way Left Turn Lane												
Headway Factor	1.06	1.04	0.96	1.01	0.99	0.94	1.01	0.96	1.00	1.01	0.96	0.95
Turning Speed (k/h)	24			14			24			14		
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0											
Detector 1 Queue (s)	0.0											
Detector 1 Delay (s)	0.0											
Detector 2 Position(m)	9.4			9.4			9.4			9.4		
Detector 2 Size(m)	0.6			0.6			0.6			0.6		

Lanes, Volumes, Timings
13: Whites Road & Kingston Road

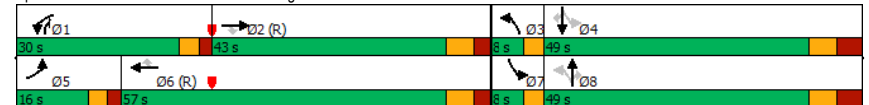
<2033 Future Background>AM
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type	Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8	1	7	4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2	2	1	6	6	3	8	1	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	5.0	8.0	5.0	5.0	8.0	8.0
Minimum Split (s)	10.0	43.0	43.0	10.0	43.0	43.0	8.0	49.0	10.0	8.0	49.0	49.0
Total Split (s)	16.0	43.0	43.0	30.0	57.0	57.0	8.0	49.0	30.0	8.0	49.0	49.0
Total Split (%)	12.3%	33.1%	33.1%	23.1%	43.8%	43.8%	6.2%	37.7%	23.1%	6.2%	37.7%	37.7%
Maximum Green (s)	11.0	36.0	36.0	25.0	50.0	50.0	5.0	40.6	25.0	5.0	40.6	40.6
Yellow Time (s)	3.0	4.2	4.2	3.0	4.2	4.2	3.0	4.3	3.0	3.0	4.3	4.3
All-Red Time (s)	2.0	2.8	2.8	2.0	2.8	2.8	0.0	4.1	2.0	0.0	4.1	4.1
Lost Time Adjust (s)	0.0											
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	3.0	8.4	5.0	3.0	8.4	8.4
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	0.2	0.2	3.0	0.2	0.2	3.0	0.2	3.0	3.0	0.2	0.2
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	None	None	Max	Max
Walk Time (s)	7.0			7.0			7.0			7.0		
Flash Dont Walk (s)	29.0			29.0			33.0			33.0		
Pedestrian Calls (#/hr)	31			31			75			65		
Act Effect Green (s)	10.1	38.7	38.7	22.3	50.9	50.9	51.0	40.6	66.3	51.0	40.6	40.6
Actuated g/C Ratio	0.08	0.30	0.30	0.17	0.39	0.39	0.39	0.31	0.51	0.39	0.31	0.31
v/c Ratio	0.67	0.38	0.56	0.84	0.45	0.41	0.75	0.27	0.49	0.44	0.55	0.31
Control Delay	83.0	38.2	24.0	52.6	29.8	14.8	52.0	34.1	10.7	30.5	38.7	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	83.0	38.2	24.0	52.6	29.8	14.8	52.0	34.1	10.7	30.5	38.7	7.6
LOS	F	D	C	D	C	B	D	C	B	C	D	A
Approach Delay	37.2			30.9			27.1			32.7		
Approach LOS	D			C			C			C		

Intersection Summary

Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	107 (82%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle:	120
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.84
Intersection Signal Delay:	31.7
Intersection Capacity Utilization:	105.3%
Analysis Period (min):	15
Intersection LOS:	C
ICU Level of Service:	G

Splits and Phases: 13: Whites Road & Kingston Road



Queues
13: Whites Road & Kingston Road

<2033 Future Background>AM
12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	85	374	320	254	612	305	159	424	424	170	865	190
w/c Ratio	0.67	0.38	0.56	0.84	0.45	0.41	0.75	0.27	0.49	0.44	0.55	0.31
Control Delay	83.0	38.2	24.0	52.6	29.8	14.8	52.0	34.1	10.7	30.5	38.7	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	83.0	38.2	24.0	52.6	29.8	14.8	52.0	34.1	10.7	30.5	38.7	7.6
Queue Length 50th (m)	21.4	40.8	35.7	61.8	77.5	44.8	25.9	29.8	30.7	27.8	67.3	3.0
Queue Length 95th (m)	#42.5	55.7	67.2	#95.0	95.6	66.9	#50.2	39.1	52.8	44.1	81.1	19.8
Internal Link Dist (m)		273.5			198.7			134.6			361.2	
Turn Bay Length (m)	127.0		123.0	87.1		35.0	72.0		35.0	88.5		47.0
Base Capacity (vph)	138	992	574	339	1373	740	211	1579	900	386	1579	610
Starvation Cap Reductn	0	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced w/c Ratio	0.62	0.38	0.56	0.75	0.45	0.41	0.75	0.27	0.47	0.44	0.55	0.31

Intersection Summary

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

Lanes, Volumes, Timings
14: Whites Road & Highway 401 EB Off Ramp

<2033 Future Background>AM
12-20-2024



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↑↑↑	↑		↑↑	↑↑	
Traffic Volume (vph)	585	268	0	693	417	0
Future Volume (vph)	585	268	0	693	417	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.7	3.6	3.8	3.7
Storage Length (m)	0.0	225.0	0.0			0.0
Storage Lanes	2	1	0			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	0.97	0.91	1.00	0.95	0.95	1.00
Ped Bike Factor						
Frt	0.993	0.850				
Flt Protected	0.954					
Satd. Flow (prot)	3387	1400	0	3374	3481	0
Flt Permitted	0.954					
Satd. Flow (perm)	3387	1400	0	3374	3481	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	5	262				
Link Speed (k/h)	50			60	60	
Link Distance (m)	295.9			185.9	316.9	
Travel Time (s)	21.3			11.2	19.0	
Confl. Peds. (#/hr)			7			7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	5%	2%	7%	6%	2%
Adj. Flow (vph)	636	291	0	753	453	0
Shared Lane Traffic (%)		10%				
Lane Group Flow (vph)	665	262	0	753	453	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.2			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	0.99	1.00	0.97	0.99
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	2.0	2.0		10.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	2.0		0.6	0.6	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				CI+Ex	CI+Ex	
Detector 2 Channel						

Lanes, Volumes, Timings

<2033 Future Background>AM

14: Whites Road & Highway 401 EB Off Ramp

12-20-2024

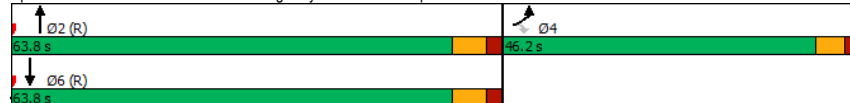


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	8.0	8.0		20.0	20.0	
Minimum Split (s)	28.5	28.5		27.7	27.7	
Total Split (s)	46.2	46.2		63.8	63.8	
Total Split (%)	42.0%	42.0%		58.0%	58.0%	
Maximum Green (s)	40.7	40.7		57.1	57.1	
Yellow Time (s)	3.7	3.7		4.5	4.5	
All-Red Time (s)	1.8	1.8		2.2	2.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.5	5.5		6.7	6.7	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		0.2	0.2	
Recall Mode	None	None		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	16.0	16.0		14.0	14.0	
Pedestrian Calls (#/hr)	3	3		0	0	
Act Effect Green (s)	27.7	27.7		70.1	70.1	
Actuated g/C Ratio	0.25	0.25		0.64	0.64	
v/c Ratio	0.78	0.48		0.35	0.20	
Control Delay	44.3	6.7		10.5	9.2	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	44.3	6.7		10.5	9.2	
LOS	D	A		B	A	
Approach Delay	33.7			10.5	9.2	
Approach LOS	C			B	A	

Intersection Summary

Area Type: Other
 Cycle Length: 110
 Actuated Cycle Length: 110
 Offset: 79.2 (72%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.78
 Intersection Signal Delay: 20.3 Intersection LOS: C
 Intersection Capacity Utilization 48.8% ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 14: Whites Road & Highway 401 EB Off Ramp



Queues

<2033 Future Background>AM

14: Whites Road & Highway 401 EB Off Ramp

12-20-2024



Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	665	262	753	453
v/c Ratio	0.78	0.48	0.35	0.20
Control Delay	44.3	6.7	10.5	9.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	44.3	6.7	10.5	9.2
Queue Length 50th (m)	68.0	0.0	36.7	19.6
Queue Length 95th (m)	80.8	19.4	56.4	32.1
Internal Link Dist (m)	271.9		161.9	292.9
Turn Bay Length (m)		225.0		
Base Capacity (vph)	1256	683	2150	2218
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.53	0.38	0.35	0.20

Intersection Summary

Lanes, Volumes, Timings
15: Dixie Road & Shopping Plaza Entrance

<2033 Future Background>AM
12-20-2024

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	0	81	0	0	194	0
Future Volume (vph)	0	81	0	0	194	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.1	3.7	4.0	3.7	3.7	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.865					
Flt Protected						0.950
Satd. Flow (prot)	1701	0	1946	0	0	1867
Flt Permitted						0.950
Satd. Flow (perm)	1701	0	1946	0	0	1867
Link Speed (k/h)	30		40		40	
Link Distance (m)	193.0		106.6		44.0	
Travel Time (s)	23.2		9.6		4.0	
Confl. Peds. (#/hr)	5			8		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	1%	2%
Adj. Flow (vph)	0	88	0	0	211	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	88	0	0	0	0	211
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	4.1		3.6		3.6	
Link Offset(m)	0.0		0.0		0.0	
Crosswalk Width(m)	1.6		1.6		1.6	
Two way Left Turn Lane						
Headway Factor	0.93	0.99	0.94	0.99	0.99	0.94
Turning Speed (k/h)	24		14		24	
Sign Control	Stop		Free		Free	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	24.2%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
15: Dixie Road & Shopping Plaza Entrance

<2033 Future Background>AM
12-20-2024

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	0	81	0	0	194	0
Future Volume (Veh/h)	0	81	0	0	194	0
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	88	0	0	211	0
Pedestrians	8			5		
Lane Width (m)	4.1			4.0		
Walking Speed (m/s)	1.1			1.1		
Percent Blockage	1			1		
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						44
pX, platoon unblocked						
vC, conflicting volume	430	13			8	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	430	13			8	
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			87	
cM capacity (veh/h)	501	1053			1605	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	88	0	211
Volume Left	0	0	211
Volume Right	88	0	0
cSH	1053	1700	1605
Volume to Capacity	0.08	0.00	0.13
Queue Length 95th (m)	2.1	0.0	3.4
Control Delay (s)	8.7	0.0	7.6
Lane LOS	A	A	A
Approach Delay (s)	8.7	0.0	7.6
Approach LOS	A	A	A

Intersection Summary			
Average Delay	7.9		
Intersection Capacity Utilization	24.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings
3: Dixie Road & Kingston Road

<2033 Future Background_PHF>AM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Traffic Volume (vph)	80	760	81	78	554	86	37	15	29	131	35	144
Future Volume (vph)	80	760	81	78	554	86	37	15	29	131	35	144
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	2.8	3.6	3.4	2.8	3.5	3.1	3.6	4.0	3.7	3.8	4.2	3.7
Grade (%)	6%		0%		0%		0%		0%		0%	
Storage Length (m)	145.4		64.5	51.0		79.5	13.0		0.0	16.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	66.4			48.0			18.0			25.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		1.00	1.00		1.00	0.99		1.00	0.99	
Frt	0.986		0.980		0.901		0.879					
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1564	3316	0	1645	3301	0	1752	1771	0	1827	1759	0
Flt Permitted	0.950			0.950			0.581			0.728		
Satd. Flow (perm)	1553	3316	0	1639	3301	0	1069	1771	0	1397	1759	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12			17			29			144	
Link Speed (kh)	60		60		40		60		60		60	
Link Distance (m)	896.3		191.2		44.0		236.2					
Travel Time (s)	53.8		11.5		4.0		14.2					
Confl. Peds. (#/hr)	6		4	4		6	3		2	2		3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	4%	2%	0%	6%	2%	3%	0%	0%	1%	0%	0%
Bus Blockages (#/hr)	0	0	6	0	0	6	0	0	0	0	0	0
Adj. Flow (vph)	80	760	81	78	554	86	37	15	29	131	35	144
Shared Lane Traffic (%)												
Lane Group Flow (vph)	80	841	0	78	640	0	37	44	0	131	179	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	
Median Width(m)	2.8		2.8		3.8		3.8					
Link Offset(m)	0.0		0.0		0.0		0.0					
Crosswalk Width(m)	4.9		4.9		4.9		4.9					
Two way Left Turn Lane	Yes											
Headway Factor	1.17	1.04	1.07	1.13	1.01	1.08	1.00	0.94	0.99	0.97	0.92	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	0	0		0	0		0	0		1	1	
Detector Template												
Leading Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		7.5	7.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		-1.5	-1.5	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		-1.5	-1.5	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		9.0	9.0	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6		8			4		

Lanes, Volumes, Timings
3: Dixie Road & Kingston Road

<2033 Future Background_PHF>AM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	8		4		8		8		4		4	
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	10.0	28.0		10.0	28.0		43.0	43.0		41.0	41.0	
Total Split (s)	15.0	59.0		11.0	55.0		50.0	50.0		50.0	50.0	
Total Split (%)	12.5%	49.2%		9.2%	45.8%		41.7%	41.7%		41.7%	41.7%	
Maximum Green (s)	10.0	52.4		6.0	48.4		40.5	40.5		40.5	40.5	
Yellow Time (s)	3.0	4.2		3.0	4.2		4.4	4.4		4.4	4.4	
All-Red Time (s)	2.0	2.4		2.0	2.4		5.1	5.1		5.1	5.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.6		5.0	6.6		9.5	9.5		9.5	9.5	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes			Yes								
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)	7.0		7.0		7.0		7.0		7.0		7.0	
Flash Dont Walk (s)	14.0		14.0		23.0		23.0		23.0		23.0	
Pedestrian Calls (#/hr)	6		1		7		7		4		4	
Act Effect Green (s)	9.3	74.9		6.0	74.0		18.0	18.0		18.0	18.0	
Actuated g/C Ratio	0.08	0.62		0.05	0.62		0.15	0.15		0.15	0.15	
v/c Ratio	0.66	0.41		0.95	0.31		0.23	0.15		0.63	0.46	
Control Delay	78.8	12.9		150.7	5.0		45.1	20.4		59.6	14.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	78.8	12.9		150.7	5.0		45.1	20.4		59.6	14.6	
LOS	E	B		F	A		D	C		E	B	
Approach Delay	18.6		20.8		31.7		33.6					
Approach LOS	B		C		C		C					

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 107.8 (90%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 85
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.95
 Intersection Signal Delay: 22.2
 Intersection LOS: C
 Intersection Capacity Utilization 72.4%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 3: Dixie Road & Kingston Road



Lanes, Volumes, Timings
1: Walnut Lane & Kingston Road

<2033 Future Background>PM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Traffic Volume (vph)	38	1420	270	119	646	43	293	0	265	24	16	26
Future Volume (vph)	38	1420	270	119	646	43	293	0	265	24	16	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.0	3.6	3.5	3.0	3.6	3.7	3.3	3.5	3.7	3.2	3.7	3.7
Storage Length (m)	26.0		25.8	37.0		0.0	63.2		0.0	18.5		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	24.0			26.0			24.4			18.1		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.99		1.00	1.00		0.98		0.98	0.99	0.98	
Frt		0.976			0.991			0.850			0.907	
Flt Protected	0.950			0.950			0.950		0.950		0.950	
Satd. Flow (prot)	1685	3444	0	1685	3505	0	1745	0	1633	1725	1709	0
Flt Permitted	0.950			0.950			0.728		0.950		0.950	
Satd. Flow (perm)	1677	3444	0	1682	3505	0	1313	0	1603	1713	1709	0
Right Turn on Red			Yes			Yes		Yes				Yes
Satd. Flow (RTOR)		26			9				93			28
Link Speed (k/h)		60			60			40				40
Link Distance (m)		129.3			694.6			114.0				179.7
Travel Time (s)		7.8			41.7			10.3				16.2
Confl. Peds. (#/hr)	5		7	7		5	14		5	5		14
Confl. Bikes (#/hr)			1									
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%	2%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	3	0	0	0	0	0	0	0	0	0
Adj. Flow (vph)	41	1543	293	129	702	47	318	0	288	26	17	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	41	1836	0	129	749	0	318	0	288	26	45	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.1			3.1			3.3				3.3
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			1.6			4.9				4.9
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.09	1.00	1.01	1.09	1.00	0.99	1.04	1.01	0.99	1.06	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	0	0		0	0		1		1	0		0
Detector Template								Right				
Leading Detector (m)	0.0	0.0		0.0	0.0		7.5		6.1	0.0		0.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		-1.5		0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		-1.5		0.0	0.0		0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8		9.0		6.1	6.1		1.8
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Turn Type	Prot	NA		Prot	NA		Perm		Perm	Perm		NA
Protected Phases	5	2		1	6							4

Lanes, Volumes, Timings
1: Walnut Lane & Kingston Road

<2033 Future Background>PM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases										8	8	4
Detector Phase	5	2			1	6			8	8	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0			5.0	20.0			8.0	8.0	8.0	8.0
Minimum Split (s)	10.0	33.0			10.0	33.0			38.0	38.0	38.0	38.0
Total Split (s)	10.0	76.0			15.0	81.0			39.0	39.0	39.0	39.0
Total Split (%)	7.7%	58.5%			11.5%	62.3%			30.0%	30.0%	30.0%	30.0%
Maximum Green (s)	5.0	69.4			10.0	74.4			31.0	31.0	31.0	31.0
Yellow Time (s)	3.0	4.4			3.0	4.4			3.3	3.3	3.3	3.3
All-Red Time (s)	2.0	2.2			2.0	2.2			4.7	4.7	4.7	4.7
Lost Time Adjust (s)	0.0	0.0			0.0	0.0			0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.6			5.0	6.6			8.0	8.0	8.0	8.0
Lead/Lag	Lead	Lag			Lead	Lag						
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0			3.0	3.0			3.0	3.0	3.0	3.0
Recall Mode	None	C-Max			None	C-Max			None	None	None	None
Walk Time (s)		7.0			7.0	7.0			7.0	7.0	7.0	7.0
Flash Dont Walk (s)		19.0			19.0	19.0			22.0	22.0	22.0	22.0
Pedestrian Calls (#/hr)		8				4			2	2	9	9
Act Effect Green (s)	5.0	69.4			10.0	76.4			31.0	31.0	31.0	31.0
Actuated g/C Ratio	0.04	0.53			0.08	0.59			0.24	0.24	0.24	0.24
v/c Ratio	0.64	0.99			1.00	0.36			1.02	0.64	0.06	0.11
Control Delay	85.6	41.2			132.8	9.2			103.9	36.8	39.0	20.3
Queue Delay	0.0	0.0			0.0	0.0			0.0	0.0	0.0	0.0
Total Delay	85.6	41.2			132.8	9.2			103.9	36.8	39.0	20.3
LOS	F	D			F	A			F	D	D	C
Approach Delay		42.2				27.4			72.0			27.1
Approach LOS		D				C			E			C
Intersection Summary												
Area Type:	Other											
Cycle Length:	130											
Actuated Cycle Length:	130											
Offset:	77 (59%), Referenced to phase 2:EBT and 6:WBT, Start of Green											
Natural Cycle:	115											
Control Type:	Actuated-Coordinated											
Maximum v/c Ratio:	1.02											
Intersection Signal Delay:	43.3						Intersection LOS: D					
Intersection Capacity Utilization:	91.5%						ICU Level of Service F					
Analysis Period (min):	15											
Splits and Phases:	1: Walnut Lane & Kingston Road											

Queues <2033 Future Background>PM
1: Walnut Lane & Kingston Road 12-20-2024

Lane Group	EBL	EBT	WBL	WBT	NBL	NBR	SBL	SBT
Lane Group Flow (vph)	41	1836	129	749	318	288	26	45
w/c Ratio	0.64	0.99	1.00	0.36	1.02	0.64	0.06	0.11
Control Delay	85.6	41.2	132.8	9.2	103.9	36.8	39.0	20.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	85.6	41.2	132.8	9.2	103.9	36.8	39.0	20.3
Queue Length 50th (m)	0.0	130.0	34.9	27.4	~84.2	45.2	5.2	3.4
Queue Length 95th (m)	m0.0	#291.4	#75.9	35.4	#142.9	76.2	12.9	13.3
Internal Link Dist (m)		105.3		670.6				155.7
Turn Bay Length (m)	26.0		37.0		63.2		18.5	
Base Capacity (vph)	64	1850	129	2063	313	453	408	428
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced w/c Ratio	0.64	0.99	1.00	0.36	1.02	0.64	0.06	0.11

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.
 m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings <2033 Future Background>PM
3: Dixie Road & Kingston Road 12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕↕		↔	↕↕		↔	↕↕		↔	↕↕	
Traffic Volume (vph)	204	1509	100	40	770	164	111	54	63	142	28	92
Future Volume (vph)	204	1509	100	40	770	164	111	54	63	142	28	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	2.8	3.6	3.4	2.8	3.5	3.1	3.6	4.0	3.7	3.8	4.2	3.7
Grade (%)		6%			0%			0%				0%
Storage Length (m)	145.4		64.5	51.0		79.5	13.0		0.0	16.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	66.4			48.0			18.0			25.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	1.00		1.00	0.99		0.99	0.99	0.99
Frt		0.991			0.974			0.920				0.885
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1579	3394	0	1597	3407	0	1770	1786	0	1827	1730	0
Fit Permitted	0.950			0.950			0.674			0.676		
Satd. Flow (perm)	1578	3394	0	1594	3407	0	1250	1786	0	1290	1730	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			24			42			100	
Link Speed (k/h)		60			60			40			60	
Link Distance (m)		896.3			191.2			44.0			236.2	
Travel Time (s)		53.8			11.5			4.0			14.2	
Confl. Peds. (#/hr)	1		6	6		1	4		7	7		4
Confl. Bikes (#/hr)			1									
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 (%)	1%	2%	2%	3%	2%	0%	2%	0%	2%	1%	0%	3%
Bus Blockages (#/hr)	0	0	5	0	0	5	0	0	0	0	0	0
Adj. Flow (vph)	222	1640	109	43	837	178	121	59	68	154	30	100
Shared Lane Traffic (%)												
Lane Group Flow (vph)	222	1749	0	43	1015	0	121	127	0	154	130	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		2.8			2.8			3.8			3.8	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane					Yes							
Headway Factor	1.17	1.04	1.07	1.13	1.01	1.08	1.00	0.94	0.99	0.97	0.92	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	0	0		0	0		0	0		1	1	
Detector Template												
Leading Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		7.5	7.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		-1.5	-1.5	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		-1.5	-1.5	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		9.0	9.0	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	

Lanes, Volumes, Timings
3: Dixie Road & Kingston Road

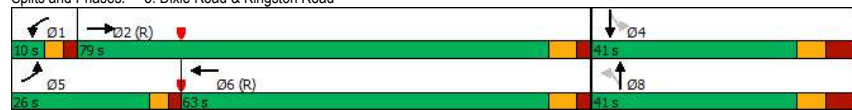
<2033 Future Background>PM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	5	2		1	6			8			4	4
Permitted Phases							8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	10.0	28.0		10.0	28.0		41.0	41.0		41.0	41.0	
Total Split (s)	26.0	79.0		10.0	63.0		41.0	41.0		41.0	41.0	
Total Split (%)	20.0%	60.8%		7.7%	48.5%		31.5%	31.5%		31.5%	31.5%	
Maximum Green (s)	21.0	72.4		5.0	56.4		31.5	31.5		31.5	31.5	
Yellow Time (s)	3.0	4.2		3.0	4.2		4.4	4.4		4.4	4.4	
All-Red Time (s)	2.0	2.4		2.0	2.4		5.1	5.1		5.1	5.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.6		5.0	6.6		9.5	9.5		9.5	9.5	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		14.0			14.0		23.0	23.0		23.0	23.0	
Pedestrian Calls (#/hr)		4			6		2	2		3	3	
Act Effct Green (s)	20.3	84.9		5.0	67.7		21.0	21.0		21.0	21.0	
Actuated g/C Ratio	0.16	0.65		0.04	0.52		0.16	0.16		0.16	0.16	
v/c Ratio	0.90	0.79		0.70	0.57		0.60	0.39		0.74	0.36	
Control Delay	73.9	26.0		107.6	23.6		61.9	34.2		71.9	15.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	73.9	26.0		107.6	23.6		61.9	34.2		71.9	15.9	
LOS	E	C		F	C		E	C		E	B	
Approach Delay		31.4			27.0			47.7			46.2	
Approach LOS		C			C			D			D	

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 115 (88%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.90
 Intersection Signal Delay: 32.4 Intersection LOS: C
 Intersection Capacity Utilization 82.5% ICU Level of Service E
 Analysis Period (min) 15

Splits and Phases: 3: Dixie Road & Kingston Road



Queues
3: Dixie Road & Kingston Road

<2033 Future Background>PM
12-20-2024

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	222	1749	43	1015	121	127	154	130
v/c Ratio	0.90	0.79	0.70	0.57	0.60	0.39	0.74	0.36
Control Delay	73.9	26.0	107.6	23.6	61.9	34.2	71.9	15.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.9	26.0	107.6	23.6	61.9	34.2	71.9	15.9
Queue Length 50th (m)	51.9	216.1	11.9	75.0	29.2	19.4	38.1	6.7
Queue Length 95th (m)	m#88.3	258.6	m#24.5	m85.4	45.6	35.4	57.0	22.4
Internal Link Dist (m)		872.3		167.2		20.0		212.2
Turn Bay Length (m)	145.4		51.0		13.0		16.0	
Base Capacity (vph)	255	2220	61	1785	302	464	312	494
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.87	0.79	0.70	0.57	0.40	0.27	0.49	0.26

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Queues <2033 Future Background>PM
6: Liverpool Road & Kingston Road 12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	265	1117	358	230	592	73	168	855	252	103	580	117
w/c Ratio	0.83	1.05	0.56	0.87	0.61	0.14	0.57	0.72	0.42	0.51	0.50	0.21
Control Delay	47.2	87.3	41.6	84.1	45.4	0.6	34.9	43.6	13.9	32.9	38.2	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.2	87.3	41.6	84.1	45.4	0.6	34.9	43.6	13.9	32.9	38.2	3.6
Queue Length 50th (m)	68.7	~172.9	73.7	57.7	70.6	0.0	27.0	102.1	14.8	15.8	63.7	0.0
Queue Length 95th (m)	m73.7	m#182.5	m77.1	#98.7	93.7	0.0	42.7	125.2	38.0	27.4	81.2	8.5
Internal Link Dist (m)	670.6		372.4			233.7		324.6				
Turn Bay Length (m)	188.8		97.9	170.7		117.0	185.5		52.0	49.0		60.5
Base Capacity (vph)	376	1065	639	279	973	529	295	1187	601	202	1149	569
Starvation Cap Reductn	0	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced w/c Ratio	0.70	1.05	0.56	0.82	0.61	0.14	0.57	0.72	0.42	0.51	0.50	0.21

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.

m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings <2033 Future Background>PM
8: Liverpool Road & Private Access/Pickering Parkway 12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔↔		↔↔	↔	↔	↔↔↔	↔↔↔	↔	↔↔	↔↔↔	↔
Traffic Volume (vph)	87	69	130	412	58	174	116	852	401	196	1006	46
Future Volume (vph)	87	69	130	412	58	174	116	852	401	196	1006	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.1	3.1	3.7	3.0	3.4	3.2	2.8	3.6	3.5	3.2	3.5	3.5
Storage Length (m)	0.0	0.0	57.0	62.1	54.4	75.7	132.5	35.5				
Storage Lanes	1	0	1	1	1	1	1	1	1	1	1	1
Taper Length (m)	2.5			12.0		29.5		28.9				
Lane Util. Factor	1.00	0.95	0.95	0.97	1.00	1.00	1.00	0.91	1.00	0.91	1.00	1.00
Ped Bike Factor		0.96		0.98			0.99		0.96	0.99		0.93
Frt		0.902				0.850		0.850				0.850
Flt Protected	0.950			0.950			0.950		0.950			0.950
Satd. Flow (prot)	1705	2959	0	3204	1858	1399	1645	5085	1569	1708	5079	1597
Flt Permitted	0.000			0.000			0.180		0.238			
Satd. Flow (perm)	0	2959	0	0	1858	1399	309	5085	1502	425	5079	1482
Right Turn on Red			Yes			Yes		Yes		Yes		Yes
Satd. Flow (RTOR)		141				189		436				144
Link Speed (k/h)	30			50			50			50		
Link Distance (m)	82.8			328.5			162.3			257.7		
Travel Time (s)	9.9			23.7			11.7			18.6		
Confl. Peds. (#/hr)			21	21			21		21	21		21
Confl. Bikes (#/hr)			2				5					6
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%	2%	0%	5%	0%	2%	1%	1%	1%	0%
Bus Blockages (#/hr)	0	0	0	0	0	12	0	0	2	0	0	0
Adj. Flow (vph)	95	75	141	448	63	189	126	926	436	213	1093	50
Shared Lane Traffic (%)												
Lane Group Flow (vph)	95	216	0	448	63	189	126	926	436	213	1093	50
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	6.0			6.0			3.8			3.8		
Link Offset(m)	0.0			0.0			0.0			0.0		
Crosswalk Width(m)	1.6			1.6			1.6			1.6		
Two way Left Turn Lane												
Headway Factor	1.08	1.08	0.99	1.09	1.03	1.13	1.13	1.00	1.03	1.06	1.01	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	

Lanes, Volumes, Timings <2033 Future Background>PM
8: Liverpool Road & Private Access/Pickering Parkway 12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type	CI+Ex			CI+Ex			CI+Ex			CI+Ex		
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	7		4	8		5	2		1	6	
Permitted Phases	7			8		8	2			2	6	
Detector Phase	3	7		4	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0	8.0	5.0	20.0	20.0	5.0	8.0	8.0
Minimum Split (s)	15.0	15.0		34.0	34.0	34.0	8.0	30.0	30.0	8.0	30.0	30.0
Total Split (s)	21.0	21.0		34.0	34.0	34.0	9.0	36.0	36.0	9.0	36.0	36.0
Total Split (%)	21.0%	21.0%		34.0%	34.0%	34.0%	9.0%	36.0%	36.0%	9.0%	36.0%	36.0%
Maximum Green (s)	14.4	14.4		27.4	27.4	27.4	6.0	29.7	29.7	6.0	29.7	29.7
Yellow Time (s)	3.3	3.3		3.3	3.3	3.3	3.0	4.2	4.2	3.0	4.2	4.2
All-Red Time (s)	3.3	3.3		3.3	3.3	3.3	0.0	2.1	2.1	0.0	2.1	2.1
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)	6.6	6.6		6.6	6.6	6.6	3.0	6.3	6.3	3.0	6.3	6.3
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
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
Recall Mode	None	None		None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)				19.0	19.0		17.0	17.0		17.0	17.0	
Flash Dont Walk (s)				8.0	8.0		6.0	6.0		6.0	6.0	
Pedestrian Calls (#/hr)				20	20		28	28		15	15	
Act Effect Green (s)	11.0	11.0		20.9	20.9	20.9	48.9	39.6	39.6	48.9	39.6	39.6
Actuated g/C Ratio	0.11	0.11		0.21	0.21	0.21	0.49	0.40	0.40	0.49	0.40	0.40
v/c Ratio	0.51	0.48		0.67	0.16	0.43	0.55	0.46	0.51	0.75	0.54	0.07
Control Delay	51.0	18.9		40.8	31.2	7.5	25.0	23.2	9.2	37.1	26.0	0.2
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.0	18.9		40.8	31.2	7.5	25.0	23.2	9.2	37.1	26.0	0.2
LOS	D	B		D	C	A	C	C	A	D	C	A
Approach Delay	28.7			31.0			19.2			26.8		
Approach LOS	C			C			B			C		

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 15 (15%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.75

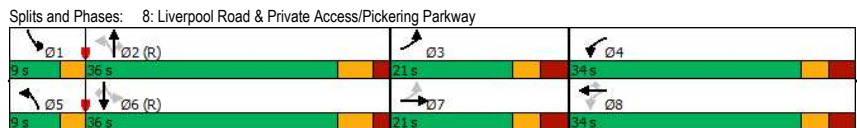
Intersection Signal Delay: 24.8

Intersection Capacity Utilization 68.8%

Analysis Period (min) 15

Intersection LOS: C

ICU Level of Service C



Queues <2033 Future Background>PM
8: Liverpool Road & Private Access/Pickering Parkway 12-20-2024



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Group Flow (vph)	95	216	448	63	189	126	926	436	213	1093	50	
v/c Ratio	0.51	0.48	0.67	0.16	0.43	0.55	0.46	0.51	0.75	0.54	0.07	
Control Delay	51.0	18.9	40.8	31.2	7.5	25.0	23.2	9.2	37.1	26.0	0.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	51.0	18.9	40.8	31.2	7.5	25.0	23.2	9.2	37.1	26.0	0.2	
Queue Length 50th (m)	17.7	7.1	42.3	10.3	0.0	14.9	50.9	24.5	20.8	56.6	0.0	
Queue Length 95th (m)	32.2	17.3	52.8	19.3	15.9	m#34.2	73.2	54.4	#61.0	84.2	0.0	
Internal Link Dist (m)	58.8		304.5			138.3			233.7			
Turn Bay Length (m)			57.0		62.1		54.4		75.7		132.5	35.5
Base Capacity (vph)	245	546	877	509	520	231	2012	857	284	2010	673	
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	0.39	0.40	0.51	0.12	0.36	0.55	0.46	0.51	0.75	0.54	0.07	

Intersection Summary

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

m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings

<2033 Future Background>PM

9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp

12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	237	278	168	293	121	1084	0	0	950	71
Future Volume (vph)	0	0	237	278	168	293	121	1084	0	0	950	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.5	3.7	3.7	3.4	3.7
Storage Length (m)	0.0	0.0	0.0	0.0		125.0	50.0		0.0	0.0		0.0
Storage Lanes	0		1	1		1	1		0	0		1
Taper Length (m)	2.5			2.5			30.0			2.5		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Ped Bike Factor												0.92
Frt			0.865			0.850						0.850
Fit Protected				0.950	0.987		0.950					
Satd. Flow (prot)	0	0	1662	1734	1801	1581	1825	5079	0	0	4972	1633
Fit Permitted				0.950	0.987		0.184					
Satd. Flow (perm)	0	0	1662	1734	1801	1581	353	5079	0	0	4972	1508
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)						85						82
Link Speed (kh)		50			50			50				50
Link Distance (m)		433.1			226.7			372.2				162.3
Travel Time (s)		31.2			16.3			26.8				11.7
Conf. Peds. (#/hr)							17		15	15		17
Conf. Bikes (#/hr)								6				7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	0%	0%	0%	1%	0%	1%	6%	2%	2%	0%
Adj. Flow (vph)	0	0	258	302	183	318	132	1178	0	0	1033	77
Shared Lane Traffic (%)				21%								
Lane Group Flow (vph)	0	0	258	239	246	318	132	1178	0	0	1033	77
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7				3.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		1.6			1.6			1.6				1.6
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	1.01	0.99	1.01	0.99	0.99	1.03	0.99
Turning Speed (k/h)	97		97	24		14	97		14	24		97
Number of Detectors			1	1	2	1	1	2			2	1
Detector Template			Right	Left	Thru	Right	Left	Thru			Thru	Right
Leading Detector (m)			2.0	2.0	10.0	2.0	2.0	10.0			10.0	2.0
Trailing Detector (m)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Position(m)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Size(m)			2.0	2.0	0.6	2.0	2.0	0.6			0.6	2.0
Detector 1 Type			Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 2 Position(m)					9.4			9.4				9.4
Detector 2 Size(m)					0.6			0.6				0.6
Detector 2 Type					Cl+Ex			Cl+Ex				Cl+Ex

Lanes, Volumes, Timings

<2033 Future Background>PM

9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp

12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)						0.0					0.0	0.0
Turn Type			Over	Split	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases			5	8	8		5	2			6	
Permitted Phases						8	2					6
Detector Phase			5	8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)			5.0	8.0	8.0	8.0	5.0	15.0			15.0	15.0
Minimum Split (s)			9.5	25.0	25.0	25.0	9.5	24.3			24.3	24.3
Total Split (s)			33.0	36.0	36.0	36.0	33.0	64.0			31.0	31.0
Total Split (%)			33.0%	36.0%	36.0%	36.0%	33.0%	64.0%			31.0%	31.0%
Maximum Green (s)			28.5	30.0	30.0	30.0	28.5	57.7			24.7	24.7
Yellow Time (s)			3.5	3.3	3.3	3.3	3.5	3.3			3.3	3.3
All-Red Time (s)			1.0	2.7	2.7	2.7	1.0	3.0			3.0	3.0
Lost Time Adjust (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Lost Time (s)			4.5	6.0	6.0	6.0	4.5	6.3			6.3	6.3
Lead/Lag			Lead				Lead				Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)			3.0	3.0	3.0	3.0	3.0	3.0			3.0	3.0
Recall Mode			None	None	None	None	None	C-Max			C-Max	C-Max
Walk Time (s)				14.0	14.0	14.0		13.0			13.0	13.0
Flash Dont Walk (s)				5.0	5.0	5.0		5.0			5.0	5.0
Pedestrian Calls (#/hr)				0	0	0		14			7	7
Act Effct Green (s)			20.7	21.5	21.5	21.5	68.0	66.2			41.0	41.0
Actuated g/C Ratio			0.21	0.22	0.22	0.22	0.68	0.66			0.41	0.41
v/c Ratio			0.75	0.64	0.64	0.78	0.24	0.35			0.51	0.12
Control Delay			50.5	42.8	42.3	39.9	7.9	8.6			25.6	12.6
Queue Delay			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay			50.5	42.8	42.3	39.9	7.9	8.6			25.6	12.6
LOS			D	D	D	D	A	A			C	B
Approach Delay			50.5			41.5		8.5			24.7	
Approach LOS			D			D		A			C	

Intersection Summary

Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	100
Offset:	8 (8%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle:	65
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.78
Intersection Signal Delay:	24.4
Intersection LOS:	C
Intersection Capacity Utilization:	59.1%
ICU Level of Service:	B
Analysis Period (min):	15

Splits and Phases: 9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp



Queues

<2033 Future Background>PM

9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp

12-20-2024



Lane Group	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	258	239	246	318	132	1178	1033	77
w/c Ratio	0.75	0.64	0.64	0.78	0.24	0.35	0.51	0.12
Control Delay	50.5	42.8	42.3	39.9	7.9	8.6	25.6	12.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.5	42.8	42.3	39.9	7.9	8.6	25.6	12.6
Queue Length 50th (m)	47.2	44.5	45.7	43.2	7.9	33.2	37.9	0.9
Queue Length 95th (m)	67.7	63.0	64.2	66.2	18.3	52.4	79.0	m11.0
Internal Link Dist (m)	202.7				348.2	138.3		
Turn Bay Length (m)			125.0	50.0				
Base Capacity (vph)	473	520	540	533	659	3364	2040	667
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced w/c Ratio	0.55	0.46	0.46	0.60	0.20	0.35	0.51	0.12

Intersection Summary

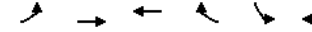
m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings

<2033 Future Background>PM

10: Kingston Road & Fairport Road

12-20-2024



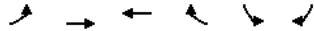
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø1
Lane Configurations	↔	↕↕	↕↕		↕	↕	
Traffic Volume (vph)	205	1590	757	223	271	137	
Future Volume (vph)	205	1590	757	223	271	137	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (m)	3.0	3.6	3.5	3.7	3.6	4.5	
Grade (%)	6%		0%		0%		
Storage Length (m)	75.0			18.5	15.5	0.0	
Storage Lanes	1			0	1	1	
Taper Length (m)	2.5			31.3			
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00	
Ped Bike Factor	1.00	0.99		0.99			
Frt			0.966		0.850		
Fit Protected	0.950			0.950			
Satd. Flow (prot)	1618	3433	3346	0	1805	1777	
Fit Permitted	0.950			0.950			
Satd. Flow (perm)	1617	3433	3346	0	1805	1751	
Right Turn on Red			Yes		Yes		
Satd. Flow (RTOR)			39		149		
Link Speed (k/h)	60		60		40		
Link Distance (m)	424.0		896.3		280.0		
Travel Time (s)	25.4		53.8		25.2		
Confl. Peds. (#/hr)	1			1	2		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Heavy Vehicles (%)	1%	2%	3%	1%	0%	0%	
Bus Blockages (#/hr)	0	0	0	9	0	0	
Adj. Flow (vph)	223	1728	823	242	295	149	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	223	1728	1065	0	295	149	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Left	Left	Right	Left	Right	
Median Width(m)	3.0		3.0		3.6		
Link Offset(m)	0.0		0.0		0.0		
Crosswalk Width(m)	1.6		1.6		1.6		
Two way Left Turn Lane	Yes						
Headway Factor	1.14	1.04	1.01	0.99	1.00	0.88	
Turning Speed (k/h)	24			14	24	14	
Number of Detectors	1	2	2		1	1	
Detector Template	Left	Thru	Thru		Left	Right	
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0	
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	0.6		2.0	2.0	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)	9.4		9.4				
Detector 2 Size(m)	0.6		0.6				

Lanes, Volumes, Timings

<2033 Future Background>PM

10: Kingston Road & Fairport Road

12-20-2024



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø1
Detector 2 Type	CI+Ex		CI+Ex				
Detector 2 Channel							
Detector 2 Extend (s)	0.0		0.0				
Turn Type	Prot	NA	NA		Prot	Perm	
Protected Phases	5	2	6		4		1
Permitted Phases						4	
Detector Phase	5	2	6		4	4	
Switch Phase							
Minimum Initial (s)	5.0	20.0	20.0		8.0	8.0	5.0
Minimum Split (s)	10.0	33.0	33.0		38.0	38.0	8.0
Total Split (s)	25.0	84.0	67.0		38.0	38.0	8.0
Total Split (%)	19.2%	64.6%	51.5%		29.2%	29.2%	6%
Maximum Green (s)	20.0	77.7	60.7		30.7	30.7	5.0
Yellow Time (s)	3.0	4.3	4.3		3.3	3.3	3.0
All-Red Time (s)	2.0	2.0	2.0		4.0	4.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.3	6.3		7.3	7.3	
Lead/Lag	Lead	Lag	Lag				Lead
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	0.2	0.2		3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max		None	None	None
Walk Time (s)	7.0		7.0		7.0	7.0	5.0
Flash Dont Walk (s)	19.0		19.0		23.0	23.0	0.0
Pedestrian Calls (#/hr)	0		0		0	0	20
Act Effect Green (s)	19.5	86.0	66.3		25.6	25.6	
Actuated g/C Ratio	0.15	0.66	0.51		0.20	0.20	
v/c Ratio	0.92	0.76	0.62		0.83	0.32	
Control Delay	48.9	40.2	10.1		69.5	8.0	
Queue Delay	0.0	0.0	0.0		0.0	0.0	
Total Delay	48.9	40.2	10.1		69.5	8.0	
LOS	D	D	B		E	A	
Approach Delay	41.2		10.1		48.9		
Approach LOS	D		B		D		

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 27 (21%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 95
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.92
 Intersection Signal Delay: 32.6 Intersection LOS: C
 Intersection Capacity Utilization 70.9% ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 10: Kingston Road & Fairport Road



Queues

<2033 Future Background>PM

10: Kingston Road & Fairport Road

12-20-2024



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	223	1728	1065	295	149
v/c Ratio	0.92	0.76	0.62	0.83	0.32
Control Delay	48.9	40.2	10.1	69.5	8.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	48.9	40.2	10.1	69.5	8.0
Queue Length 50th (m)	51.0	247.6	26.7	72.7	0.0
Queue Length 95th (m)	m50.4	m241.9	36.0	101.2	16.7
Internal Link Dist (m)	400.0		872.3	256.0	
Turn Bay Length (m)	75.0		15.5		
Base Capacity (vph)	248	2270	1724	426	527
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.90	0.76	0.62	0.69	0.28

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings

<2033 Future Background>PM

11: Hwy 401 WB Ramps & Kingston Road

12-20-2024

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖↗		↖	↖↗	↖↗	↖
Traffic Volume (vph)	1692	23	184	709	662	100
Future Volume (vph)	1692	23	184	709	662	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.0	3.7	2.7	3.8	3.8	3.7
Grade (%)	6%			0%	0%	
Storage Length (m)		0.0	47.5		0.0	52.0
Storage Lanes		0	1		2	1
Taper Length (m)			22.3		2.5	
Lane Util. Factor	0.95	0.95	1.00	0.95	0.97	1.00
Ped Bike Factor					1.00	0.98
Frt	0.998					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3577	0	1577	3618	3544	1617
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3577	0	1577	3618	3537	1591
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	1					84
Link Speed (k/h)	60			60	50	
Link Distance (m)	268.7			424.0	216.6	
Travel Time (s)	16.1			25.4	15.6	
Confl. Peds. (#/hr)					1	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	5%	3%	2%	1%	1%
Adj. Flow (vph)	1839	25	200	771	720	109
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1864	0	200	771	720	109
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.1			3.1	7.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	0.98	1.03	1.14	0.97	0.97	0.99
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	10.0		2.0	10.0	2.0	2.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Size(m)	0.6		2.0	0.6	2.0	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		

Lanes, Volumes, Timings

<2033 Future Background>PM

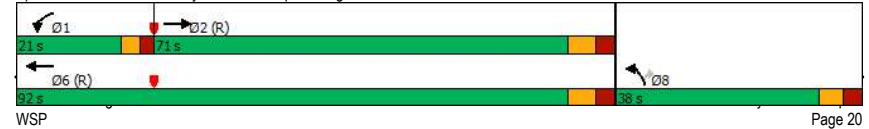
11: Hwy 401 WB Ramps & Kingston Road

12-20-2024

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		Prot	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases						8
Detector Phase	2		1	6	8	8
Switch Phase						
Minimum Initial (s)	20.0		5.0	20.0	8.0	8.0
Minimum Split (s)	50.0		10.0	50.0	38.0	38.0
Total Split (s)	71.0		21.0	92.0	38.0	38.0
Total Split (%)	54.6%		16.2%	70.8%	29.2%	29.2%
Maximum Green (s)	63.8		16.0	84.8	31.3	31.3
Yellow Time (s)	4.2		3.0	4.2	3.7	3.7
All-Red Time (s)	3.0		2.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	7.2		5.0	7.2	6.7	6.7
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?						
Vehicle Extension (s)	0.2		3.0	0.2	3.0	3.0
Recall Mode	C-Max		None	C-Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	35.0			35.0	24.0	24.0
Pedestrian Calls (#/hr)	0			0	14	14
Act Effct Green (s)	65.4		16.0	86.4	29.7	29.7
Actuated g/C Ratio	0.50		0.12	0.66	0.23	0.23
v/c Ratio	1.04		1.03	0.32	0.89	0.25
Control Delay	67.7		126.5	1.8	62.5	14.0
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	67.7		126.5	1.8	62.5	14.0
LOS	E		F	A	E	B
Approach Delay	67.7			27.5	56.1	
Approach LOS	E			C	E	

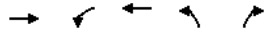
Intersection Summary	
Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	69 (53%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle:	130
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.04
Intersection Signal Delay:	54.5
Intersection Capacity Utilization:	93.0%
Analysis Period (min):	15
Intersection LOS:	D
ICU Level of Service:	F

Splits and Phases: 11: Hwy 401 WB Ramps & Kingston Road



Queues
11: Hwy 401 WB Ramps & Kingston Road

<2033 Future Background>PM
12-20-2024



Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1864	200	771	720	109
w/c Ratio	1.04	1.03	0.32	0.89	0.25
Control Delay	67.7	126.5	1.8	62.5	14.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	67.7	126.5	1.8	62.5	14.0
Queue Length 50th (m)	-284.5	-47.6	6.4	91.1	5.0
Queue Length 95th (m)	#328.0	#100.5	6.1	#114.7	19.8
Internal Link Dist (m)	244.7		400.0	192.6	
Turn Bay Length (m)		47.5			52.0
Base Capacity (vph)	1799	194	2404	853	446
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced w/c Ratio	1.04	1.03	0.32	0.84	0.24

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.

Lanes, Volumes, Timings
12: Plaza Entrance/Delta Blvd & Kingston Road

<2033 Future Background>PM
12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Traffic Volume (vph)	130	1563	38	89	1168	121	198	15	138	82	13	143
Future Volume (vph)	130	1563	38	89	1168	121	198	15	138	82	13	143
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.2	3.4	3.5	3.1	3.4	3.4	3.6	4.6	3.7	3.2	2.8	3.7
Grade (%)		6%			0%			0%				0%
Storage Length (m)	51.8		148.5	100.0		18.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	35.3			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		1.00	0.99		1.00					0.99
Frt		0.996			0.986			0.864				0.862
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1656	3343	0	1705	3399	0	1770	1824	0	1725	1474	0
Fit Permitted	0.950			0.950			0.630			0.637		
Satd. Flow (perm)	1647	3343	0	1704	3399	0	1172	1824	0	1157	1474	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			13			129				149
Link Speed (k/h)		60			60			30				40
Link Distance (m)		222.7			268.7			130.9				169.9
Travel Time (s)		13.4			16.1			15.7				15.3
Confl. Peds. (#/hr)	16		1	1		16	1					1
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 (%)	1%	2%	0%	0%	2%	0%	2%	0%	0%	0%	0%	0%
Adj. Flow (vph)	141	1699	41	97	1270	132	215	16	150	89	14	155
Shared Lane Traffic (%)												
Lane Group Flow (vph)	141	1740	0	97	1402	0	215	166	0	89	169	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.6				3.6
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		1.6			1.6			1.6				1.6
Two way Left Turn Lane					Yes							
Headway Factor	1.10	1.07	1.06	1.08	1.03	1.03	1.00	0.87	0.99	1.06	1.13	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	

Lanes, Volumes, Timings

<2033 Future Background>PM

12: Plaza Entrance/Delta Blvd & Kingston Road

12-20-2024

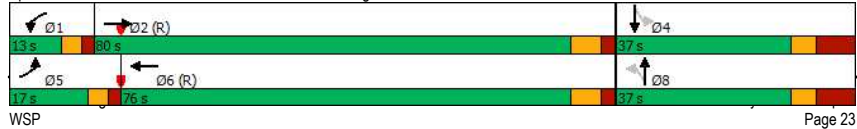


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases								8			4	
Detector Phase	5	2		1	6		8	8			4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	10.0	32.0		10.0	32.0		37.0	37.0		37.0	37.0	
Total Split (s)	17.0	80.0		13.0	76.0		37.0	37.0		37.0	37.0	
Total Split (%)	13.1%	61.5%		10.0%	58.5%		28.5%	28.5%		28.5%	28.5%	
Maximum Green (s)	12.0	73.1		8.0	69.1		27.0	27.0		27.0	27.0	
Yellow Time (s)	3.0	4.7		3.0	4.7		3.8	3.8		3.8	3.8	
All-Red Time (s)	2.0	2.2		2.0	2.2		6.2	6.2		6.2	6.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.9		5.0	6.9		10.0	10.0		10.0	10.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	0.2		3.0	0.2		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		18.0			18.0		20.0	20.0		20.0	20.0	
Pedestrian Calls (#/hr)		0			13		3	3		6	6	
Act Effct Green (s)	12.0	74.3		8.0	70.3		25.8	25.8		25.8	25.8	
Actuated g/C Ratio	0.09	0.57		0.06	0.54		0.20	0.20		0.20	0.20	
v/c Ratio	0.93	0.91		0.93	0.76		0.93	0.36		0.39	0.41	
Control Delay	84.0	24.5		123.6	20.4		93.7	14.4		50.3	12.5	
Queue Delay	0.0	1.2		0.0	0.0		0.0	74.4		139.0	0.0	
Total Delay	84.0	25.7		123.6	20.4		93.7	88.7		189.3	12.5	
LOS	F	C		F	C		F	F		F	B	
Approach Delay		30.0			27.1			91.6			73.5	
Approach LOS		C			C			F			E	

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 5 (4%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.93
 Intersection Signal Delay: 37.6 Intersection LOS: D
 Intersection Capacity Utilization 96.9% ICU Level of Service F
 Analysis Period (min) 15

Splits and Phases: 12: Plaza Entrance/Delta Blvd & Kingston Road

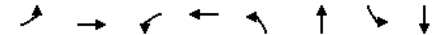


Queues

<2033 Future Background>PM

12: Plaza Entrance/Delta Blvd & Kingston Road

12-20-2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	141	1740	97	1402	215	166	89	169
v/c Ratio	0.93	0.91	0.93	0.76	0.93	0.36	0.39	0.41
Control Delay	84.0	24.5	123.6	20.4	93.7	14.4	50.3	12.5
Queue Delay	0.0	1.2	0.0	0.0	0.0	74.4	139.0	0.0
Total Delay	84.0	25.7	123.6	20.4	93.7	88.7	189.3	12.5
Queue Length 50th (m)	36.8	146.2	26.3	75.0	54.0	7.7	19.7	4.2
Queue Length 95th (m)	m39.6	m149.4	m#47.6	97.5	#99.2	26.9	36.4	23.7
Internal Link Dist (m)		198.7		244.7		106.9		145.9
Turn Bay Length (m)	51.8		100.0					
Base Capacity (vph)	152	1912	104	1843	243	481	240	424
Starvation Cap Reductn	0	37	0	0	0	0	0	0
Spillback Cap Reductn	0	56	0	0	0	362	220	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.94	0.93	0.76	0.88	1.39	4.45	0.40

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings
13: Whites Road & Kingston Road

<2033 Future Background>PM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	155	941	358	231	763	490	228	684	655	189	617	186
Future Volume (vph)	155	941	358	231	763	490	228	684	655	189	617	186
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.6	4.2	3.5	3.7	4.0	3.5	3.9	3.7	3.5	3.9	4.0
Grade (%)	6%		0%		0%		0%		0%		0%	
Storage Length (m)	127.0		123.0		87.1		35.0		72.0		47.0	
Storage Lanes	1		1		1		1		1		1	
Taper Length (m)	64.0		39.6		66.8		32.6		32.6		32.6	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Ped Bike Factor	0.97		0.96		0.99		0.91		0.99		0.95	
Frt	0.850		0.850		0.850		0.850		0.850		0.850	
Flt Protected	0.950		0.950		0.950		0.950		0.950		0.950	
Satd. Flow (prot)	1681	3400	1622	1733	3579	1654	1767	5255	1588	1750	5105	1627
Flt Permitted	0.950		0.950		0.331		0.292		0.292		0.292	
Satd. Flow (perm)	1638	3400	1549	1719	3579	1502	608	5255	1470	527	5105	1550
Right Turn on Red	Yes		Yes		Yes		Yes		Yes		Yes	
Satd. Flow (RTOR)	171		136		59		202		202		202	
Link Speed (kh)	60		60		60		60		60		60	
Link Distance (m)	297.5		222.7		158.6		385.2		385.2		385.2	
Travel Time (s)	17.9		13.4		9.5		23.1		23.1		23.1	
Confl. Peds. (#/hr)	75		31		31		75		37		65	
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 (%)	3%	3%	3%	3%	2%	2%	1%	2%	2%	2%	5%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	2	0	0	4
Adj. Flow (vph)	168	1023	389	251	829	533	248	743	712	205	671	202
Shared Lane Traffic (%)												
Lane Group Flow (vph)	168	1023	389	251	829	533	248	743	712	205	671	202
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width(m)	3.5		3.5		3.5		3.5		3.5		3.5	
Link Offset(m)	0.0		0.0		0.0		0.0		0.0		0.0	
Crosswalk Width(m)	1.6		1.6		1.6		1.6		1.6		1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.04	0.96	1.01	0.99	0.94	1.01	0.96	1.00	1.01	0.96	0.96
Turning Speed (k/h)	24	14	14	24	14	24	14	24	14	24	14	24
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4		9.4		9.4		9.4		9.4		9.4	
Detector 2 Size(m)	0.6		0.6		0.6		0.6		0.6		0.6	

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WSP

Synchro 11 Report
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Lanes, Volumes, Timings
13: Whites Road & Kingston Road

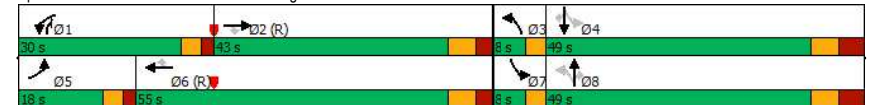
<2033 Future Background>PM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type	Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0		0.0		0.0		0.0		0.0		0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8	1	7	4	
Permitted Phases	2		2		1		6		8		4	
Detector Phase	5	2	2	1	6	6	3	8	1	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	5.0	8.0	5.0	5.0	8.0	8.0
Minimum Split (s)	10.0	43.0	43.0	10.0	43.0	43.0	8.0	49.0	10.0	8.0	49.0	49.0
Total Split (s)	18.0	43.0	43.0	30.0	55.0	55.0	8.0	49.0	30.0	8.0	49.0	49.0
Total Split (%)	13.8%	33.1%	33.1%	23.1%	42.3%	42.3%	6.2%	37.7%	23.1%	6.2%	37.7%	37.7%
Maximum Green (s)	13.0	36.0	36.0	25.0	48.0	48.0	5.0	40.6	25.0	5.0	40.6	40.6
Yellow Time (s)	3.0	4.2	4.2	3.0	4.2	4.2	3.0	4.3	3.0	3.0	4.3	4.3
All-Red Time (s)	2.0	2.8	2.8	2.0	2.8	2.8	0.0	4.1	2.0	0.0	4.1	4.1
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	0.0
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	3.0	8.4	5.0	3.0	8.4	8.4
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	0.2	0.2	3.0	0.2	0.2	3.0	0.2	3.0	3.0	0.2	0.2
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	None	None	Max	Max
Walk Time (s)	7.0		7.0		7.0		7.0		7.0		7.0	
Flash Dont Walk (s)	29.0		29.0		29.0		29.0		33.0		33.0	
Pedestrian Calls (#/hr)	13		13		38		38		20		20	
Act Effect Green (s)	13.0	38.3	38.3	22.7	48.0	48.0	51.0	40.6	66.7	51.0	40.6	40.6
Actuated g/C Ratio	0.10	0.29	0.29	0.17	0.37	0.37	0.39	0.31	0.51	0.39	0.31	0.31
v/c Ratio	1.00	1.02	0.68	0.83	0.63	0.83	0.88	0.45	0.89	0.81	0.42	0.32
Control Delay	127.6	79.3	29.2	80.9	24.8	25.5	63.3	36.9	37.4	55.8	36.4	5.8
Queue Delay	0.0	6.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	127.6	86.2	29.2	80.9	24.8	25.5	63.3	36.9	37.4	55.8	36.4	5.8
LOS	F	F	C	F	C	C	E	D	D	E	D	A
Approach Delay	76.6		33.8		40.9		34.3		34.3		34.3	
Approach LOS	E		C		D		C		D		C	

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 34 (26%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 120
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.02
 Intersection Signal Delay: 47.2
 Intersection Capacity Utilization 109.1%
 Analysis Period (min) 15
 Intersection LOS: D
 ICU Level of Service H

Splits and Phases: 13: Whites Road & Kingston Road



Queues

<2033 Future Background>PM

13: Whites Road & Kingston Road

12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	168	1023	389	251	829	533	248	743	712	205	671	202
w/c Ratio	1.00	1.02	0.68	0.83	0.63	0.83	0.88	0.45	0.89	0.81	0.42	0.32
Control Delay	127.6	79.3	29.2	80.9	24.8	25.5	63.3	36.9	37.4	55.8	36.4	5.8
Queue Delay	0.0	6.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	127.6	86.2	29.2	80.9	24.8	25.5	63.3	36.9	37.4	55.8	36.4	5.8
Queue Length 50th (m)	43.7	~154.6	51.2	57.7	60.1	58.6	42.7	55.8	123.7	34.3	49.8	0.0
Queue Length 95th (m)	#89.4	#195.8	88.5	m78.9	m79.8	m#129.1	#83.4	68.3	#188.7	#65.5	61.7	17.0
Internal Link Dist (m)		273.5			198.7			134.6			361.2	
Turn Bay Length (m)	127.0		123.0	87.1		35.0	72.0		35.0	88.5		47.0
Base Capacity (vph)	168	1001	576	333	1321	640	283	1641	830	253	1594	622
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	20	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced w/c Ratio	1.00	1.04	0.68	0.75	0.63	0.83	0.88	0.45	0.86	0.81	0.42	0.32

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.
- m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings

<2033 Future Background>PM

14: Whites Road & Highway 401 EB Off Ramp

12-20-2024



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↑↑↑	↑		↑↑	↑↑	
Traffic Volume (vph)	1183	589	0	841	547	0
Future Volume (vph)	1183	589	0	841	547	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.7	3.6	3.8	3.7
Storage Length (m)	0.0	225.0	0.0	0.0	0.0	0.0
Storage Lanes	2	1	0			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	0.97	0.91	1.00	0.95	0.95	1.00
Ped Bike Factor	1.00	0.98				
Frt	0.993	0.850				
Flt Protected	0.955					
Satd. Flow (prot)	3453	1427	0	3539	3618	0
Flt Permitted	0.955					
Satd. Flow (perm)	3453	1404	0	3539	3618	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	7	129				
Link Speed (k/h)	50			60	60	
Link Distance (m)	295.9			185.9	316.9	
Travel Time (s)	21.3			11.2	19.0	
Confl. Peds. (#/hr)		3	4			4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	3%	2%	2%	2%	2%
Adj. Flow (vph)	1286	640	0	914	595	0
Shared Lane Traffic (%)		10%				
Lane Group Flow (vph)	1350	576	0	914	595	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.2			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	0.99	1.00	0.97	0.99
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	2.0	2.0		10.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	2.0		0.6	0.6	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				CI+Ex	CI+Ex	
Detector 2 Channel						

Lanes, Volumes, Timings

<2033 Future Background>PM

14: Whites Road & Highway 401 EB Off Ramp

12-20-2024

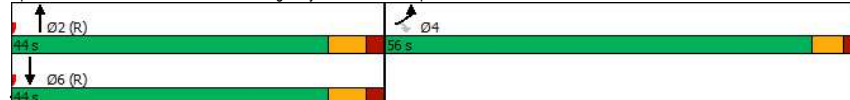


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	8.0	8.0		20.0	20.0	
Minimum Split (s)	28.5	28.5		27.7	27.7	
Total Split (s)	56.0	56.0		44.0	44.0	
Total Split (%)	56.0%	56.0%		44.0%	44.0%	
Maximum Green (s)	50.5	50.5		37.3	37.3	
Yellow Time (s)	3.7	3.7		4.5	4.5	
All-Red Time (s)	1.8	1.8		2.2	2.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.5	5.5		6.7	6.7	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		0.2	0.2	
Recall Mode	None	None		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	16.0	16.0		14.0	14.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effect Green (s)	46.8	46.8		41.0	41.0	
Actuated g/C Ratio	0.47	0.47		0.41	0.41	
v/c Ratio	0.83	0.79		0.63	0.40	
Control Delay	28.2	25.9		26.6	22.6	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	28.2	25.9		26.6	22.6	
LOS	C	C		C	C	
Approach Delay	27.5			26.6	22.6	
Approach LOS	C			C	C	

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 8 (8%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.83
 Intersection Signal Delay: 26.4
 Intersection LOS: C
 Intersection Capacity Utilization 73.4%
 ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 14: Whites Road & Highway 401 EB Off Ramp



Queues

<2033 Future Background>PM

14: Whites Road & Highway 401 EB Off Ramp

12-20-2024



Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	1350	576	914	595
v/c Ratio	0.83	0.79	0.63	0.40
Control Delay	28.2	25.9	26.6	22.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	28.2	25.9	26.6	22.6
Queue Length 50th (m)	110.4	77.9	74.2	42.8
Queue Length 95th (m)	131.2	123.7	99.3	59.7
Internal Link Dist (m)	271.9		161.9	292.9
Turn Bay Length (m)		225.0		
Base Capacity (vph)	1747	772	1451	1484
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.77	0.75	0.63	0.40

Intersection Summary

Lanes, Volumes, Timings
15: Dixie Road & Shopping Plaza Entrance

<2033 Future Background>PM
12-20-2024

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	228	0	0	168	0
Future Volume (vph)	0	228	0	0	168	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.1	3.7	4.0	3.7	3.7	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.865					
Fit Protected				0.950		
Satd. Flow (prot)	1701	0	1946	0	0	1848
Fit Permitted	0.950					
Satd. Flow (perm)	1701	0	1946	0	0	1848
Link Speed (k/h)	30	40		40		
Link Distance (m)	193.0	106.6		44.0		
Travel Time (s)	23.2	9.6		4.0		
Confl. Peds. (#/hr)	11		12			
Confl. Bikes (#/hr)	1					
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	248	0	0	183	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	248	0	0	0	0	183
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	4.1	3.6		3.6		
Link Offset(m)	0.0	0.0		0.0		
Crosswalk Width(m)	1.6	1.6		1.6		
Two way Left Turn Lane						
Headway Factor	0.93	0.99	0.94	0.99	0.99	0.94
Turning Speed (k/h)	97	97	97		97	
Sign Control	Stop	Free		Free		

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	31.2%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
15: Dixie Road & Shopping Plaza Entrance

<2033 Future Background>PM
12-20-2024

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	228	0	0	168	0
Future Volume (Veh/h)	0	228	0	0	168	0
Sign Control	Stop	Free		Free		
Grade	0%	0%		0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	248	0	0	183	0
Pedestrians	12					11
Lane Width (m)	4.1					4.0
Walking Speed (m/s)	1.1					1.1
Percent Blockage	1					1
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	44					
pX, platoon unblocked						
vC, conflicting volume	378	23			12	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	378	23			12	
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	76			88	
cM capacity (veh/h)	545	1029			1587	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	248	0	183
Volume Left	0	0	183
Volume Right	248	0	0
cSH	1029	1700	1587
Volume to Capacity	0.24	0.00	0.12
Queue Length 95th (m)	7.2	0.0	3.0
Control Delay (s)	9.6	0.0	7.6
Lane LOS	A		A
Approach Delay (s)	9.6	0.0	7.6
Approach LOS	A		

Intersection Summary			
Average Delay	8.7		
Intersection Capacity Utilization	31.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings
1: Walnut Lane & Kingston Road

<2033 Future Background_PHF>PM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Traffic Volume (vph)	38	1420	270	119	646	43	293	0	265	24	16	26
Future Volume (vph)	38	1420	270	119	646	43	293	0	265	24	16	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.0	3.6	3.5	3.0	3.6	3.7	3.3	3.5	3.7	3.2	3.7	3.7
Storage Length (m)	26.0		25.8	37.0		0.0	63.2		0.0	18.5		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	24.0			26.0			24.4			18.1		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.99		1.00	1.00		0.98		0.98	0.99	0.98	
Frt		0.976			0.991			0.850			0.907	
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1685	3444	0	1685	3505	0	1745	0	1633	1725	1710	0
Fit Permitted	0.950			0.950			0.730			0.950		
Satd. Flow (perm)	1677	3444	0	1682	3505	0	1317	0	1603	1713	1710	0
Right Turn on Red			Yes			Yes		Yes			Yes	
Satd. Flow (RTOR)		26			9				100			26
Link Speed (k/h)		60			60			40				40
Link Distance (m)		129.3			694.6			114.0				179.7
Travel Time (s)		7.8			41.7			10.3				16.2
Conf. Peds. (#/hr)	5		7	7		5	14		5	5		14
Conf. Bikes (#/hr)			1									
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	2%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	3	0	0	0	0	0	0	0	0	0
Adj. Flow (vph)	38	1420	270	119	646	43	293	0	265	24	16	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	1690	0	119	689	0	293	0	265	24	42	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	
Median Width(m)		3.1			3.1			3.3				3.3
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			1.6			4.9				4.9
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.09	1.00	1.01	1.09	1.00	0.99	1.04	1.01	0.99	1.06	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	0	0		0	0		1		1	0		0
Detector Template								Right				
Leading Detector (m)	0.0	0.0		0.0	0.0		7.5		6.1	0.0		0.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		-1.5		0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		-1.5		0.0	0.0		0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8		9.0		6.1	6.1		1.8
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Turn Type	Prot	NA		Prot	NA		Perm		Perm	Perm		NA
Protected Phases	5	2		1	6							4

Lanes, Volumes, Timings
1: Walnut Lane & Kingston Road

<2033 Future Background_PHF>PM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases										8	8	4
Detector Phase	5	2			1	6			8	8	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0			5.0	20.0			8.0	8.0	8.0	8.0
Minimum Split (s)	10.0	33.0			10.0	33.0			38.0	38.0	38.0	38.0
Total Split (s)	10.0	76.0			15.0	81.0			39.0	39.0	39.0	39.0
Total Split (%)	7.7%	58.5%			11.5%	62.3%			30.0%	30.0%	30.0%	30.0%
Maximum Green (s)	5.0	69.4			10.0	74.4			31.0	31.0	31.0	31.0
Yellow Time (s)	3.0	4.4			3.0	4.4			3.3	3.3	3.3	3.3
All-Red Time (s)	2.0	2.2			2.0	2.2			4.7	4.7	4.7	4.7
Lost Time Adjust (s)	0.0	0.0			0.0	0.0			0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.6			5.0	6.6			8.0	8.0	8.0	8.0
Lead/Lag	Lead	Lag			Lead	Lag						
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0			3.0	3.0			3.0	3.0	3.0	3.0
Recall Mode	None	C-Max			None	C-Max			None	None	None	None
Walk Time (s)		7.0			7.0	7.0			7.0	7.0	7.0	7.0
Flash Dont Walk (s)		19.0			19.0	19.0			22.0	22.0	22.0	22.0
Pedestrian Calls (#/hr)		8				4			2	2	9	9
Act Effect Green (s)	5.0	70.1			10.0	77.1			30.3	30.3	30.3	30.3
Actuated g/C Ratio	0.04	0.54			0.08	0.59			0.23	0.23	0.23	0.23
v/c Ratio	0.59	0.91			0.92	0.33			0.95	0.59	0.06	0.10
Control Delay	81.2	29.8			117.1	9.1			90.1	32.8	38.9	20.6
Queue Delay	0.0	0.0			0.0	0.0			0.0	0.0	0.0	0.0
Total Delay	81.2	29.8			117.1	9.1			90.1	32.8	38.9	20.6
LOS	F	C			F	A			F	C	D	C
Approach Delay		30.9				25.0			62.9			27.2
Approach LOS		C				C			E			C
Intersection Summary												
Area Type:	Other											
Cycle Length:	130											
Actuated Cycle Length:	130											
Offset:	77 (59%), Referenced to phase 2:EBT and 6:WBT, Start of Green											
Natural Cycle:	105											
Control Type:	Actuated-Coordinated											
Maximum v/c Ratio:	0.95											
Intersection Signal Delay:	35.0						Intersection LOS: C					
Intersection Capacity Utilization:	91.5%						ICU Level of Service F					
Analysis Period (min):	15											
Splits and Phases:	1: Walnut Lane & Kingston Road											

Lanes, Volumes, Timings

<2033 Future Background_PHF>PM

6: Liverpool Road & Kingston Road

12-20-2024

	↖	→	↘	↙	←	↖	↙	↘	↙	↘	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↖	↖	↖	↖↖	↖	↖	↖↖	↖	↖	↖↖	↖
Traffic Volume (vph)	244	1028	329	212	545	67	155	787	232	95	534	108
Future Volume (vph)	244	1028	329	212	545	67	155	787	232	95	534	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.1	3.4	3.6	3.3	3.7	3.4	3.8	4.1	4.8	4.7	3.8	3.3
Storage Length (m)	188.8	97.9	170.7		117.0	185.5		52.0	49.0		60.5	
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	31.6		22.7			20.8			25.0			
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.95	0.99		0.96	0.99		0.90	0.98		0.96
Frt			0.850			0.850			0.850			0.850
Fit Protected	0.950		0.950			0.950			0.950			0.950
Satd. Flow (prot)	1688	3461	1599	1728	3579	1579	1791	3773	1732	2026	3654	1561
Fit Permitted	0.950		0.950			0.372			0.202			
Satd. Flow (perm)	1666	3461	1512	1710	3579	1517	693	3773	1564	424	3654	1499
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			126			160			174			143
Link Speed (kh)		60			60			50			50	
Link Distance (m)		694.6			396.4			257.7			348.6	
Travel Time (s)		41.7			23.8			18.6			25.1	
Conf. Peds. (#/hr)	20		31	31		20	29		62	62		29
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	2%	1%	1%	2%	0%	3%	1%	4%	0%	1%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	4	0	0	0
Adj. Flow (vph)	244	1028	329	212	545	67	155	787	232	95	534	108
Shared Lane Traffic (%)												
Lane Group Flow (vph)	244	1028	329	212	545	67	155	787	232	95	534	108
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.3			3.3			4.7			4.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane		Yes									Yes	
Headway Factor	1.08	1.03	1.00	1.04	0.99	1.03	0.97	0.93	0.87	0.86	0.97	1.04
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	

Lanes, Volumes, Timings

<2033 Future Background_PHF>PM

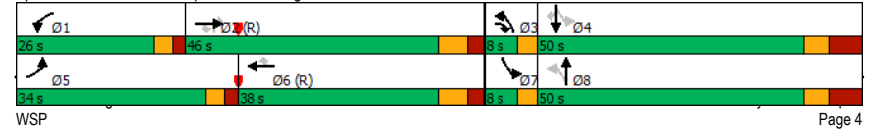
6: Liverpool Road & Kingston Road

12-20-2024

	↖	→	↘	↙	←	↖	↙	↘	↙	↘	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0				0.0			0.0
Turn Type	Prot	NA	pm+ov	Prot	NA	Perm	pm+pt	NA	custom	pm+pt	NA	Perm
Protected Phases	5	2	3	1	6				3	8	7	4
Permitted Phases			2			6	8		2	4		4
Detector Phase	5	2	3	1	6	6	3	8	2	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	5.0	5.0	20.0	20.0	5.0	8.0	20.0	5.0	8.0	8.0
Minimum Split (s)	10.0	36.0	8.0	10.0	36.0	36.0	8.0	50.0	36.0	8.0	50.0	50.0
Total Split (s)	34.0	46.0	8.0	26.0	38.0	38.0	8.0	50.0	46.0	8.0	50.0	50.0
Total Split (%)	26.2%	35.4%	6.2%	20.0%	29.2%	29.2%	6.2%	38.5%	35.4%	6.2%	38.5%	38.5%
Maximum Green (s)	29.0	38.9	5.0	21.0	30.9	30.9	5.0	40.9	38.9	5.0	40.9	40.9
Yellow Time (s)	3.0	4.3	3.0	3.0	4.3	4.3	3.0	3.8	4.3	3.0	3.8	3.8
All-Red Time (s)	2.0	2.8	0.0	2.0	2.8	2.8	0.0	5.3	2.8	0.0	5.3	5.3
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	0.0
Total Lost Time (s)	5.0	7.1	3.0	5.0	7.1	7.1	3.0	9.1	7.1	3.0	9.1	9.1
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
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	3.0
Recall Mode	None	C-Max	None	None	C-Max	C-Max	None	Max	C-Max	None	Max	Max
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		21.0			21.0	21.0		33.0	21.0		33.0	33.0
Pedestrian Calls (#/hr)		15			20	20		28	15		15	15
Act Effct Green (s)	23.4	40.7	49.8	19.2	36.5	36.5	52.0	40.9	40.7	52.0	40.9	40.9
actuated g/C Ratio	0.18	0.31	0.38	0.15	0.28	0.28	0.40	0.31	0.31	0.40	0.31	0.31
v/c Ratio	0.81	0.95	0.50	0.83	0.54	0.12	0.49	0.66	0.38	0.41	0.46	0.19
Control Delay	49.4	69.4	37.7	79.5	43.0	0.5	31.3	41.8	11.9	28.7	37.4	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.4	69.4	37.7	79.5	43.0	0.5	31.3	41.8	11.9	28.7	37.4	2.8
LOS	D	E	D	E	D	A	C	D	B	C	D	A
Approach Delay		59.8			48.9			34.5			31.2	
Approach LOS		E			D			C			C	

Intersection Summary	
Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	78 (60%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle:	115
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.95
Intersection Signal Delay:	46.0
Intersection Capacity Utilization:	103.1%
ICU Level of Service:	G
Analysis Period (min):	15

Splits and Phases: 6: Liverpool Road & Kingston Road



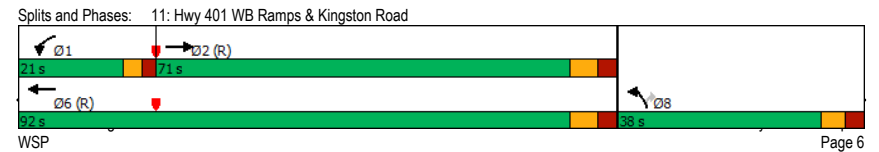
Lanes, Volumes, Timings <2033 Future Background_PHF>PM
 11: Hwy 401 WB Ramps & Kingston Road 12-20-2024

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↕↕		↕	↕↕	↕↕	↕
Traffic Volume (vph)	1692	23	184	709	662	100
Future Volume (vph)	1692	23	184	709	662	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.0	3.7	2.7	3.8	3.8	3.7
Grade (%)	6%			0%	0%	
Storage Length (m)		0.0	47.5		0.0	52.0
Storage Lanes		0	1		2	1
Taper Length (m)			22.3		2.5	
Lane Util. Factor	0.95	0.95	1.00	0.95	0.97	1.00
Ped Bike Factor					1.00	0.98
Frt	0.998					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3577	0	1577	3618	3544	1617
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3577	0	1577	3618	3537	1591
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	1					84
Link Speed (k/h)	60			60	50	
Link Distance (m)	268.7			424.0	216.6	
Travel Time (s)	16.1			25.4	15.6	
Confl. Peds. (#/hr)					1	3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	5%	3%	2%	1%	1%
Adj. Flow (vph)	1692	23	184	709	662	100
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1715	0	184	709	662	100
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.1			3.1	7.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	0.98	1.03	1.14	0.97	0.97	0.99
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	10.0		2.0	10.0	2.0	2.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Size(m)	0.6		2.0	0.6	2.0	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		

Lanes, Volumes, Timings <2033 Future Background_PHF>PM
 11: Hwy 401 WB Ramps & Kingston Road 12-20-2024

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		Prot	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases						8
Detector Phase	2		1	6	8	8
Switch Phase						
Minimum Initial (s)	20.0		5.0	20.0	8.0	8.0
Minimum Split (s)	50.0		10.0	50.0	38.0	38.0
Total Split (s)	71.0		21.0	92.0	38.0	38.0
Total Split (%)	54.6%		16.2%	70.8%	29.2%	29.2%
Maximum Green (s)	63.8		16.0	84.8	31.3	31.3
Yellow Time (s)	4.2		3.0	4.2	3.7	3.7
All-Red Time (s)	3.0		2.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	7.2		5.0	7.2	6.7	6.7
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?						
Vehicle Extension (s)	0.2		3.0	0.2	3.0	3.0
Recall Mode	C-Max		None	C-Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	35.0			35.0	24.0	24.0
Pedestrian Calls (#/hr)	0			0	14	14
Act Effct Green (s)	66.7		16.0	87.7	28.4	28.4
Actuated g/C Ratio	0.51		0.12	0.67	0.22	0.22
v/c Ratio	0.93		0.95	0.29	0.86	0.24
Control Delay	46.2		110.5	1.6	60.4	12.6
Queue Delay	0.8		0.0	0.0	0.0	0.0
Total Delay	47.0		110.5	1.6	60.4	12.6
LOS	D		F	A	E	B
Approach Delay	47.0			24.0	54.2	
Approach LOS	D			C	D	

Intersection Summary	
Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	69 (53%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle:	120
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.95
Intersection Signal Delay:	42.5
Intersection Capacity Utilization:	93.0%
Analysis Period (min):	15
Intersection LOS:	D
ICU Level of Service:	F



Lanes, Volumes, Timings
13: Whites Road & Kingston Road

<2033 Future Background_PHF>PM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	155	941	358	231	763	490	228	684	655	189	617	186
Future Volume (vph)	155	941	358	231	763	490	228	684	655	189	617	186
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.6	4.2	3.5	3.7	4.0	3.5	3.9	3.7	3.5	3.9	4.0
Grade (%)	6%			0%			0%			0%		
Storage Length (m)	127.0			123.0			87.1			47.0		
Storage Lanes	1			1			1			1		
Taper Length (m)	64.0			39.6			66.8			32.6		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Ped Bike Factor	0.97			0.96			0.99			0.95		
Frt	0.850			0.850			0.850			0.850		
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1681	3400	1622	1733	3579	1654	1767	5255	1588	1750	5105	1627
Flt Permitted	0.950			0.950			0.363			0.323		
Satd. Flow (perm)	1634	3400	1549	1717	3579	1502	666	5255	1470	582	5105	1550
Right Turn on Red	Yes			Yes			Yes			Yes		
Satd. Flow (RTOR)	187			147			59			186		
Link Speed (kh)	60			60			60			60		
Link Distance (m)	297.5			222.7			158.6			385.2		
Travel Time (s)	17.9			13.4			9.5			23.1		
Confl. Peds. (#/hr)	75	31	31	31	75	37	65	65	65	65	37	37
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	3%	3%	3%	2%	2%	1%	2%	2%	2%	5%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	2	0	0	4
Adj. Flow (vph)	155	941	358	231	763	490	228	684	655	189	617	186
Shared Lane Traffic (%)												
Lane Group Flow (vph)	155	941	358	231	763	490	228	684	655	189	617	186
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width(m)	3.5			3.5			3.5			3.5		
Link Offset(m)	0.0			0.0			0.0			0.0		
Crosswalk Width(m)	1.6			1.6			1.6			1.6		
Two way Left Turn Lane												
Headway Factor	1.06	1.04	0.96	1.01	0.99	0.94	1.01	0.96	1.00	1.01	0.96	0.96
Turning Speed (k/h)	24	14	24	14	24	14	24	14	24	14	24	14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4			9.4			9.4		
Detector 2 Size(m)	0.6			0.6			0.6			0.6		

Lanes, Volumes, Timings
13: Whites Road & Kingston Road

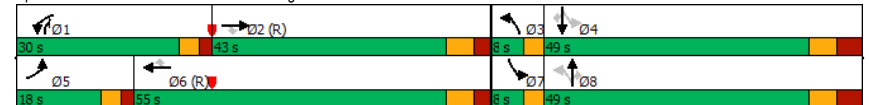
<2033 Future Background_PHF>PM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type	CI+Ex			CI+Ex			CI+Ex			CI+Ex		
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8	1	7	4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2	2	1	6	6	3	8	1	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	5.0	8.0	5.0	5.0	8.0	8.0
Minimum Split (s)	10.0	43.0	43.0	10.0	43.0	43.0	8.0	49.0	10.0	8.0	49.0	49.0
Total Split (s)	18.0	43.0	43.0	30.0	55.0	55.0	8.0	49.0	30.0	8.0	49.0	49.0
Total Split (%)	13.8%	33.1%	33.1%	23.1%	42.3%	42.3%	6.2%	37.7%	23.1%	6.2%	37.7%	37.7%
Maximum Green (s)	13.0	36.0	36.0	25.0	48.0	48.0	5.0	40.6	25.0	5.0	40.6	40.6
Yellow Time (s)	3.0	4.2	4.2	3.0	4.2	4.2	3.0	4.3	3.0	3.0	4.3	4.3
All-Red Time (s)	2.0	2.8	2.8	2.0	2.8	2.8	0.0	4.1	2.0	0.0	4.1	4.1
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	0.0
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	3.0	8.4	5.0	3.0	8.4	8.4
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	0.2	0.2	3.0	0.2	0.2	3.0	0.2	3.0	0.2	0.2	0.2
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	None	None	Max	Max
Walk Time (s)	7.0			7.0			7.0			7.0		
Flash Dont Walk (s)	29.0			29.0			29.0			33.0		
Pedestrian Calls (#/hr)	13			13			38			20		
Act Effect Green (s)	13.0	39.5	39.5	21.5	48.0	48.0	51.0	40.6	65.5	51.0	40.6	40.6
Actuated g/C Ratio	0.10	0.30	0.30	0.17	0.37	0.37	0.39	0.31	0.50	0.39	0.31	0.31
v/c Ratio	0.92	0.91	0.60	0.81	0.58	0.76	0.75	0.42	0.83	0.69	0.39	0.30
Control Delay	109.5	57.7	23.1	84.6	24.5	20.2	47.4	36.3	32.1	43.6	35.8	5.8
Queue Delay	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	109.5	59.1	23.1	84.6	24.5	20.2	47.4	36.3	32.1	43.6	35.8	5.8
LOS	F	E	C	F	C	C	D	D	C	D	D	A
Approach Delay	55.6			32.4			36.2			31.7		
Approach LOS	E			C			D			C		

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 32 (25%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 120
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.92
 Intersection Signal Delay: 39.5
 Intersection Capacity Utilization 109.1%
 Analysis Period (min) 15
 Intersection LOS: D
 ICU Level of Service H

Splits and Phases: 13: Whites Road & Kingston Road



F-3 *2038 FUTURE
BACKGROUND
CONDITIONS*

Lanes, Volumes, Timings
1: Walnut Lane & Kingston Road

<2038 Future Background>AM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Traffic Volume (vph)	20	754	75	103	443	30	243	0	143	14	6	29
Future Volume (vph)	20	754	75	103	443	30	243	0	143	14	6	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.0	3.6	3.5	3.0	3.6	3.7	3.3	3.5	3.7	3.2	3.7	3.7
Storage Length (m)	26.0		25.8	37.0		0.0	63.2		0.0	18.5		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	24.0			26.0			24.4			18.1		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		0.99	1.00		0.99		0.99	1.00	0.98	
Frt		0.986			0.990				0.850		0.877	
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1685	3405	0	1652	3379	0	1745	0	1585	1725	1601	0
Fit Permitted	0.950			0.950			0.732			0.950		
Satd. Flow (perm)	1677	3405	0	1643	3379	0	1330	0	1563	1720	1601	0
Right Turn on Red			Yes			Yes		Yes			Yes	
Satd. Flow (RTOR)		10			8				155		32	
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		129.3			694.6			114.0			179.7	
Travel Time (s)		7.8			41.7			10.3			16.2	
Conf. Peds. (#/hr)	4		8	8		4	9		2	2		9
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%	4%	6%	2%	5%	14%	0%	0%	3%	0%	0%	4%
Bus Blockages (#/hr)	0	0	6	0	0	0	0	0	0	0	0	0
Adj. Flow (vph)	22	820	82	112	482	33	264	0	155	15	7	32
Shared Lane Traffic (%)												
Lane Group Flow (vph)	22	902	0	112	515	0	264	0	155	15	39	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.1			3.1			3.3			3.3	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			1.6			4.9			4.9	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.09	1.00	1.01	1.09	1.00	0.99	1.04	1.01	0.99	1.06	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	0	0		0	0		1		1	0	0	
Detector Template								Right				
Leading Detector (m)	0.0	0.0		0.0	0.0		7.5		6.1	0.0	0.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		-1.5		0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		-1.5		0.0	0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		9.0		6.1	6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	
Turn Type	Prot	NA		Prot	NA		Perm		Perm	Perm	NA	
Protected Phases	5	2		1	6				8		4	
Permitted Phases												

Lanes, Volumes, Timings
1: Walnut Lane & Kingston Road

<2038 Future Background>AM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2		1	6		8		8	4	4	
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0		8.0		8.0	8.0	8.0	
Minimum Split (s)	10.0	33.0		10.0	33.0		39.0		39.0	39.0	39.0	
Total Split (s)	10.0	52.0		19.0	61.0		49.0		49.0	49.0	49.0	
Total Split (%)	8.3%	43.3%		15.8%	50.8%		40.8%		40.8%	40.8%	40.8%	
Maximum Green (s)	5.0	45.4		14.0	54.4		41.0		41.0	41.0	41.0	
Yellow Time (s)	3.0	4.4		3.0	4.4		3.3		3.3	3.3	3.3	
All-Red Time (s)	2.0	2.2		2.0	2.2		4.7		4.7	4.7	4.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	
Total Lost Time (s)	5.0	6.6		5.0	6.6		8.0		8.0	8.0	8.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0		3.0	3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None		None	None	None	
Walk Time (s)		7.0			7.0		7.0		7.0	7.0	7.0	
Flash Dont Walk (s)		19.0			19.0		22.0		22.0	22.0	22.0	
Pedestrian Calls (#/hr)		7			5		5		5	14	14	
Act Effct Green (s)	6.7	58.2		12.8	68.7		29.3		29.3	29.3	29.3	
Actuated g/C Ratio	0.06	0.48		0.11	0.57		0.24		0.24	0.24	0.24	
v/c Ratio	0.24	0.54		0.64	0.27		0.81		0.31	0.04	0.09	
Control Delay	81.8	19.1		50.1	21.9		61.3		6.4	30.7	12.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	
Total Delay	81.8	19.1		50.1	21.9		61.3		6.4	30.7	12.8	
LOS	F	B		D	C		E		A	C	B	
Approach Delay		20.6			26.9		41.0				17.8	
Approach LOS		C			C		D				B	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 1 (1%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 85
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.81
 Intersection Signal Delay: 26.7 Intersection LOS: C
 Intersection Capacity Utilization 62.1% ICU Level of Service B
 Analysis Period (min) 15

Splits and Phases: 1: Walnut Lane & Kingston Road



Queues <2038 Future Background>AM
1: Walnut Lane & Kingston Road 12-20-2024

	↖	→	↘	←	↙	↗	↓	
Lane Group	EBL	EBT	WBL	WBT	NBL	NBR	SBL	SBT
Lane Group Flow (vph)	22	902	112	515	264	155	15	39
w/c Ratio	0.24	0.54	0.64	0.27	0.81	0.31	0.04	0.09
Control Delay	81.8	19.1	50.1	21.9	61.3	6.4	30.7	12.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	81.8	19.1	50.1	21.9	61.3	6.4	30.7	12.8
Queue Length 50th (m)	5.4	84.7	26.7	55.7	58.8	0.0	2.7	1.3
Queue Length 95th (m)	m13.0	120.8	43.4	73.2	80.8	14.2	7.3	8.8
Internal Link Dist (m)		105.3		670.6				155.7
Turn Bay Length (m)	26.0		37.0		63.2		18.5	
Base Capacity (vph)	93	1657	201	1938	454	636	587	568
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced w/c Ratio	0.24	0.54	0.56	0.27	0.58	0.24	0.03	0.07
Intersection Summary								
m	Volume for 95th percentile queue is metered by upstream signal.							

Lanes, Volumes, Timings <2038 Future Background>AM
3: Dixie Road & Kingston Road 12-20-2024

	↖	→	↘	←	↙	↗	↑	↘	↓	↙		
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗		↖	↖↗		↖	↖↗		↖	↖↗	
Traffic Volume (vph)	80	760	81	78	554	86	37	15	29	131	35	144
Future Volume (vph)	80	760	81	78	554	86	37	15	29	131	35	144
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	2.8	3.6	3.4	2.8	3.5	3.1	3.6	4.0	3.7	3.8	4.2	3.7
Grade (%)		6%			0%			0%			0%	
Storage Length (m)	145.4		64.5	51.0		79.5	13.0		0.0	16.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	66.4			48.0			18.0			25.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		1.00	1.00		1.00	0.99		1.00	0.99	
Frt		0.986			0.980			0.900				0.879
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1564	3316	0	1645	3301	0	1752	1769	0	1827	1759	0
Fit Permitted	0.950			0.950			0.540			0.726		
Satd. Flow (perm)	1554	3316	0	1639	3301	0	993	1769	0	1393	1759	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12			17			32				157
Link Speed (k/h)		60			60			40				60
Link Distance (m)		896.3			191.2			44.0				236.2
Travel Time (s)		53.8			11.5			4.0				14.2
Confl. Peds. (#/hr)	6		4	4		6	3		2	2		3
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 (%)	2%	4%	2%	0%	6%	2%	3%	0%	0%	1%	0%	0%
Bus Blockages (#/hr)	0	0	6	0	0	6	0	0	0	0	0	0
Adj. Flow (vph)	87	826	88	85	602	93	40	16	32	142	38	157
Shared Lane Traffic (%)												
Lane Group Flow (vph)	87	914	0	85	695	0	40	48	0	142	195	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		2.8			2.8			3.8				3.8
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			4.9			4.9				4.9
Two way Left Turn Lane												
	Yes											
Headway Factor	1.17	1.04	1.07	1.13	1.01	1.08	1.00	0.94	0.99	0.97	0.92	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	0	0		0	0		0	0		1		1
Detector Template												
Leading Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		7.5		7.5
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		-1.5		-1.5
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		-1.5		-1.5
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		9.0		9.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0		0.0
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm		NA
Protected Phases	5	2		1	6			8				4

Lanes, Volumes, Timings
3: Dixie Road & Kingston Road

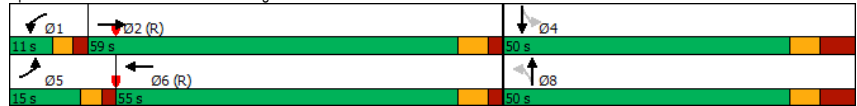
<2038 Future Background>AM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases							8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	10.0	28.0		10.0	28.0		43.0	43.0		41.0	41.0	
Total Split (s)	15.0	59.0		11.0	55.0		50.0	50.0		50.0	50.0	
Total Split (%)	12.5%	49.2%		9.2%	45.8%		41.7%	41.7%		41.7%	41.7%	
Maximum Green (s)	10.0	52.4		6.0	48.4		40.5	40.5		40.5	40.5	
Yellow Time (s)	3.0	4.2		3.0	4.2		4.4	4.4		4.4	4.4	
All-Red Time (s)	2.0	2.4		2.0	2.4		5.1	5.1		5.1	5.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.6		5.0	6.6		9.5	9.5		9.5	9.5	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes			Yes								
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		14.0			14.0		23.0	23.0		23.0	23.0	
Pedestrian Calls (#/hr)		6			1		7	7		4	4	
Act Effect Green (s)	9.5	74.2		6.0	70.7		18.7	18.7		18.7	18.7	
Actuated g/C Ratio	0.08	0.62		0.05	0.59		0.16	0.16		0.16	0.16	
v/c Ratio	0.71	0.44		1.04	0.36		0.26	0.16		0.65	0.48	
Control Delay	83.0	13.7		171.5	5.6		45.6	19.8		60.5	14.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	83.0	13.7		171.5	5.6		45.6	19.8		60.5	14.4	
LOS	F	B		F	A		D	B		E	B	
Approach Delay		19.8			23.7			31.5			33.8	
Approach LOS		B			C			C			C	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 107.8 (90%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 85
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.04
 Intersection Signal Delay: 23.8 Intersection LOS: C
 Intersection Capacity Utilization 72.4% ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 3: Dixie Road & Kingston Road



Queues
3: Dixie Road & Kingston Road

<2038 Future Background>AM
12-20-2024

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	87	914	85	695	40	48	142	195
v/c Ratio	0.71	0.44	1.04	0.36	0.26	0.16	0.65	0.48
Control Delay	83.0	13.7	171.5	5.6	45.6	19.8	60.5	14.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	83.0	13.7	171.5	5.6	45.6	19.8	60.5	14.4
Queue Length 50th (m)	20.2	53.6	~20.9	23.3	8.5	3.3	32.2	7.9
Queue Length 95th (m)	#43.5	88.2	m#53.1	43.7	16.9	12.4	47.4	25.6
Internal Link Dist (m)		872.3		167.2		20.0		212.2
Turn Bay Length (m)	145.4		51.0		13.0		16.0	
Base Capacity (vph)	130	2054	82	1951	335	618	470	697
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.67	0.44	1.04	0.36	0.12	0.08	0.30	0.28

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.
 m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings

6: Liverpool Road & Kingston Road

<2038 Future Background>AM

12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	167	523	218	137	465	50	134	398	146	84	672	117
Future Volume (vph)	167	523	218	137	465	50	134	398	146	84	672	117
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.1	3.4	3.6	3.3	3.7	3.4	3.8	4.1	4.8	4.7	3.8	3.3
Storage Length (m)	188.8		97.9	170.7		117.0	185.5		52.0	49.0		60.5
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	31.6			22.7			20.8			25.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.97	0.99		0.96	0.99		0.93	0.98		0.96
Frt			0.850			0.850			0.850			0.850
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1671	3299	1538	1694	3510	1579	1774	3700	1647	2026	3618	1516
Fit Permitted	0.950			0.950			0.266			0.474		
Satd. Flow (perm)	1649	3299	1487	1677	3510	1517	492	3700	1536	989	3618	1452
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			172			174			159			155
Link Speed (kh)		60			60			50				50
Link Distance (m)		694.6			396.4			257.7				348.6
Travel Time (s)		41.7			23.8			18.6				25.1
Confl. Peds. (#/hr)	21		17	17		21	34		44	44		34
Confl. Bikes (#/hr)						1						
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 (%)	2%	7%	5%	3%	4%	0%	4%	3%	8%	0%	2%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	7	0	0	0
Adj. Flow (vph)	182	568	237	149	505	54	146	433	159	91	730	127
Shared Lane Traffic (%)												
Lane Group Flow (vph)	182	568	237	149	505	54	146	433	159	91	730	127
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.3			3.3			4.7				4.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		1.6			1.6			1.6				1.6
Two way Left Turn Lane		Yes										Yes
Headway Factor	1.08	1.03	1.00	1.04	0.99	1.03	0.97	0.93	0.88	0.86	0.97	1.04
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4				9.4
Detector 2 Size(m)		0.6			0.6			0.6				0.6

1105-1163 Kingston Road
WSP

Synchro 11 Report
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Lanes, Volumes, Timings

6: Liverpool Road & Kingston Road

<2038 Future Background>AM

12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type	CI+Ex			CI+Ex			CI+Ex			CI+Ex		
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	custom	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6	8		2	4		4
Detector Phase	5	2	2	1	6	6	3	8	2	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	5.0	8.0	20.0	5.0	8.0	8.0
Minimum Split (s)	10.0	36.0	36.0	10.0	36.0	36.0	8.0	51.0	36.0	8.0	51.0	51.0
Total Split (s)	25.0	42.0	42.0	19.0	36.0	36.0	8.0	51.0	42.0	8.0	51.0	51.0
Total Split (%)	20.8%	35.0%	35.0%	15.8%	30.0%	30.0%	6.7%	42.5%	35.0%	6.7%	42.5%	42.5%
Maximum Green (s)	20.0	34.9	34.9	14.0	28.9	28.9	5.0	41.9	34.9	5.0	41.9	41.9
Yellow Time (s)	3.0	4.3	4.3	3.0	4.3	4.3	3.0	3.8	4.3	3.0	3.8	3.8
All-Red Time (s)	2.0	2.8	2.8	2.0	2.8	2.8	0.0	5.3	2.8	0.0	5.3	5.3
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	0.0
Total Lost Time (s)	5.0	7.1	7.1	5.0	7.1	7.1	3.0	9.1	7.1	3.0	9.1	9.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
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	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	C-Max	None	Max	Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		21.0	21.0		21.0	21.0		33.0	21.0		33.0	33.0
Pedestrian Calls (#/hr)		44	44		31	31		61	44		40	40
Act Effect Green (s)	17.1	35.6	35.6	13.3	31.8	31.8	53.0	41.9	35.6	53.0	41.9	41.9
Actuated g/C Ratio	0.14	0.30	0.30	0.11	0.26	0.26	0.44	0.35	0.30	0.44	0.35	0.35
v/c Ratio	0.77	0.58	0.42	0.80	0.54	0.10	0.54	0.34	0.28	0.19	0.58	0.21
Control Delay	91.5	31.9	13.1	81.0	41.1	0.4	28.3	29.7	6.2	19.1	34.1	3.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	91.5	31.9	13.1	81.0	41.1	0.4	28.3	29.7	6.2	19.1	34.1	3.1
LOS	F	C	B	F	D	A	C	C	A	B	C	A
Approach Delay		38.3			46.4			24.4				28.5
Approach LOS		D			D			C				C

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 29.4 (25%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 105

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 34.2

Intersection LOS: C

Intersection Capacity Utilization 94.3%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 6: Liverpool Road & Kingston Road



Queues <2038 Future Background>AM
6: Liverpool Road & Kingston Road 12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	182	568	237	149	505	54	146	433	159	91	730	127
w/c Ratio	0.77	0.58	0.42	0.80	0.54	0.10	0.54	0.34	0.28	0.19	0.58	0.21
Control Delay	91.5	31.9	13.1	81.0	41.1	0.4	28.3	29.7	6.2	19.1	34.1	3.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	91.5	31.9	13.1	81.0	41.1	0.4	28.3	29.7	6.2	19.1	34.1	3.1
Queue Length 50th (m)	45.6	23.2	1.7	34.5	54.6	0.0	19.5	39.2	0.0	11.7	73.3	0.0
Queue Length 95th (m)	69.1	61.1	34.0	#65.7	73.4	0.0	32.4	52.6	15.4	21.1	92.6	8.1
Internal Link Dist (m)	670.6			372.4			233.7			324.6		
Turn Bay Length (m)	188.8	97.9	170.7	117.0			185.5	52.0	49.0	60.5		
Base Capacity (vph)	278	978	562	197	931	530	270	1291	567	480	1263	607
Starvation Cap Reductn	0	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced w/c Ratio	0.65	0.58	0.42	0.76	0.54	0.10	0.54	0.34	0.28	0.19	0.58	0.21

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

Lanes, Volumes, Timings <2038 Future Background>AM
8: Liverpool Road & Private Access/Pickering Parkway 12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔↔	↔	↔↔	↔	↔	↔	↔↔↔	↔	↔	↔↔↔	↔
Traffic Volume (vph)	10	17	36	194	19	59	53	554	272	146	815	24
Future Volume (vph)	10	17	36	194	19	59	53	554	272	146	815	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.1	3.1	3.7	3.0	3.4	3.2	2.8	3.6	3.5	3.2	3.5	3.5
Storage Length (m)	0.0	0.0	57.0	62.1	54.4	75.7	132.5	35.5				
Storage Lanes	1	0	1	1	1	1	1	1				
Taper Length (m)	2.5	12.0			29.5			28.9				
Lane Util. Factor	1.00	0.95	0.95	0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Ped Bike Factor	0.99	0.897			0.850			0.850	0.97	0.99	0.96	
Frt	0.897			0.850			0.850	0.850				
Flt Protected	0.950	0.950			0.950			0.950				
Satd. Flow (prot)	1705	3058	0	3113	1858	1204	1645	5036	1523	1675	5029	1521
Flt Permitted	0.000	0.000			0.306			0.386				
Satd. Flow (perm)	0	3058	0	0	1858	1181	527	5036	1483	677	5029	1458
Right Turn on Red	Yes			Yes			Yes	Yes				
Satd. Flow (RTOR)	39			141			296	144				
Link Speed (k/h)	30			50			50	50				
Link Distance (m)	82.8			328.5			162.3	257.7				
Travel Time (s)	9.9			23.7			11.7	18.6				
Confl. Peds. (#/hr)	7			7			10	11	11	10		
Confl. Bikes (#/hr)	1			1			1	1				
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%	5%	0%	23%	0%	3%	4%	3%	2%	5%
Bus Blockages (#/hr)	0	0	0	0	0	10	0	2	0	0	0	0
Adj. Flow (vph)	11	18	39	211	21	64	58	602	296	159	886	26
Shared Lane Traffic (%)	11			57			0			211		
Lane Group Flow (vph)	11	57	0	211	21	64	58	602	296	159	886	26
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	6.0			6.0			3.8			3.8		
Link Offset(m)	0.0			0.0			0.0			0.0		
Crosswalk Width(m)	1.6			1.6			1.6			1.6		
Two way Left Turn Lane												
Headway Factor	1.08	1.08	0.99	1.09	1.03	1.12	1.13	1.00	1.03	1.06	1.01	1.01
Turning Speed (k/h)	24	24	14	24	14	24	24	14	24	14	24	14
Number of Detectors	1	2	1	2	1	2	1	2	1	1	2	1
Detector Template	Left	Thru	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left
Leading Detector (m)	2.0	10.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4			9.4			9.4		
Detector 2 Size(m)	0.6			0.6			0.6			0.6		

Lanes, Volumes, Timings

<2038 Future Background>AM

8: Liverpool Road & Private Access/Pickering Parkway

12-20-2024

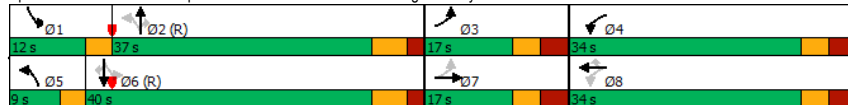


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type	CI+Ex		CI+Ex		CI+Ex		CI+Ex		CI+Ex		CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0		0.0		0.0		0.0		0.0		0.0	
Turn Type	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm
Protected Phases	3	7	4	8	8	5	2	2	6	1	6	6
Permitted Phases	7		8		8	2		2	6	1	6	6
Detector Phase	3	7	4	8	8	5	2	2	1	6	6	6
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	5.0	20.0	20.0	5.0	20.0	20.0	20.0
Minimum Split (s)	15.0	15.0	15.0	34.0	34.0	34.0	8.0	30.0	30.0	8.0	30.0	30.0
Total Split (s)	17.0	17.0	34.0	34.0	34.0	9.0	37.0	37.0	12.0	40.0	40.0	40.0
Total Split (%)	17.0%	17.0%	34.0%	34.0%	34.0%	9.0%	37.0%	37.0%	12.0%	40.0%	40.0%	40.0%
Maximum Green (s)	10.4	10.4	27.4	27.4	27.4	6.0	30.7	30.7	9.0	33.7	33.7	33.7
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.0	4.2	4.2	3.0	4.2	4.2	4.2
All-Red Time (s)	3.3	3.3	3.3	3.3	3.3	0.0	2.1	2.1	0.0	2.1	2.1	2.1
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	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.6	3.0	6.3	6.3	3.0	6.3	6.3	6.3
Lead/Lag					Lead		Lag	Lag	Lead	Lag	Lag	Lag
Lead-Lag Optimize?												
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	3.0
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max	C-Max
Walk Time (s)			19.0		19.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0
Flash Dont Walk (s)			8.0		8.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Pedestrian Calls (#/hr)			0		0	21	21	21	21	21	21	21
Act Effect Green (s)	8.0	8.0	12.1	12.1	12.1	61.3	52.1	52.1	66.4	56.1	56.1	56.1
Actuated g/C Ratio	0.08	0.08	0.12	0.12	0.12	0.61	0.52	0.52	0.66	0.56	0.56	0.56
v/c Ratio	0.08	0.20	0.56	0.09	0.24	0.15	0.23	0.32	0.30	0.31	0.03	0.03
Control Delay	44.1	22.1	46.9	38.5	2.1	6.7	13.1	4.0	9.0	13.7	0.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.1	22.1	46.9	38.5	2.1	6.7	13.1	4.0	9.0	13.7	0.0	0.0
LOS	D	C	D	D	A	A	B	A	A	B	B	A
Approach Delay	25.7		36.6		9.9		12.7					
Approach LOS	C		D		A		B					

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 34 (34%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.56
 Intersection Signal Delay: 14.9 Intersection LOS: B
 Intersection Capacity Utilization 55.7% ICU Level of Service B
 Analysis Period (min) 15

Splits and Phases: 8: Liverpool Road & Private Access/Pickering Parkway



Queues

<2038 Future Background>AM

8: Liverpool Road & Private Access/Pickering Parkway

12-20-2024



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Group Flow (vph)	11	57	211	21	64	58	602	296	159	886	26	
v/c Ratio	0.08	0.20	0.56	0.09	0.24	0.15	0.23	0.32	0.30	0.31	0.03	
Control Delay	44.1	22.1	46.9	38.5	2.1	6.7	13.1	4.0	9.0	13.7	0.0	
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	44.1	22.1	46.9	38.5	2.1	6.7	13.1	4.0	9.0	13.7	0.0	
Queue Length 50th (m)	2.0	1.7	20.2	3.7	0.0	2.4	24.0	9.7	11.3	35.3	0.0	
Queue Length 95th (m)	7.4	7.8	30.3	10.1	0.0	m5.5	37.0	19.9	21.5	48.0	0.0	
Internal Link Dist (m)	58.8		304.5		138.3		233.7					
Turn Bay Length (m)			57.0		62.1		54.4	75.7	132.5	35.5		
Base Capacity (vph)	177	352	852	509	425	390	2621	913	540	2821	881	
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	0.06	0.16	0.25	0.04	0.15	0.15	0.23	0.32	0.29	0.31	0.03	

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings

<2038 Future Background>AM

9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp

12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗	↖	↖	↖	↖	↖	↖	↖	↖	↖
Traffic Volume (vph)	0	0	160	188	69	310	162	536	0	0	700	97
Future Volume (vph)	0	0	160	188	69	310	162	536	0	0	700	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.5	3.7	3.7	3.4	3.7
Storage Length (m)	0.0	0.0	0.0	0.0	125.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0
Storage Lanes	0		1	1		1	1		0	0		1
Taper Length (m)	2.5			2.5		30.0				2.5		
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	1.00	0.91	1.00
Ped Bike Factor							1.00					0.96
Frt			0.865			0.850						0.850
Fit Protected				0.950	0.977		0.950					
Satd. Flow (prot)	0	0	1108	1700	1767	1551	1460	4932	0	0	4877	1601
Fit Permitted				0.950	0.977		0.300					
Satd. Flow (perm)	0	0	1108	1700	1767	1551	459	4932	0	0	4877	1538
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)						337						105
Link Speed (kh)		50			50			50				50
Link Distance (m)		433.1			226.7			372.2				162.3
Travel Time (s)		31.2			16.3			26.8				11.7
Confl. Peds. (#/hr)							7		14	14		7
Confl. Bikes (#/hr)								4				
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%	2%	50%	2%	0%	3%	25%	4%	4%	2%	4%	2%
Adj. Flow (vph)	0	0	174	204	75	337	176	583	0	0	761	105
Shared Lane Traffic (%)				32%								
Lane Group Flow (vph)	0	0	174	139	140	337	176	583	0	0	761	105
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7				3.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		1.6			1.6			1.6				1.6
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	1.01	0.99	1.01	0.99	0.99	1.03	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors			1	1	2	1	1	2			2	1
Detector Template			Right	Left	Thru	Right	Left	Thru			Thru	Right
Leading Detector (m)			2.0	2.0	10.0	2.0	2.0	10.0			10.0	2.0
Trailing Detector (m)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Position(m)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Size(m)			2.0	2.0	0.6	2.0	2.0	0.6			0.6	2.0
Detector 1 Type			Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 2 Position(m)						9.4		9.4				9.4
Detector 2 Size(m)						0.6		0.6				0.6
Detector 2 Type						Cl+Ex		Cl+Ex				Cl+Ex

Lanes, Volumes, Timings

<2038 Future Background>AM

9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp

12-20-2024

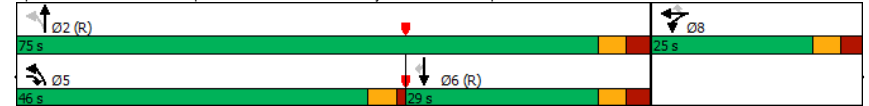


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0				0.0
Turn Type			Over	Split	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases			5	8	8		5	2			6	
Permitted Phases						8	2					6
Detector Phase			5	8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)			5.0	8.0	8.0	8.0	5.0	15.0			15.0	15.0
Minimum Split (s)			9.5	25.0	25.0	25.0	9.5	24.3			24.3	24.3
Total Split (s)			46.0	25.0	25.0	25.0	46.0	75.0			29.0	29.0
Total Split (%)			46.0%	25.0%	25.0%	25.0%	46.0%	75.0%			29.0%	29.0%
Maximum Green (s)			41.5	19.0	19.0	19.0	41.5	68.7			22.7	22.7
Yellow Time (s)			3.5	3.3	3.3	3.3	3.5	3.3			3.3	3.3
All-Red Time (s)			1.0	2.7	2.7	2.7	1.0	3.0			3.0	3.0
Lost Time Adjust (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Lost Time (s)			4.5	6.0	6.0	6.0	4.5	6.3			6.3	6.3
Lead/Lag			Lead				Lead				Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)			3.0	3.0	3.0	3.0	3.0	3.0			3.0	3.0
Recall Mode			None	None	None	None	None	C-Max			C-Max	C-Max
Walk Time (s)				14.0	14.0	14.0		13.0			13.0	13.0
Flash Dont Walk (s)				5.0	5.0	5.0		5.0			5.0	5.0
Pedestrian Calls (#/hr)				0	0	0		15			17	17
Act Effct Green (s)			21.4	13.7	13.7	13.7	75.8	74.0			48.1	48.1
Actuated g/C Ratio			0.21	0.14	0.14	0.14	0.76	0.74			0.48	0.48
v/c Ratio			0.73	0.60	0.58	0.67	0.31	0.16			0.32	0.13
Control Delay			53.6	50.7	49.5	11.3	5.4	4.3			11.1	1.9
Queue Delay			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay			53.6	50.7	49.5	11.3	5.4	4.3			11.1	1.9
LOS			D	D	D	B	A	A			B	A
Approach Delay		53.6			28.9			4.6				10.0
Approach LOS		D			C			A				A

Intersection Summary

Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	100
Offset:	38 (38%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle:	65
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.73
Intersection Signal Delay:	16.2
Intersection LOS:	B
Intersection Capacity Utilization:	45.9%
ICU Level of Service:	A
Analysis Period (min):	15

Splits and Phases: 9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp



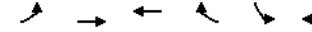
Queues <2038 Future Background>AM
 9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp 12-20-2024



Lane Group	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	174	139	140	337	176	583	761	105
w/c Ratio	0.73	0.60	0.58	0.67	0.31	0.16	0.32	0.13
Control Delay	53.6	50.7	49.5	11.3	5.4	4.3	11.1	1.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.6	50.7	49.5	11.3	5.4	4.3	11.1	1.9
Queue Length 50th (m)	31.7	27.1	27.2	0.0	7.6	10.0	19.5	0.2
Queue Length 95th (m)	48.6	44.3	44.3	23.2	16.9	16.9	24.3	2.1
Internal Link Dist (m)	202.7				348.2	138.3		
Turn Bay Length (m)			125.0		50.0			
Base Capacity (vph)	459	323	335	567	763	3651	2346	794
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced w/c Ratio	0.38	0.43	0.42	0.59	0.23	0.16	0.32	0.13

Intersection Summary

Lanes, Volumes, Timings <2038 Future Background>AM
 10: Kingston Road & Fairport Road 12-20-2024



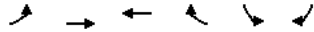
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø1
Lane Configurations	↔	↔↔	↔↔		↔	↔	
Traffic Volume (vph)	96	714	648	99	182	229	
Future Volume (vph)	96	714	648	99	182	229	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (m)	3.0	3.6	3.5	3.7	3.6	4.5	
Grade (%)	6%		0%		0%		
Storage Length (m)	75.0				18.5	15.5	0.0
Storage Lanes	1				0	1	1
Taper Length (m)	2.5				31.3		
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00	
Frt			0.980		0.850		
Fit Protected	0.950				0.950		
Satd. Flow (prot)	1602	3335	3379	0	1736	1708	
Fit Permitted	0.950				0.950		
Satd. Flow (perm)	1602	3335	3379	0	1736	1708	
Right Turn on Red			Yes		Yes		
Satd. Flow (RTOR)			17		249		
Link Speed (k/h)	60		60		40		
Link Distance (m)	424.0		896.3		280.0		
Travel Time (s)	25.4		53.8		25.2		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Heavy Vehicles (%)	2%	5%	3%	7%	4%	4%	
Bus Blockages (#/hr)	0	0	0	9	0	0	
Adj. Flow (vph)	104	776	704	108	198	249	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	104	776	812	0	198	249	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Left	Left	Right	Left	Right	
Median Width(m)	3.0		3.0		3.6		
Link Offset(m)	0.0		0.0		0.0		
Crosswalk Width(m)	1.6		1.6		1.6		
Two way Left Turn Lane	Yes						
Headway Factor	1.14	1.04	1.01	0.99	1.00	0.88	
Turning Speed (k/h)	24				14	24	14
Number of Detectors	1	2	2		1	1	
Detector Template	Left	Thru	Thru		Left	Right	
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0	
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	0.6		2.0	2.0	
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)	9.4		9.4				
Detector 2 Size(m)	0.6		0.6				
Detector 2 Type	CI+Ex		CI+Ex				
Detector 2 Channel							

Lanes, Volumes, Timings

<2038 Future Background>AM

10: Kingston Road & Fairport Road

12-20-2024



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø1
Detector 2 Extend (s)		0.0	0.0				
Turn Type	Prot	NA	NA		Prot	Perm	
Protected Phases	5	2	6		4		1
Permitted Phases						4	
Detector Phase	5	2	6		4	4	
Switch Phase							
Minimum Initial (s)	5.0	20.0	20.0		8.0	8.0	5.0
Minimum Split (s)	10.0	32.3	32.3		38.1	38.1	8.0
Total Split (s)	22.0	79.0	65.0		43.0	43.0	8.0
Total Split (%)	16.9%	60.8%	50.0%		33.1%	33.1%	6%
Maximum Green (s)	17.0	72.7	58.7		35.7	35.7	5.0
Yellow Time (s)	3.0	4.3	4.3		3.3	3.3	3.0
All-Red Time (s)	2.0	2.0	2.0		4.0	4.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.3	6.3		7.3	7.3	
Lead/Lag	Lead	Lag	Lag				Lead
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	0.2	0.2		3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max		None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0	5.0
Flash Dont Walk (s)		19.0	19.0		23.0	23.0	0.0
Pedestrian Calls (#/hr)		0	1		2	2	20
Act Effect Green (s)	13.3	90.9	77.4		20.7	20.7	
Actuated g/C Ratio	0.10	0.70	0.60		0.16	0.16	
v/c Ratio	0.64	0.33	0.40		0.72	0.52	
Control Delay	104.1	0.8	15.8		65.5	9.1	
Queue Delay	0.0	0.0	0.0		0.0	0.0	
Total Delay	104.1	0.8	15.8		65.5	9.1	
LOS	F	A	B		E	A	
Approach Delay		13.0	15.8		34.1		
Approach LOS		B	B		C		

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 105 (81%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 85
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.72
 Intersection Signal Delay: 18.5
 Intersection LOS: B
 Intersection Capacity Utilization 52.0%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 10: Kingston Road & Fairport Road



Queues

<2038 Future Background>AM

10: Kingston Road & Fairport Road

12-20-2024



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	104	776	812	198	249
v/c Ratio	0.64	0.33	0.40	0.72	0.52
Control Delay	104.1	0.8	15.8	65.5	9.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	104.1	0.8	15.8	65.5	9.1
Queue Length 50th (m)	26.1	2.5	53.8	49.0	0.0
Queue Length 95th (m)	42.6	2.5	86.2	68.5	20.6
Internal Link Dist (m)		400.0	872.3	256.0	
Turn Bay Length (m)	75.0			15.5	
Base Capacity (vph)	209	2331	2018	476	649
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.50	0.33	0.40	0.42	0.38

Intersection Summary

Lanes, Volumes, Timings
11: Hwy 401 WB Ramps & Kingston Road

<2038 Future Background>AM
12-20-2024

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↖	↑↑	↖	↗
Traffic Volume (vph)	748	12	284	612	461	65
Future Volume (vph)	748	12	284	612	461	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.0	3.7	2.7	3.8	3.8	3.7
Grade (%)	6%			0%	0%	
Storage Length (m)		0.0	47.5		0.0	52.0
Storage Lanes		0	1		2	1
Taper Length (m)			22.3		2.5	
Lane Util. Factor	0.95	0.95	1.00	0.95	0.97	1.00
Frt	0.998					0.850
Fit Protected			0.950		0.950	
Satd. Flow (prot)	3479	0	1593	3548	3442	1633
Fit Permitted			0.950		0.950	
Satd. Flow (perm)	3479	0	1593	3548	3442	1633
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	1					71
Link Speed (k/h)	60			60	50	
Link Distance (m)	268.7			424.0	216.6	
Travel Time (s)	16.1			25.4	15.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	0%	2%	4%	4%	0%
Adj. Flow (vph)	813	13	309	665	501	71
Shared Lane Traffic (%)						
Lane Group Flow (vph)	826	0	309	665	501	71
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.1			3.1	7.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	0.98	1.03	1.14	0.97	0.97	0.99
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	10.0		2.0	10.0	2.0	2.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Size(m)	0.6		2.0	0.6	2.0	2.0
Detector 1 Type	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	CI+Ex			CI+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		

Lanes, Volumes, Timings
11: Hwy 401 WB Ramps & Kingston Road

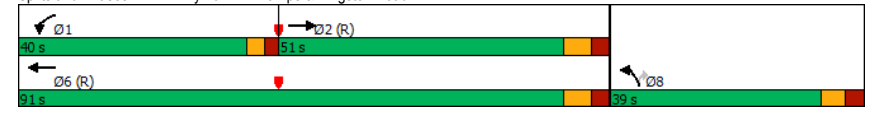
<2038 Future Background>AM
12-20-2024

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Turn Type	NA		Prot	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases						8
Detector Phase	2		1	6	8	8
Switch Phase						
Minimum Initial (s)	20.0		5.0	20.0	8.0	8.0
Minimum Split (s)	50.0		10.0	50.0	39.0	39.0
Total Split (s)	51.0		40.0	91.0	39.0	39.0
Total Split (%)	39.2%		30.8%	70.0%	30.0%	30.0%
Maximum Green (s)	43.8		35.0	83.8	32.3	32.3
Yellow Time (s)	4.2		3.0	4.2	3.7	3.7
All-Red Time (s)	3.0		2.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	7.2		5.0	7.2	6.7	6.7
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?						
Vehicle Extension (s)	0.2		3.0	0.2	3.0	3.0
Recall Mode	C-Max		None	C-Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	35.0			35.0	24.0	24.0
Pedestrian Calls (#/hr)	0			3	3	3
Act Effect Green (s)	57.3		29.4	91.7	24.4	24.4
Actuated g/C Ratio	0.44		0.23	0.71	0.19	0.19
v/c Ratio	0.54		0.86	0.27	0.78	0.20
Control Delay	12.2		59.8	15.2	58.6	10.2
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	12.2		59.8	15.2	58.6	10.2
LOS	B		E	B	E	B
Approach Delay	12.2			29.3	52.6	
Approach LOS	B			C	D	

Intersection Summary

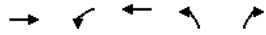
Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 66 (51%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.86
 Intersection Signal Delay: 29.0
 Intersection Capacity Utilization 65.7%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service C

Splits and Phases: 11: Hwy 401 WB Ramps & Kingston Road



Queues
11: Hwy 401 WB Ramps & Kingston Road

<2038 Future Background>AM
12-20-2024



Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	826	309	665	501	71
w/c Ratio	0.54	0.86	0.27	0.78	0.20
Control Delay	12.2	59.8	15.2	58.6	10.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	12.2	59.8	15.2	58.6	10.2
Queue Length 50th (m)	19.3	76.0	61.7	63.7	0.0
Queue Length 95th (m)	46.5	107.1	80.7	77.4	12.0
Internal Link Dist (m)	244.7		400.0	192.6	
Turn Bay Length (m)		47.5			52.0
Base Capacity (vph)	1534	428	2502	855	459
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced w/c Ratio	0.54	0.72	0.27	0.59	0.15

Intersection Summary

Lanes, Volumes, Timings
12: Plaza Entrance/Delta Blvd & Kingston Road

<2038 Future Background>AM
12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	76	975	37	96	980	74	140	6	92	42	13	124
Future Volume (vph)	76	975	37	96	980	74	140	6	92	42	13	124
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.2	3.4	3.5	3.1	3.4	3.4	3.6	4.6	3.7	3.2	2.8	3.7
Grade (%)		6%			0%			0%				0%
Storage Length (m)	51.8		148.5	100.0		18.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	35.3			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99				1.00		0.99	0.98		1.00		0.98
Frt		0.995			0.990			0.860				0.864
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1673	3280	0	1671	3380	0	1805	1755	0	1643	1468	0
Fit Permitted	0.950			0.950			0.662			0.688		
Satd. Flow (perm)	1662	3280	0	1671	3380	0	1249	1755	0	1185	1468	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			9			100				135
Link Speed (k/h)		60			60			30				40
Link Distance (m)		222.7			268.7			130.9				169.9
Travel Time (s)		13.4			16.1			15.7				15.3
Confl. Peds. (#/hr)	13					13	6		3	3		6
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%	4%	0%	2%	3%	3%	0%	0%	2%	5%	0%	0%
Adj. Flow (vph)	83	1060	40	104	1065	80	152	7	100	46	14	135
Shared Lane Traffic (%)												
Lane Group Flow (vph)	83	1100	0	104	1145	0	152	107	0	46	149	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.6				3.6
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		1.6			1.6			1.6				1.6
Two way Left Turn Lane					Yes							
Headway Factor	1.10	1.07	1.06	1.08	1.03	1.03	1.00	0.87	0.99	1.06	1.13	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	

Lanes, Volumes, Timings

<2038 Future Background>AM

12: Plaza Entrance/Delta Blvd & Kingston Road

12-20-2024

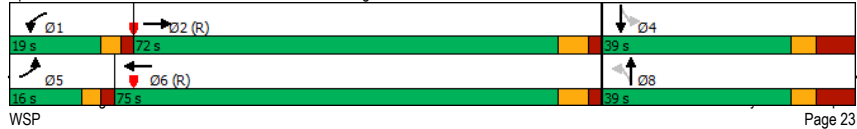


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	10.0	31.9		10.0	31.9		37.6	37.6		37.6	37.6	
Total Split (s)	16.0	72.0		19.0	75.0		39.0	39.0		39.0	39.0	
Total Split (%)	12.3%	55.4%		14.6%	57.7%		30.0%	30.0%		30.0%	30.0%	
Maximum Green (s)	11.0	65.1		14.0	68.1		29.0	29.0		29.0	29.0	
Yellow Time (s)	3.0	4.7		3.0	4.7		3.8	3.8		3.8	3.8	
All-Red Time (s)	2.0	2.2		2.0	2.2		6.2	6.2		6.2	6.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.9		5.0	6.9		10.0	10.0		10.0	10.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	0.2		3.0	0.2		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		18.0			18.0		20.0	20.0		20.0	20.0	
Pedestrian Calls (#/hr)		1			16		0	0		1	1	
Act Effct Green (s)	10.0	75.0		12.1	77.1		20.9	20.9		20.9	20.9	
Actuated g/C Ratio	0.08	0.58		0.09	0.59		0.16	0.16		0.16	0.16	
v/c Ratio	0.65	0.58		0.67	0.57		0.76	0.29		0.24	0.43	
Control Delay	83.2	29.8		78.6	28.2		74.1	11.5		48.1	12.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	83.2	29.8		78.6	28.2		74.1	11.5		48.1	12.9	
LOS	F	C		E	C		E	B		D	B	
Approach Delay		33.6			32.4			48.2			21.2	
Approach LOS		C			C			D			C	

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 49 (38%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.76
 Intersection Signal Delay: 33.6 Intersection LOS: C
 Intersection Capacity Utilization 79.5% ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 12: Plaza Entrance/Delta Blvd & Kingston Road

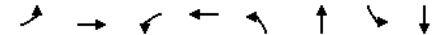


Queues

<2038 Future Background>AM

12: Plaza Entrance/Delta Blvd & Kingston Road

12-20-2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	83	1100	104	1145	152	107	46	149
v/c Ratio	0.65	0.58	0.67	0.57	0.76	0.29	0.24	0.43
Control Delay	83.2	29.8	78.6	28.2	74.1	11.5	48.1	12.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	83.2	29.8	78.6	28.2	74.1	11.5	48.1	12.9
Queue Length 50th (m)	22.0	125.7	27.2	152.0	37.6	1.5	10.4	3.1
Queue Length 95th (m)	#40.7	159.0	44.8	176.0	57.4	16.2	20.7	20.6
Internal Link Dist (m)		198.7		244.7		106.9		145.9
Turn Bay Length (m)	51.8		100.0					
Base Capacity (vph)	141	1894	179	2009	278	469	264	432
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.58	0.58	0.57	0.55	0.23	0.17	0.34

Intersection Summary

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

Lanes, Volumes, Timings
13: Whites Road & Kingston Road

<2038 Future Background>AM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	78	344	294	234	563	281	146	390	390	156	796	175
Future Volume (vph)	78	344	294	234	563	281	146	390	390	156	796	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.6	4.2	3.5	3.7	4.0	3.5	3.9	3.7	3.5	3.9	4.0
Grade (%)	6%			0%			0%			0%		
Storage Length (m)	127.0			123.0			87.1			47.0		
Storage Lanes	1			1			1			1		
Taper Length (m)	64.0			39.6			66.8			32.6		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Ped Bike Factor	0.98			0.97			0.99			0.97		
Frt	0.850			0.850			0.850			0.850		
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1633	3335	1607	1767	3510	1606	1700	5057	1558	1750	5057	1625
Flt Permitted	0.950			0.950			0.232			0.495		
Satd. Flow (perm)	1605	3335	1565	1752	3510	1522	413	5057	1509	902	5057	1574
Right Turn on Red	Yes			Yes			Yes			Yes		
Satd. Flow (RTOR)	155			239			193			173		
Link Speed (kh)	60			60			60			60		
Link Distance (m)	297.5			222.7			158.6			385.2		
Travel Time (s)	17.9			13.4			9.5			23.1		
Confl. Peds. (#/hr)	38			13			20			20		
Peak Hour Factor	0.92			0.92			0.92			0.92		
Heavy Vehicles (%)	6%			4%			5%			6%		
Bus Blockages (#/hr)	0			0			0			0		
Adj. Flow (vph)	85	374	320	254	612	305	159	424	424	170	865	190
Shared Lane Traffic (%)	-											
Lane Group Flow (vph)	85	374	320	254	612	305	159	424	424	170	865	190
Enter Blocked Intersection	No											
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width(m)	3.5			3.5			3.5			3.5		
Link Offset(m)	0.0			0.0			0.0			0.0		
Crosswalk Width(m)	1.6			1.6			1.6			1.6		
Two way Left Turn Lane												
Headway Factor	1.06	1.04	0.96	1.01	0.99	0.94	1.01	0.96	1.00	1.01	0.96	0.95
Turning Speed (k/h)	24			14			24			14		
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0											
Detector 1 Queue (s)	0.0											
Detector 1 Delay (s)	0.0											
Detector 2 Position(m)	9.4			9.4			9.4			9.4		
Detector 2 Size(m)	0.6			0.6			0.6			0.6		

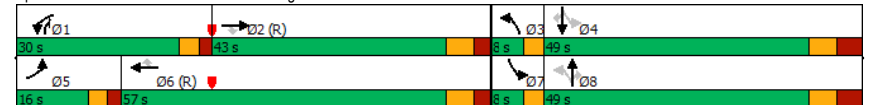
Lanes, Volumes, Timings
13: Whites Road & Kingston Road

<2038 Future Background>AM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type	CI+Ex			CI+Ex			CI+Ex			CI+Ex		
Detector 2 Channel	-											
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8	1	7	4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2	2	1	6	6	3	8	1	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	5.0	8.0	5.0	5.0	8.0	8.0
Minimum Split (s)	10.0	43.0	43.0	10.0	43.0	43.0	8.0	49.0	10.0	8.0	49.0	49.0
Total Split (s)	16.0	43.0	43.0	30.0	57.0	57.0	8.0	49.0	30.0	8.0	49.0	49.0
Total Split (%)	12.3%	33.1%	33.1%	23.1%	43.8%	43.8%	6.2%	37.7%	23.1%	6.2%	37.7%	37.7%
Maximum Green (s)	11.0	36.0	36.0	25.0	50.0	50.0	5.0	40.6	25.0	5.0	40.6	40.6
Yellow Time (s)	3.0	4.2	4.2	3.0	4.2	4.2	3.0	4.3	3.0	3.0	4.3	4.3
All-Red Time (s)	2.0	2.8	2.8	2.0	2.8	2.8	0.0	4.1	2.0	0.0	4.1	4.1
Lost Time Adjust (s)	0.0											
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	3.0	8.4	5.0	3.0	8.4	8.4
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	0.2	0.2	3.0	0.2	0.2	3.0	0.2	3.0	3.0	0.2	0.2
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	None	None	Max	Max
Walk Time (s)	7.0			7.0			7.0			7.0		
Flash Dont Walk (s)	29.0			29.0			33.0			33.0		
Pedestrian Calls (#/hr)	31			31			75			65		
Act Effect Green (s)	10.1	38.7	38.7	22.3	50.9	50.9	51.0	40.6	66.3	51.0	40.6	40.6
Actuated g/C Ratio	0.08	0.30	0.30	0.17	0.39	0.39	0.39	0.31	0.51	0.39	0.31	0.31
v/c Ratio	0.67	0.38	0.56	0.84	0.45	0.41	0.75	0.27	0.49	0.44	0.55	0.31
Control Delay	83.0	38.2	24.0	52.6	29.8	14.8	52.0	34.1	10.7	30.5	38.7	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	83.0	38.2	24.0	52.6	29.8	14.8	52.0	34.1	10.7	30.5	38.7	7.6
LOS	F	D	C	D	C	B	D	C	B	C	D	A
Approach Delay	37.2			30.9			27.1			32.7		
Approach LOS	D			C			C			C		

Intersection Summary	
Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	107 (82%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle:	120
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.84
Intersection Signal Delay:	31.7
Intersection Capacity Utilization:	105.3%
Analysis Period (min):	15
Intersection LOS:	C
ICU Level of Service:	G

Splits and Phases: 13: Whites Road & Kingston Road



Queues <2038 Future Background>AM
13: Whites Road & Kingston Road 12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	85	374	320	254	612	305	159	424	424	170	865	190
w/c Ratio	0.67	0.38	0.56	0.84	0.45	0.41	0.75	0.27	0.49	0.44	0.55	0.31
Control Delay	83.0	38.2	24.0	52.6	29.8	14.8	52.0	34.1	10.7	30.5	38.7	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	83.0	38.2	24.0	52.6	29.8	14.8	52.0	34.1	10.7	30.5	38.7	7.6
Queue Length 50th (m)	21.4	40.8	35.7	61.8	77.5	44.8	25.9	29.8	30.7	27.8	67.3	3.0
Queue Length 95th (m)	#42.5	55.7	67.2	#95.0	95.6	66.9	#50.2	39.1	52.8	44.1	81.1	19.8
Internal Link Dist (m)		273.5			198.7			134.6			361.2	
Turn Bay Length (m)	127.0		123.0	87.1		35.0	72.0		35.0	88.5		47.0
Base Capacity (vph)	138	992	574	339	1373	740	211	1579	900	386	1579	610
Starvation Cap Reductn	0	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced w/c Ratio	0.62	0.38	0.56	0.75	0.45	0.41	0.75	0.27	0.47	0.44	0.55	0.31

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

Lanes, Volumes, Timings <2038 Future Background>AM
14: Whites Road & Highway 401 EB Off Ramp 12-20-2024



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↑↑↑	↑		↑↑	↑↑	
Traffic Volume (vph)	585	268	0	693	417	0
Future Volume (vph)	585	268	0	693	417	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.7	3.6	3.8	3.7
Storage Length (m)	0.0	225.0	0.0			0.0
Storage Lanes	2	1	0			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	0.97	0.91	1.00	0.95	0.95	1.00
Ped Bike Factor						
Frt	0.993	0.850				
Flt Protected	0.954					
Satd. Flow (prot)	3387	1400	0	3374	3481	0
Flt Permitted	0.954					
Satd. Flow (perm)	3387	1400	0	3374	3481	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	5	262				
Link Speed (k/h)	50			60	60	
Link Distance (m)	295.9			185.9	316.9	
Travel Time (s)	21.3			11.2	19.0	
Confl. Peds. (#/hr)			7			7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	5%	2%	7%	6%	2%
Adj. Flow (vph)	636	291	0	753	453	0
Shared Lane Traffic (%)		10%				
Lane Group Flow (vph)	665	262	0	753	453	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.2			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	0.99	1.00	0.97	0.99
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	2.0	2.0		10.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	2.0		0.6	0.6	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				CI+Ex	CI+Ex	
Detector 2 Channel						

Lanes, Volumes, Timings

<2038 Future Background>AM

14: Whites Road & Highway 401 EB Off Ramp

12-20-2024

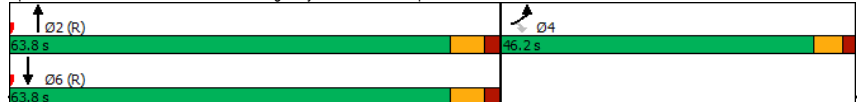


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	8.0	8.0		20.0	20.0	
Minimum Split (s)	28.5	28.5		27.7	27.7	
Total Split (s)	46.2	46.2		63.8	63.8	
Total Split (%)	42.0%	42.0%		58.0%	58.0%	
Maximum Green (s)	40.7	40.7		57.1	57.1	
Yellow Time (s)	3.7	3.7		4.5	4.5	
All-Red Time (s)	1.8	1.8		2.2	2.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.5	5.5		6.7	6.7	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		0.2	0.2	
Recall Mode	None	None		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	16.0	16.0		14.0	14.0	
Pedestrian Calls (#/hr)	3	3		0	0	
Act Effect Green (s)	27.7	27.7		70.1	70.1	
Actuated g/C Ratio	0.25	0.25		0.64	0.64	
v/c Ratio	0.78	0.48		0.35	0.20	
Control Delay	44.3	6.7		10.5	9.2	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	44.3	6.7		10.5	9.2	
LOS	D	A		B	A	
Approach Delay	33.7			10.5	9.2	
Approach LOS	C			B	A	

Intersection Summary

Area Type:	Other
Cycle Length:	110
Actuated Cycle Length:	110
Offset:	79.2 (72%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle:	60
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.78
Intersection Signal Delay:	20.3
Intersection LOS:	C
Intersection Capacity Utilization:	48.8%
ICU Level of Service:	A
Analysis Period (min):	15

Splits and Phases: 14: Whites Road & Highway 401 EB Off Ramp



Queues

<2038 Future Background>AM

14: Whites Road & Highway 401 EB Off Ramp

12-20-2024



Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	665	262	753	453
v/c Ratio	0.78	0.48	0.35	0.20
Control Delay	44.3	6.7	10.5	9.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	44.3	6.7	10.5	9.2
Queue Length 50th (m)	68.0	0.0	36.7	19.6
Queue Length 95th (m)	80.8	19.4	56.4	32.1
Internal Link Dist (m)	271.9		161.9	292.9
Turn Bay Length (m)		225.0		
Base Capacity (vph)	1256	683	2150	2218
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.53	0.38	0.35	0.20

Intersection Summary

Lanes, Volumes, Timings
15: Dixie Road & Shopping Plaza Entrance

<2038 Future Background>AM
12-20-2024

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↕	↕	↔	↔
Traffic Volume (vph)	0	81	0	0	194	0
Future Volume (vph)	0	81	0	0	194	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.1	3.7	4.0	3.7	3.7	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.865					
Fit Protected				0.950		
Satd. Flow (prot)	1701	0	1946	0	0	1867
Fit Permitted				0.950		
Satd. Flow (perm)	1701	0	1946	0	0	1867
Link Speed (k/h)	30	40		40		40
Link Distance (m)	193.0	106.6		44.0		44.0
Travel Time (s)	23.2	9.6		4.0		4.0
Confl. Peds. (#/hr)	5		8			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	1%	2%
Adj. Flow (vph)	0	88	0	0	211	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	88	0	0	0	0	211
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	4.1	3.6		3.6		3.6
Link Offset(m)	0.0	0.0		0.0		0.0
Crosswalk Width(m)	1.6	1.6		1.6		1.6
Two way Left Turn Lane						
Headway Factor	0.93	0.99	0.94	0.99	0.99	0.94
Turning Speed (k/h)	24	14	14		24	
Sign Control	Stop	Free		Free		Free

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	24.2%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
15: Dixie Road & Shopping Plaza Entrance

<2038 Future Background>AM
12-20-2024

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↕	↕	↔	↔
Traffic Volume (veh/h)	0	81	0	0	194	0
Future Volume (Veh/h)	0	81	0	0	194	0
Sign Control	Stop	Free		Free		Free
Grade	0%	0%		0%		0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	88	0	0	211	0
Pedestrians	8					5
Lane Width (m)	4.1					4.0
Walking Speed (m/s)	1.1					1.1
Percent Blockage	1					1
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)				44		
pX, platoon unblocked						
vC, conflicting volume	430	13			8	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	430	13			8	
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			87	
cM capacity (veh/h)	501	1053			1605	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	88	0	211
Volume Left	0	0	211
Volume Right	88	0	0
cSH	1053	1700	1605
Volume to Capacity	0.08	0.00	0.13
Queue Length 95th (m)	2.1	0.0	3.4
Control Delay (s)	8.7	0.0	7.6
Lane LOS	A	A	A
Approach Delay (s)	8.7	0.0	7.6
Approach LOS	A	A	A

Intersection Summary			
Average Delay	7.9		
Intersection Capacity Utilization	24.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings
3: Dixie Road & Kingston Road

<2038 Future Background_PHF>AM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Traffic Volume (vph)	80	760	81	78	554	86	37	15	29	131	35	144
Future Volume (vph)	80	760	81	78	554	86	37	15	29	131	35	144
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	2.8	3.6	3.4	2.8	3.5	3.1	3.6	4.0	3.7	3.8	4.2	3.7
Grade (%)	6%		0%		0%		0%		0%		0%	
Storage Length (m)	145.4		64.5	51.0		79.5	13.0		0.0	16.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	66.4			48.0			18.0			25.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		1.00	1.00		1.00	0.99		1.00	0.99	
Frt	0.986		0.980		0.901		0.879					
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1564	3316	0	1645	3301	0	1752	1771	0	1827	1759	0
Flt Permitted	0.950			0.950			0.581			0.728		
Satd. Flow (perm)	1553	3316	0	1639	3301	0	1069	1771	0	1397	1759	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12			17			29			144	
Link Speed (kh)	60		60		40		60		60		60	
Link Distance (m)	896.3		191.2		44.0		236.2					
Travel Time (s)	53.8		11.5		4.0		14.2					
Confl. Peds. (#/hr)	6		4	4		6	3		2	2		3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	4%	2%	0%	6%	2%	3%	0%	0%	1%	0%	0%
Bus Blockages (#/hr)	0	0	6	0	0	6	0	0	0	0	0	0
Adj. Flow (vph)	80	760	81	78	554	86	37	15	29	131	35	144
Shared Lane Traffic (%)												
Lane Group Flow (vph)	80	841	0	78	640	0	37	44	0	131	179	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	2.8		2.8		3.8		3.8					
Link Offset(m)	0.0		0.0		0.0		0.0					
Crosswalk Width(m)	4.9		4.9		4.9		4.9					
Two way Left Turn Lane	Yes											
Headway Factor	1.17	1.04	1.07	1.13	1.01	1.08	1.00	0.94	0.99	0.97	0.92	0.99
Turning Speed (k/h)	24		14		24		14		24		14	
Number of Detectors	0	0		0	0		0	0		1	1	
Detector Template												
Leading Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		7.5	7.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		-1.5	-1.5	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		-1.5	-1.5	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		9.0	9.0	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6		8			4		

Lanes, Volumes, Timings
3: Dixie Road & Kingston Road

<2038 Future Background_PHF>AM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases							8		4			
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	10.0	28.0		10.0	28.0		43.0	43.0		41.0	41.0	
Total Split (s)	15.0	59.0		11.0	55.0		50.0	50.0		50.0	50.0	
Total Split (%)	12.5%	49.2%		9.2%	45.8%		41.7%	41.7%		41.7%	41.7%	
Maximum Green (s)	10.0	52.4		6.0	48.4		40.5	40.5		40.5	40.5	
Yellow Time (s)	3.0	4.2		3.0	4.2		4.4	4.4		4.4	4.4	
All-Red Time (s)	2.0	2.4		2.0	2.4		5.1	5.1		5.1	5.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.6		5.0	6.6		9.5	9.5		9.5	9.5	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes						Yes					
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)	7.0		7.0		7.0		7.0		7.0		7.0	
Flash Dont Walk (s)	14.0		14.0		23.0		23.0		23.0		23.0	
Pedestrian Calls (#/hr)	6		1		7		7		4		4	
Act Effect Green (s)	9.3	74.9		6.0	74.0		18.0	18.0		18.0	18.0	
Actuated g/C Ratio	0.08	0.62		0.05	0.62		0.15	0.15		0.15	0.15	
v/c Ratio	0.66	0.41		0.95	0.31		0.23	0.15		0.63	0.46	
Control Delay	78.8	12.9		150.7	5.0		45.1	20.4		59.6	14.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	78.8	12.9		150.7	5.0		45.1	20.4		59.6	14.6	
LOS	E	B		F	A		D	C		E	B	
Approach Delay	18.6		20.8		31.7		33.6					
Approach LOS	B		C		C		C					

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 107.8 (90%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 85
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.95
 Intersection Signal Delay: 22.2 Intersection LOS: C
 Intersection Capacity Utilization 72.4% ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 3: Dixie Road & Kingston Road



Lanes, Volumes, Timings
1: Walnut Lane & Kingston Road

<2038 Future Background>PM
12-20-2024

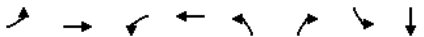
	↖	→	↘	↙	←	↖	↙	↘	↗	↘	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗		↖	↖↗		↖	↖	↖	↖	↖	↖
Traffic Volume (vph)	38	1420	270	119	646	43	293	0	265	24	16	26
Future Volume (vph)	38	1420	270	119	646	43	293	0	265	24	16	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.0	3.6	3.5	3.0	3.6	3.7	3.3	3.5	3.7	3.2	3.7	3.7
Storage Length (m)	26.0		25.8	37.0		0.0	63.2		0.0	18.5		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	24.0			26.0			24.4			18.1		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.99		1.00	1.00		0.98		0.98	0.99	0.98	
Frt		0.976			0.991			0.850			0.907	
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1685	3444	0	1685	3505	0	1745	0	1633	1725	1709	0
Fit Permitted	0.950			0.950			0.728			0.950		
Satd. Flow (perm)	1677	3444	0	1682	3505	0	1313	0	1603	1713	1709	0
Right Turn on Red			Yes			Yes		Yes			Yes	
Satd. Flow (RTOR)		26			9				93			28
Link Speed (k/h)		60			60			40				40
Link Distance (m)		129.3			694.6			114.0				179.7
Travel Time (s)		7.8			41.7			10.3				16.2
Confl. Peds. (#/hr)	5		7	7		5	14		5	5		14
Confl. Bikes (#/hr)			1									
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%	2%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	3	0	0	0	0	0	0	0	0	0
Adj. Flow (vph)	41	1543	293	129	702	47	318	0	288	26	17	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	41	1836	0	129	749	0	318	0	288	26	45	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	
Median Width(m)		3.1			3.1			3.3				3.3
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			1.6			4.9				4.9
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.09	1.00	1.01	1.09	1.00	0.99	1.04	1.01	0.99	1.06	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	0	0		0	0		1		1	0		0
Detector Template								Right				
Leading Detector (m)	0.0	0.0		0.0	0.0		7.5		6.1	0.0		0.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		-1.5		0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		-1.5		0.0	0.0		0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8		9.0		6.1	6.1		1.8
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Turn Type	Prot	NA		Prot	NA		Perm		Perm	Perm		NA
Protected Phases	5	2		1	6							4

Lanes, Volumes, Timings
1: Walnut Lane & Kingston Road

<2038 Future Background>PM
12-20-2024

	↖	→	↘	↙	←	↖	↙	↘	↗	↘	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases								8		8	4	
Detector Phase	5	2			1	6		8		8	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0			5.0	20.0		8.0		8.0	8.0	8.0
Minimum Split (s)	10.0	33.0			10.0	33.0		38.0		38.0	38.0	38.0
Total Split (s)	10.0	76.0			15.0	81.0		39.0		39.0	39.0	39.0
Total Split (%)	7.7%	58.5%			11.5%	62.3%		30.0%		30.0%	30.0%	30.0%
Maximum Green (s)	5.0	69.4			10.0	74.4		31.0		31.0	31.0	31.0
Yellow Time (s)	3.0	4.4			3.0	4.4		3.3		3.3	3.3	3.3
All-Red Time (s)	2.0	2.2			2.0	2.2		4.7		4.7	4.7	4.7
Lost Time Adjust (s)	0.0	0.0			0.0	0.0		0.0		0.0	0.0	0.0
Total Lost Time (s)	5.0	6.6			5.0	6.6		8.0		8.0	8.0	8.0
Lead/Lag	Lead	Lag			Lead	Lag						
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0		3.0	3.0	3.0
Recall Mode	None	C-Max			None	C-Max		None		None	None	None
Walk Time (s)		7.0			7.0	7.0		7.0		7.0	7.0	7.0
Flash Dont Walk (s)		19.0			19.0	19.0		22.0		22.0	22.0	22.0
Pedestrian Calls (#/hr)		8			8	8		4		2	9	9
Act Effect Green (s)	5.0	69.4			10.0	76.4		31.0		31.0	31.0	31.0
Actuated g/C Ratio	0.04	0.53			0.08	0.59		0.24		0.24	0.24	0.24
v/c Ratio	0.64	0.99			1.00	0.36		1.02		0.64	0.06	0.11
Control Delay	85.6	41.2			132.8	9.2		103.9		36.8	39.0	20.3
Queue Delay	0.0	0.0			0.0	0.0		0.0		0.0	0.0	0.0
Total Delay	85.6	41.2			132.8	9.2		103.9		36.8	39.0	20.3
LOS	F	D			F	A		F		D	D	C
Approach Delay		42.2				27.4		72.0				27.1
Approach LOS		D				C		E				C
Intersection Summary												
Area Type:	Other											
Cycle Length:	130											
Actuated Cycle Length:	130											
Offset:	77 (59%), Referenced to phase 2:EBT and 6:WBT, Start of Green											
Natural Cycle:	115											
Control Type:	Actuated-Coordinated											
Maximum v/c Ratio:	1.02											
Intersection Signal Delay:	43.3						Intersection LOS: D					
Intersection Capacity Utilization:	91.5%						ICU Level of Service F					
Analysis Period (min):	15											
Splits and Phases:	1: Walnut Lane & Kingston Road											

Queues <2038 Future Background>PM
1: Walnut Lane & Kingston Road 12-20-2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBR	SBL	SBT
Lane Group Flow (vph)	41	1836	129	749	318	288	26	45
w/c Ratio	0.64	0.99	1.00	0.36	1.02	0.64	0.06	0.11
Control Delay	85.6	41.2	132.8	9.2	103.9	36.8	39.0	20.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	85.6	41.2	132.8	9.2	103.9	36.8	39.0	20.3
Queue Length 50th (m)	0.0	130.0	34.9	27.4	~84.2	45.2	5.2	3.4
Queue Length 95th (m)	m0.0	#291.4	#75.7	35.4	#142.9	76.2	12.9	13.3
Internal Link Dist (m)		105.3		670.6				155.7
Turn Bay Length (m)	26.0		37.0		63.2		18.5	
Base Capacity (vph)	64	1850	129	2063	313	453	408	428
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced w/c Ratio	0.64	0.99	1.00	0.36	1.02	0.64	0.06	0.11


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.

m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings <2038 Future Background>PM
3: Dixie Road & Kingston Road 12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑	↑↑		↑	↑		↑	↑	
Traffic Volume (vph)	204	1509	100	40	770	164	111	54	63	142	28	92
Future Volume (vph)	204	1509	100	40	770	164	111	54	63	142	28	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	2.8	3.6	3.4	2.8	3.5	3.1	3.6	4.0	3.7	3.8	4.2	3.7
Grade (%)		6%			0%			0%				0%
Storage Length (m)	145.4		64.5	51.0		79.5	13.0		0.0	16.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	66.4			48.0			18.0			25.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	1.00		1.00	0.99		0.99	0.99	0.99
Frt		0.991			0.974			0.920				0.885
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1579	3394	0	1597	3407	0	1770	1786	0	1827	1730	0
Fit Permitted	0.950			0.950			0.674			0.676		
Satd. Flow (perm)	1578	3394	0	1594	3407	0	1250	1786	0	1290	1730	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			24			42			100	
Link Speed (k/h)		60			60			40			60	
Link Distance (m)		896.3			191.2			44.0			236.2	
Travel Time (s)		53.8			11.5			4.0			14.2	
Confl. Peds. (#/hr)	1		6	6		1	4		7	7		4
Confl. Bikes (#/hr)			1									
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 (%)	1%	2%	2%	3%	2%	0%	2%	0%	2%	1%	0%	3%
Bus Blockages (#/hr)	0	0	5	0	0	5	0	0	0	0	0	0
Adj. Flow (vph)	222	1640	109	43	837	178	121	59	68	154	30	100
Shared Lane Traffic (%)												
Lane Group Flow (vph)	222	1749	0	43	1015	0	121	127	0	154	130	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		2.8			2.8			3.8			3.8	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane					Yes							
Headway Factor	1.17	1.04	1.07	1.13	1.01	1.08	1.00	0.94	0.99	0.97	0.92	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	0	0		0	0		0	0		1	1	
Detector Template												
Leading Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		7.5	7.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		-1.5	-1.5	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		-1.5	-1.5	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		9.0	9.0	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	

Lanes, Volumes, Timings
3: Dixie Road & Kingston Road

<2038 Future Background>PM
12-20-2024

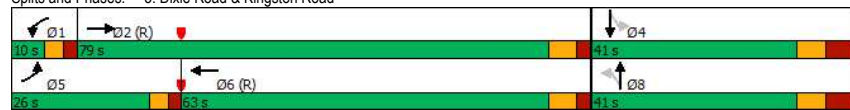


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	5	2		1	6			8			4	4
Permitted Phases								8			4	
Detector Phase	5	2		1	6			8	8		4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	10.0	28.0		10.0	28.0		41.0	41.0		41.0	41.0	
Total Split (s)	26.0	79.0		10.0	63.0		41.0	41.0		41.0	41.0	
Total Split (%)	20.0%	60.8%		7.7%	48.5%		31.5%	31.5%		31.5%	31.5%	
Maximum Green (s)	21.0	72.4		5.0	56.4		31.5	31.5		31.5	31.5	
Yellow Time (s)	3.0	4.2		3.0	4.2		4.4	4.4		4.4	4.4	
All-Red Time (s)	2.0	2.4		2.0	2.4		5.1	5.1		5.1	5.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.6		5.0	6.6		9.5	9.5		9.5	9.5	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		14.0			14.0		23.0	23.0		23.0	23.0	
Pedestrian Calls (#/hr)		4			6		2	2		3	3	
Act Effct Green (s)	20.3	84.9		5.0	67.7		21.0	21.0		21.0	21.0	
Actuated g/C Ratio	0.16	0.65		0.04	0.52		0.16	0.16		0.16	0.16	
v/c Ratio	0.90	0.79		0.70	0.57		0.60	0.39		0.74	0.36	
Control Delay	73.9	26.0		107.6	23.6		61.9	34.2		71.9	15.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	73.9	26.0		107.6	23.6		61.9	34.2		71.9	15.9	
LOS	E	C		F	C		E	C		E	B	
Approach Delay		31.4			27.0			47.7			46.2	
Approach LOS		C			C			D			D	

Intersection Summary

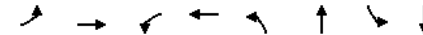
Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 115 (88%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.90
 Intersection Signal Delay: 32.4 Intersection LOS: C
 Intersection Capacity Utilization 82.5% ICU Level of Service E
 Analysis Period (min) 15

Splits and Phases: 3: Dixie Road & Kingston Road



Queues
3: Dixie Road & Kingston Road

<2038 Future Background>PM
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Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	222	1749	43	1015	121	127	154	130
v/c Ratio	0.90	0.79	0.70	0.57	0.60	0.39	0.74	0.36
Control Delay	73.9	26.0	107.6	23.6	61.9	34.2	71.9	15.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.9	26.0	107.6	23.6	61.9	34.2	71.9	15.9
Queue Length 50th (m)	51.9	216.1	11.9	75.0	29.2	19.4	38.1	6.7
Queue Length 95th (m)	m#88.3	258.6	m#24.5	m85.4	45.6	35.4	57.0	22.4
Internal Link Dist (m)		872.3		167.2		20.0		212.2
Turn Bay Length (m)	145.4		51.0		13.0		16.0	
Base Capacity (vph)	255	2220	61	1785	302	464	312	494
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.87	0.79	0.70	0.57	0.40	0.27	0.49	0.26

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings

6: Liverpool Road & Kingston Road

<2038 Future Background>PM

12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	244	1028	329	212	545	67	155	806	232	95	546	108
Future Volume (vph)	244	1028	329	212	545	67	155	806	232	95	546	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.1	3.4	3.6	3.3	3.7	3.4	3.8	4.1	4.8	4.7	3.8	3.3
Storage Length (m)	188.8	97.9	170.7		117.0	185.5		52.0	49.0		60.5	
Storage Lanes	1	1	1		1	1		1	1		1	
Taper Length (m)	31.6		22.7		20.8			25.0				
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.95	0.99		0.96	0.99		0.90	0.99		0.96
Frt		0.850			0.850			0.850			0.850	
Fit Protected	0.950		0.950		0.950		0.950		0.950		0.950	
Satd. Flow (prot)	1688	3461	1599	1728	3579	1579	1791	3773	1732	2026	3654	1561
Fit Permitted	0.950		0.950		0.950		0.328		0.153			
Satd. Flow (perm)	1667	3461	1512	1712	3579	1517	612	3773	1564	322	3654	1499
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			103			160			169			143
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		694.6			396.4			257.7			348.6	
Travel Time (s)		41.7			23.8			18.6			25.1	
Conf. Peds. (#/hr)	20		31	31		20	29		62	62		29
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 (%)	1%	2%	1%	1%	2%	0%	3%	1%	4%	0%	1%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	4	0	0	0
Adj. Flow (vph)	265	1117	358	230	592	73	168	876	252	103	593	117
Shared Lane Traffic (%)												
Lane Group Flow (vph)	265	1117	358	230	592	73	168	876	252	103	593	117
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.3			3.3			4.7			4.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane		Yes			Yes			Yes			Yes	
Headway Factor	1.08	1.03	1.00	1.04	0.99	1.03	0.97	0.93	0.87	0.86	0.97	1.04
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	

1105-1163 Kingston Road
WSP

Synchro 11 Report
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Lanes, Volumes, Timings

6: Liverpool Road & Kingston Road

<2038 Future Background>PM

12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	pm+ov	Prot	NA	Perm	pm+pt	NA	custom	pm+pt	NA	Perm
Protected Phases	5	2	3	1	6		3	8		7	4	
Permitted Phases			2			6	8		2	4		4
Detector Phase	5	2	3	1	6	6	3	8	2	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	5.0	5.0	20.0	20.0	5.0	8.0	20.0	5.0	8.0	8.0
Minimum Split (s)	10.0	36.0	8.0	10.0	36.0	36.0	8.0	50.0	36.0	8.0	50.0	50.0
Total Split (s)	34.0	46.0	8.0	26.0	38.0	38.0	8.0	50.0	46.0	8.0	50.0	50.0
Total Split (%)	26.2%	35.4%	6.2%	20.0%	29.2%	29.2%	6.2%	38.5%	35.4%	6.2%	38.5%	38.5%
Maximum Green (s)	29.0	38.9	5.0	21.0	30.9	30.9	5.0	40.9	38.9	5.0	40.9	40.9
Yellow Time (s)	3.0	4.3	3.0	3.0	4.3	4.3	3.0	3.8	4.3	3.0	3.8	3.8
All-Red Time (s)	2.0	2.8	0.0	2.0	2.8	2.8	0.0	5.3	2.8	0.0	5.3	5.3
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	0.0
Total Lost Time (s)	5.0	7.1	3.0	5.0	7.1	7.1	3.0	9.1	7.1	3.0	9.1	9.1
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
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	3.0
Recall Mode	None	C-Max	None	None	C-Max	C-Max	None	Max	C-Max	None	Max	Max
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		21.0			21.0	21.0		33.0	21.0		33.0	33.0
Pedestrian Calls (#/hr)		15			20	20		28	15		15	15
Act Effct Green (s)	24.5	40.0	49.1	19.9	35.4	35.4	52.0	40.9	40.0	52.0	40.9	40.9
actuated g/C Ratio	0.19	0.31	0.38	0.15	0.27	0.27	0.40	0.31	0.31	0.40	0.31	0.31
v/c Ratio	0.83	1.05	0.56	0.87	0.61	0.14	0.58	0.74	0.42	0.53	0.52	0.21
Control Delay	47.2	87.3	41.8	84.1	45.4	0.6	35.4	44.3	14.5	34.1	38.4	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.2	87.3	41.8	84.1	45.4	0.6	35.4	44.3	14.5	34.1	38.4	3.6
LOS	D	F	D	F	D	A	D	D	B	C	D	A
Approach Delay		71.8			51.7			37.3			32.8	
Approach LOS		E			D			D			C	

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 78 (60%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 125
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.05
 Intersection Signal Delay: 51.9
 Intersection LOS: D
 Intersection Capacity Utilization 103.1%
 ICU Level of Service G
 Analysis Period (min) 15

Splits and Phases: 6: Liverpool Road & Kingston Road



WSP

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Queues

<2038 Future Background>PM

6: Liverpool Road & Kingston Road

12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	265	1117	358	230	592	73	168	876	252	103	593	117
w/c Ratio	0.83	1.05	0.56	0.87	0.61	0.14	0.58	0.74	0.42	0.53	0.52	0.21
Control Delay	47.2	87.3	41.8	84.1	45.4	0.6	35.4	44.3	14.5	34.1	38.4	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.2	87.3	41.8	84.1	45.4	0.6	35.4	44.3	14.5	34.1	38.4	3.6
Queue Length 50th (m)	68.7	~172.9	74.1	57.7	70.6	0.0	27.0	105.3	15.8	15.8	65.3	0.0
Queue Length 95th (m)	m73.7	m#182.5	m77.4	#98.7	93.7	0.0	42.7	128.8	39.1	27.4	83.3	8.5
Internal Link Dist (m)	670.6		372.4			233.7		324.6				
Turn Bay Length (m)	188.8	97.9	170.7	117.0	185.5	52.0	49.0	60.5				
Base Capacity (vph)	376	1065	638	279	973	529	290	1187	598	194	1149	569
Starvation Cap Reductn	0	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced w/c Ratio	0.70	1.05	0.56	0.82	0.61	0.14	0.58	0.74	0.42	0.53	0.52	0.21

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.
- m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings

<2038 Future Background>PM

8: Liverpool Road & Private Access/Pickering Parkway

12-20-2024

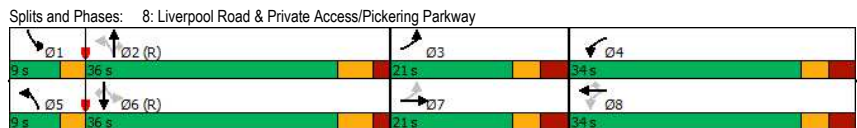
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔↔		↔↔	↔	↔	↔↔↔	↔↔↔	↔	↔↔	↔↔↔	↔
Traffic Volume (vph)	87	69	130	412	58	174	116	873	401	196	1027	46
Future Volume (vph)	87	69	130	412	58	174	116	873	401	196	1027	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.1	3.1	3.7	3.0	3.4	3.2	2.8	3.6	3.5	3.2	3.5	3.5
Storage Length (m)	0.0	0.0	57.0	62.1	54.4	75.7	132.5	35.5				
Storage Lanes	1	0	1	1	1	1	1	1				
Taper Length (m)	2.5			12.0			29.5			28.9		
Lane Util. Factor	1.00	0.95	0.95	0.97	1.00	1.00	1.00	0.91	1.00	0.91	1.00	1.00
Ped Bike Factor	0.96		0.98		0.99		0.96		0.99		0.93	
Frt	0.902		0.850		0.850		0.850		0.850		0.850	
Flt Protected	0.950		0.950		0.950		0.950		0.950		0.950	
Satd. Flow (prot)	1705	2959	0	3204	1858	1399	1645	5085	1569	1708	5079	1597
Flt Permitted	0.000		0.000		0.173		0.230		0.230		0.230	
Satd. Flow (perm)	0	2959	0	0	1858	1399	297	5085	1502	411	5079	1482
Right Turn on Red			Yes		Yes		Yes		Yes		Yes	
Satd. Flow (RTOR)	141		189		436		144					
Link Speed (k/h)	30		50		50		50					
Link Distance (m)	82.8		328.5		162.3		257.7					
Travel Time (s)	9.9		23.7		11.7		18.6					
Confl. Peds. (#/hr)	21		21		21		21		21		21	
Confl. Bikes (#/hr)	2		5		6							
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%	2%	0%	5%	0%	2%	1%	1%	1%	0%
Bus Blockages (#/hr)	0	0	0	0	12	0	0	2	0	0	0	0
Adj. Flow (vph)	95	75	141	448	63	189	126	949	436	213	1116	50
Shared Lane Traffic (%)												
Lane Group Flow (vph)	95	216	0	448	63	189	126	949	436	213	1116	50
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	6.0		6.0		3.8		3.8					
Link Offset(m)	0.0		0.0		0.0		0.0					
Crosswalk Width(m)	1.6		1.6		1.6		1.6					
Two way Left Turn Lane												
Headway Factor	1.08	1.08	0.99	1.09	1.03	1.13	1.13	1.00	1.03	1.06	1.01	1.01
Turning Speed (k/h)	24	24	14	24	14	24	14	24	14	24	14	14
Number of Detectors	1	2	1	2	1	2	1	2	1	1	2	1
Detector Template	Left	Thru	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Right
Leading Detector (m)	2.0	10.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4		9.4		9.4		9.4					
Detector 2 Size(m)	0.6		0.6		0.6		0.6					

Lanes, Volumes, Timings <2038 Future Background>PM
8: Liverpool Road & Private Access/Pickering Parkway 12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type	CI+Ex		CI+Ex		CI+Ex		CI+Ex		CI+Ex		CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0		0.0		0.0		0.0		0.0		0.0	
Turn Type	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm
Protected Phases	3	7	4	8	8	5	2	2	6	1	6	6
Permitted Phases	7		8		8	2		2	6		6	6
Detector Phase	3	7	4	8	8	5	2	2	1	6	6	6
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	5.0	20.0	20.0	5.0	8.0	8.0	8.0
Minimum Split (s)	15.0	15.0	34.0	34.0	34.0	8.0	30.0	30.0	8.0	30.0	30.0	30.0
Total Split (s)	21.0	21.0	34.0	34.0	34.0	9.0	36.0	36.0	9.0	36.0	36.0	36.0
Total Split (%)	21.0%	21.0%	34.0%	34.0%	34.0%	9.0%	36.0%	36.0%	9.0%	36.0%	36.0%	36.0%
Maximum Green (s)	14.4	14.4	27.4	27.4	27.4	6.0	29.7	29.7	6.0	29.7	29.7	29.7
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.0	4.2	4.2	3.0	4.2	4.2	4.2
All-Red Time (s)	3.3	3.3	3.3	3.3	3.3	0.0	2.1	2.1	0.0	2.1	2.1	2.1
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	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.6	3.0	6.3	6.3	3.0	6.3	6.3	6.3
Lead/Lag					Lead		Lag	Lag	Lead	Lag	Lag	Lag
Lead-Lag Optimize?												
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	3.0
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max	C-Max
Walk Time (s)			19.0	19.0		17.0	17.0		17.0	17.0		17.0
Flash Dont Walk (s)			8.0	8.0		6.0	6.0		6.0	6.0		6.0
Pedestrian Calls (#/hr)			20	20		28	28		15	15		15
Act Effect Green (s)	11.0	11.0	20.9	20.9	20.9	48.9	39.6	39.6	48.9	39.6	39.6	39.6
Actuated g/C Ratio	0.11	0.11	0.21	0.21	0.21	0.49	0.40	0.40	0.49	0.40	0.40	0.40
v/c Ratio	0.51	0.48	0.67	0.16	0.43	0.56	0.47	0.51	0.77	0.56	0.07	0.07
Control Delay	51.0	18.9	40.8	31.2	7.5	25.6	23.2	9.2	38.9	26.2	0.2	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.0	18.9	40.8	31.2	7.5	25.6	23.2	9.2	38.9	26.2	0.2	0.2
LOS	D	B	D	C	A	C	C	A	D	C	A	A
Approach Delay	28.7		31.0				19.4				27.2	
Approach LOS	C		C				B				C	

Intersection Summary
 Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 15 (15%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.77
 Intersection Signal Delay: 25.0 Intersection LOS: C
 Intersection Capacity Utilization 68.8% ICU Level of Service C
 Analysis Period (min) 15



Queues <2038 Future Background>PM
8: Liverpool Road & Private Access/Pickering Parkway 12-20-2024



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Group Flow (vph)	95	216	448	63	189	126	949	436	213	1116	50	
v/c Ratio	0.51	0.48	0.67	0.16	0.43	0.56	0.47	0.51	0.77	0.56	0.07	
Control Delay	51.0	18.9	40.8	31.2	7.5	25.6	23.2	9.2	38.9	26.2	0.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	51.0	18.9	40.8	31.2	7.5	25.6	23.2	9.2	38.9	26.2	0.2	
Queue Length 50th (m)	17.7	7.1	42.3	10.3	0.0	14.8	52.3	24.5	20.8	58.2	0.0	
Queue Length 95th (m)	32.2	17.3	52.8	19.3	15.9	m#35.1	75.2	55.0	#62.0	86.4	0.0	
Internal Link Dist (m)	58.8		304.5		138.3		233.7					
Turn Bay Length (m)	57.0		62.1		54.4	75.7		132.5	35.5			
Base Capacity (vph)	245	546	877	509	520	225	2012	857	278	2010	673	
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	0.39	0.40	0.51	0.12	0.36	0.56	0.47	0.51	0.77	0.56	0.07	

Intersection Summary
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings

<2038 Future Background>PM

9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp

12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	237	278	168	293	121	1110	0	0	972	71
Future Volume (vph)	0	0	237	278	168	293	121	1110	0	0	972	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.5	3.7	3.7	3.4	3.7
Storage Length (m)	0.0	0.0	0.0	0.0		125.0	50.0		0.0	0.0		0.0
Storage Lanes	0		1	1		1	1		0	0		1
Taper Length (m)	2.5			2.5			30.0			2.5		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Ped Bike Factor												0.92
Frt			0.865			0.850						0.850
Fit Protected				0.950	0.987		0.950					
Satd. Flow (prot)	0	0	1662	1734	1801	1581	1825	5079	0	0	4972	1633
Fit Permitted				0.950	0.987		0.177					
Satd. Flow (perm)	0	0	1662	1734	1801	1581	340	5079	0	0	4972	1508
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)						85						82
Link Speed (kh)		50			50			50			50	
Link Distance (m)		433.1			226.7			372.2			162.3	
Travel Time (s)		31.2			16.3			26.8			11.7	
Confl. Peds. (#/hr)							17		15	15		17
Confl. Bikes (#/hr)								6				7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	0%	0%	0%	1%	0%	1%	6%	2%	2%	0%
Adj. Flow (vph)	0	0	258	302	183	318	132	1207	0	0	1057	77
Shared Lane Traffic (%)				21%								
Lane Group Flow (vph)	0	0	258	239	246	318	132	1207	0	0	1057	77
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	1.01	0.99	1.01	0.99	0.99	1.03	0.99
Turning Speed (k/h)	97		97	24		14	97		14	24		97
Number of Detectors			1	1	2	1	1	2			2	1
Detector Template			Right	Left	Thru	Right	Left	Thru			Thru	Right
Leading Detector (m)			2.0	2.0	10.0	2.0	2.0	10.0			10.0	2.0
Trailing Detector (m)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Position(m)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Size(m)			2.0	2.0	0.6	2.0	2.0	0.6			0.6	2.0
Detector 1 Type			Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 2 Position(m)					9.4			9.4			9.4	
Detector 2 Size(m)					0.6			0.6			0.6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	

Lanes, Volumes, Timings

<2038 Future Background>PM

9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp

12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)						0.0					0.0	0.0
Turn Type			Over	Split	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases			5	8	8		5	2			6	
Permitted Phases						8	2					6
Detector Phase			5	8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)			5.0	8.0	8.0	8.0	5.0	15.0			15.0	15.0
Minimum Split (s)			9.5	25.0	25.0	25.0	9.5	24.3			24.3	24.3
Total Split (s)			33.0	36.0	36.0	36.0	33.0	64.0			31.0	31.0
Total Split (%)			33.0%	36.0%	36.0%	36.0%	33.0%	64.0%			31.0%	31.0%
Maximum Green (s)			28.5	30.0	30.0	30.0	28.5	57.7			24.7	24.7
Yellow Time (s)			3.5	3.3	3.3	3.3	3.5	3.3			3.3	3.3
All-Red Time (s)			1.0	2.7	2.7	2.7	1.0	3.0			3.0	3.0
Lost Time Adjust (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Lost Time (s)			4.5	6.0	6.0	6.0	4.5	6.3			6.3	6.3
Lead/Lag			Lead				Lead				Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)			3.0	3.0	3.0	3.0	3.0	3.0			3.0	3.0
Recall Mode			None	None	None	None	None	C-Max			C-Max	C-Max
Walk Time (s)				14.0	14.0	14.0		13.0			13.0	13.0
Flash Dont Walk (s)				5.0	5.0	5.0		5.0			5.0	5.0
Pedestrian Calls (#/hr)				0	0	0		14			7	7
Act Effct Green (s)			20.7	21.5	21.5	21.5	68.0	66.2			41.0	41.0
Actuated g/C Ratio			0.21	0.22	0.22	0.22	0.68	0.66			0.41	0.41
v/c Ratio			0.75	0.64	0.64	0.78	0.25	0.36			0.52	0.12
Control Delay			50.5	42.8	42.3	39.9	7.9	8.6			25.9	12.8
Queue Delay			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay			50.5	42.8	42.3	39.9	7.9	8.6			25.9	12.8
LOS			D	D	D	D	A	A			C	B
Approach Delay			50.5			41.5		8.6			25.0	
Approach LOS			D			D		A			C	

Intersection Summary	
Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	100
Offset:	8 (8%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle:	65
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.78
Intersection Signal Delay:	24.4
Intersection LOS:	C
Intersection Capacity Utilization:	59.6%
ICU Level of Service:	B
Analysis Period (min):	15

Splits and Phases: 9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp



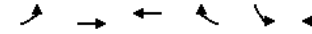
Queues <2038 Future Background>PM
 9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp 12-20-2024



Lane Group	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	258	239	246	318	132	1207	1057	77
w/c Ratio	0.75	0.64	0.64	0.78	0.25	0.36	0.52	0.12
Control Delay	50.5	42.8	42.3	39.9	7.9	8.6	25.9	12.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.5	42.8	42.3	39.9	7.9	8.6	25.9	12.8
Queue Length 50th (m)	47.2	44.5	45.7	43.2	7.9	34.3	38.5	0.9
Queue Length 95th (m)	67.7	63.0	64.2	66.2	18.3	54.1	80.7	m11.0
Internal Link Dist (m)	202.7				348.2	138.3		
Turn Bay Length (m)			125.0	50.0				
Base Capacity (vph)	473	520	540	533	654	3364	2040	667
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced w/c Ratio	0.55	0.46	0.46	0.60	0.20	0.36	0.52	0.12

Intersection Summary
 m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings <2038 Future Background>PM
 10: Kingston Road & Fairport Road 12-20-2024



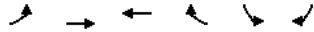
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø1
Lane Configurations	↔	↕	↕	↔	↔	↔	
Traffic Volume (vph)	205	1590	757	223	271	137	
Future Volume (vph)	205	1590	757	223	271	137	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (m)	3.0	3.6	3.5	3.7	3.6	4.5	
Grade (%)	6%		0%		0%		
Storage Length (m)	75.0			18.5	15.5	0.0	
Storage Lanes	1			0	1	1	
Taper Length (m)	2.5			31.3			
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00	
Ped Bike Factor	1.00	0.99		0.99			
Frt	0.966		0.850				
Fit Protected	0.950			0.950			
Satd. Flow (prot)	1618	3433	3346	0	1805	1777	
Fit Permitted	0.950			0.950			
Satd. Flow (perm)	1617	3433	3346	0	1805	1751	
Right Turn on Red			Yes	Yes			
Satd. Flow (RTOR)			39	149			
Link Speed (k/h)	60		60	40			
Link Distance (m)	424.0		896.3	280.0			
Travel Time (s)	25.4		53.8	25.2			
Confl. Peds. (#/hr)	1			1	2		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Heavy Vehicles (%)	1%	2%	3%	1%	0%	0%	
Bus Blockages (#/hr)	0	0	0	9	0	0	
Adj. Flow (vph)	223	1728	823	242	295	149	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	223	1728	1065	0	295	149	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Left	Left	Right	Left	Right	
Median Width(m)	3.0		3.0	3.6			
Link Offset(m)	0.0		0.0	0.0			
Crosswalk Width(m)	1.6		1.6	1.6			
Two way Left Turn Lane	Yes						
Headway Factor	1.14	1.04	1.01	0.99	1.00	0.88	
Turning Speed (k/h)	24		14		24	14	
Number of Detectors	1	2	2	1			
Detector Template	Left	Thru	Thru	Left		Right	
Leading Detector (m)	2.0	10.0	10.0	2.0			
Trailing Detector (m)	0.0	0.0	0.0	0.0			
Detector 1 Position(m)	0.0	0.0	0.0	0.0			
Detector 1 Size(m)	2.0	0.6	0.6	2.0			
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0	0.0			
Detector 1 Queue (s)	0.0	0.0	0.0	0.0			
Detector 1 Delay (s)	0.0	0.0	0.0	0.0			
Detector 2 Position(m)	9.4		9.4				
Detector 2 Size(m)	0.6		0.6				

Lanes, Volumes, Timings

<2038 Future Background>PM

10: Kingston Road & Fairport Road

12-20-2024



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø1
Detector 2 Type	CI+Ex		CI+Ex				
Detector 2 Channel							
Detector 2 Extend (s)	0.0		0.0				
Turn Type	Prot	NA	NA		Prot	Perm	
Protected Phases	5	2	6		4		1
Permitted Phases						4	
Detector Phase	5	2	6		4	4	
Switch Phase							
Minimum Initial (s)	5.0	20.0	20.0		8.0	8.0	5.0
Minimum Split (s)	10.0	33.0	33.0		38.0	38.0	8.0
Total Split (s)	25.0	84.0	67.0		38.0	38.0	8.0
Total Split (%)	19.2%	64.6%	51.5%		29.2%	29.2%	6%
Maximum Green (s)	20.0	77.7	60.7		30.7	30.7	5.0
Yellow Time (s)	3.0	4.3	4.3		3.3	3.3	3.0
All-Red Time (s)	2.0	2.0	2.0		4.0	4.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.3	6.3		7.3	7.3	
Lead/Lag	Lead	Lag	Lag				Lead
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	0.2	0.2		3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max		None	None	None
Walk Time (s)	7.0		7.0		7.0	7.0	5.0
Flash Dont Walk (s)	19.0		19.0		23.0	23.0	0.0
Pedestrian Calls (#/hr)	0		0		0	0	20
Act Effect Green (s)	19.5	86.0	66.3		25.6	25.6	
Actuated g/C Ratio	0.15	0.66	0.51		0.20	0.20	
v/c Ratio	0.92	0.76	0.62		0.83	0.32	
Control Delay	48.9	40.2	10.1		69.5	8.0	
Queue Delay	0.0	0.0	0.0		0.0	0.0	
Total Delay	48.9	40.2	10.1		69.5	8.0	
LOS	D	D	B		E	A	
Approach Delay	41.2		10.1		48.9		
Approach LOS	D		B		D		

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 27 (21%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 95
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.92
 Intersection Signal Delay: 32.6 Intersection LOS: C
 Intersection Capacity Utilization 70.9% ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 10: Kingston Road & Fairport Road



Queues

<2038 Future Background>PM

10: Kingston Road & Fairport Road

12-20-2024



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	223	1728	1065	295	149
v/c Ratio	0.92	0.76	0.62	0.83	0.32
Control Delay	48.9	40.2	10.1	69.5	8.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	48.9	40.2	10.1	69.5	8.0
Queue Length 50th (m)	51.0	247.6	26.7	72.7	0.0
Queue Length 95th (m)	m50.4	m241.9	36.0	101.2	16.7
Internal Link Dist (m)	400.0		872.3	256.0	
Turn Bay Length (m)	75.0		15.5		
Base Capacity (vph)	248	2270	1724	426	527
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.90	0.76	0.62	0.69	0.28

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings

<2038 Future Background>PM

11: Hwy 401 WB Ramps & Kingston Road

12-20-2024

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↕↕		↕	↕↕	↕↕	↕
Traffic Volume (vph)	1692	23	184	709	662	100
Future Volume (vph)	1692	23	184	709	662	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.0	3.7	2.7	3.8	3.8	3.7
Grade (%)	6%			0%	0%	
Storage Length (m)		0.0	47.5		0.0	52.0
Storage Lanes		0	1		2	1
Taper Length (m)			22.3		2.5	
Lane Util. Factor	0.95	0.95	1.00	0.95	0.97	1.00
Ped Bike Factor					1.00	0.98
Frt	0.998					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3577	0	1577	3618	3544	1617
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3577	0	1577	3618	3537	1591
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	1					84
Link Speed (k/h)	60			60	50	
Link Distance (m)	268.7			424.0	216.6	
Travel Time (s)	16.1			25.4	15.6	
Confl. Peds. (#/hr)					1	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	5%	3%	2%	1%	1%
Adj. Flow (vph)	1839	25	200	771	720	109
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1864	0	200	771	720	109
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.1			3.1	7.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	0.98	1.03	1.14	0.97	0.97	0.99
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	10.0		2.0	10.0	2.0	2.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Size(m)	0.6		2.0	0.6	2.0	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		

Lanes, Volumes, Timings

<2038 Future Background>PM

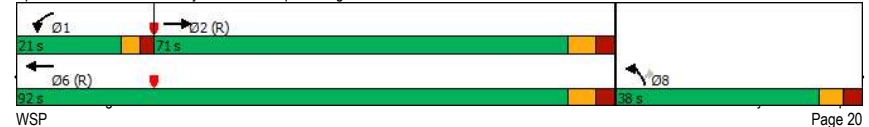
11: Hwy 401 WB Ramps & Kingston Road

12-20-2024

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		Prot	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases						8
Detector Phase	2		1	6	8	8
Switch Phase						
Minimum Initial (s)	20.0		5.0	20.0	8.0	8.0
Minimum Split (s)	50.0		10.0	50.0	38.0	38.0
Total Split (s)	71.0		21.0	92.0	38.0	38.0
Total Split (%)	54.6%		16.2%	70.8%	29.2%	29.2%
Maximum Green (s)	63.8		16.0	84.8	31.3	31.3
Yellow Time (s)	4.2		3.0	4.2	3.7	3.7
All-Red Time (s)	3.0		2.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	7.2		5.0	7.2	6.7	6.7
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?						
Vehicle Extension (s)	0.2		3.0	0.2	3.0	3.0
Recall Mode	C-Max		None	C-Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	35.0			35.0	24.0	24.0
Pedestrian Calls (#/hr)	0			0	14	14
Act Effct Green (s)	65.4		16.0	86.4	29.7	29.7
Actuated g/C Ratio	0.50		0.12	0.66	0.23	0.23
v/c Ratio	1.04		1.03	0.32	0.89	0.25
Control Delay	66.9		126.5	1.8	62.5	14.0
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	66.9		126.5	1.8	62.5	14.0
LOS	E		F	A	E	B
Approach Delay	66.9			27.5	56.1	
Approach LOS	E			C	E	

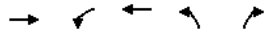
Intersection Summary	
Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	69 (53%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle:	130
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.04
Intersection Signal Delay:	54.1
Intersection LOS:	D
Intersection Capacity Utilization:	93.0%
ICU Level of Service:	F
Analysis Period (min):	15

Splits and Phases: 11: Hwy 401 WB Ramps & Kingston Road



Queues
11: Hwy 401 WB Ramps & Kingston Road

<2038 Future Background>PM
12-20-2024



Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1864	200	771	720	109
w/c Ratio	1.04	1.03	0.32	0.89	0.25
Control Delay	66.9	126.5	1.8	62.5	14.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	66.9	126.5	1.8	62.5	14.0
Queue Length 50th (m)	-284.5	-47.6	6.4	91.1	5.0
Queue Length 95th (m)	#328.0	#100.5	6.1	#114.7	19.8
Internal Link Dist (m)	244.7		400.0	192.6	
Turn Bay Length (m)		47.5			52.0
Base Capacity (vph)	1799	194	2404	853	446
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced w/c Ratio	1.04	1.03	0.32	0.84	0.24

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.

Lanes, Volumes, Timings
12: Plaza Entrance/Delta Blvd & Kingston Road

<2038 Future Background>PM
12-20-2024



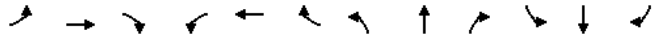
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	130	1563	38	89	1168	121	198	15	138	82	13	143
Future Volume (vph)	130	1563	38	89	1168	121	198	15	138	82	13	143
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.2	3.4	3.5	3.1	3.4	3.4	3.6	4.6	3.7	3.2	2.8	3.7
Grade (%)		6%			0%			0%				0%
Storage Length (m)	51.8		148.5	100.0		18.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	35.3			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		1.00	0.99		1.00					0.99
Frt		0.996			0.986			0.864				0.862
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1656	3343	0	1705	3399	0	1770	1824	0	1725	1474	0
Fit Permitted	0.950			0.950			0.630			0.637		
Satd. Flow (perm)	1647	3343	0	1704	3399	0	1172	1824	0	1157	1474	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			13			129				149
Link Speed (k/h)		60			60			30				40
Link Distance (m)		222.7			268.7			130.9				169.9
Travel Time (s)		13.4			16.1			15.7				15.3
Confl. Peds. (#/hr)	16		1	1		16	1					1
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 (%)	1%	2%	0%	0%	2%	0%	2%	0%	0%	0%	0%	0%
Adj. Flow (vph)	141	1699	41	97	1270	132	215	16	150	89	14	155
Shared Lane Traffic (%)												
Lane Group Flow (vph)	141	1740	0	97	1402	0	215	166	0	89	169	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.6				3.6
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		1.6			1.6			1.6				1.6
Two way Left Turn Lane					Yes							
Headway Factor	1.10	1.07	1.06	1.08	1.03	1.03	1.00	0.87	0.99	1.06	1.13	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	

Lanes, Volumes, Timings

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12: Plaza Entrance/Delta Blvd & Kingston Road

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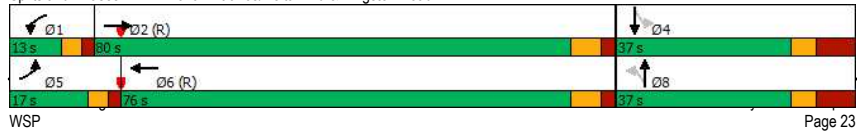


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases								8			4	
Detector Phase	5	2		1	6		8	8			4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	10.0	32.0		10.0	32.0		37.0	37.0		37.0	37.0	
Total Split (s)	17.0	80.0		13.0	76.0		37.0	37.0		37.0	37.0	
Total Split (%)	13.1%	61.5%		10.0%	58.5%		28.5%	28.5%		28.5%	28.5%	
Maximum Green (s)	12.0	73.1		8.0	69.1		27.0	27.0		27.0	27.0	
Yellow Time (s)	3.0	4.7		3.0	4.7		3.8	3.8		3.8	3.8	
All-Red Time (s)	2.0	2.2		2.0	2.2		6.2	6.2		6.2	6.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.9		5.0	6.9		10.0	10.0		10.0	10.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	0.2		3.0	0.2		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		18.0			18.0		20.0	20.0		20.0	20.0	
Pedestrian Calls (#/hr)		0			13		3	3		6	6	
Act Effct Green (s)	12.0	74.3		8.0	70.3		25.8	25.8		25.8	25.8	
Actuated g/C Ratio	0.09	0.57		0.06	0.54		0.20	0.20		0.20	0.20	
v/c Ratio	0.93	0.91		0.93	0.76		0.93	0.36		0.39	0.41	
Control Delay	84.2	22.6		124.2	20.0		93.7	14.4		50.3	12.5	
Queue Delay	0.0	1.2		0.0	0.0		0.0	74.4		139.0	0.0	
Total Delay	84.2	23.8		124.2	20.0		93.7	88.7		189.3	12.5	
LOS	F	C		F	C		F	F		F	B	
Approach Delay		28.3			26.8			91.6			73.5	
Approach LOS		C			C			F			E	

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 6 (5%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.93
 Intersection Signal Delay: 36.6 Intersection LOS: D
 Intersection Capacity Utilization 96.9% ICU Level of Service F
 Analysis Period (min) 15

Splits and Phases: 12: Plaza Entrance/Delta Blvd & Kingston Road



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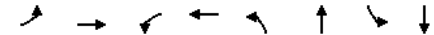
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Queues

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12: Plaza Entrance/Delta Blvd & Kingston Road

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Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	141	1740	97	1402	215	166	89	169
v/c Ratio	0.93	0.91	0.93	0.76	0.93	0.36	0.39	0.41
Control Delay	84.2	22.6	124.2	20.0	93.7	14.4	50.3	12.5
Queue Delay	0.0	1.2	0.0	0.0	0.0	74.4	139.0	0.0
Total Delay	84.2	23.8	124.2	20.0	93.7	88.7	189.3	12.5
Queue Length 50th (m)	36.9	135.0	26.3	72.7	54.0	7.7	19.7	4.2
Queue Length 95th (m)	m39.6	m138.3	m#47.8	95.4	#99.2	26.9	36.4	23.7
Internal Link Dist (m)		198.7		244.7		106.9		145.9
Turn Bay Length (m)	51.8		100.0					
Base Capacity (vph)	152	1912	104	1843	243	481	240	424
Starvation Cap Reductn	0	37	0	0	0	0	0	0
Spillback Cap Reductn	0	56	0	0	0	362	220	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.94	0.93	0.76	0.88	1.39	4.45	0.40

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

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Lanes, Volumes, Timings
13: Whites Road & Kingston Road

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	155	941	358	231	763	490	228	684	655	189	617	186
Future Volume (vph)	155	941	358	231	763	490	228	684	655	189	617	186
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.6	4.2	3.5	3.7	4.0	3.5	3.9	3.7	3.5	3.9	4.0
Grade (%)	6%		0%		0%		0%		0%		0%	
Storage Length (m)	127.0		123.0	87.1		35.0	72.0		35.0	88.5		47.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	64.0			39.6			66.8			32.6		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Ped Bike Factor	0.97		0.96	0.99		0.91	0.99		0.93	0.98		0.95
Frt		0.850			0.850			0.850			0.850	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1681	3400	1622	1733	3579	1654	1767	5255	1588	1750	5105	1627
Flt Permitted	0.950			0.950			0.331			0.292		
Satd. Flow (perm)	1638	3400	1549	1719	3579	1502	608	5255	1470	527	5105	1550
Right Turn on Red			Yes			Yes			Yes		Yes	
Satd. Flow (RTOR)			171			136			59			202
Link Speed (kh)	60		60		60		60		60		60	
Link Distance (m)	297.5		222.7		158.6		385.2					
Travel Time (s)	17.9		13.4		9.5		23.1					
Confl. Peds. (#/hr)	75		31	31		75	37		65	65		37
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 (%)	3%	3%	3%	3%	2%	2%	1%	2%	2%	2%	5%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	2	0	0	4
Adj. Flow (vph)	168	1023	389	251	829	533	248	743	712	205	671	202
Shared Lane Traffic (%)												
Lane Group Flow (vph)	168	1023	389	251	829	533	248	743	712	205	671	202
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width(m)	3.5		3.5		3.5		3.5		3.5		3.5	
Link Offset(m)	0.0		0.0		0.0		0.0		0.0		0.0	
Crosswalk Width(m)	1.6		1.6		1.6		1.6		1.6		1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.04	0.96	1.01	0.99	0.94	1.01	0.96	1.00	1.01	0.96	0.96
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4		9.4		9.4		9.4		9.4		9.4	
Detector 2 Size(m)	0.6		0.6		0.6		0.6		0.6		0.6	

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Synchro 11 Report
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Lanes, Volumes, Timings
13: Whites Road & Kingston Road

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type	Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0		0.0		0.0		0.0		0.0		0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8	1	7	4	
Permitted Phases			2			6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	1	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	5.0	8.0	5.0	5.0	8.0	8.0
Minimum Split (s)	10.0	43.0	43.0	10.0	43.0	43.0	8.0	49.0	10.0	8.0	49.0	49.0
Total Split (s)	18.0	43.0	43.0	30.0	55.0	55.0	8.0	49.0	30.0	8.0	49.0	49.0
Total Split (%)	13.8%	33.1%	33.1%	23.1%	42.3%	42.3%	6.2%	37.7%	23.1%	6.2%	37.7%	37.7%
Maximum Green (s)	13.0	36.0	36.0	25.0	48.0	48.0	5.0	40.6	25.0	5.0	40.6	40.6
Yellow Time (s)	3.0	4.2	4.2	3.0	4.2	4.2	3.0	4.3	3.0	3.0	4.3	4.3
All-Red Time (s)	2.0	2.8	2.8	2.0	2.8	2.8	0.0	4.1	2.0	0.0	4.1	4.1
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	0.0
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	3.0	8.4	5.0	3.0	8.4	8.4
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	0.2	0.2	3.0	0.2	0.2	3.0	0.2	3.0	3.0	0.2	0.2
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	None	None	Max	Max
Walk Time (s)	7.0		7.0		7.0		7.0		7.0		7.0	
Flash Dont Walk (s)	29.0		29.0		29.0		29.0		33.0		33.0	
Pedestrian Calls (#/hr)	13		13		38		38		20		20	
Act Effect Green (s)	13.0	38.3	38.3	22.7	48.0	48.0	51.0	40.6	66.7	51.0	40.6	40.6
Actuated g/C Ratio	0.10	0.29	0.29	0.17	0.37	0.37	0.39	0.31	0.51	0.39	0.31	0.31
v/c Ratio	1.00	1.02	0.68	0.83	0.63	0.83	0.88	0.45	0.89	0.81	0.42	0.32
Control Delay	127.6	79.3	29.2	83.6	25.4	25.9	63.3	36.9	37.4	55.8	36.4	5.8
Queue Delay	0.0	6.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	127.6	86.2	29.2	83.6	25.4	25.9	63.3	36.9	37.4	55.8	36.4	5.8
LOS	F	F	C	F	C	C	E	D	D	E	D	A
Approach Delay	76.6		34.6		40.9		34.3		34.3		34.3	
Approach LOS	E		C		D		C		D		C	
Intersection Summary												
Area Type:	Other											
Cycle Length:	130											
Actuated Cycle Length:	130											
Offset:	32 (25%), Referenced to phase 2:EBT and 6:WBT, Start of Green											
Natural Cycle:	120											
Control Type:	Actuated-Coordinated											
Maximum v/c Ratio:	1.02											
Intersection Signal Delay:	47.5						Intersection LOS: D					
Intersection Capacity Utilization:	109.1%						ICU Level of Service H					
Analysis Period (min):	15											
Splits and Phases:	13: Whites Road & Kingston Road											



Queues
13: Whites Road & Kingston Road

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	168	1023	389	251	829	533	248	743	712	205	671	202
w/c Ratio	1.00	1.02	0.68	0.83	0.63	0.83	0.88	0.45	0.89	0.81	0.42	0.32
Control Delay	127.6	79.3	29.2	83.6	25.4	25.9	63.3	36.9	37.4	55.8	36.4	5.8
Queue Delay	0.0	6.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	127.6	86.2	29.2	83.6	25.4	25.9	63.3	36.9	37.4	55.8	36.4	5.8
Queue Length 50th (m)	43.7	~154.6	51.2	60.7	53.7	43.3	42.7	55.8	123.7	34.3	49.8	0.0
Queue Length 95th (m)	#89.4	#195.8	88.5	m80.9	m79.6	m#129.0	#83.4	68.3	#188.7	#65.5	61.7	17.0
Internal Link Dist (m)		273.5		198.7			134.6			361.2		
Turn Bay Length (m)	127.0		123.0	87.1		35.0	72.0		35.0	88.5		47.0
Base Capacity (vph)	168	1001	576	333	1321	640	283	1641	830	253	1594	622
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	20	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced w/c Ratio	1.00	1.04	0.68	0.75	0.63	0.83	0.88	0.45	0.86	0.81	0.42	0.32

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.
- m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings
14: Whites Road & Highway 401 EB Off Ramp

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12-20-2024



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↑↑	↑		↑↑	↑↑	
Traffic Volume (vph)	1183	589	0	841	547	0
Future Volume (vph)	1183	589	0	841	547	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.7	3.6	3.8	3.7
Storage Length (m)	0.0	225.0	0.0			0.0
Storage Lanes	2	1	0			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	0.97	0.91	1.00	0.95	0.95	1.00
Ped Bike Factor	1.00	0.98				
Frt	0.993	0.850				
Flt Protected	0.955					
Satd. Flow (prot)	3453	1427	0	3539	3618	0
Flt Permitted	0.955					
Satd. Flow (perm)	3453	1404	0	3539	3618	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	7	129				
Link Speed (k/h)	50			60	60	
Link Distance (m)	295.9			185.9	316.9	
Travel Time (s)	21.3			11.2	19.0	
Confl. Peds. (#/hr)		3	4			4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	3%	2%	2%	2%	2%
Adj. Flow (vph)	1286	640	0	914	595	0
Shared Lane Traffic (%)		10%				
Lane Group Flow (vph)	1350	576	0	914	595	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.2			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	0.99	1.00	0.97	0.99
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	2.0	2.0		10.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	2.0		0.6	0.6	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				CI+Ex	CI+Ex	
Detector 2 Channel						

Lanes, Volumes, Timings

<2038 Future Background>PM

14: Whites Road & Highway 401 EB Off Ramp

12-20-2024

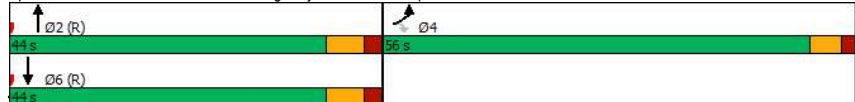


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	8.0	8.0		20.0	20.0	
Minimum Split (s)	28.5	28.5		27.7	27.7	
Total Split (s)	56.0	56.0		44.0	44.0	
Total Split (%)	56.0%	56.0%		44.0%	44.0%	
Maximum Green (s)	50.5	50.5		37.3	37.3	
Yellow Time (s)	3.7	3.7		4.5	4.5	
All-Red Time (s)	1.8	1.8		2.2	2.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.5	5.5		6.7	6.7	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		0.2	0.2	
Recall Mode	None	None		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	16.0	16.0		14.0	14.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effect Green (s)	46.8	46.8		41.0	41.0	
Actuated g/C Ratio	0.47	0.47		0.41	0.41	
v/c Ratio	0.83	0.79		0.63	0.40	
Control Delay	28.2	25.9		26.6	22.6	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	28.2	25.9		26.6	22.6	
LOS	C	C		C	C	
Approach Delay	27.5			26.6	22.6	
Approach LOS	C			C	C	

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 8 (8%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.83
 Intersection Signal Delay: 26.4
 Intersection LOS: C
 Intersection Capacity Utilization 73.4%
 ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 14: Whites Road & Highway 401 EB Off Ramp



Queues

<2038 Future Background>PM

14: Whites Road & Highway 401 EB Off Ramp

12-20-2024



Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	1350	576	914	595
v/c Ratio	0.83	0.79	0.63	0.40
Control Delay	28.2	25.9	26.6	22.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	28.2	25.9	26.6	22.6
Queue Length 50th (m)	110.4	77.9	74.2	42.8
Queue Length 95th (m)	131.2	123.7	99.3	59.7
Internal Link Dist (m)	271.9		161.9	292.9
Turn Bay Length (m)		225.0		
Base Capacity (vph)	1747	772	1451	1484
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.77	0.75	0.63	0.40

Intersection Summary

Lanes, Volumes, Timings
15: Dixie Road & Shopping Plaza Entrance

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12-20-2024

	←		↑		→	
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↕		↔	
Traffic Volume (vph)	0	228	0	0	168	0
Future Volume (vph)	0	228	0	0	168	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.1	3.7	4.0	3.7	3.7	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.865					
Fit Protected						0.950
Satd. Flow (prot)	1701	0	1946	0	0	1848
Fit Permitted						0.950
Satd. Flow (perm)	1701	0	1946	0	0	1848
Link Speed (k/h)	30	40		40		
Link Distance (m)	193.0	106.6		44.0		
Travel Time (s)	23.2	9.6		4.0		
Confl. Peds. (#/hr)	11		12			
Confl. Bikes (#/hr)						1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	248	0	0	183	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	248	0	0	0	0	183
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	4.1	3.6		3.6		
Link Offset(m)	0.0	0.0		0.0		
Crosswalk Width(m)	1.6	1.6		1.6		
Two way Left Turn Lane						
Headway Factor	0.93	0.99	0.94	0.99	0.99	0.94
Turning Speed (k/h)	97	97	97		97	
Sign Control	Stop	Free		Free		

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	31.2%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
15: Dixie Road & Shopping Plaza Entrance

<2038 Future Background>PM
12-20-2024

	←		↑		→	
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↕		↔	
Traffic Volume (veh/h)	0	228	0	0	168	0
Future Volume (Veh/h)	0	228	0	0	168	0
Sign Control	Stop	Free		Free		
Grade	0%	0%		0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	248	0	0	183	0
Pedestrians	12					11
Lane Width (m)	4.1					4.0
Walking Speed (m/s)	1.1					1.1
Percent Blockage	1					1
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						44
pX, platoon unblocked						
vC, conflicting volume	378	23			12	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	378	23			12	
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	76			88	
cM capacity (veh/h)	545	1029			1587	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	248	0	183
Volume Left	0	0	183
Volume Right	248	0	0
cSH	1029	1700	1587
Volume to Capacity	0.24	0.00	0.12
Queue Length 95th (m)	7.2	0.0	3.0
Control Delay (s)	9.6	0.0	7.6
Lane LOS	A	A	A
Approach Delay (s)	9.6	0.0	7.6
Approach LOS	A		

Intersection Summary	
Average Delay	8.7
Intersection Capacity Utilization	31.2%
ICU Level of Service	A
Analysis Period (min)	15

Lanes, Volumes, Timings
1: Walnut Lane & Kingston Road

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Traffic Volume (vph)	38	1420	270	119	646	43	293	0	265	24	16	26
Future Volume (vph)	38	1420	270	119	646	43	293	0	265	24	16	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.0	3.6	3.5	3.0	3.6	3.7	3.3	3.5	3.7	3.2	3.7	3.7
Storage Length (m)	26.0		25.8	37.0		0.0	63.2		0.0	18.5		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	24.0			26.0			24.4			18.1		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.99		1.00	1.00		0.98		0.98	0.99	0.98	
Frt		0.976			0.991				0.850		0.907	
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1685	3444	0	1685	3505	0	1745	0	1633	1725	1710	0
Fit Permitted	0.950			0.950			0.730			0.950		
Satd. Flow (perm)	1677	3444	0	1682	3505	0	1317	0	1603	1713	1710	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		26			9				100			26
Link Speed (k/h)		60			60				40			40
Link Distance (m)		129.3			694.6				114.0			179.7
Travel Time (s)		7.8			41.7				10.3			16.2
Conf. Peds. (#/hr)	5		7	7		5	14		5	5		14
Conf. Bikes (#/hr)			1									
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	2%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	3	0	0	0	0	0	0	0	0	0
Adj. Flow (vph)	38	1420	270	119	646	43	293	0	265	24	16	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	1690	0	119	689	0	293	0	265	24	42	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width(m)		3.1			3.1				3.3			3.3
Link Offset(m)		0.0			0.0				0.0			0.0
Crosswalk Width(m)		4.9			1.6				4.9			4.9
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.09	1.00	1.01	1.09	1.00	0.99	1.04	1.01	0.99	1.06	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	0	0		0	0		1		1	0		0
Detector Template								Right				
Leading Detector (m)	0.0	0.0		0.0	0.0		7.5		6.1	0.0		0.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		-1.5		0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		-1.5		0.0	0.0		0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8		9.0		6.1	6.1		1.8
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Turn Type	Prot	NA		Prot	NA		Perm		Perm	Perm		NA
Protected Phases	5	2		1	6							4

Lanes, Volumes, Timings
1: Walnut Lane & Kingston Road

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases										8	8	4
Detector Phase	5	2			1	6			8	8	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0			5.0	20.0			8.0	8.0	8.0	8.0
Minimum Split (s)	10.0	33.0			10.0	33.0			38.0	38.0	38.0	38.0
Total Split (s)	10.0	76.0			15.0	81.0			39.0	39.0	39.0	39.0
Total Split (%)	7.7%	58.5%			11.5%	62.3%			30.0%	30.0%	30.0%	30.0%
Maximum Green (s)	5.0	69.4			10.0	74.4			31.0	31.0	31.0	31.0
Yellow Time (s)	3.0	4.4			3.0	4.4			3.3	3.3	3.3	3.3
All-Red Time (s)	2.0	2.2			2.0	2.2			4.7	4.7	4.7	4.7
Lost Time Adjust (s)	0.0	0.0			0.0	0.0			0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.6			5.0	6.6			8.0	8.0	8.0	8.0
Lead/Lag	Lead	Lag			Lead	Lag						
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0			3.0	3.0			3.0	3.0	3.0	3.0
Recall Mode	None	C-Max			None	C-Max			None	None	None	None
Walk Time (s)		7.0				7.0			7.0	7.0	7.0	7.0
Flash Dont Walk (s)		19.0				19.0			22.0	22.0	22.0	22.0
Pedestrian Calls (#/hr)		8				4			2	9	9	9
Act Effect Green (s)	5.0	70.1			10.0	77.1			30.3	30.3	30.3	30.3
Actuated g/C Ratio	0.04	0.54			0.08	0.59			0.23	0.23	0.23	0.23
v/c Ratio	0.59	0.91			0.92	0.33			0.95	0.59	0.06	0.10
Control Delay	81.2	29.8			117.0	9.1			90.1	32.8	38.9	20.6
Queue Delay	0.0	0.0			0.0	0.0			0.0	0.0	0.0	0.0
Total Delay	81.2	29.8			117.0	9.1			90.1	32.8	38.9	20.6
LOS	F	C			F	A			F	C	D	C
Approach Delay		30.9				25.0			62.9			27.2
Approach LOS		C				C			E			C
Intersection Summary												
Area Type:	Other											
Cycle Length:	130											
Actuated Cycle Length:	130											
Offset:	77 (59%), Referenced to phase 2:EBT and 6:WBT, Start of Green											
Natural Cycle:	105											
Control Type:	Actuated-Coordinated											
Maximum v/c Ratio:	0.95											
Intersection Signal Delay:	35.0						Intersection LOS: C					
Intersection Capacity Utilization:	91.5%						ICU Level of Service F					
Analysis Period (min):	15											
Splits and Phases:	1: Walnut Lane & Kingston Road											

Lanes, Volumes, Timings

<2038 Future Background_PHF>PM

6: Liverpool Road & Kingston Road

12-20-2024

	↖	→	↘	↙	←	↖	↙	↘	↙	↘	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↖	↖	↖	↖↖	↖	↖	↖↖	↖	↖	↖↖	↖
Traffic Volume (vph)	244	1028	329	212	545	67	155	806	232	95	546	108
Future Volume (vph)	244	1028	329	212	545	67	155	806	232	95	546	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.1	3.4	3.6	3.3	3.7	3.4	3.8	4.1	4.8	4.7	3.8	3.3
Storage Length (m)	188.8		97.9	170.7		117.0	185.5		52.0	49.0		60.5
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	31.6			22.7			20.8			25.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.95	0.99		0.96	0.99		0.90	0.98		0.96
Frt			0.850			0.850			0.850			0.850
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1688	3461	1599	1728	3579	1579	1791	3773	1732	2026	3654	1561
Fit Permitted	0.950			0.950			0.362			0.191		
Satd. Flow (perm)	1666	3461	1512	1710	3579	1517	674	3773	1564	401	3654	1499
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			122			160			170			143
Link Speed (kh)		60			60			50				50
Link Distance (m)		694.6			396.4			257.7				348.6
Travel Time (s)		41.7			23.8			18.6				25.1
Conf. Peds. (#/hr)	20		31	31		20	29		62	62		29
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	2%	1%	1%	2%	0%	3%	1%	4%	0%	1%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	4	0	0	0
Adj. Flow (vph)	244	1028	329	212	545	67	155	806	232	95	546	108
Shared Lane Traffic (%)												
Lane Group Flow (vph)	244	1028	329	212	545	67	155	806	232	95	546	108
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.3			3.3			4.7				4.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		1.6			1.6			1.6				1.6
Two way Left Turn Lane		Yes										Yes
Headway Factor	1.08	1.03	1.00	1.04	0.99	1.03	0.97	0.93	0.87	0.86	0.97	1.04
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4				9.4
Detector 2 Size(m)		0.6			0.6			0.6				0.6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex

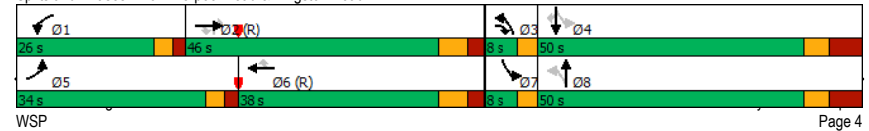
Lanes, Volumes, Timings

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6: Liverpool Road & Kingston Road

12-20-2024

	↖	→	↘	↙	←	↖	↙	↘	↙	↘	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)		0.0										0.0
Turn Type	Prot	NA	pm+ov	Prot	NA	Perm	pm+pt	NA	custom	pm+pt	NA	Perm
Protected Phases	5	2	3	1	6					3	8	7
Permitted Phases			2			6	8		2	4		4
Detector Phase	5	2	3	1	6	6	3	8	2	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	5.0	5.0	20.0	20.0	5.0	8.0	20.0	5.0	8.0	8.0
Minimum Split (s)	10.0	36.0	8.0	10.0	36.0	36.0	8.0	50.0	36.0	8.0	50.0	50.0
Total Split (s)	34.0	46.0	8.0	26.0	38.0	38.0	8.0	50.0	46.0	8.0	50.0	50.0
Total Split (%)	26.2%	35.4%	6.2%	20.0%	29.2%	29.2%	6.2%	38.5%	35.4%	6.2%	38.5%	38.5%
Maximum Green (s)	29.0	38.9	5.0	21.0	30.9	30.9	5.0	40.9	38.9	5.0	40.9	40.9
Yellow Time (s)	3.0	4.3	3.0	3.0	4.3	4.3	3.0	3.8	4.3	3.0	3.8	3.8
All-Red Time (s)	2.0	2.8	0.0	2.0	2.8	2.8	0.0	5.3	2.8	0.0	5.3	5.3
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	0.0
Total Lost Time (s)	5.0	7.1	3.0	5.0	7.1	7.1	3.0	9.1	7.1	3.0	9.1	9.1
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
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	3.0
Recall Mode	None	C-Max	None	None	C-Max	C-Max	None	Max	C-Max	None	Max	Max
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		21.0			21.0	21.0		33.0	21.0		33.0	33.0
Pedestrian Calls (#/hr)		15			20	20		28	15		15	15
Act Effct Green (s)	23.4	40.7	49.8	19.2	36.5	36.5	52.0	40.9	40.7	52.0	40.9	40.9
actuated g/C Ratio	0.18	0.31	0.38	0.15	0.28	0.28	0.40	0.31	0.31	0.40	0.31	0.31
v/c Ratio	0.81	0.95	0.50	0.83	0.54	0.12	0.50	0.68	0.38	0.43	0.48	0.19
Control Delay	49.4	69.4	38.1	79.5	43.0	0.5	31.7	42.3	12.4	29.4	37.6	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.4	69.4	38.1	79.5	43.0	0.5	31.7	42.3	12.4	29.4	37.6	2.8
LOS	D	E	D	E	D	A	C	D	B	C	D	A
Approach Delay		59.9			48.9			35.1				31.5
Approach LOS		E			D			D				C
Intersection Summary												
Area Type:	Other											
Cycle Length:	130											
Actuated Cycle Length:	130											
Offset:	78 (60%), Referenced to phase 2:EBT and 6:WBT, Start of Green											
Natural Cycle:	115											
Control Type:	Actuated-Coordinated											
Maximum v/c Ratio:	0.95											
Intersection Signal Delay:	46.2						Intersection LOS: D					
Intersection Capacity Utilization:	103.1%						ICU Level of Service G					
Analysis Period (min):	15											
Splits and Phases:	6: Liverpool Road & Kingston Road											



Lanes, Volumes, Timings

<2038 Future Background_PHF>PM

11: Hwy 401 WB Ramps & Kingston Road

12-20-2024

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑↑	↑
Traffic Volume (vph)	1692	23	184	709	662	100
Future Volume (vph)	1692	23	184	709	662	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.0	3.7	2.7	3.8	3.8	3.7
Grade (%)	6%			0%	0%	
Storage Length (m)		0.0	47.5		0.0	52.0
Storage Lanes		0	1		2	1
Taper Length (m)			22.3		2.5	
Lane Util. Factor	0.95	0.95	1.00	0.95	0.97	1.00
Ped Bike Factor					1.00	0.98
Frt	0.998					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3577	0	1577	3618	3544	1617
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3577	0	1577	3618	3537	1591
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	1					84
Link Speed (k/h)	60			60	50	
Link Distance (m)	268.7			424.0	216.6	
Travel Time (s)	16.1			25.4	15.6	
Confl. Peds. (#/hr)					1	3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	5%	3%	2%	1%	1%
Adj. Flow (vph)	1692	23	184	709	662	100
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1715	0	184	709	662	100
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.1			3.1	7.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	0.98	1.03	1.14	0.97	0.97	0.99
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	10.0		2.0	10.0	2.0	2.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Size(m)	0.6		2.0	0.6	2.0	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		

Lanes, Volumes, Timings

<2038 Future Background_PHF>PM

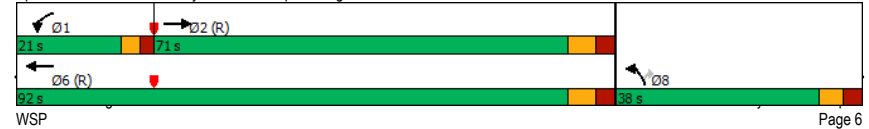
11: Hwy 401 WB Ramps & Kingston Road

12-20-2024

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		Prot	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases						8
Detector Phase	2		1	6	8	8
Switch Phase						
Minimum Initial (s)	20.0		5.0	20.0	8.0	8.0
Minimum Split (s)	50.0		10.0	50.0	38.0	38.0
Total Split (s)	71.0		21.0	92.0	38.0	38.0
Total Split (%)	54.6%		16.2%	70.8%	29.2%	29.2%
Maximum Green (s)	63.8		16.0	84.8	31.3	31.3
Yellow Time (s)	4.2		3.0	4.2	3.7	3.7
All-Red Time (s)	3.0		2.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	7.2		5.0	7.2	6.7	6.7
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?						
Vehicle Extension (s)	0.2		3.0	0.2	3.0	3.0
Recall Mode	C-Max		None	C-Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	35.0			35.0	24.0	24.0
Pedestrian Calls (#/hr)	0			0	14	14
Act Effct Green (s)	66.7		16.0	87.7	28.4	28.4
Actuated g/C Ratio	0.51		0.12	0.67	0.22	0.22
v/c Ratio	0.93		0.95	0.29	0.86	0.24
Control Delay	46.2		110.5	1.6	60.4	12.6
Queue Delay	0.8		0.0	0.0	0.0	0.0
Total Delay	47.0		110.5	1.6	60.4	12.6
LOS	D		F	A	E	B
Approach Delay	47.0			24.0	54.2	
Approach LOS	D			C	D	

Intersection Summary	
Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	69 (53%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle:	120
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.95
Intersection Signal Delay:	42.5
Intersection LOS:	D
Intersection Capacity Utilization:	93.0%
ICU Level of Service:	F
Analysis Period (min):	15

Splits and Phases: 11: Hwy 401 WB Ramps & Kingston Road



Lanes, Volumes, Timings
13: Whites Road & Kingston Road

<2038 Future Background_PHF>PM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	155	941	358	231	763	490	228	684	655	189	617	186
Future Volume (vph)	155	941	358	231	763	490	228	684	655	189	617	186
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.6	4.2	3.5	3.7	4.0	3.5	3.9	3.7	3.5	3.9	4.0
Grade (%)	6%			0%			0%			0%		
Storage Length (m)	127.0			123.0			87.1			47.0		
Storage Lanes	1			1			1			1		
Taper Length (m)	64.0			39.6			66.8			32.6		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Ped Bike Factor	0.97			0.96			0.99			0.95		
Frt	0.850			0.850			0.850			0.850		
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1681	3400	1622	1733	3579	1654	1767	5255	1588	1750	5105	1627
Flt Permitted	0.950			0.950			0.363			0.323		
Satd. Flow (perm)	1634	3400	1549	1717	3579	1502	666	5255	1470	582	5105	1550
Right Turn on Red	Yes			Yes			Yes			Yes		
Satd. Flow (RTOR)	187			147			59			186		
Link Speed (kh)	60			60			60			60		
Link Distance (m)	297.5			222.7			158.6			385.2		
Travel Time (s)	17.9			13.4			9.5			23.1		
Confl. Peds. (#/hr)	75	31	31	31	75	37	65	65	65	65	37	37
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	3%	3%	3%	2%	2%	1%	2%	2%	2%	5%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	2	0	0	4
Adj. Flow (vph)	155	941	358	231	763	490	228	684	655	189	617	186
Shared Lane Traffic (%)												
Lane Group Flow (vph)	155	941	358	231	763	490	228	684	655	189	617	186
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width(m)	3.5			3.5			3.5			3.5		
Link Offset(m)	0.0			0.0			0.0			0.0		
Crosswalk Width(m)	1.6			1.6			1.6			1.6		
Two way Left Turn Lane												
Headway Factor	1.06	1.04	0.96	1.01	0.99	0.94	1.01	0.96	1.00	1.01	0.96	0.96
Turning Speed (k/h)	24	14	24	14	24	14	24	14	24	14	24	14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4			9.4			9.4		
Detector 2 Size(m)	0.6			0.6			0.6			0.6		

Lanes, Volumes, Timings
13: Whites Road & Kingston Road

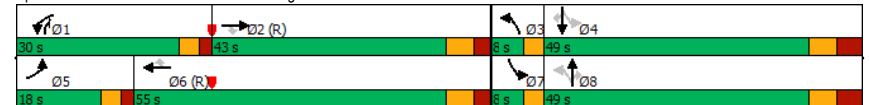
<2038 Future Background_PHF>PM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type	CI+Ex			CI+Ex			CI+Ex			CI+Ex		
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8	1	7	4	4
Permitted Phases	2			6			8			4		
Detector Phase	5	2	2	1	6	6	3	8	1	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	5.0	8.0	5.0	5.0	8.0	8.0
Minimum Split (s)	10.0	43.0	43.0	10.0	43.0	43.0	8.0	49.0	10.0	8.0	49.0	49.0
Total Split (s)	18.0	43.0	43.0	30.0	55.0	55.0	8.0	49.0	30.0	8.0	49.0	49.0
Total Split (%)	13.8%	33.1%	33.1%	23.1%	42.3%	42.3%	6.2%	37.7%	23.1%	6.2%	37.7%	37.7%
Maximum Green (s)	13.0	36.0	36.0	25.0	48.0	48.0	5.0	40.6	25.0	5.0	40.6	40.6
Yellow Time (s)	3.0	4.2	4.2	3.0	4.2	4.2	3.0	4.3	3.0	3.0	4.3	4.3
All-Red Time (s)	2.0	2.8	2.8	2.0	2.8	2.8	0.0	4.1	2.0	0.0	4.1	4.1
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	0.0
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	3.0	8.4	5.0	3.0	8.4	8.4
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	0.2	0.2	3.0	0.2	0.2	3.0	0.2	3.0	3.0	0.2	0.2
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	None	None	Max	Max
Walk Time (s)	7.0		7.0	7.0		7.0	7.0		7.0		7.0	
Flash Dont Walk (s)	29.0		29.0	29.0		29.0	33.0		33.0		33.0	
Pedestrian Calls (#/hr)	13		13	38		38	20		20		20	
Act Effect Green (s)	13.0	39.5	39.5	21.5	48.0	48.0	51.0	40.6	65.5	51.0	40.6	40.6
Actuated g/C Ratio	0.10	0.30	0.30	0.17	0.37	0.37	0.39	0.31	0.50	0.39	0.31	0.31
v/c Ratio	0.92	0.91	0.60	0.81	0.58	0.76	0.75	0.42	0.83	0.69	0.39	0.30
Control Delay	109.5	57.7	23.1	84.6	24.5	20.2	47.4	36.3	32.1	43.6	35.8	5.8
Queue Delay	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	109.5	59.1	23.1	84.6	24.5	20.2	47.4	36.3	32.1	43.6	35.8	5.8
LOS	F	E	C	F	C	C	D	D	C	D	D	A
Approach Delay	55.6			32.4			36.2			31.7		
Approach LOS	E			C			D			C		

Intersection Summary

Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	32 (25%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle:	120
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.92
Intersection Signal Delay:	39.5
Intersection Capacity Utilization:	109.1%
Analysis Period (min):	15
Intersection LOS:	D
ICU Level of Service:	H

Splits and Phases: 13: Whites Road & Kingston Road



Lanes, Volumes, Timings

<2038 Future Background_PHF>PM

15: Dixie Road & Shopping Plaza Entrance

12-20-2024

	←		↑		→	
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔		↔	↔
Traffic Volume (vph)	0	228	0	0	168	0
Future Volume (vph)	0	228	0	0	168	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.1	3.7	4.0	3.7	3.7	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.865					
Fit Protected				0.950		
Satd. Flow (prot)	1701	0	1946	0	0	1848
Fit Permitted				0.950		
Satd. Flow (perm)	1701	0	1946	0	0	1848
Link Speed (k/h)	30	40		40		
Link Distance (m)	193.0	106.6		44.0		
Travel Time (s)	23.2	9.6		4.0		
Confl. Peds. (#/hr)	11				12	
Confl. Bikes (#/hr)				1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	248	0	0	183	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	248	0	0	0	0	183
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	4.1	3.6		3.6		
Link Offset(m)	0.0	0.0		0.0		
Crosswalk Width(m)	1.6	1.6		1.6		
Two way Left Turn Lane						
Headway Factor	0.93	0.99	0.94	0.99	0.99	0.94
Turning Speed (k/h)	97	97	97		97	
Sign Control	Stop	Free		Free		

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	31.2%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis

<2038 Future Background_PHF>PM

15: Dixie Road & Shopping Plaza Entrance

12-20-2024

	←		↑		→	
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↔		↔	↔
Traffic Volume (veh/h)	0	228	0	0	168	0
Future Volume (Veh/h)	0	228	0	0	168	0
Sign Control	Stop	Free		Free		
Grade	0%	0%		0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	248	0	0	183	0
Pedestrians	12			11		
Lane Width (m)	4.1			4.0		
Walking Speed (m/s)	1.1			1.1		
Percent Blockage	1			1		
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)				44		
pX, platoon unblocked						
vC, conflicting volume	378	23			12	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	378	23			12	
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	76			88	
cM capacity (veh/h)	545	1029			1587	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	248	0	183
Volume Left	0	0	183
Volume Right	248	0	0
cSH	1029	1700	1587
Volume to Capacity	0.24	0.00	0.12
Queue Length 95th (m)	7.2	0.0	3.0
Control Delay (s)	9.6	0.0	7.6
Lane LOS	A	A	A
Approach Delay (s)	9.6	0.0	7.6
Approach LOS	A		

Intersection Summary

Average Delay	8.7
Intersection Capacity Utilization	31.2%
ICU Level of Service	A
Analysis Period (min)	15

***F-4 2043 FUTURE
BACKGROUND
CONDITIONS***

Lanes, Volumes, Timings
1: Walnut Lane & Kingston Road

<2043 Future Background>AM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Traffic Volume (vph)	20	754	75	103	443	30	243	0	143	14	6	29
Future Volume (vph)	20	754	75	103	443	30	243	0	143	14	6	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.0	3.6	3.5	3.0	3.6	3.7	3.3	3.5	3.7	3.2	3.7	3.7
Storage Length (m)	26.0		25.8	37.0		0.0	63.2		0.0	18.5		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	24.0			26.0			24.4			18.1		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		0.99	1.00		0.99		0.99	1.00	0.98	
Frt		0.986			0.990				0.850		0.877	
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1685	3405	0	1652	3379	0	1745	0	1585	1725	1601	0
Fit Permitted	0.950			0.950			0.732			0.950		
Satd. Flow (perm)	1677	3405	0	1643	3379	0	1330	0	1563	1720	1601	0
Right Turn on Red			Yes			Yes		Yes				Yes
Satd. Flow (RTOR)		10			8				155			32
Link Speed (k/h)		60			60				40			40
Link Distance (m)		129.3			694.6				114.0			179.7
Travel Time (s)		7.8			41.7				10.3			16.2
Conf. Peds. (#/hr)	4		8	8		4	9		2	2		9
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%	4%	6%	2%	5%	14%	0%	0%	3%	0%	0%	4%
Bus Blockages (#/hr)	0	0	6	0	0	0	0	0	0	0	0	0
Adj. Flow (vph)	22	820	82	112	482	33	264	0	155	15	7	32
Shared Lane Traffic (%)												
Lane Group Flow (vph)	22	902	0	112	515	0	264	0	155	15	39	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.1			3.1				3.3			3.3
Link Offset(m)		0.0			0.0				0.0			0.0
Crosswalk Width(m)		4.9			1.6				4.9			4.9
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.09	1.00	1.01	1.09	1.00	0.99	1.04	1.01	0.99	1.06	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	0	0		0	0		1		1	0		0
Detector Template									Right			
Leading Detector (m)	0.0	0.0		0.0	0.0		7.5		6.1	0.0		0.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		-1.5		0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		-1.5		0.0	0.0		0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8		9.0		6.1	6.1		1.8
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Turn Type	Prot	NA		Prot	NA		Perm		Perm	Perm		NA
Protected Phases	5	2		1	6							4
Permitted Phases							8		8			4

Lanes, Volumes, Timings
1: Walnut Lane & Kingston Road

<2043 Future Background>AM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2		1	6		8		8	4	4	
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0		8.0		8.0	8.0		8.0
Minimum Split (s)	10.0	33.0		10.0	33.0		39.0		39.0	39.0		39.0
Total Split (s)	10.0	52.0		19.0	61.0		49.0		49.0	49.0		49.0
Total Split (%)	8.3%	43.3%		15.8%	50.8%		40.8%		40.8%	40.8%		40.8%
Maximum Green (s)	5.0	45.4		14.0	54.4		41.0		41.0	41.0		41.0
Yellow Time (s)	3.0	4.4		3.0	4.4		3.3		3.3	3.3		3.3
All-Red Time (s)	2.0	2.2		2.0	2.2		4.7		4.7	4.7		4.7
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Total Lost Time (s)	5.0	6.6		5.0	6.6		8.0		8.0	8.0		8.0
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0		3.0	3.0		3.0
Recall Mode	None	C-Max		None	C-Max		None		None	None		None
Walk Time (s)		7.0			7.0		7.0		7.0	7.0		7.0
Flash Dont Walk (s)		19.0			19.0		22.0		22.0	22.0		22.0
Pedestrian Calls (#/hr)		7			5		5		5	14		14
Act Effct Green (s)	6.7	58.2		12.8	68.7		29.3		29.3	29.3		29.3
Actuated g/C Ratio	0.06	0.48		0.11	0.57		0.24		0.24	0.24		0.24
v/c Ratio	0.24	0.54		0.64	0.27		0.81		0.31	0.04		0.09
Control Delay	81.8	19.1		50.0	21.9		61.3		6.4	30.7		12.8
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Total Delay	81.8	19.1		50.0	21.9		61.3		6.4	30.7		12.8
LOS	F	B		D	C		E		A	C		B
Approach Delay		20.6			26.9		41.0					17.8
Approach LOS		C			C		D					B

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 1 (1%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 85
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.81
 Intersection Signal Delay: 26.7 Intersection LOS: C
 Intersection Capacity Utilization 62.1% ICU Level of Service B
 Analysis Period (min) 15

Splits and Phases: 1: Walnut Lane & Kingston Road



Queues <2043 Future Background>AM
1: Walnut Lane & Kingston Road 12-20-2024

Lane Group	EBL	EBT	WBL	WBT	NBL	NBR	SBL	SBT
Lane Group Flow (vph)	22	902	112	515	264	155	15	39
w/c Ratio	0.24	0.54	0.64	0.27	0.81	0.31	0.04	0.09
Control Delay	81.8	19.1	50.0	21.9	61.3	6.4	30.7	12.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	81.8	19.1	50.0	21.9	61.3	6.4	30.7	12.8
Queue Length 50th (m)	5.4	84.7	26.7	55.7	58.8	0.0	2.7	1.3
Queue Length 95th (m)	m13.0	120.8	43.4	73.1	80.8	14.2	7.3	8.8
Internal Link Dist (m)		105.3		670.6				155.7
Turn Bay Length (m)	26.0		37.0		63.2		18.5	
Base Capacity (vph)	93	1657	201	1938	454	636	587	568
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced w/c Ratio	0.24	0.54	0.56	0.27	0.58	0.24	0.03	0.07

Intersection Summary
m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings <2043 Future Background>AM
3: Dixie Road & Kingston Road 12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	760	81	78	554	86	37	15	29	131	35	144
Future Volume (vph)	80	760	81	78	554	86	37	15	29	131	35	144
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	2.8	3.6	3.4	2.8	3.5	3.1	3.6	4.0	3.7	3.8	4.2	3.7
Grade (%)		6%			0%			0%			0%	
Storage Length (m)	145.4		64.5	51.0		79.5	13.0		0.0	16.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	66.4			48.0			18.0			25.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		1.00	1.00		1.00	0.99		1.00	0.99	
Frt		0.986			0.980			0.900				0.879
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1564	3316	0	1645	3301	0	1752	1769	0	1827	1759	0
Fit Permitted	0.950			0.950			0.540			0.726		
Satd. Flow (perm)	1554	3316	0	1639	3301	0	993	1769	0	1393	1759	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12			17			32				157
Link Speed (k/h)		60			60			40				60
Link Distance (m)		896.3			191.2			44.0				236.2
Travel Time (s)		53.8			11.5			4.0				14.2
Confl. Peds. (#/hr)	6		4	4		6	3		2	2		3
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 (%)	2%	4%	2%	0%	6%	2%	3%	0%	0%	1%	0%	0%
Bus Blockages (#/hr)	0	0	6	0	0	6	0	0	0	0	0	0
Adj. Flow (vph)	87	826	88	85	602	93	40	16	32	142	38	157
Shared Lane Traffic (%)												
Lane Group Flow (vph)	87	914	0	85	695	0	40	48	0	142	195	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		2.8			2.8			3.8				3.8
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			4.9			4.9				4.9
Two way Left Turn Lane					Yes							
Headway Factor	1.17	1.04	1.07	1.13	1.01	1.08	1.00	0.94	0.99	0.97	0.92	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	0	0		0	0		0	0		1	1	
Detector Template												
Leading Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		7.5	7.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		-1.5	-1.5	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		-1.5	-1.5	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		9.0	9.0	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	

Lanes, Volumes, Timings
3: Dixie Road & Kingston Road

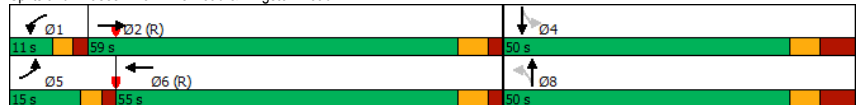
<2043 Future Background>AM
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases							8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	10.0	28.0		10.0	28.0		43.0	43.0		41.0	41.0	
Total Split (s)	15.0	59.0		11.0	55.0		50.0	50.0		50.0	50.0	
Total Split (%)	12.5%	49.2%		9.2%	45.8%		41.7%	41.7%		41.7%	41.7%	
Maximum Green (s)	10.0	52.4		6.0	48.4		40.5	40.5		40.5	40.5	
Yellow Time (s)	3.0	4.2		3.0	4.2		4.4	4.4		4.4	4.4	
All-Red Time (s)	2.0	2.4		2.0	2.4		5.1	5.1		5.1	5.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.6		5.0	6.6		9.5	9.5		9.5	9.5	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes			Yes								
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		14.0			14.0		23.0	23.0		23.0	23.0	
Pedestrian Calls (#/hr)		6			1		7	7		4	4	
Act Effect Green (s)	9.5	74.2		6.0	70.7		18.7	18.7		18.7	18.7	
Actuated g/C Ratio	0.08	0.62		0.05	0.59		0.16	0.16		0.16	0.16	
v/c Ratio	0.71	0.44		1.04	0.36		0.26	0.16		0.65	0.48	
Control Delay	83.0	13.7		171.5	5.6		45.6	19.8		60.5	14.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	83.0	13.7		171.5	5.6		45.6	19.8		60.5	14.4	
LOS	F	B		F	A		D	B		E	B	
Approach Delay		19.8			23.7			31.5			33.8	
Approach LOS		B			C			C			C	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 107.8 (90%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 85
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.04
 Intersection Signal Delay: 23.8 Intersection LOS: C
 Intersection Capacity Utilization 72.4% ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 3: Dixie Road & Kingston Road



Queues
3: Dixie Road & Kingston Road

<2043 Future Background>AM
12-20-2024

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	87	914	85	695	40	48	142	195
v/c Ratio	0.71	0.44	1.04	0.36	0.26	0.16	0.65	0.48
Control Delay	83.0	13.7	171.5	5.6	45.6	19.8	60.5	14.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	83.0	13.7	171.5	5.6	45.6	19.8	60.5	14.4
Queue Length 50th (m)	20.2	53.6	~20.8	23.3	8.5	3.3	32.2	7.9
Queue Length 95th (m)	#43.5	88.2	m#53.0	44.1	16.9	12.4	47.4	25.6
Internal Link Dist (m)		872.3		167.2		20.0		212.2
Turn Bay Length (m)	145.4		51.0		13.0		16.0	
Base Capacity (vph)	130	2054	82	1951	335	618	470	697
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.67	0.44	1.04	0.36	0.12	0.08	0.30	0.28

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.
 m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings

6: Liverpool Road & Kingston Road

<2043 Future Background>AM

12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	167	523	218	137	465	50	134	408	146	84	686	117
Future Volume (vph)	167	523	218	137	465	50	134	408	146	84	686	117
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.1	3.4	3.6	3.3	3.7	3.4	3.8	4.1	4.8	4.7	3.8	3.3
Storage Length (m)	188.8	97.9	170.7		117.0	185.5		52.0	49.0		60.5	
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	31.6			22.7			20.8			25.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.97	0.99		0.96	0.99		0.93	0.98		0.96
Frt			0.850			0.850			0.850			0.850
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1671	3299	1538	1694	3510	1579	1774	3700	1647	2026	3618	1516
Fit Permitted	0.950			0.950			0.257			0.466		
Satd. Flow (perm)	1649	3299	1487	1677	3510	1517	476	3700	1536	973	3618	1452
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			169			174			159			155
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		694.6			396.4			257.7			348.6	
Travel Time (s)		41.7			23.8			18.6			25.1	
Confl. Peds. (#/hr)	21		17	17		21	34		44	44		34
Confl. Bikes (#/hr)						1						
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 (%)	2%	7%	5%	3%	4%	0%	4%	3%	8%	0%	2%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	7	0	0	0
Adj. Flow (vph)	182	568	237	149	505	54	146	443	159	91	746	127
Shared Lane Traffic (%)												
Lane Group Flow (vph)	182	568	237	149	505	54	146	443	159	91	746	127
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.3			3.3			4.7			4.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane		Yes									Yes	
Headway Factor	1.08	1.03	1.00	1.04	0.99	1.03	0.97	0.93	0.88	0.86	0.97	1.04
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	

1105-1163 Kingston Road
WSP

Synchro 11 Report
Page 7

Lanes, Volumes, Timings

6: Liverpool Road & Kingston Road

<2043 Future Background>AM

12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type	Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	custom	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6	8		2	4		4
Detector Phase	5	2	2	1	6	6	3	8	2	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	5.0	8.0	20.0	5.0	8.0	8.0
Minimum Split (s)	10.0	36.0	36.0	10.0	36.0	36.0	8.0	51.0	36.0	8.0	51.0	51.0
Total Split (s)	25.0	42.0	42.0	19.0	36.0	36.0	8.0	51.0	42.0	8.0	51.0	51.0
Total Split (%)	20.8%	35.0%	35.0%	15.8%	30.0%	30.0%	6.7%	42.5%	35.0%	6.7%	42.5%	42.5%
Maximum Green (s)	20.0	34.9	34.9	14.0	28.9	28.9	5.0	41.9	34.9	5.0	41.9	41.9
Yellow Time (s)	3.0	4.3	4.3	3.0	4.3	4.3	3.0	3.8	4.3	3.0	3.8	3.8
All-Red Time (s)	2.0	2.8	2.8	2.0	2.8	2.8	0.0	5.3	2.8	0.0	5.3	5.3
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	0.0
Total Lost Time (s)	5.0	7.1	7.1	5.0	7.1	7.1	3.0	9.1	7.1	3.0	9.1	9.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
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	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	C-Max	None	Max	Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		21.0	21.0		21.0	21.0		33.0	21.0		33.0	33.0
Pedestrian Calls (#/hr)		44	44		31	31		61	44		40	40
Act Effect Green (s)	17.1	35.6	35.6	13.3	31.8	31.8	53.0	41.9	35.6	53.0	41.9	41.9
Actuated g/C Ratio	0.14	0.30	0.30	0.11	0.26	0.26	0.44	0.35	0.30	0.44	0.35	0.35
v/c Ratio	0.77	0.58	0.42	0.80	0.54	0.10	0.55	0.34	0.28	0.19	0.59	0.21
Control Delay	91.5	31.9	13.3	81.0	41.1	0.4	29.0	29.8	6.2	19.1	34.4	3.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	91.5	31.9	13.3	81.0	41.1	0.4	29.0	29.8	6.2	19.1	34.4	3.1
LOS	F	C	B	F	D	A	C	C	A	B	C	A
Approach Delay		38.4			46.4			24.6			28.8	
Approach LOS		D			D			C			C	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 29.4 (25%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 105

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 34.3

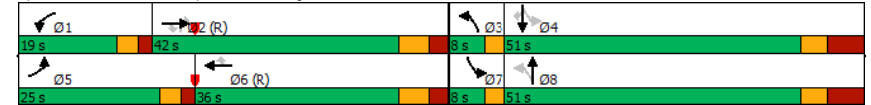
Intersection LOS: C

Intersection Capacity Utilization 94.3%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 6: Liverpool Road & Kingston Road



Queues <2043 Future Background>AM
6: Liverpool Road & Kingston Road 12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	182	568	237	149	505	54	146	443	159	91	746	127
w/c Ratio	0.77	0.58	0.42	0.80	0.54	0.10	0.55	0.34	0.28	0.19	0.59	0.21
Control Delay	91.5	31.9	13.3	81.0	41.1	0.4	29.0	29.8	6.2	19.1	34.4	3.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	91.5	31.9	13.3	81.0	41.1	0.4	29.0	29.8	6.2	19.1	34.4	3.1
Queue Length 50th (m)	45.6	23.2	1.8	34.5	54.6	0.0	19.5	40.3	0.0	11.7	75.3	0.0
Queue Length 95th (m)	69.1	61.1	34.2	#65.7	73.4	0.0	32.4	54.0	15.4	21.1	95.0	8.1
Internal Link Dist (m)	670.6			372.4			233.7			324.6		
Turn Bay Length (m)	188.8	97.9	170.7	117.0			185.5	52.0	49.0	60.5		
Base Capacity (vph)	278	978	560	197	931	530	264	1291	567	473	1263	607
Starvation Cap Reductn	0	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced w/c Ratio	0.65	0.58	0.42	0.76	0.54	0.10	0.55	0.34	0.28	0.19	0.59	0.21

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

Lanes, Volumes, Timings <2043 Future Background>AM
8: Liverpool Road & Private Access/Pickering Parkway 12-20-2024



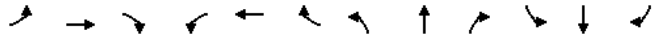
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔↔	↔	↔↔	↔	↔	↔	↔↔↔	↔	↔	↔↔↔	↔
Traffic Volume (vph)	10	17	36	194	19	59	53	568	272	146	832	24
Future Volume (vph)	10	17	36	194	19	59	53	568	272	146	832	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.1	3.1	3.7	3.0	3.4	3.2	2.8	3.6	3.5	3.2	3.5	3.5
Storage Length (m)	0.0	0.0	57.0	62.1	54.4	75.7	132.5	35.5				
Storage Lanes	1	0	1	1	1	1	1	1	1	1	1	1
Taper Length (m)	2.5	12.0			29.5			28.9				
Lane Util. Factor	1.00	0.95	0.95	0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Ped Bike Factor	0.99	0.897			0.850			0.850				
Frt	0.897			0.850			0.850					
Fit Protected	0.950	0.950			0.950			0.950				
Satd. Flow (prot)	1705	3058	0	3113	1858	1204	1645	5036	1523	1675	5029	1521
Fit Permitted	0.000	0.000			0.299			0.379				
Satd. Flow (perm)	0	3058	0	0	1858	1181	515	5036	1483	665	5029	1458
Right Turn on Red	Yes			Yes			Yes			Yes		
Satd. Flow (RTOR)	39			141			296			144		
Link Speed (k/h)	30			50			50			50		
Link Distance (m)	82.8			328.5			162.3			257.7		
Travel Time (s)	9.9			23.7			11.7			18.6		
Confl. Peds. (#/hr)	7			7			10			11		
Confl. Bikes (#/hr)	1			1			1			1		
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%	5%	0%	23%	0%	3%	4%	3%	2%	5%
Bus Blockages (#/hr)	0	0	0	0	0	10	0	2	0	2	0	0
Adj. Flow (vph)	11	18	39	211	21	64	58	617	296	159	904	26
Shared Lane Traffic (%)	11			57			0			211		
Lane Group Flow (vph)	11	57	0	211	21	64	58	617	296	159	904	26
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	6.0			6.0			3.8			3.8		
Link Offset(m)	0.0			0.0			0.0			0.0		
Crosswalk Width(m)	1.6			1.6			1.6			1.6		
Two way Left Turn Lane												
Headway Factor	1.08	1.08	0.99	1.09	1.03	1.12	1.13	1.00	1.03	1.06	1.01	1.01
Turning Speed (k/h)	24	24	14	24	14	24	14	24	14	24	14	24
Number of Detectors	1	2	1	2	1	2	1	2	1	1	2	1
Detector Template	Left	Thru	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left
Leading Detector (m)	2.0	10.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4			9.4			9.4		
Detector 2 Size(m)	0.6			0.6			0.6			0.6		

Lanes, Volumes, Timings

<2043 Future Background>AM

8: Liverpool Road & Private Access/Pickering Parkway

12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type	CI+Ex		CI+Ex		CI+Ex		CI+Ex		CI+Ex		CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0		0.0		0.0		0.0		0.0		0.0	
Turn Type	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm
Protected Phases	3	7	4	8	8	5	2	2	1	6		
Permitted Phases	7		8		8	2		2	6		6	
Detector Phase	3	7	4	8	8	5	2	2	1	6	6	6
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	5.0	20.0	20.0	5.0	20.0	20.0	20.0
Minimum Split (s)	15.0	15.0	15.0	34.0	34.0	34.0	8.0	30.0	30.0	8.0	30.0	30.0
Total Split (s)	17.0	17.0	34.0	34.0	34.0	9.0	37.0	37.0	12.0	40.0	40.0	40.0
Total Split (%)	17.0%	17.0%	34.0%	34.0%	34.0%	9.0%	37.0%	37.0%	12.0%	40.0%	40.0%	40.0%
Maximum Green (s)	10.4	10.4	27.4	27.4	27.4	6.0	30.7	30.7	9.0	33.7	33.7	33.7
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.0	4.2	4.2	3.0	4.2	4.2	4.2
All-Red Time (s)	3.3	3.3	3.3	3.3	3.3	0.0	2.1	2.1	0.0	2.1	2.1	2.1
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	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.6	3.0	6.3	6.3	3.0	6.3	6.3	6.3
Lead/Lag					Lead		Lag	Lag	Lead	Lag	Lag	Lag
Lead-Lag Optimize?												
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	3.0
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max	C-Max
Walk Time (s)			19.0	19.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0
Flash Dont Walk (s)			8.0	8.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Pedestrian Calls (#/hr)			0	0	21	21	21	21	21	21	21	21
Act Effect Green (s)	8.0	8.0	12.1	12.1	12.1	61.3	52.1	52.1	66.4	56.1	56.1	56.1
Actuated g/C Ratio	0.08	0.08	0.12	0.12	0.12	0.61	0.52	0.52	0.66	0.56	0.56	0.56
v/c Ratio	0.08	0.20	0.56	0.09	0.24	0.15	0.24	0.32	0.30	0.32	0.03	0.03
Control Delay	44.1	22.1	46.9	38.5	2.1	6.7	13.1	4.0	9.1	13.8	0.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.1	22.1	46.9	38.5	2.1	6.7	13.1	4.0	9.1	13.8	0.0	0.0
LOS	D	C	D	D	A	A	B	A	A	B	B	A
Approach Delay	25.7		36.6		9.9		12.8					
Approach LOS	C		D		A		B					

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 34 (34%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.56

Intersection Signal Delay: 14.9

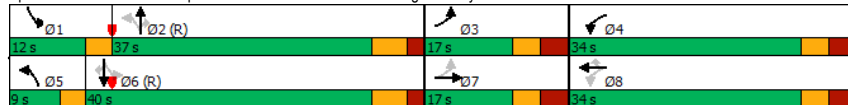
Intersection Capacity Utilization 55.7%

Analysis Period (min) 15

Intersection LOS: B

ICU Level of Service B

Splits and Phases: 8: Liverpool Road & Private Access/Pickering Parkway



Queues

<2043 Future Background>AM

8: Liverpool Road & Private Access/Pickering Parkway

12-20-2024



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Group Flow (vph)	11	57	211	21	64	58	617	296	159	904	26	
v/c Ratio	0.08	0.20	0.56	0.09	0.24	0.15	0.24	0.32	0.30	0.32	0.03	
Control Delay	44.1	22.1	46.9	38.5	2.1	6.7	13.1	4.0	9.1	13.8	0.0	
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	44.1	22.1	46.9	38.5	2.1	6.7	13.1	4.0	9.1	13.8	0.0	
Queue Length 50th (m)	2.0	1.7	20.2	3.7	0.0	2.4	24.8	9.8	11.3	36.3	0.0	
Queue Length 95th (m)	7.4	7.8	30.3	10.1	0.0	m5.5	37.9	20.1	21.5	49.1	0.0	
Internal Link Dist (m)	58.8		304.5		138.3		233.7					
Turn Bay Length (m)	57.0		62.1		54.4		75.7		132.5		35.5	
Base Capacity (vph)	177	352	852	509	425	383	2621	913	533	2821	881	
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	0.06	0.16	0.25	0.04	0.15	0.15	0.24	0.32	0.30	0.32	0.03	

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings

<2043 Future Background>AM

9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp

12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗	↖	↖	↖	↖	↖	↖	↖	↖	↖
Traffic Volume (vph)	0	0	160	188	69	310	162	549	0	0	715	97
Future Volume (vph)	0	0	160	188	69	310	162	549	0	0	715	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.5	3.7	3.7	3.4	3.7
Storage Length (m)	0.0	0.0	0.0	0.0	125.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0
Storage Lanes	0		1	1		1	1		0	0		1
Taper Length (m)	2.5			2.5		30.0			2.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	1.00	0.91	1.00
Ped Bike Factor							1.00					0.96
Frt			0.865			0.850						0.850
Fit Protected				0.950	0.977		0.950					
Satd. Flow (prot)	0	0	1108	1700	1767	1551	1460	4932	0	0	4877	1601
Fit Permitted				0.950	0.977		0.293					
Satd. Flow (perm)	0	0	1108	1700	1767	1551	448	4932	0	0	4877	1538
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)						336						105
Link Speed (kh)		50			50			50				50
Link Distance (m)		433.1			226.7			372.2				162.3
Travel Time (s)		31.2			16.3			26.8				11.7
Confl. Peds. (#/hr)							7		14	14		7
Confl. Bikes (#/hr)								4				
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%	2%	50%	2%	0%	3%	25%	4%	4%	2%	4%	2%
Adj. Flow (vph)	0	0	174	204	75	337	176	597	0	0	777	105
Shared Lane Traffic (%)				32%								
Lane Group Flow (vph)	0	0	174	139	140	337	176	597	0	0	777	105
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7				3.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		1.6			1.6			1.6				1.6
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	1.01	0.99	1.01	0.99	0.99	1.03	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors			1	1	2	1	1	2			2	1
Detector Template			Right	Left	Thru	Right	Left	Thru			Thru	Right
Leading Detector (m)			2.0	2.0	10.0	2.0	2.0	10.0			10.0	2.0
Trailing Detector (m)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Position(m)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Size(m)			2.0	2.0	0.6	2.0	2.0	0.6			0.6	2.0
Detector 1 Type			Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 2 Position(m)						9.4		9.4				9.4
Detector 2 Size(m)						0.6		0.6				0.6
Detector 2 Type						Cl+Ex		Cl+Ex				Cl+Ex

Lanes, Volumes, Timings

<2043 Future Background>AM

9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp

12-20-2024

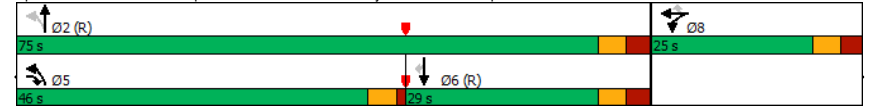


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0				0.0
Turn Type			Over	Split	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases			5	8	8		5	2			6	
Permitted Phases						8	2					6
Detector Phase			5	8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)			5.0	8.0	8.0	8.0	5.0	15.0			15.0	15.0
Minimum Split (s)			9.5	25.0	25.0	25.0	9.5	24.3			24.3	24.3
Total Split (s)			46.0	25.0	25.0	25.0	46.0	75.0			29.0	29.0
Total Split (%)			46.0%	25.0%	25.0%	25.0%	46.0%	75.0%			29.0%	29.0%
Maximum Green (s)			41.5	19.0	19.0	19.0	41.5	68.7			22.7	22.7
Yellow Time (s)			3.5	3.3	3.3	3.3	3.5	3.3			3.3	3.3
All-Red Time (s)			1.0	2.7	2.7	2.7	1.0	3.0			3.0	3.0
Lost Time Adjust (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Lost Time (s)			4.5	6.0	6.0	6.0	4.5	6.3			6.3	6.3
Lead/Lag			Lead				Lead				Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)			3.0	3.0	3.0	3.0	3.0	3.0			3.0	3.0
Recall Mode			None	None	None	None	None	C-Max			C-Max	C-Max
Walk Time (s)				14.0	14.0	14.0		13.0			13.0	13.0
Flash Dont Walk (s)				5.0	5.0	5.0		5.0			5.0	5.0
Pedestrian Calls (#/hr)				0	0	0		15			17	17
Act Effct Green (s)			21.4	13.7	13.7	13.7	75.8	74.0			48.1	48.1
Actuated g/C Ratio			0.21	0.14	0.14	0.14	0.76	0.74			0.48	0.48
v/c Ratio			0.73	0.60	0.58	0.67	0.32	0.16			0.33	0.13
Control Delay			53.6	50.7	49.5	11.5	5.4	4.3			11.0	1.9
Queue Delay			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay			53.6	50.7	49.5	11.5	5.4	4.3			11.0	1.9
LOS			D	D	D	B	A	A			B	A
Approach Delay		53.6			28.9			4.6				9.9
Approach LOS		D			C			A				A

Intersection Summary

Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	100
Offset:	38 (38%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle:	65
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.73
Intersection Signal Delay:	16.1
Intersection LOS:	B
Intersection Capacity Utilization:	45.9%
ICU Level of Service:	A
Analysis Period (min):	15

Splits and Phases: 9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp



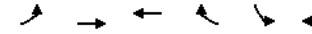
Queues <2043 Future Background>AM
 9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp 12-20-2024



Lane Group	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	174	139	140	337	176	597	777	105
w/c Ratio	0.73	0.60	0.58	0.67	0.32	0.16	0.33	0.13
Control Delay	53.6	50.7	49.5	11.5	5.4	4.3	11.0	1.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.6	50.7	49.5	11.5	5.4	4.3	11.0	1.9
Queue Length 50th (m)	31.7	27.1	27.2	0.2	7.6	10.3	19.7	0.1
Queue Length 95th (m)	48.6	44.3	44.3	23.5	16.9	17.3	24.6	2.1
Internal Link Dist (m)	202.7				348.2	138.3		
Turn Bay Length (m)			125.0	50.0				
Base Capacity (vph)	459	323	335	566	759	3651	2346	794
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced w/c Ratio	0.38	0.43	0.42	0.60	0.23	0.16	0.33	0.13

Intersection Summary

Lanes, Volumes, Timings <2043 Future Background>AM
 10: Kingston Road & Fairport Road 12-20-2024



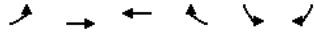
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø1
Lane Configurations	↘	↗	↗		↘	↘	
Traffic Volume (vph)	96	714	648	99	182	229	
Future Volume (vph)	96	714	648	99	182	229	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (m)	3.0	3.6	3.5	3.7	3.6	4.5	
Grade (%)	6%		0%		0%		
Storage Length (m)	75.0			18.5	15.5	0.0	
Storage Lanes	1			0	1	1	
Taper Length (m)	2.5			31.3			
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00	
Frnt			0.980			0.850	
Fit Protected	0.950			0.950			
Satd. Flow (prot)	1602	3335	3379	0	1736	1708	
Fit Permitted	0.950			0.950			
Satd. Flow (perm)	1602	3335	3379	0	1736	1708	
Right Turn on Red				Yes	Yes		
Satd. Flow (RTOR)				17	249		
Link Speed (k/h)	60		60		40		
Link Distance (m)	424.0		896.3		280.0		
Travel Time (s)	25.4		53.8		25.2		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Heavy Vehicles (%)	2%	5%	3%	7%	4%	4%	
Bus Blockages (#/hr)	0	0	0	9	0	0	
Adj. Flow (vph)	104	776	704	108	198	249	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	104	776	812	0	198	249	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Left	Left	Right	Left	Right	
Median Width(m)	3.0		3.0		3.6		
Link Offset(m)	0.0		0.0		0.0		
Crosswalk Width(m)	1.6		1.6		1.6		
Two way Left Turn Lane	Yes						
Headway Factor	1.14	1.04	1.01	0.99	1.00	0.88	
Turning Speed (k/h)	24		14		24		
Number of Detectors	1	2	2	1		1	
Detector Template	Left	Thru	Thru	Left		Right	
Leading Detector (m)	2.0	10.0	10.0	2.0		2.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0		0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0		0.0	
Detector 1 Size(m)	2.0	0.6	0.6	2.0		2.0	
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex		CI+Ex	
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0	0.0		0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0		0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0		0.0	
Detector 2 Position(m)	9.4		9.4				
Detector 2 Size(m)	0.6		0.6				
Detector 2 Type	CI+Ex		CI+Ex				
Detector 2 Channel							

Lanes, Volumes, Timings

<2043 Future Background>AM

10: Kingston Road & Fairport Road

12-20-2024



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø1
Detector 2 Extend (s)		0.0	0.0				
Turn Type	Prot	NA	NA		Prot	Perm	
Protected Phases	5	2	6		4		1
Permitted Phases						4	
Detector Phase	5	2	6		4	4	
Switch Phase							
Minimum Initial (s)	5.0	20.0	20.0		8.0	8.0	5.0
Minimum Split (s)	10.0	32.3	32.3		38.1	38.1	8.0
Total Split (s)	22.0	79.0	65.0		43.0	43.0	8.0
Total Split (%)	16.9%	60.8%	50.0%		33.1%	33.1%	6%
Maximum Green (s)	17.0	72.7	58.7		35.7	35.7	5.0
Yellow Time (s)	3.0	4.3	4.3		3.3	3.3	3.0
All-Red Time (s)	2.0	2.0	2.0		4.0	4.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.3	6.3		7.3	7.3	
Lead/Lag	Lead	Lag	Lag				Lead
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	0.2	0.2		3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max		None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0	5.0
Flash Dont Walk (s)		19.0	19.0		23.0	23.0	0.0
Pedestrian Calls (#/hr)		0	1		2	2	20
Act Effect Green (s)	13.3	90.9	77.4		20.7	20.7	
Actuated g/C Ratio	0.10	0.70	0.60		0.16	0.16	
v/c Ratio	0.64	0.33	0.40		0.72	0.52	
Control Delay	104.1	0.8	15.8		65.5	9.1	
Queue Delay	0.0	0.0	0.0		0.0	0.0	
Total Delay	104.1	0.8	15.8		65.5	9.1	
LOS	F	A	B		E	A	
Approach Delay		13.0	15.8		34.1		
Approach LOS		B	B		C		

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 105 (81%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 85
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.72
 Intersection Signal Delay: 18.5 Intersection LOS: B
 Intersection Capacity Utilization 52.0% ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 10: Kingston Road & Fairport Road



Queues

<2043 Future Background>AM

10: Kingston Road & Fairport Road

12-20-2024



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	104	776	812	198	249
v/c Ratio	0.64	0.33	0.40	0.72	0.52
Control Delay	104.1	0.8	15.8	65.5	9.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	104.1	0.8	15.8	65.5	9.1
Queue Length 50th (m)	26.1	2.5	53.8	49.0	0.0
Queue Length 95th (m)	42.6	2.5	86.2	68.5	20.6
Internal Link Dist (m)		400.0	872.3	256.0	
Turn Bay Length (m)	75.0			15.5	
Base Capacity (vph)	209	2331	2018	476	649
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.50	0.33	0.40	0.42	0.38

Intersection Summary

Lanes, Volumes, Timings
11: Hwy 401 WB Ramps & Kingston Road

<2043 Future Background>AM
12-20-2024

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖↗		↖	↖↗	↖↗	↖
Traffic Volume (vph)	748	12	284	612	461	65
Future Volume (vph)	748	12	284	612	461	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.0	3.7	2.7	3.8	3.8	3.7
Grade (%)	6%			0%	0%	
Storage Length (m)		0.0	47.5		0.0	52.0
Storage Lanes		0	1		2	1
Taper Length (m)			22.3		2.5	
Lane Util. Factor	0.95	0.95	1.00	0.95	0.97	1.00
Frt	0.998					0.850
Fit Protected			0.950		0.950	
Satd. Flow (prot)	3479	0	1593	3548	3442	1633
Fit Permitted			0.950		0.950	
Satd. Flow (perm)	3479	0	1593	3548	3442	1633
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	1					71
Link Speed (k/h)	60			60	50	
Link Distance (m)	268.7			424.0	216.6	
Travel Time (s)	16.1			25.4	15.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	0%	2%	4%	4%	0%
Adj. Flow (vph)	813	13	309	665	501	71
Shared Lane Traffic (%)						
Lane Group Flow (vph)	826	0	309	665	501	71
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.1			3.1	7.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	0.98	1.03	1.14	0.97	0.97	0.99
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	10.0		2.0	10.0	2.0	2.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Size(m)	0.6		2.0	0.6	2.0	2.0
Detector 1 Type	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	CI+Ex			CI+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		

Lanes, Volumes, Timings
11: Hwy 401 WB Ramps & Kingston Road

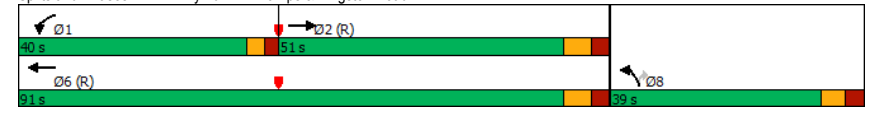
<2043 Future Background>AM
12-20-2024

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Turn Type	NA		Prot	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases						8
Detector Phase	2		1	6	8	8
Switch Phase						
Minimum Initial (s)	20.0		5.0	20.0	8.0	8.0
Minimum Split (s)	50.0		10.0	50.0	39.0	39.0
Total Split (s)	51.0		40.0	91.0	39.0	39.0
Total Split (%)	39.2%		30.8%	70.0%	30.0%	30.0%
Maximum Green (s)	43.8		35.0	83.8	32.3	32.3
Yellow Time (s)	4.2		3.0	4.2	3.7	3.7
All-Red Time (s)	3.0		2.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	7.2		5.0	7.2	6.7	6.7
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?						
Vehicle Extension (s)	0.2		3.0	0.2	3.0	3.0
Recall Mode	C-Max		None	C-Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	35.0			35.0	24.0	24.0
Pedestrian Calls (#/hr)	0			3	3	3
Act Effect Green (s)	57.3		29.4	91.7	24.4	24.4
Actuated g/C Ratio	0.44		0.23	0.71	0.19	0.19
v/c Ratio	0.54		0.86	0.27	0.78	0.20
Control Delay	12.2		59.8	15.2	58.6	10.2
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	12.2		59.8	15.2	58.6	10.2
LOS	B		E	B	E	B
Approach Delay	12.2			29.3	52.6	
Approach LOS	B			C	D	

Intersection Summary

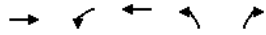
Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 66 (51%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.86
 Intersection Signal Delay: 29.0
 Intersection Capacity Utilization 65.7%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service C

Splits and Phases: 11: Hwy 401 WB Ramps & Kingston Road



Queues
11: Hwy 401 WB Ramps & Kingston Road

<2043 Future Background>AM
12-20-2024



Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	826	309	665	501	71
w/c Ratio	0.54	0.86	0.27	0.78	0.20
Control Delay	12.2	59.8	15.2	58.6	10.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	12.2	59.8	15.2	58.6	10.2
Queue Length 50th (m)	19.3	76.0	61.7	63.7	0.0
Queue Length 95th (m)	46.5	107.1	80.7	77.4	12.0
Internal Link Dist (m)	244.7		400.0	192.6	
Turn Bay Length (m)		47.5			52.0
Base Capacity (vph)	1534	428	2502	855	459
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced w/c Ratio	0.54	0.72	0.27	0.59	0.15

Intersection Summary

Lanes, Volumes, Timings
12: Plaza Entrance/Delta Blvd & Kingston Road

<2043 Future Background>AM
12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	76	975	37	96	980	74	140	6	92	42	13	124
Future Volume (vph)	76	975	37	96	980	74	140	6	92	42	13	124
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.2	3.4	3.5	3.1	3.4	3.4	3.6	4.6	3.7	3.2	2.8	3.7
Grade (%)		6%			0%			0%				0%
Storage Length (m)	51.8		148.5	100.0		18.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	35.3			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99				1.00		0.99	0.98		1.00		0.98
Frt		0.995			0.990			0.860				0.864
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1673	3280	0	1671	3380	0	1805	1755	0	1643	1468	0
Fit Permitted	0.950			0.950			0.662			0.688		
Satd. Flow (perm)	1662	3280	0	1671	3380	0	1249	1755	0	1185	1468	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			9			100				135
Link Speed (k/h)		60			60			30				40
Link Distance (m)		222.7			268.7			130.9				169.9
Travel Time (s)		13.4			16.1			15.7				15.3
Confl. Peds. (#/hr)	13					13	6		3	3		6
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%	4%	0%	2%	3%	3%	0%	0%	2%	5%	0%	0%
Adj. Flow (vph)	83	1060	40	104	1065	80	152	7	100	46	14	135
Shared Lane Traffic (%)												
Lane Group Flow (vph)	83	1100	0	104	1145	0	152	107	0	46	149	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.6				3.6
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		1.6			1.6			1.6				1.6
Two way Left Turn Lane					Yes							
Headway Factor	1.10	1.07	1.06	1.08	1.03	1.03	1.00	0.87	0.99	1.06	1.13	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	

Lanes, Volumes, Timings

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12: Plaza Entrance/Delta Blvd & Kingston Road

12-20-2024

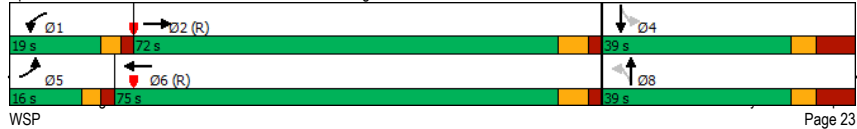


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	10.0	31.9		10.0	31.9		37.6	37.6		37.6	37.6	
Total Split (s)	16.0	72.0		19.0	75.0		39.0	39.0		39.0	39.0	
Total Split (%)	12.3%	55.4%		14.6%	57.7%		30.0%	30.0%		30.0%	30.0%	
Maximum Green (s)	11.0	65.1		14.0	68.1		29.0	29.0		29.0	29.0	
Yellow Time (s)	3.0	4.7		3.0	4.7		3.8	3.8		3.8	3.8	
All-Red Time (s)	2.0	2.2		2.0	2.2		6.2	6.2		6.2	6.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.9		5.0	6.9		10.0	10.0		10.0	10.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	0.2		3.0	0.2		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		18.0			18.0		20.0	20.0		20.0	20.0	
Pedestrian Calls (#/hr)		1			16		0	0		1	1	
Act Effct Green (s)	10.0	75.0		12.1	77.1		20.9	20.9		20.9	20.9	
Actuated g/C Ratio	0.08	0.58		0.09	0.59		0.16	0.16		0.16	0.16	
v/c Ratio	0.65	0.58		0.67	0.57		0.76	0.29		0.24	0.43	
Control Delay	83.2	29.8		78.6	28.2		74.1	11.5		48.1	12.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	83.2	29.8		78.6	28.2		74.1	11.5		48.1	12.9	
LOS	F	C		E	C		E	B		D	B	
Approach Delay		33.6			32.4			48.2			21.2	
Approach LOS		C			C			D			C	

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 49 (38%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.76
 Intersection Signal Delay: 33.6 Intersection LOS: C
 Intersection Capacity Utilization 79.5% ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 12: Plaza Entrance/Delta Blvd & Kingston Road



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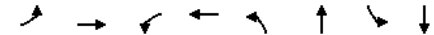
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Queues

<2043 Future Background>AM

12: Plaza Entrance/Delta Blvd & Kingston Road

12-20-2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	83	1100	104	1145	152	107	46	149
v/c Ratio	0.65	0.58	0.67	0.57	0.76	0.29	0.24	0.43
Control Delay	83.2	29.8	78.6	28.2	74.1	11.5	48.1	12.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	83.2	29.8	78.6	28.2	74.1	11.5	48.1	12.9
Queue Length 50th (m)	22.0	125.7	27.2	152.0	37.6	1.5	10.4	3.1
Queue Length 95th (m)	#40.7	159.0	44.8	176.0	57.4	16.2	20.7	20.6
Internal Link Dist (m)		198.7		244.7		106.9		145.9
Turn Bay Length (m)	51.8		100.0					
Base Capacity (vph)	141	1894	179	2009	278	469	264	432
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.58	0.58	0.57	0.55	0.23	0.17	0.34

Intersection Summary

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

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 WSP

Synchro 11 Report
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Lanes, Volumes, Timings
13: Whites Road & Kingston Road

<2043 Future Background>AM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	78	344	294	234	563	281	146	390	390	156	796	175
Future Volume (vph)	78	344	294	234	563	281	146	390	390	156	796	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.6	4.2	3.5	3.7	4.0	3.5	3.9	3.7	3.5	3.9	4.0
Grade (%)	6%		0%		0%		0%		0%		0%	
Storage Length (m)	127.0		123.0		87.1		35.0		72.0		47.0	
Storage Lanes	1		1		1		1		1		1	
Taper Length (m)	64.0		39.6		66.8		32.6		32.6		32.6	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Ped Bike Factor	0.98		0.97		0.99		0.95		0.99		0.97	
Frt	0.850		0.850		0.850		0.850		0.850		0.850	
Flt Protected	0.950		0.950		0.950		0.950		0.950		0.950	
Satd. Flow (prot)	1633	3335	1607	1767	3510	1606	1700	5057	1558	1750	5057	1625
Flt Permitted	0.950		0.950		0.232		0.495		0.495		0.495	
Satd. Flow (perm)	1605	3335	1565	1752	3510	1522	413	5057	1509	902	5057	1574
Right Turn on Red	Yes		Yes		Yes		Yes		Yes		Yes	
Satd. Flow (RTOR)	155		239		193		173		173		173	
Link Speed (kh)	60		60		60		60		60		60	
Link Distance (m)	297.5		222.7		158.6		385.2		385.2		385.2	
Travel Time (s)	17.9		13.4		9.5		23.1		23.1		23.1	
Confl. Peds. (#/hr)	38		13		13		38		20		20	
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 (%)	6%	5%	4%	1%	4%	5%	5%	6%	4%	2%	6%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	2	0	0	2
Adj. Flow (vph)	85	374	320	254	612	305	159	424	424	170	865	190
Shared Lane Traffic (%)	-											
Lane Group Flow (vph)	85	374	320	254	612	305	159	424	424	170	865	190
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	3.5		3.5		3.5		3.5		3.5		3.5	
Link Offset(m)	0.0		0.0		0.0		0.0		0.0		0.0	
Crosswalk Width(m)	1.6		1.6		1.6		1.6		1.6		1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.04	0.96	1.01	0.99	0.94	1.01	0.96	1.00	1.01	0.96	0.95
Turning Speed (k/h)	24	14	14	24	14	24	14	24	14	24	14	24
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4		9.4		9.4		9.4		9.4		9.4	
Detector 2 Size(m)	0.6		0.6		0.6		0.6		0.6		0.6	

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WSP

Synchro 11 Report
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Lanes, Volumes, Timings
13: Whites Road & Kingston Road

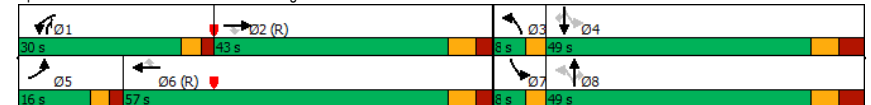
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12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type	Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex		
Detector 2 Channel	-											
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8	1	7	4	4
Permitted Phases	2		2		6		8		8		4	
Detector Phase	5	2	2	1	6	6	3	8	1	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	5.0	8.0	5.0	5.0	8.0	8.0
Minimum Split (s)	10.0	43.0	43.0	10.0	43.0	43.0	8.0	49.0	10.0	8.0	49.0	49.0
Total Split (s)	16.0	43.0	43.0	30.0	57.0	57.0	8.0	49.0	30.0	8.0	49.0	49.0
Total Split (%)	12.3%	33.1%	33.1%	23.1%	43.8%	43.8%	6.2%	37.7%	23.1%	6.2%	37.7%	37.7%
Maximum Green (s)	11.0	36.0	36.0	25.0	50.0	50.0	5.0	40.6	25.0	5.0	40.6	40.6
Yellow Time (s)	3.0	4.2	4.2	3.0	4.2	4.2	3.0	4.3	3.0	3.0	4.3	4.3
All-Red Time (s)	2.0	2.8	2.8	2.0	2.8	2.8	0.0	4.1	2.0	0.0	4.1	4.1
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	0.0
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	3.0	8.4	5.0	3.0	8.4	8.4
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	0.2	0.2	3.0	0.2	0.2	3.0	0.2	3.0	3.0	0.2	0.2
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	None	None	Max	Max
Walk Time (s)	7.0		7.0		7.0		7.0		7.0		7.0	
Flash Dont Walk (s)	29.0		29.0		29.0		29.0		33.0		33.0	
Pedestrian Calls (#/hr)	31		31		75		75		65		37	
Act Effect Green (s)	10.1	38.7	38.7	22.3	50.9	50.9	51.0	40.6	66.3	51.0	40.6	40.6
Actuated g/C Ratio	0.08	0.30	0.30	0.17	0.39	0.39	0.39	0.31	0.51	0.39	0.31	0.31
v/c Ratio	0.67	0.38	0.56	0.84	0.45	0.41	0.75	0.27	0.49	0.44	0.55	0.31
Control Delay	83.0	38.2	24.0	52.6	29.8	14.8	52.0	34.1	10.7	30.5	38.7	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	83.0	38.2	24.0	52.6	29.8	14.8	52.0	34.1	10.7	30.5	38.7	7.6
LOS	F	D	C	D	C	B	D	C	B	C	D	A
Approach Delay	37.2		30.9		27.1		32.7		32.7		32.7	
Approach LOS	D		C		C		C		C		C	

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 107 (82%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 120
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.84
 Intersection Signal Delay: 31.7
 Intersection Capacity Utilization 105.3%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service G

Splits and Phases: 13: Whites Road & Kingston Road



Queues
13: Whites Road & Kingston Road

<2043 Future Background>AM
12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	85	374	320	254	612	305	159	424	424	170	865	190
w/c Ratio	0.67	0.38	0.56	0.84	0.45	0.41	0.75	0.27	0.49	0.44	0.55	0.31
Control Delay	83.0	38.2	24.0	52.6	29.8	14.8	52.0	34.1	10.7	30.5	38.7	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	83.0	38.2	24.0	52.6	29.8	14.8	52.0	34.1	10.7	30.5	38.7	7.6
Queue Length 50th (m)	21.4	40.8	35.7	61.8	77.5	44.8	25.9	29.8	30.7	27.8	67.3	3.0
Queue Length 95th (m)	#42.5	55.7	67.2	#95.0	95.6	66.9	#50.2	39.1	52.8	44.1	81.1	19.8
Internal Link Dist (m)		273.5			198.7			134.6			361.2	
Turn Bay Length (m)	127.0		123.0	87.1		35.0	72.0		35.0	88.5		47.0
Base Capacity (vph)	138	992	574	339	1373	740	211	1579	900	386	1579	610
Starvation Cap Reductn	0	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced w/c Ratio	0.62	0.38	0.56	0.75	0.45	0.41	0.75	0.27	0.47	0.44	0.55	0.31

Intersection Summary

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

Lanes, Volumes, Timings
14: Whites Road & Highway 401 EB Off Ramp

<2043 Future Background>AM
12-20-2024



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↑↑↑	↑		↑↑	↑↑	
Traffic Volume (vph)	585	268	0	693	417	0
Future Volume (vph)	585	268	0	693	417	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.7	3.6	3.8	3.7
Storage Length (m)	0.0	225.0	0.0			0.0
Storage Lanes	2	1	0			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	0.97	0.91	1.00	0.95	0.95	1.00
Ped Bike Factor						
Frt	0.993	0.850				
Flt Protected	0.954					
Satd. Flow (prot)	3387	1400	0	3374	3481	0
Flt Permitted	0.954					
Satd. Flow (perm)	3387	1400	0	3374	3481	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	5	262				
Link Speed (k/h)	50			60	60	
Link Distance (m)	295.9			185.9	316.9	
Travel Time (s)	21.3			11.2	19.0	
Confl. Peds. (#/hr)			7			7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	5%	2%	7%	6%	2%
Adj. Flow (vph)	636	291	0	753	453	0
Shared Lane Traffic (%)		10%				
Lane Group Flow (vph)	665	262	0	753	453	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.2			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	0.99	1.00	0.97	0.99
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	2.0	2.0		10.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	2.0		0.6	0.6	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				CI+Ex	CI+Ex	
Detector 2 Channel						

Lanes, Volumes, Timings

<2043 Future Background>AM

14: Whites Road & Highway 401 EB Off Ramp

12-20-2024

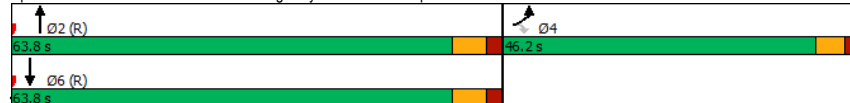


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	8.0	8.0		20.0	20.0	
Minimum Split (s)	28.5	28.5		27.7	27.7	
Total Split (s)	46.2	46.2		63.8	63.8	
Total Split (%)	42.0%	42.0%		58.0%	58.0%	
Maximum Green (s)	40.7	40.7		57.1	57.1	
Yellow Time (s)	3.7	3.7		4.5	4.5	
All-Red Time (s)	1.8	1.8		2.2	2.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.5	5.5		6.7	6.7	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		0.2	0.2	
Recall Mode	None	None		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	16.0	16.0		14.0	14.0	
Pedestrian Calls (#/hr)	3	3		0	0	
Act Effect Green (s)	27.7	27.7		70.1	70.1	
Actuated g/C Ratio	0.25	0.25		0.64	0.64	
v/c Ratio	0.78	0.48		0.35	0.20	
Control Delay	44.3	6.7		10.5	9.2	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	44.3	6.7		10.5	9.2	
LOS	D	A		B	A	
Approach Delay	33.7			10.5	9.2	
Approach LOS	C			B	A	

Intersection Summary

Area Type:	Other
Cycle Length:	110
Actuated Cycle Length:	110
Offset:	79.2 (72%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle:	60
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.78
Intersection Signal Delay:	20.3
Intersection LOS:	C
Intersection Capacity Utilization:	48.8%
ICU Level of Service:	A
Analysis Period (min):	15

Splits and Phases: 14: Whites Road & Highway 401 EB Off Ramp



Queues

<2043 Future Background>AM

14: Whites Road & Highway 401 EB Off Ramp

12-20-2024



Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	665	262	753	453
v/c Ratio	0.78	0.48	0.35	0.20
Control Delay	44.3	6.7	10.5	9.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	44.3	6.7	10.5	9.2
Queue Length 50th (m)	68.0	0.0	36.7	19.6
Queue Length 95th (m)	80.8	19.4	56.4	32.1
Internal Link Dist (m)	271.9		161.9	292.9
Turn Bay Length (m)		225.0		
Base Capacity (vph)	1256	683	2150	2218
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.53	0.38	0.35	0.20

Intersection Summary

Lanes, Volumes, Timings
15: Dixie Road & Shopping Plaza Entrance

<2043 Future Background>AM
12-20-2024

	↙	↖	↑	↗	↘	↓
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙		↖			↘
Traffic Volume (vph)	0	81	0	0	194	0
Future Volume (vph)	0	81	0	0	194	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.1	3.7	4.0	3.7	3.7	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.865					
Flt Protected						0.950
Satd. Flow (prot)	1701	0	1946	0	0	1867
Flt Permitted						0.950
Satd. Flow (perm)	1701	0	1946	0	0	1867
Link Speed (k/h)	30		40			40
Link Distance (m)	193.0		106.6			44.0
Travel Time (s)	23.2		9.6			4.0
Conf. Peds. (#/hr)		5				8
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	1%	2%
Adj. Flow (vph)	0	88	0	0	211	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	88	0	0	0	0	211
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	4.1		3.6			3.6
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	0.93	0.99	0.94	0.99	0.99	0.94
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	24.2%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
15: Dixie Road & Shopping Plaza Entrance

<2043 Future Background>AM
12-20-2024

	↙	↖	↑	↗	↘	↓
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↙		↖			↘
Traffic Volume (veh/h)	0	81	0	0	194	0
Future Volume (Veh/h)	0	81	0	0	194	0
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	88	0	0	211	0
Pedestrians	8					5
Lane Width (m)	4.1					4.0
Walking Speed (m/s)	1.1					1.1
Percent Blockage	1					1
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						44
pX, platoon unblocked						
vC, conflicting volume	430	13			8	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	430	13			8	
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			87	
cM capacity (veh/h)	501	1053			1605	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	88	0	211
Volume Left	0	0	211
Volume Right	88	0	0
cSH	1053	1700	1605
Volume to Capacity	0.08	0.00	0.13
Queue Length 95th (m)	2.1	0.0	3.4
Control Delay (s)	8.7	0.0	7.6
Lane LOS	A		A
Approach Delay (s)	8.7	0.0	7.6
Approach LOS	A		

Intersection Summary			
Average Delay		7.9	
Intersection Capacity Utilization	24.2%	ICU Level of Service	A
Analysis Period (min)		15	

Lanes, Volumes, Timings
3: Dixie Road & Kingston Road

<2043 Future Background_PHF>AM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Traffic Volume (vph)	80	760	81	78	554	86	37	15	29	131	35	144
Future Volume (vph)	80	760	81	78	554	86	37	15	29	131	35	144
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	2.8	3.6	3.4	2.8	3.5	3.1	3.6	4.0	3.7	3.8	4.2	3.7
Grade (%)	6%		0%		0%		0%		0%		0%	
Storage Length (m)	145.4		64.5	51.0		79.5	13.0		0.0	16.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	66.4			48.0			18.0			25.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		1.00		1.00	0.99		1.00	0.99		
Frt	0.986		0.980		0.901		0.879					
Flt Protected	0.950		0.950		0.950		0.950		0.950			
Satd. Flow (prot)	1564	3316	0	1645	3301	0	1752	1771	0	1827	1759	0
Flt Permitted	0.950			0.950			0.581			0.728		
Satd. Flow (perm)	1553	3316	0	1639	3301	0	1069	1771	0	1397	1759	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12			17			29			144	
Link Speed (kh)	60		60		40		60		60		60	
Link Distance (m)	896.3		191.2		44.0		236.2					
Travel Time (s)	53.8		11.5		4.0		14.2					
Confl. Peds. (#/hr)	6		4	4		6	3		2	2		3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	4%	2%	0%	6%	2%	3%	0%	0%	1%	0%	0%
Bus Blockages (#/hr)	0	0	6	0	0	6	0	0	0	0	0	0
Adj. Flow (vph)	80	760	81	78	554	86	37	15	29	131	35	144
Shared Lane Traffic (%)												
Lane Group Flow (vph)	80	841	0	78	640	0	37	44	0	131	179	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	2.8		2.8		3.8		3.8					
Link Offset(m)	0.0		0.0		0.0		0.0					
Crosswalk Width(m)	4.9		4.9		4.9		4.9					
Two way Left Turn Lane			Yes									
Headway Factor	1.17	1.04	1.07	1.13	1.01	1.08	1.00	0.94	0.99	0.97	0.92	0.99
Turning Speed (k/h)	24		14		24		14		24		14	
Number of Detectors	0	0		0	0		0	0		1	1	
Detector Template												
Leading Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		7.5	7.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		-1.5	-1.5	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		-1.5	-1.5	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		9.0	9.0	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	

Lanes, Volumes, Timings
3: Dixie Road & Kingston Road

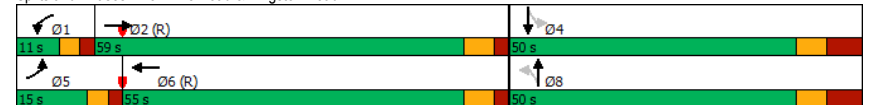
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases							8		4			
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	10.0	28.0		10.0	28.0		43.0	43.0		41.0	41.0	
Total Split (s)	15.0	59.0		11.0	55.0		50.0	50.0		50.0	50.0	
Total Split (%)	12.5%	49.2%		9.2%	45.8%		41.7%	41.7%		41.7%	41.7%	
Maximum Green (s)	10.0	52.4		6.0	48.4		40.5	40.5		40.5	40.5	
Yellow Time (s)	3.0	4.2		3.0	4.2		4.4	4.4		4.4	4.4	
All-Red Time (s)	2.0	2.4		2.0	2.4		5.1	5.1		5.1	5.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.6		5.0	6.6		9.5	9.5		9.5	9.5	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes		Yes		Yes		Yes		Yes		Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)	7.0		7.0		7.0		7.0		7.0		7.0	
Flash Dont Walk (s)	14.0		14.0		23.0		23.0		23.0		23.0	
Pedestrian Calls (#/hr)	6		1		7		4		4			
Act Effect Green (s)	9.3	74.9		6.0	74.0		18.0	18.0		18.0	18.0	
Actuated g/C Ratio	0.08	0.62		0.05	0.62		0.15	0.15		0.15	0.15	
v/c Ratio	0.66	0.41		0.95	0.31		0.23	0.15		0.63	0.46	
Control Delay	78.8	12.9		150.7	5.0		45.1	20.4		59.6	14.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	78.8	12.9		150.7	5.0		45.1	20.4		59.6	14.6	
LOS	E	B		F	A		D	C		E	B	
Approach Delay	18.6		20.8		31.7		33.6					
Approach LOS	B		C		C		C					

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 107.8 (90%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 85
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.95
 Intersection Signal Delay: 22.2
 Intersection LOS: C
 Intersection Capacity Utilization 72.4%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 3: Dixie Road & Kingston Road



Lanes, Volumes, Timings
1: Walnut Lane & Kingston Road

<2043 Future Background>PM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Traffic Volume (vph)	38	1420	270	119	646	43	293	0	265	24	16	26
Future Volume (vph)	38	1420	270	119	646	43	293	0	265	24	16	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.0	3.6	3.5	3.0	3.6	3.7	3.3	3.5	3.7	3.2	3.7	3.7
Storage Length (m)	26.0		25.8	37.0		0.0	63.2		0.0	18.5		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	24.0			26.0			24.4			18.1		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.99		1.00	1.00		0.98		0.98	0.99	0.98	
Frt		0.976			0.991				0.850		0.907	
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1685	3444	0	1685	3505	0	1745	0	1633	1725	1709	0
Fit Permitted	0.950			0.950			0.728			0.950		
Satd. Flow (perm)	1677	3444	0	1682	3505	0	1313	0	1603	1713	1709	0
Right Turn on Red			Yes			Yes		Yes			Yes	
Satd. Flow (RTOR)		26			9				93			28
Link Speed (k/h)		60			60			40				40
Link Distance (m)		129.3			694.6			114.0				179.7
Travel Time (s)		7.8			41.7			10.3				16.2
Confl. Peds. (#/hr)	5		7	7		5	14		5	5		14
Confl. Bikes (#/hr)			1									
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%	2%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	3	0	0	0	0	0	0	0	0	0
Adj. Flow (vph)	41	1543	293	129	702	47	318	0	288	26	17	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	41	1836	0	129	749	0	318	0	288	26	45	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.1			3.1			3.3				3.3
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			1.6			4.9				4.9
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.09	1.00	1.01	1.09	1.00	0.99	1.04	1.01	0.99	1.06	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	0	0		0	0		1		1	0		0
Detector Template								Right				
Leading Detector (m)	0.0	0.0		0.0	0.0		7.5		6.1	0.0		0.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		-1.5		0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		-1.5		0.0	0.0		0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8		9.0		6.1	6.1		1.8
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Turn Type	Prot	NA		Prot	NA		Perm		Perm	Perm		NA
Protected Phases	5	2		1	6							4

Lanes, Volumes, Timings
1: Walnut Lane & Kingston Road

<2043 Future Background>PM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases										8	8	4
Detector Phase	5	2			1	6				8	8	4
Switch Phase												
Minimum Initial (s)	5.0	20.0			5.0	20.0				8.0	8.0	8.0
Minimum Split (s)	10.0	33.0			10.0	33.0				38.0	38.0	38.0
Total Split (s)	10.0	76.0			15.0	81.0				39.0	39.0	39.0
Total Split (%)	7.7%	58.5%			11.5%	62.3%				30.0%	30.0%	30.0%
Maximum Green (s)	5.0	69.4			10.0	74.4				31.0	31.0	31.0
Yellow Time (s)	3.0	4.4			3.0	4.4				3.3	3.3	3.3
All-Red Time (s)	2.0	2.2			2.0	2.2				4.7	4.7	4.7
Lost Time Adjust (s)	0.0	0.0			0.0	0.0				0.0	0.0	0.0
Total Lost Time (s)	5.0	6.6			5.0	6.6				8.0	8.0	8.0
Lead/Lag	Lead	Lag			Lead	Lag						
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0			3.0	3.0				3.0	3.0	3.0
Recall Mode	None	C-Max			None	C-Max				None	None	None
Walk Time (s)		7.0				7.0				7.0	7.0	7.0
Flash Dont Walk (s)		19.0				19.0				22.0	22.0	22.0
Pedestrian Calls (#/hr)		8				4				2	9	9
Act Effect Green (s)	5.0	69.4			10.0	76.4				31.0	31.0	31.0
Actuated g/C Ratio	0.04	0.53			0.08	0.59				0.24	0.24	0.24
v/c Ratio	0.64	0.99			1.00	0.36				1.02	0.64	0.11
Control Delay	85.6	41.2			132.7	9.2				103.9	36.8	20.3
Queue Delay	0.0	0.0			0.0	0.0				0.0	0.0	0.0
Total Delay	85.6	41.2			132.7	9.2				103.9	36.8	20.3
LOS	F	D			F	A				F	D	C
Approach Delay		42.2				27.3				72.0		27.1
Approach LOS		D				C				E		C
Intersection Summary												
Area Type:	Other											
Cycle Length:	130											
Actuated Cycle Length:	130											
Offset:	77 (59%), Referenced to phase 2:EBT and 6:WBT, Start of Green											
Natural Cycle:	115											
Control Type:	Actuated-Coordinated											
Maximum v/c Ratio:	1.02											
Intersection Signal Delay:	43.3						Intersection LOS: D					
Intersection Capacity Utilization:	91.5%						ICU Level of Service F					
Analysis Period (min):	15											
Splits and Phases:	1: Walnut Lane & Kingston Road											

Queues <2043 Future Background>PM
1: Walnut Lane & Kingston Road 12-20-2024

Lane Group	EBL	EBT	WBL	WBT	NBL	NBR	SBL	SBT
Lane Group Flow (vph)	41	1836	129	749	318	288	26	45
w/c Ratio	0.64	0.99	1.00	0.36	1.02	0.64	0.06	0.11
Control Delay	85.6	41.2	132.7	9.2	103.9	36.8	39.0	20.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	85.6	41.2	132.7	9.2	103.9	36.8	39.0	20.3
Queue Length 50th (m)	0.0	130.0	34.9	27.4	~84.2	45.2	5.2	3.4
Queue Length 95th (m)	m0.0	#291.4	#75.5	35.4	#142.9	76.2	12.9	13.3
Internal Link Dist (m)		105.3		670.6				155.7
Turn Bay Length (m)	26.0		37.0		63.2		18.5	
Base Capacity (vph)	64	1850	129	2063	313	453	408	428
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced w/c Ratio	0.64	0.99	1.00	0.36	1.02	0.64	0.06	0.11

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.
 m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings <2043 Future Background>PM
3: Dixie Road & Kingston Road 12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑	↑↑		↑	↑		↑	↑	
Traffic Volume (vph)	204	1509	100	40	770	164	111	54	63	142	28	92
Future Volume (vph)	204	1509	100	40	770	164	111	54	63	142	28	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	2.8	3.6	3.4	2.8	3.5	3.1	3.6	4.0	3.7	3.8	4.2	3.7
Grade (%)		6%			0%			0%				0%
Storage Length (m)	145.4		64.5	51.0		79.5	13.0		0.0	16.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	66.4			48.0			18.0			25.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	1.00		1.00	0.99		0.99	0.99	
Frt		0.991			0.974			0.920				0.885
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1579	3394	0	1597	3407	0	1770	1786	0	1827	1730	0
Fit Permitted	0.950			0.950			0.674			0.676		
Satd. Flow (perm)	1578	3394	0	1594	3407	0	1250	1786	0	1290	1730	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			24			42			100	
Link Speed (k/h)		60			60			40			60	
Link Distance (m)		896.3			191.2			44.0			236.2	
Travel Time (s)		53.8			11.5			4.0			14.2	
Confl. Peds. (#/hr)	1		6	6		1	4		7	7		4
Confl. Bikes (#/hr)			1									
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 (%)	1%	2%	2%	3%	2%	0%	2%	0%	2%	1%	0%	3%
Bus Blockages (#/hr)	0	0	5	0	0	5	0	0	0	0	0	0
Adj. Flow (vph)	222	1640	109	43	837	178	121	59	68	154	30	100
Shared Lane Traffic (%)												
Lane Group Flow (vph)	222	1749	0	43	1015	0	121	127	0	154	130	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		2.8			2.8			3.8			3.8	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane					Yes							
Headway Factor	1.17	1.04	1.07	1.13	1.01	1.08	1.00	0.94	0.99	0.97	0.92	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	0	0		0	0		0	0		1	1	
Detector Template												
Leading Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		7.5	7.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		-1.5	-1.5	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		-1.5	-1.5	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		9.0	9.0	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	

Lanes, Volumes, Timings
3: Dixie Road & Kingston Road

<2043 Future Background>PM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	5	2		1	6			8			4	4
Permitted Phases							8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	10.0	28.0		10.0	28.0		41.0	41.0		41.0	41.0	
Total Split (s)	26.0	79.0		10.0	63.0		41.0	41.0		41.0	41.0	
Total Split (%)	20.0%	60.8%		7.7%	48.5%		31.5%	31.5%		31.5%	31.5%	
Maximum Green (s)	21.0	72.4		5.0	56.4		31.5	31.5		31.5	31.5	
Yellow Time (s)	3.0	4.2		3.0	4.2		4.4	4.4		4.4	4.4	
All-Red Time (s)	2.0	2.4		2.0	2.4		5.1	5.1		5.1	5.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.6		5.0	6.6		9.5	9.5		9.5	9.5	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		14.0			14.0		23.0	23.0		23.0	23.0	
Pedestrian Calls (#/hr)		4			6		2	2		3	3	
Act Effct Green (s)	20.3	84.9		5.0	67.7		21.0	21.0		21.0	21.0	
Actuated g/C Ratio	0.16	0.65		0.04	0.52		0.16	0.16		0.16	0.16	
v/c Ratio	0.90	0.79		0.70	0.57		0.60	0.39		0.74	0.36	
Control Delay	73.9	26.0		107.6	23.6		61.9	34.2		71.9	15.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	73.9	26.0		107.6	23.6		61.9	34.2		71.9	15.9	
LOS	E	C		F	C		E	C		E	B	
Approach Delay		31.4			27.0			47.7			46.2	
Approach LOS		C			C			D			D	

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 115 (88%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.90
 Intersection Signal Delay: 32.4 Intersection LOS: C
 Intersection Capacity Utilization 82.5% ICU Level of Service E
 Analysis Period (min) 15

Splits and Phases: 3: Dixie Road & Kingston Road



Queues
3: Dixie Road & Kingston Road

<2043 Future Background>PM
12-20-2024

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	222	1749	43	1015	121	127	154	130
v/c Ratio	0.90	0.79	0.70	0.57	0.60	0.39	0.74	0.36
Control Delay	73.9	26.0	107.6	23.6	61.9	34.2	71.9	15.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.9	26.0	107.6	23.6	61.9	34.2	71.9	15.9
Queue Length 50th (m)	51.9	216.1	11.9	75.0	29.2	19.4	38.1	6.7
Queue Length 95th (m)	m#88.3	258.6	m#24.5	m85.4	45.6	35.4	57.0	22.4
Internal Link Dist (m)		872.3		167.2		20.0		212.2
Turn Bay Length (m)	145.4		51.0		13.0		16.0	
Base Capacity (vph)	255	2220	61	1785	302	464	312	494
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.87	0.79	0.70	0.57	0.40	0.27	0.49	0.26

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings

6: Liverpool Road & Kingston Road

<2043 Future Background>PM

12-20-2024

	↖	→	↘	↙	←	↖	↙	↘	↙	↘	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↖	↖	↖	↖↖	↖	↖	↖↖	↖	↖	↖↖	↖
Traffic Volume (vph)	244	1028	329	212	545	67	155	826	232	95	557	108
Future Volume (vph)	244	1028	329	212	545	67	155	826	232	95	557	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.1	3.4	3.6	3.3	3.7	3.4	3.8	4.1	4.8	4.7	3.8	3.3
Storage Length (m)	188.8	97.9	170.7		117.0	185.5		52.0	49.0		60.5	
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	31.6			22.7			20.8			25.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.95	0.99		0.96	0.99		0.90	0.99		0.96
Frt			0.850			0.850			0.850			0.850
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1688	3461	1599	1728	3579	1579	1791	3773	1732	2026	3654	1561
Fit Permitted	0.950			0.950			0.319			0.142		
Satd. Flow (perm)	1667	3461	1512	1712	3579	1517	595	3773	1564	299	3654	1499
Right Turn on Red			Yes			Yes			Yes		Yes	
Satd. Flow (RTOR)			100			160			165		143	
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		694.6			396.4			257.7			348.6	
Travel Time (s)		41.7			23.8			18.6			25.1	
Conf. Peds. (#/hr)	20		31	31		20	29		62	62		29
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 (%)	1%	2%	1%	1%	2%	0%	3%	1%	4%	0%	1%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	4	0	0	0
Adj. Flow (vph)	265	1117	358	230	592	73	168	898	252	103	605	117
Shared Lane Traffic (%)												
Lane Group Flow (vph)	265	1117	358	230	592	73	168	898	252	103	605	117
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.3			3.3			4.7			4.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane		Yes									Yes	
Headway Factor	1.08	1.03	1.00	1.04	0.99	1.03	0.97	0.93	0.87	0.86	0.97	1.04
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	

Lanes, Volumes, Timings

6: Liverpool Road & Kingston Road

<2043 Future Background>PM

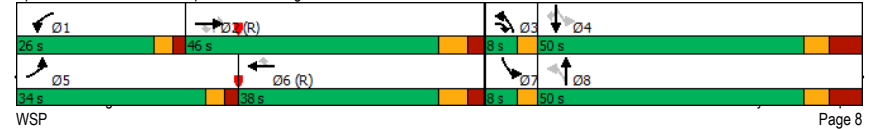
12-20-2024

	↖	→	↘	↙	←	↖	↙	↘	↙	↘	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0						0.0	
Turn Type	Prot	NA	pm+ov	Prot	NA	Perm	pm+pt	NA	custom	pm+pt	NA	Perm
Protected Phases	5	2	3	1	6					3	8	
Permitted Phases			2			6	8		2	4		4
Detector Phase	5	2	3	1	6	6	3	8	2	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	5.0	5.0	20.0	20.0	5.0	8.0	20.0	5.0	8.0	8.0
Minimum Split (s)	10.0	36.0	8.0	10.0	36.0	36.0	8.0	50.0	36.0	8.0	50.0	50.0
Total Split (s)	34.0	46.0	8.0	26.0	38.0	38.0	8.0	50.0	46.0	8.0	50.0	50.0
Total Split (%)	26.2%	35.4%	6.2%	20.0%	29.2%	29.2%	6.2%	38.5%	35.4%	6.2%	38.5%	38.5%
Maximum Green (s)	29.0	38.9	5.0	21.0	30.9	30.9	5.0	40.9	38.9	5.0	40.9	40.9
Yellow Time (s)	3.0	4.3	3.0	3.0	4.3	4.3	3.0	3.8	4.3	3.0	3.8	3.8
All-Red Time (s)	2.0	2.8	0.0	2.0	2.8	2.8	0.0	5.3	2.8	0.0	5.3	5.3
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	0.0
Total Lost Time (s)	5.0	7.1	3.0	5.0	7.1	7.1	3.0	9.1	7.1	3.0	9.1	9.1
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
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	3.0
Recall Mode	None	C-Max	None	None	C-Max	C-Max	None	Max	C-Max	None	Max	Max
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		21.0			21.0	21.0		33.0	21.0		33.0	33.0
Pedestrian Calls (#/hr)		15			20	20		28	15		15	15
Act Effct Green (s)	24.5	40.0	49.1	19.9	35.4	35.4	52.0	40.9	40.0	52.0	40.9	40.9
actuated g/C Ratio	0.19	0.31	0.38	0.15	0.27	0.27	0.40	0.31	0.31	0.40	0.31	0.31
v/c Ratio	0.83	1.05	0.56	0.87	0.61	0.14	0.59	0.76	0.42	0.55	0.53	0.21
Control Delay	47.2	87.3	42.2	84.1	45.4	0.6	36.1	45.0	15.0	35.6	38.6	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.2	87.3	42.2	84.1	45.4	0.6	36.1	45.0	15.0	35.6	38.6	3.6
LOS	D	F	D	F	D	A	D	D	B	D	D	A
Approach Delay		71.9			51.7			38.1			33.3	
Approach LOS		E			D			D			C	

Intersection Summary

Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	78 (60%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle:	125
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.05
Intersection Signal Delay:	52.1
Intersection LOS:	D
Intersection Capacity Utilization:	103.1%
ICU Level of Service:	G
Analysis Period (min):	15

Splits and Phases: 6: Liverpool Road & Kingston Road



Queues <2043 Future Background>PM
6: Liverpool Road & Kingston Road 12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	265	1117	358	230	592	73	168	898	252	103	605	117
w/c Ratio	0.83	1.05	0.56	0.87	0.61	0.14	0.59	0.76	0.42	0.55	0.53	0.21
Control Delay	47.2	87.3	42.2	84.1	45.4	0.6	36.1	45.0	15.0	35.6	38.6	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.2	87.3	42.2	84.1	45.4	0.6	36.1	45.0	15.0	35.6	38.6	3.6
Queue Length 50th (m)	68.7	~172.9	74.6	57.7	70.6	0.0	27.0	108.8	16.6	15.8	66.9	0.0
Queue Length 95th (m)	m73.7	m#182.5	m77.9	#98.7	93.7	0.0	42.7	132.7	40.1	27.4	85.1	8.5
Internal Link Dist (m)	670.6			372.4			233.7			324.6		
Turn Bay Length (m)	188.8	97.9	170.7	117.0			185.5	52.0	49.0	60.5		
Base Capacity (vph)	376	1065	636	279	973	529	284	1187	595	186	1149	569
Starvation Cap Reductn	0	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced w/c Ratio	0.70	1.05	0.56	0.82	0.61	0.14	0.59	0.76	0.42	0.55	0.53	0.21

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

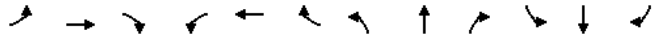
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings <2043 Future Background>PM
8: Liverpool Road & Private Access/Pickering Parkway 12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔↔	↔	↔↔	↔	↔	↔↔↔	↔↔↔	↔	↔↔	↔↔↔	↔
Traffic Volume (vph)	87	69	130	412	58	174	116	894	401	196	1048	46
Future Volume (vph)	87	69	130	412	58	174	116	894	401	196	1048	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.1	3.1	3.7	3.0	3.4	3.2	2.8	3.6	3.5	3.2	3.5	3.5
Storage Length (m)	0.0	0.0	57.0	62.1	54.4	75.7	132.5	35.5	1	1	1	1
Storage Lanes	1	0	1	1	1	1	1	1	1	1	1	1
Taper Length (m)	2.5	12.0			29.5			28.9				
Lane Util. Factor	1.00	0.95	0.95	0.97	1.00	1.00	1.00	0.91	1.00	0.91	1.00	0.91
Ped Bike Factor	0.96		0.98		0.99		0.96		0.99		0.93	
Frt	0.902		0.850		0.850		0.850		0.850		0.850	
Fit Protected	0.950		0.950		0.950		0.950		0.950		0.950	
Satd. Flow (prot)	1705	2959	0	3204	1858	1399	1645	5085	1569	1708	5079	1597
Fit Permitted	0.000		0.000		0.166		0.221		0.221		0.221	
Satd. Flow (perm)	0	2959	0	0	1858	1399	286	5085	1502	395	5079	1482
Right Turn on Red	Yes		Yes		Yes		Yes		Yes		Yes	
Satd. Flow (RTOR)	141		189		436		144		144		144	
Link Speed (k/h)	30		50		50		50		50		50	
Link Distance (m)	82.8		328.5		162.3		257.7		18.6		18.6	
Travel Time (s)	9.9		23.7		11.7		18.6		18.6		18.6	
Confl. Peds. (#/hr)	21		21		21		21		21		21	
Confl. Bikes (#/hr)	2		5		6		6		6		6	
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%	2%	0%	5%	0%	2%	1%	1%	1%	0%
Bus Blockages (#/hr)	0	0	0	0	12	0	0	2	0	0	0	0
Adj. Flow (vph)	95	75	141	448	63	189	126	972	436	213	1139	50
Shared Lane Traffic (%)	0											
Lane Group Flow (vph)	95	216	0	448	63	189	126	972	436	213	1139	50
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	6.0		6.0		3.8		3.8		3.8		3.8	
Link Offset(m)	0.0		0.0		0.0		0.0		0.0		0.0	
Crosswalk Width(m)	1.6		1.6		1.6		1.6		1.6		1.6	
Two way Left Turn Lane												
Headway Factor	1.08	1.08	0.99	1.09	1.03	1.13	1.13	1.00	1.03	1.06	1.01	1.01
Turning Speed (k/h)	24	24	14	24	14	24	14	24	14	24	14	14
Number of Detectors	1	2	1	2	1	2	1	2	1	1	2	1
Detector Template	Left	Thru	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Right
Leading Detector (m)	2.0	10.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4		9.4		9.4		9.4		9.4		9.4	
Detector 2 Size(m)	0.6		0.6		0.6		0.6		0.6		0.6	

Lanes, Volumes, Timings <2043 Future Background>PM
8: Liverpool Road & Private Access/Pickering Parkway 12-20-2024

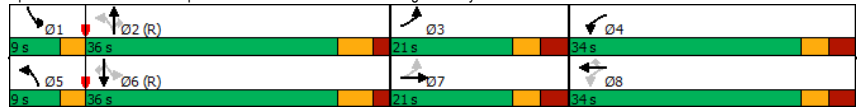


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type	CI+Ex			CI+Ex			CI+Ex			CI+Ex		
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	7		4	8		5	2		1	6	
Permitted Phases	7			8		8	2			2	6	
Detector Phase	3	7		4	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0	8.0	5.0	20.0	20.0	5.0	8.0	8.0
Minimum Split (s)	15.0	15.0		34.0	34.0	34.0	8.0	30.0	30.0	8.0	30.0	30.0
Total Split (s)	21.0	21.0		34.0	34.0	34.0	9.0	36.0	36.0	9.0	36.0	36.0
Total Split (%)	21.0%	21.0%		34.0%	34.0%	34.0%	9.0%	36.0%	36.0%	9.0%	36.0%	36.0%
Maximum Green (s)	14.4	14.4		27.4	27.4	27.4	6.0	29.7	29.7	6.0	29.7	29.7
Yellow Time (s)	3.3	3.3		3.3	3.3	3.3	3.0	4.2	4.2	3.0	4.2	4.2
All-Red Time (s)	3.3	3.3		3.3	3.3	3.3	0.0	2.1	2.1	0.0	2.1	2.1
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)	6.6	6.6		6.6	6.6	6.6	3.0	6.3	6.3	3.0	6.3	6.3
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
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
Recall Mode	None	None		None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)				19.0	19.0		17.0	17.0		17.0	17.0	
Flash Dont Walk (s)				8.0	8.0		6.0	6.0		6.0	6.0	
Pedestrian Calls (#/hr)				20	20		28	28		15	15	
Act Effect Green (s)	11.0	11.0		20.9	20.9	20.9	48.9	39.6	39.6	48.9	39.6	39.6
Actuated g/C Ratio	0.11	0.11		0.21	0.21	0.21	0.49	0.40	0.40	0.49	0.40	0.40
v/c Ratio	0.51	0.48		0.67	0.16	0.43	0.57	0.48	0.51	0.78	0.57	0.07
Control Delay	51.0	18.9		40.8	31.2	7.5	26.1	23.2	9.2	41.2	26.4	0.2
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.0	18.9		40.8	31.2	7.5	26.1	23.2	9.2	41.2	26.4	0.2
LOS	D	B		D	C	A	C	C	A	D	C	A
Approach Delay	28.7			31.0			19.5			27.7		
Approach LOS	C			C			B			C		

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 15 (15%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.78
 Intersection Signal Delay: 25.2 Intersection LOS: C
 Intersection Capacity Utilization 68.8% ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 8: Liverpool Road & Private Access/Pickering Parkway



Queues <2043 Future Background>PM
8: Liverpool Road & Private Access/Pickering Parkway 12-20-2024



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Group Flow (vph)	95	216	448	63	189	126	972	436	213	1139	50	
v/c Ratio	0.51	0.48	0.67	0.16	0.43	0.57	0.48	0.51	0.78	0.57	0.07	
Control Delay	51.0	18.9	40.8	31.2	7.5	26.1	23.2	9.2	41.2	26.4	0.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	51.0	18.9	40.8	31.2	7.5	26.1	23.2	9.2	41.2	26.4	0.2	
Queue Length 50th (m)	17.7	7.1	42.3	10.3	0.0	14.8	53.8	24.8	20.8	59.7	0.0	
Queue Length 95th (m)	32.2	17.3	52.8	19.3	15.9	m#35.6	77.1	55.5	#63.3	88.5	0.0	
Internal Link Dist (m)	58.8		304.5			138.3			233.7			
Turn Bay Length (m)			57.0		62.1		54.4		75.7		132.5	35.5
Base Capacity (vph)	245	546	877	509	520	221	2012	857	272	2010	673	
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	0.39	0.40	0.51	0.12	0.36	0.57	0.48	0.51	0.78	0.57	0.07	

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings

<2043 Future Background>PM

9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp

12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	237	278	168	293	121	1137	0	0	994	71
Future Volume (vph)	0	0	237	278	168	293	121	1137	0	0	994	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.5	3.7	3.7	3.4	3.7
Storage Length (m)	0.0	0.0	0.0	0.0		125.0	50.0		0.0	0.0		0.0
Storage Lanes	0		1	1		1	1		0	0		1
Taper Length (m)	2.5			2.5			30.0			2.5		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Ped Bike Factor												0.92
Frt			0.865			0.850						0.850
Fit Protected				0.950	0.987		0.950					
Satd. Flow (prot)	0	0	1662	1734	1801	1581	1825	5079	0	0	4972	1633
Fit Permitted				0.950	0.987		0.170					
Satd. Flow (perm)	0	0	1662	1734	1801	1581	327	5079	0	0	4972	1508
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)						85						82
Link Speed (kh)		50			50			50			50	
Link Distance (m)		433.1			226.7			372.2			162.3	
Travel Time (s)		31.2			16.3			26.8			11.7	
Confl. Peds. (#/hr)							17		15	15		17
Confl. Bikes (#/hr)								6				7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	0%	0%	0%	1%	0%	1%	6%	2%	2%	0%
Adj. Flow (vph)	0	0	258	302	183	318	132	1236	0	0	1080	77
Shared Lane Traffic (%)				21%								
Lane Group Flow (vph)	0	0	258	239	246	318	132	1236	0	0	1080	77
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	1.01	0.99	1.01	0.99	0.99	1.03	0.99
Turning Speed (k/h)	97		97	24		14	97		14	24		97
Number of Detectors			1	1	2	1	1	2			2	1
Detector Template			Right	Left	Thru	Right	Left	Thru			Thru	Right
Leading Detector (m)			2.0	2.0	10.0	2.0	2.0	10.0			10.0	2.0
Trailing Detector (m)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Position(m)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Size(m)			2.0	2.0	0.6	2.0	2.0	0.6			0.6	2.0
Detector 1 Type			Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 2 Position(m)						9.4		9.4			9.4	
Detector 2 Size(m)						0.6		0.6			0.6	
Detector 2 Type						Cl+Ex		Cl+Ex			Cl+Ex	

Lanes, Volumes, Timings

<2043 Future Background>PM

9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp

12-20-2024

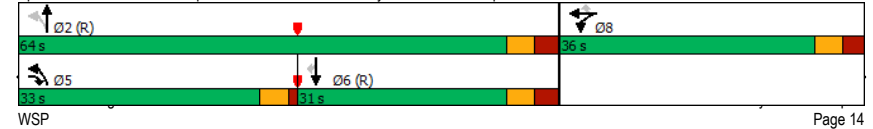


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)						0.0					0.0	0.0
Turn Type			Over	Split	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases			5	8	8		5	2			6	
Permitted Phases						8	2					6
Detector Phase			5	8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)			5.0	8.0	8.0	8.0	5.0	15.0			15.0	15.0
Minimum Split (s)			9.5	25.0	25.0	25.0	9.5	24.3			24.3	24.3
Total Split (s)			33.0	36.0	36.0	36.0	33.0	64.0			31.0	31.0
Total Split (%)			33.0%	36.0%	36.0%	36.0%	33.0%	64.0%			31.0%	31.0%
Maximum Green (s)			28.5	30.0	30.0	30.0	28.5	57.7			24.7	24.7
Yellow Time (s)			3.5	3.3	3.3	3.3	3.5	3.3			3.3	3.3
All-Red Time (s)			1.0	2.7	2.7	2.7	1.0	3.0			3.0	3.0
Lost Time Adjust (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Lost Time (s)			4.5	6.0	6.0	6.0	4.5	6.3			6.3	6.3
Lead/Lag			Lead				Lead				Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)			3.0	3.0	3.0	3.0	3.0	3.0			3.0	3.0
Recall Mode			None	None	None	None	None	C-Max			C-Max	C-Max
Walk Time (s)				14.0	14.0	14.0		13.0			13.0	13.0
Flash Dont Walk (s)				5.0	5.0	5.0		5.0			5.0	5.0
Pedestrian Calls (#/hr)				0	0	0		14			7	7
Act Effct Green (s)			20.7	21.5	21.5	21.5	68.0	66.2			41.0	41.0
Actuated g/C Ratio			0.21	0.22	0.22	0.22	0.68	0.66			0.41	0.41
v/c Ratio			0.75	0.64	0.64	0.78	0.25	0.37			0.53	0.12
Control Delay			50.5	42.8	42.3	39.9	8.0	8.7			26.1	12.9
Queue Delay			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay			50.5	42.8	42.3	39.9	8.0	8.7			26.1	12.9
LOS				D	D	D	D	A			C	B
Approach Delay			50.5			41.5		8.6			25.3	
Approach LOS			D			D		A			C	

Intersection Summary

Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	100
Offset:	8 (8%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle:	65
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.78
Intersection Signal Delay:	24.4
Intersection LOS:	C
Intersection Capacity Utilization:	60.0%
ICU Level of Service:	B
Analysis Period (min):	15

Splits and Phases: 9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp



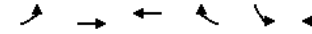
Queues <2043 Future Background>PM
 9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp 12-20-2024



Lane Group	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	258	239	246	318	132	1236	1080	77
w/c Ratio	0.75	0.64	0.64	0.78	0.25	0.37	0.53	0.12
Control Delay	50.5	42.8	42.3	39.9	8.0	8.7	26.1	12.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.5	42.8	42.3	39.9	8.0	8.7	26.1	12.9
Queue Length 50th (m)	47.2	44.5	45.7	43.2	7.9	35.4	39.2	0.8
Queue Length 95th (m)	67.7	63.0	64.2	66.2	18.3	55.6	#82.5	m11.0
Internal Link Dist (m)	202.7			348.2		138.3		
Turn Bay Length (m)	125.0			50.0				
Base Capacity (vph)	473	520	540	533	649	3364	2040	667
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced w/c Ratio	0.55	0.46	0.46	0.60	0.20	0.37	0.53	0.12

Intersection Summary
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings <2043 Future Background>PM
 10: Kingston Road & Fairport Road 12-20-2024



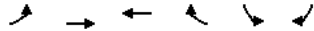
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø1
Lane Configurations	↔	↕↕	↕↕	↔	↔	↔	
Traffic Volume (vph)	205	1590	757	223	271	137	
Future Volume (vph)	205	1590	757	223	271	137	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (m)	3.0	3.6	3.5	3.7	3.6	4.5	
Grade (%)	6%		0%		0%		
Storage Length (m)	75.0		18.5		15.5		0.0
Storage Lanes	1		0		1		1
Taper Length (m)	2.5		31.3				
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00	
Ped Bike Factor	1.00		0.99		0.99		
Frt			0.966		0.850		
Fit Protected	0.950				0.950		
Satd. Flow (prot)	1618	3433	3346	0	1805	1777	
Fit Permitted	0.950				0.950		
Satd. Flow (perm)	1617	3433	3346	0	1805	1751	
Right Turn on Red			Yes		Yes		
Satd. Flow (RTOR)			39		149		
Link Speed (k/h)	60		60		40		
Link Distance (m)	424.0		896.3		280.0		
Travel Time (s)	25.4		53.8		25.2		
Confl. Peds. (#/hr)	1		1		2		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Heavy Vehicles (%)	1%	2%	3%	1%	0%	0%	
Bus Blockages (#/hr)	0		0		9		
Adj. Flow (vph)	223	1728	823	242	295	149	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	223	1728	1065	0	295	149	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Left	Left	Right	Left	Right	
Median Width(m)	3.0		3.0		3.6		
Link Offset(m)	0.0		0.0		0.0		
Crosswalk Width(m)	1.6		1.6		1.6		
Two way Left Turn Lane	Yes						
Headway Factor	1.14	1.04	1.01	0.99	1.00	0.88	
Turning Speed (k/h)	24		14		24		
Number of Detectors	1	2	2		1	1	
Detector Template	Left	Thru	Thru		Left	Right	
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0	
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	0.6		2.0	2.0	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)	9.4		9.4				
Detector 2 Size(m)	0.6		0.6				

Lanes, Volumes, Timings

<2043 Future Background>PM

10: Kingston Road & Fairport Road

12-20-2024

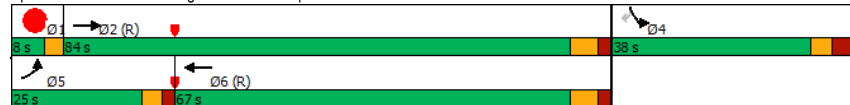


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø1
Detector 2 Type	CI+Ex		CI+Ex				
Detector 2 Channel							
Detector 2 Extend (s)	0.0		0.0				
Turn Type	Prot	NA	NA		Prot	Perm	
Protected Phases	5	2	6		4		1
Permitted Phases						4	
Detector Phase	5	2	6		4	4	
Switch Phase							
Minimum Initial (s)	5.0	20.0	20.0		8.0	8.0	5.0
Minimum Split (s)	10.0	33.0	33.0		38.0	38.0	8.0
Total Split (s)	25.0	84.0	67.0		38.0	38.0	8.0
Total Split (%)	19.2%	64.6%	51.5%		29.2%	29.2%	6%
Maximum Green (s)	20.0	77.7	60.7		30.7	30.7	5.0
Yellow Time (s)	3.0	4.3	4.3		3.3	3.3	3.0
All-Red Time (s)	2.0	2.0	2.0		4.0	4.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.3	6.3		7.3	7.3	
Lead/Lag	Lead	Lag	Lag				Lead
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	0.2	0.2		3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max		None	None	None
Walk Time (s)	7.0		7.0		7.0		5.0
Flash Dont Walk (s)	19.0		19.0		23.0		0.0
Pedestrian Calls (#/hr)	0		0		0		20
Act Effect Green (s)	19.5	86.0	66.3		25.6	25.6	
Actuated g/C Ratio	0.15	0.66	0.51		0.20	0.20	
v/c Ratio	0.92	0.76	0.62		0.83	0.32	
Control Delay	48.9	40.2	10.1		69.5	8.0	
Queue Delay	0.0	0.0	0.0		0.0	0.0	
Total Delay	48.9	40.2	10.1		69.5	8.0	
LOS	D	D	B		E	A	
Approach Delay	41.2		10.1		48.9		
Approach LOS	D		B		D		

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 27 (21%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 95
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.92
 Intersection Signal Delay: 32.6 Intersection LOS: C
 Intersection Capacity Utilization 70.9% ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 10: Kingston Road & Fairport Road



Queues

<2043 Future Background>PM

10: Kingston Road & Fairport Road

12-20-2024



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	223	1728	1065	295	149
v/c Ratio	0.92	0.76	0.62	0.83	0.32
Control Delay	48.9	40.2	10.1	69.5	8.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	48.9	40.2	10.1	69.5	8.0
Queue Length 50th (m)	51.0	247.6	26.7	72.7	0.0
Queue Length 95th (m)	m50.4	m241.9	36.0	101.2	16.7
Internal Link Dist (m)		400.0	872.3	256.0	
Turn Bay Length (m)	75.0			15.5	
Base Capacity (vph)	248	2270	1724	426	527
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.90	0.76	0.62	0.69	0.28

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings

<2043 Future Background>PM

11: Hwy 401 WB Ramps & Kingston Road

12-20-2024

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↕↕		↖	↕↕	↖↖	↖
Traffic Volume (vph)	1692	23	184	709	662	100
Future Volume (vph)	1692	23	184	709	662	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.0	3.7	2.7	3.8	3.8	3.7
Grade (%)	6%			0%	0%	
Storage Length (m)		0.0	47.5		0.0	52.0
Storage Lanes		0	1		2	1
Taper Length (m)			22.3		2.5	
Lane Util. Factor	0.95	0.95	1.00	0.95	0.97	1.00
Ped Bike Factor					1.00	0.98
Frt	0.998					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3577	0	1577	3618	3544	1617
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3577	0	1577	3618	3537	1591
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	1					84
Link Speed (k/h)	60			60	50	
Link Distance (m)	268.7			424.0	216.6	
Travel Time (s)	16.1			25.4	15.6	
Confl. Peds. (#/hr)					1	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	5%	3%	2%	1%	1%
Adj. Flow (vph)	1839	25	200	771	720	109
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1864	0	200	771	720	109
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.1			3.1	7.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	0.98	1.03	1.14	0.97	0.97	0.99
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	10.0		2.0	10.0	2.0	2.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Size(m)	0.6		2.0	0.6	2.0	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		

Lanes, Volumes, Timings

<2043 Future Background>PM

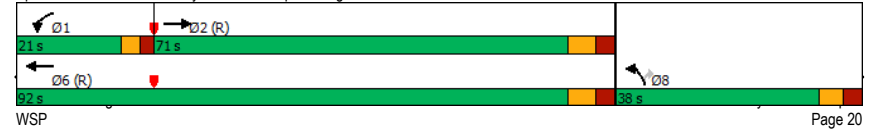
11: Hwy 401 WB Ramps & Kingston Road

12-20-2024

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		Prot	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases						8
Detector Phase	2		1	6	8	8
Switch Phase						
Minimum Initial (s)	20.0		5.0	20.0	8.0	8.0
Minimum Split (s)	50.0		10.0	50.0	38.0	38.0
Total Split (s)	71.0		21.0	92.0	38.0	38.0
Total Split (%)	54.6%		16.2%	70.8%	29.2%	29.2%
Maximum Green (s)	63.8		16.0	84.8	31.3	31.3
Yellow Time (s)	4.2		3.0	4.2	3.7	3.7
All-Red Time (s)	3.0		2.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	7.2		5.0	7.2	6.7	6.7
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?						
Vehicle Extension (s)	0.2		3.0	0.2	3.0	3.0
Recall Mode	C-Max		None	C-Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	35.0			35.0	24.0	24.0
Pedestrian Calls (#/hr)	0			0	14	14
Act Effct Green (s)	65.4		16.0	86.4	29.7	29.7
Actuated g/C Ratio	0.50		0.12	0.66	0.23	0.23
v/c Ratio	1.04		1.03	0.32	0.89	0.25
Control Delay	66.9		126.5	1.8	62.5	14.0
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	66.9		126.5	1.8	62.5	14.0
LOS	E		F	A	E	B
Approach Delay	66.9			27.5	56.1	
Approach LOS	E			C	E	

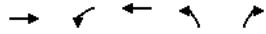
Intersection Summary	
Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	69 (53%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle:	130
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.04
Intersection Signal Delay:	54.1
Intersection Capacity Utilization:	93.0%
Analysis Period (min):	15
Intersection LOS:	D
ICU Level of Service:	F

Splits and Phases: 11: Hwy 401 WB Ramps & Kingston Road



Queues
11: Hwy 401 WB Ramps & Kingston Road

<2043 Future Background>PM
12-20-2024



Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1864	200	771	720	109
w/c Ratio	1.04	1.03	0.32	0.89	0.25
Control Delay	66.9	126.5	1.8	62.5	14.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	66.9	126.5	1.8	62.5	14.0
Queue Length 50th (m)	-284.5	-47.6	6.4	91.1	5.0
Queue Length 95th (m)	#328.0	#100.5	6.1	#114.7	19.8
Internal Link Dist (m)	244.7		400.0	192.6	
Turn Bay Length (m)		47.5			52.0
Base Capacity (vph)	1799	194	2404	853	446
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced w/c Ratio	1.04	1.03	0.32	0.84	0.24

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.

Lanes, Volumes, Timings
12: Plaza Entrance/Delta Blvd & Kingston Road

<2043 Future Background>PM
12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Traffic Volume (vph)	130	1563	38	89	1168	121	198	15	138	82	13	143
Future Volume (vph)	130	1563	38	89	1168	121	198	15	138	82	13	143
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.2	3.4	3.5	3.1	3.4	3.4	3.6	4.6	3.7	3.2	2.8	3.7
Grade (%)		6%			0%			0%				0%
Storage Length (m)	51.8		148.5	100.0		18.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	35.3			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		1.00	0.99		1.00					0.99
Frt		0.996			0.986			0.864				0.862
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1656	3343	0	1705	3399	0	1770	1824	0	1725	1474	0
Fit Permitted	0.950			0.950			0.630			0.637		
Satd. Flow (perm)	1647	3343	0	1704	3399	0	1172	1824	0	1157	1474	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			13			129				149
Link Speed (k/h)		60			60			30				40
Link Distance (m)		222.7			268.7			130.9				169.9
Travel Time (s)		13.4			16.1			15.7				15.3
Confl. Peds. (#/hr)	16		1	1		16	1					1
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 (%)	1%	2%	0%	0%	2%	0%	2%	0%	0%	0%	0%	0%
Adj. Flow (vph)	141	1699	41	97	1270	132	215	16	150	89	14	155
Shared Lane Traffic (%)												
Lane Group Flow (vph)	141	1740	0	97	1402	0	215	166	0	89	169	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.6				3.6
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		1.6			1.6			1.6				1.6
Two way Left Turn Lane					Yes							
Headway Factor	1.10	1.07	1.06	1.08	1.03	1.03	1.00	0.87	0.99	1.06	1.13	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	

Lanes, Volumes, Timings

<2043 Future Background>PM

12: Plaza Entrance/Delta Blvd & Kingston Road

12-20-2024

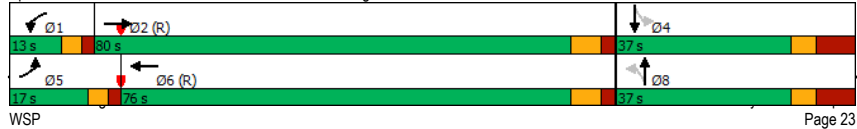


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	10.0	32.0		10.0	32.0		37.0	37.0		37.0	37.0	
Total Split (s)	17.0	80.0		13.0	76.0		37.0	37.0		37.0	37.0	
Total Split (%)	13.1%	61.5%		10.0%	58.5%		28.5%	28.5%		28.5%	28.5%	
Maximum Green (s)	12.0	73.1		8.0	69.1		27.0	27.0		27.0	27.0	
Yellow Time (s)	3.0	4.7		3.0	4.7		3.8	3.8		3.8	3.8	
All-Red Time (s)	2.0	2.2		2.0	2.2		6.2	6.2		6.2	6.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.9		5.0	6.9		10.0	10.0		10.0	10.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	0.2		3.0	0.2		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		18.0			18.0		20.0	20.0		20.0	20.0	
Pedestrian Calls (#/hr)		0			13		3	3		6	6	
Act Effct Green (s)	12.0	74.3		8.0	70.3		25.8	25.8		25.8	25.8	
Actuated g/C Ratio	0.09	0.57		0.06	0.54		0.20	0.20		0.20	0.20	
v/c Ratio	0.93	0.91		0.93	0.76		0.93	0.36		0.39	0.41	
Control Delay	84.2	22.6		124.2	20.0		93.7	14.4		50.3	12.5	
Queue Delay	0.0	1.2		0.0	0.0		0.0	74.4		139.0	0.0	
Total Delay	84.2	23.8		124.2	20.0		93.7	88.7		189.3	12.5	
LOS	F	C		F	C		F	F		F	B	
Approach Delay		28.3			26.8			91.6			73.5	
Approach LOS		C			C			F			E	

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 6 (5%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.93
 Intersection Signal Delay: 36.6 Intersection LOS: D
 Intersection Capacity Utilization 96.9% ICU Level of Service F
 Analysis Period (min) 15

Splits and Phases: 12: Plaza Entrance/Delta Blvd & Kingston Road



WSP

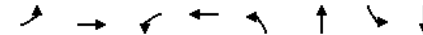
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Queues

<2043 Future Background>PM

12: Plaza Entrance/Delta Blvd & Kingston Road

12-20-2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	141	1740	97	1402	215	166	89	169
v/c Ratio	0.93	0.91	0.93	0.76	0.93	0.36	0.39	0.41
Control Delay	84.2	22.6	124.2	20.0	93.7	14.4	50.3	12.5
Queue Delay	0.0	1.2	0.0	0.0	0.0	74.4	139.0	0.0
Total Delay	84.2	23.8	124.2	20.0	93.7	88.7	189.3	12.5
Queue Length 50th (m)	36.9	135.0	26.3	72.7	54.0	7.7	19.7	4.2
Queue Length 95th (m)	m39.6	m138.3	m#47.8	95.4	#99.2	26.9	36.4	23.7
Internal Link Dist (m)		198.7		244.7		106.9		145.9
Turn Bay Length (m)	51.8		100.0					
Base Capacity (vph)	152	1912	104	1843	243	481	240	424
Starvation Cap Reductn	0	37	0	0	0	0	0	0
Spillback Cap Reductn	0	56	0	0	0	362	220	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.94	0.93	0.76	0.88	1.39	4.45	0.40

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

1105-1163 Kingston Road
 WSP

Synchro 11 Report
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Lanes, Volumes, Timings
13: Whites Road & Kingston Road

<2043 Future Background>PM
12-20-2024

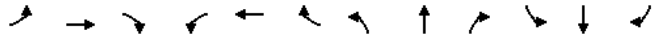
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	155	941	358	231	763	490	228	684	655	189	617	186
Future Volume (vph)	155	941	358	231	763	490	228	684	655	189	617	186
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.6	4.2	3.5	3.7	4.0	3.5	3.9	3.7	3.5	3.9	4.0
Grade (%)	6%			0%			0%			0%		
Storage Length (m)	127.0			123.0			87.1			47.0		
Storage Lanes	1			1			1			1		
Taper Length (m)	64.0			39.6			66.8			32.6		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Ped Bike Factor	0.97			0.96			0.99			0.95		
Frt	0.850			0.850			0.850			0.850		
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1681	3400	1622	1733	3579	1654	1767	5255	1588	1750	5105	1627
Flt Permitted	0.950			0.950			0.331			0.292		
Satd. Flow (perm)	1638	3400	1549	1719	3579	1502	608	5255	1470	527	5105	1550
Right Turn on Red	Yes			Yes			Yes			Yes		
Satd. Flow (RTOR)	171			136			59			202		
Link Speed (kh)	60			60			60			60		
Link Distance (m)	297.5			222.7			158.6			385.2		
Travel Time (s)	17.9			13.4			9.5			23.1		
Confl. Peds. (#/hr)	75			31			37			65		
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 (%)	3%	3%	3%	3%	2%	2%	1%	2%	2%	2%	5%	2%
Bus Blockages (#/hr)	0			0			0			0		
Adj. Flow (vph)	168	1023	389	251	829	533	248	743	712	205	671	202
Shared Lane Traffic (%)												
Lane Group Flow (vph)	168	1023	389	251	829	533	248	743	712	205	671	202
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width(m)	3.5			3.5			3.5			3.5		
Link Offset(m)	0.0			0.0			0.0			0.0		
Crosswalk Width(m)	1.6			1.6			1.6			1.6		
Two way Left Turn Lane												
Headway Factor	1.06	1.04	0.96	1.01	0.99	0.94	1.01	0.96	1.00	1.01	0.96	0.96
Turning Speed (k/h)	24			14			24			14		
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4			9.4			9.4		
Detector 2 Size(m)	0.6			0.6			0.6			0.6		

Lanes, Volumes, Timings
13: Whites Road & Kingston Road

<2043 Future Background>PM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type	Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8	1	7	4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2	2	1	6	6	3	8	1	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	5.0	8.0	5.0	5.0	8.0	8.0
Minimum Split (s)	10.0	43.0	43.0	10.0	43.0	43.0	8.0	49.0	10.0	8.0	49.0	49.0
Total Split (s)	18.0	43.0	43.0	30.0	55.0	55.0	8.0	49.0	30.0	8.0	49.0	49.0
Total Split (%)	13.8%	33.1%	33.1%	23.1%	42.3%	42.3%	6.2%	37.7%	23.1%	6.2%	37.7%	37.7%
Maximum Green (s)	13.0	36.0	36.0	25.0	48.0	48.0	5.0	40.6	25.0	5.0	40.6	40.6
Yellow Time (s)	3.0	4.2	4.2	3.0	4.2	4.2	3.0	4.3	3.0	3.0	4.3	4.3
All-Red Time (s)	2.0	2.8	2.8	2.0	2.8	2.8	0.0	4.1	2.0	0.0	4.1	4.1
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	0.0
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	3.0	8.4	5.0	3.0	8.4	8.4
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	0.2	0.2	3.0	0.2	0.2	3.0	0.2	3.0	3.0	0.2	0.2
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	None	None	Max	Max
Walk Time (s)	7.0			7.0			7.0			7.0		
Flash Dont Walk (s)	29.0			29.0			33.0			33.0		
Pedestrian Cross (#/hr)	13			13			38			20		
Act Effect Green (s)	13.0	38.3	38.3	22.7	48.0	48.0	51.0	40.6	66.7	51.0	40.6	40.6
Actuated g/C Ratio	0.10	0.29	0.29	0.17	0.37	0.37	0.39	0.31	0.51	0.39	0.31	0.31
v/c Ratio	1.00	1.02	0.68	0.83	0.63	0.83	0.88	0.45	0.89	0.81	0.42	0.32
Control Delay	127.6	79.3	29.2	83.6	25.4	25.9	63.3	36.9	37.4	55.8	36.4	5.8
Queue Delay	0.0	6.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	127.6	86.2	29.2	83.6	25.4	25.9	63.3	36.9	37.4	55.8	36.4	5.8
LOS	F	F	C	F	C	C	E	D	D	E	D	A
Approach Delay	76.6			34.6			40.9			34.3		
Approach LOS	E			C			D			C		
Intersection Summary												
Area Type:	Other											
Cycle Length:	130											
Actuated Cycle Length:	130											
Offset: 32 (25%), Referenced to phase 2:EBT and 6:WBT, Start of Green												
Natural Cycle:	120											
Control Type:	Actuated-Coordinated											
Maximum v/c Ratio:	1.02											
Intersection Signal Delay:	47.5						Intersection LOS: D					
Intersection Capacity Utilization:	109.1%						ICU Level of Service H					
Analysis Period (min):	15											
Splits and Phases: 13: Whites Road & Kingston Road												

Queues <2043 Future Background>PM
13: Whites Road & Kingston Road 12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	168	1023	389	251	829	533	248	743	712	205	671	202
w/c Ratio	1.00	1.02	0.68	0.83	0.63	0.83	0.88	0.45	0.89	0.81	0.42	0.32
Control Delay	127.6	79.3	29.2	83.6	25.4	25.9	63.3	36.9	37.4	55.8	36.4	5.8
Queue Delay	0.0	6.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	127.6	86.2	29.2	83.6	25.4	25.9	63.3	36.9	37.4	55.8	36.4	5.8
Queue Length 50th (m)	43.7	~154.6	51.2	60.7	53.7	43.3	42.7	55.8	123.7	34.3	49.8	0.0
Queue Length 95th (m)	#89.4	#195.8	88.5	m80.9	m79.6	m#129.0	#83.4	68.3	#188.7	#65.5	61.7	17.0
Internal Link Dist (m)		273.5		198.7			134.6			361.2		
Turn Bay Length (m)	127.0		123.0	87.1		35.0	72.0		35.0	88.5		47.0
Base Capacity (vph)	168	1001	576	333	1321	640	283	1641	830	253	1594	622
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	20	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced w/c Ratio	1.00	1.04	0.68	0.75	0.63	0.83	0.88	0.45	0.86	0.81	0.42	0.32

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.

m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings <2043 Future Background>PM
14: Whites Road & Highway 401 EB Off Ramp 12-20-2024



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↑↑↑	↑		↑↑	↑↑	
Traffic Volume (vph)	1183	589	0	841	547	0
Future Volume (vph)	1183	589	0	841	547	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.7	3.6	3.8	3.7
Storage Length (m)	0.0	225.0	0.0			0.0
Storage Lanes	2	1	0			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	0.97	0.91	1.00	0.95	0.95	1.00
Ped Bike Factor	1.00	0.98				
Frt	0.993	0.850				
Flt Protected	0.955					
Satd. Flow (prot)	3453	1427	0	3539	3618	0
Flt Permitted	0.955					
Satd. Flow (perm)	3453	1404	0	3539	3618	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	7	129				
Link Speed (k/h)	50			60	60	
Link Distance (m)	295.9			185.9	316.9	
Travel Time (s)	21.3			11.2	19.0	
Confl. Peds. (#/hr)		3	4			4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	3%	2%	2%	2%	2%
Adj. Flow (vph)	1286	640	0	914	595	0
Shared Lane Traffic (%)		10%				
Lane Group Flow (vph)	1350	576	0	914	595	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.2			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	0.99	1.00	0.97	0.99
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	2.0	2.0		10.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	2.0		0.6	0.6	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				CI+Ex	CI+Ex	
Detector 2 Channel						

Lanes, Volumes, Timings

<2043 Future Background>PM

14: Whites Road & Highway 401 EB Off Ramp

12-20-2024

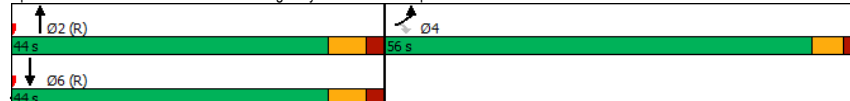


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	8.0	8.0		20.0	20.0	
Minimum Split (s)	28.5	28.5		27.7	27.7	
Total Split (s)	56.0	56.0		44.0	44.0	
Total Split (%)	56.0%	56.0%		44.0%	44.0%	
Maximum Green (s)	50.5	50.5		37.3	37.3	
Yellow Time (s)	3.7	3.7		4.5	4.5	
All-Red Time (s)	1.8	1.8		2.2	2.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.5	5.5		6.7	6.7	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		0.2	0.2	
Recall Mode	None	None		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	16.0	16.0		14.0	14.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effect Green (s)	46.8	46.8		41.0	41.0	
Actuated g/C Ratio	0.47	0.47		0.41	0.41	
v/c Ratio	0.83	0.79		0.63	0.40	
Control Delay	28.2	25.9		26.6	22.6	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	28.2	25.9		26.6	22.6	
LOS	C	C		C	C	
Approach Delay	27.5			26.6	22.6	
Approach LOS	C			C	C	

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 8 (8%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.83
 Intersection Signal Delay: 26.4
 Intersection LOS: C
 Intersection Capacity Utilization 73.4%
 ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 14: Whites Road & Highway 401 EB Off Ramp



Queues

<2043 Future Background>PM

14: Whites Road & Highway 401 EB Off Ramp

12-20-2024



Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	1350	576	914	595
v/c Ratio	0.83	0.79	0.63	0.40
Control Delay	28.2	25.9	26.6	22.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	28.2	25.9	26.6	22.6
Queue Length 50th (m)	110.4	77.9	74.2	42.8
Queue Length 95th (m)	131.2	123.7	99.3	59.7
Internal Link Dist (m)	271.9		161.9	292.9
Turn Bay Length (m)		225.0		
Base Capacity (vph)	1747	772	1451	1484
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.77	0.75	0.63	0.40

Intersection Summary

Lanes, Volumes, Timings
15: Dixie Road & Shopping Plaza Entrance

<2043 Future Background>PM
12-20-2024

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	228	0	0	168	0
Future Volume (vph)	0	228	0	0	168	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.1	3.7	4.0	3.7	3.7	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.865					
Fit Protected				0.950		
Satd. Flow (prot)	1701	0	1946	0	0	1848
Fit Permitted	0.950					
Satd. Flow (perm)	1701	0	1946	0	0	1848
Link Speed (k/h)	30	40		40		
Link Distance (m)	193.0	106.6		44.0		
Travel Time (s)	23.2	9.6		4.0		
Confl. Peds. (#/hr)	11		12			
Confl. Bikes (#/hr)	1					
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	248	0	0	183	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	248	0	0	0	0	183
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	4.1	3.6		3.6		
Link Offset(m)	0.0	0.0		0.0		
Crosswalk Width(m)	1.6	1.6		1.6		
Two way Left Turn Lane						
Headway Factor	0.93	0.99	0.94	0.99	0.99	0.94
Turning Speed (k/h)	97	97	97		97	
Sign Control	Stop	Free		Free		

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	31.2%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
15: Dixie Road & Shopping Plaza Entrance

<2043 Future Background>PM
12-20-2024

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	228	0	0	168	0
Future Volume (Veh/h)	0	228	0	0	168	0
Sign Control	Stop	Free		Free		
Grade	0%	0%		0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	248	0	0	183	0
Pedestrians	12					11
Lane Width (m)	4.1					4.0
Walking Speed (m/s)	1.1					1.1
Percent Blockage	1					1
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	44					
pX, platoon unblocked						
vC, conflicting volume	378	23			12	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	378	23			12	
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	76			88	
cM capacity (veh/h)	545	1029			1587	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	248	0	183
Volume Left	0	0	183
Volume Right	248	0	0
cSH	1029	1700	1587
Volume to Capacity	0.24	0.00	0.12
Queue Length 95th (m)	7.2	0.0	3.0
Control Delay (s)	9.6	0.0	7.6
Lane LOS	A	A	A
Approach Delay (s)	9.6	0.0	7.6
Approach LOS	A		

Intersection Summary			
Average Delay	8.7		
Intersection Capacity Utilization	31.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings
1: Walnut Lane & Kingston Road

<2043 Future Background_PHF>PM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Traffic Volume (vph)	38	1420	270	119	646	43	293	0	265	24	16	26
Future Volume (vph)	38	1420	270	119	646	43	293	0	265	24	16	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.0	3.6	3.5	3.0	3.6	3.7	3.3	3.5	3.7	3.2	3.7	3.7
Storage Length (m)	26.0		25.8	37.0		0.0	63.2		0.0	18.5		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	24.0			26.0			24.4			18.1		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.99		1.00	1.00		0.98		0.98	0.99	0.98	
Frt		0.976			0.991			0.850			0.907	
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1685	3444	0	1685	3505	0	1745	0	1633	1725	1710	0
Fit Permitted	0.950			0.950			0.730			0.950		
Satd. Flow (perm)	1677	3444	0	1682	3505	0	1317	0	1603	1713	1710	0
Right Turn on Red			Yes			Yes		Yes			Yes	
Satd. Flow (RTOR)		26			9				100			26
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		129.3			694.6			114.0			179.7	
Travel Time (s)		7.8			41.7			10.3			16.2	
Conf. Peds. (#/hr)	5		7	7		5	14		5	5		14
Conf. Bikes (#/hr)			1									
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	2%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	3	0	0	0	0	0	0	0	0	0
Adj. Flow (vph)	38	1420	270	119	646	43	293	0	265	24	16	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	1690	0	119	689	0	293	0	265	24	42	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	
Median Width(m)		3.1			3.1			3.3			3.3	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			1.6			4.9			4.9	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.09	1.00	1.01	1.09	1.00	0.99	1.04	1.01	0.99	1.06	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	0	0		0	0		1		1	0		0
Detector Template							Right					
Leading Detector (m)	0.0	0.0		0.0	0.0		7.5		6.1	0.0		0.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		-1.5		0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		-1.5		0.0	0.0		0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8		9.0		6.1	6.1		1.8
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Turn Type	Prot	NA		Prot	NA		Perm		Perm	Perm		NA
Protected Phases	5	2		1	6							4

Lanes, Volumes, Timings
1: Walnut Lane & Kingston Road

<2043 Future Background_PHF>PM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases										8	8	4
Detector Phase	5	2			1	6			8	8	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0			5.0	20.0			8.0	8.0	8.0	8.0
Minimum Split (s)	10.0	33.0			10.0	33.0			38.0	38.0	38.0	38.0
Total Split (s)	10.0	76.0			15.0	81.0			39.0	39.0	39.0	39.0
Total Split (%)	7.7%	58.5%			11.5%	62.3%			30.0%	30.0%	30.0%	30.0%
Maximum Green (s)	5.0	69.4			10.0	74.4			31.0	31.0	31.0	31.0
Yellow Time (s)	3.0	4.4			3.0	4.4			3.3	3.3	3.3	3.3
All-Red Time (s)	2.0	2.2			2.0	2.2			4.7	4.7	4.7	4.7
Lost Time Adjust (s)	0.0	0.0			0.0	0.0			0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.6			5.0	6.6			8.0	8.0	8.0	8.0
Lead/Lag	Lead	Lag			Lead	Lag						
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0			3.0	3.0			3.0	3.0	3.0	3.0
Recall Mode	None	C-Max			None	C-Max			None	None	None	None
Walk Time (s)		7.0			7.0	7.0			7.0	7.0	7.0	7.0
Flash Dont Walk (s)		19.0			19.0	19.0			22.0	22.0	22.0	22.0
Pedestrian Calls (#/hr)		8			4	4			2	2	9	9
Act Effect Green (s)	5.0	70.1			10.0	77.1			30.3	30.3	30.3	30.3
Actuated g/C Ratio	0.04	0.54			0.08	0.59			0.23	0.23	0.23	0.23
v/c Ratio	0.59	0.91			0.92	0.33			0.95	0.59	0.06	0.10
Control Delay	81.2	29.8			117.0	9.1			90.1	32.8	38.9	20.6
Queue Delay	0.0	0.0			0.0	0.0			0.0	0.0	0.0	0.0
Total Delay	81.2	29.8			117.0	9.1			90.1	32.8	38.9	20.6
LOS	F	C			F	A			F	C	D	C
Approach Delay		30.9				25.0			62.9			27.2
Approach LOS		C				C			E			C
Intersection Summary												
Area Type:	Other											
Cycle Length:	130											
Actuated Cycle Length:	130											
Offset:	77 (59%), Referenced to phase 2:EBT and 6:WBT, Start of Green											
Natural Cycle:	105											
Control Type:	Actuated-Coordinated											
Maximum v/c Ratio:	0.95											
Intersection Signal Delay:	35.0						Intersection LOS: C					
Intersection Capacity Utilization:	91.5%						ICU Level of Service F					
Analysis Period (min):	15											
Splits and Phases:	1: Walnut Lane & Kingston Road											

Lanes, Volumes, Timings

<2043 Future Background_PHF>PM

6: Liverpool Road & Kingston Road

12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	244	1028	329	212	545	67	155	826	232	95	557	108
Future Volume (vph)	244	1028	329	212	545	67	155	826	232	95	557	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.1	3.4	3.6	3.3	3.7	3.4	3.8	4.1	4.8	4.7	3.8	3.3
Storage Length (m)	188.8	97.9	170.7		117.0	185.5		52.0	49.0		60.5	
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	31.6			22.7			20.8			25.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.95	0.99		0.96	0.99		0.90	0.99		0.96
Frt			0.850			0.850			0.850			0.850
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1688	3461	1599	1728	3579	1579	1791	3773	1732	2026	3654	1561
Fit Permitted	0.950			0.950			0.354			0.180		
Satd. Flow (perm)	1666	3461	1512	1710	3579	1517	660	3773	1564	378	3654	1499
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			120			160			165			143
Link Speed (kh)		60			60			50			50	
Link Distance (m)		694.6			396.4			257.7			348.6	
Travel Time (s)		41.7			23.8			18.6			25.1	
Conf. Peds. (#/hr)	20		31	31		20	29		62	62		29
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	2%	1%	1%	2%	0%	3%	1%	4%	0%	1%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	4	0	0	0
Adj. Flow (vph)	244	1028	329	212	545	67	155	826	232	95	557	108
Shared Lane Traffic (%)												
Lane Group Flow (vph)	244	1028	329	212	545	67	155	826	232	95	557	108
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.3			3.3			4.7			4.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane		Yes									Yes	
Headway Factor	1.08	1.03	1.00	1.04	0.99	1.03	0.97	0.93	0.87	0.86	0.97	1.04
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	

Lanes, Volumes, Timings

<2043 Future Background_PHF>PM

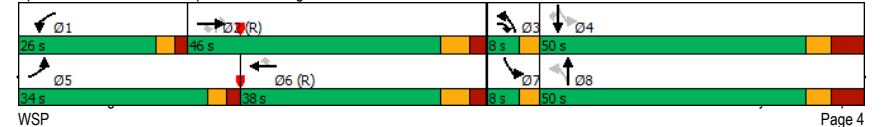
6: Liverpool Road & Kingston Road

12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		
Turn Type	Prot	NA	pm+ov	Prot	NA	Perm	pm+pt	NA	custom	pm+pt	NA	Perm
Protected Phases	5	2	3	1	6		3	8		7	4	
Permitted Phases			2			6	8		2	4		4
Detector Phase	5	2	3	1	6	6	3	8	2	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	5.0	5.0	20.0	20.0	5.0	8.0	20.0	5.0	8.0	8.0
Minimum Split (s)	10.0	36.0	8.0	10.0	36.0	36.0	8.0	50.0	36.0	8.0	50.0	50.0
Total Split (s)	34.0	46.0	8.0	26.0	38.0	38.0	8.0	50.0	46.0	8.0	50.0	50.0
Total Split (%)	26.2%	35.4%	6.2%	20.0%	29.2%	29.2%	6.2%	38.5%	35.4%	6.2%	38.5%	38.5%
Maximum Green (s)	29.0	38.9	5.0	21.0	30.9	30.9	5.0	40.9	38.9	5.0	40.9	40.9
Yellow Time (s)	3.0	4.3	3.0	3.0	4.3	4.3	3.0	3.8	4.3	3.0	3.8	3.8
All-Red Time (s)	2.0	2.8	0.0	2.0	2.8	2.8	0.0	5.3	2.8	0.0	5.3	5.3
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	0.0
Total Lost Time (s)	5.0	7.1	3.0	5.0	7.1	7.1	3.0	9.1	7.1	3.0	9.1	9.1
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
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	3.0
Recall Mode	None	C-Max	None	None	C-Max	C-Max	None	Max	C-Max	None	Max	Max
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		21.0			21.0	21.0		33.0	21.0		33.0	33.0
Pedestrian Calls (#/hr)		15			20	20		28	15		15	15
Act Effct Green (s)	23.4	40.7	49.8	19.2	36.5	36.5	52.0	40.9	40.7	52.0	40.9	40.9
actuated g/C Ratio	0.18	0.31	0.38	0.15	0.28	0.28	0.40	0.31	0.31	0.40	0.31	0.31
v/c Ratio	0.81	0.95	0.50	0.83	0.54	0.12	0.50	0.70	0.39	0.44	0.48	0.19
Control Delay	49.4	69.4	38.3	79.5	43.0	0.5	32.0	42.8	13.0	30.0	37.8	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.4	69.4	38.3	79.5	43.0	0.5	32.0	42.8	13.0	30.0	37.8	2.8
LOS	D	E	D	E	D	A	C	D	B	C	D	A
Approach Delay		59.9			48.9			35.7			31.8	
Approach LOS		E			D			D			C	

Intersection Summary	
Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	78 (60%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle:	115
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.95
Intersection Signal Delay:	46.3
Intersection Capacity Utilization:	103.1%
ICU Level of Service:	G
Analysis Period (min):	15

Splits and Phases: 6: Liverpool Road & Kingston Road



Lanes, Volumes, Timings

<2043 Future Background_PHF>PM

11: Hwy 401 WB Ramps & Kingston Road

12-20-2024

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↕↕		↕	↕↕	↕↕	↕
Traffic Volume (vph)	1692	23	184	709	662	100
Future Volume (vph)	1692	23	184	709	662	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.0	3.7	2.7	3.8	3.8	3.7
Grade (%)	6%			0%	0%	
Storage Length (m)		0.0	47.5		0.0	52.0
Storage Lanes		0	1		2	1
Taper Length (m)			22.3		2.5	
Lane Util. Factor	0.95	0.95	1.00	0.95	0.97	1.00
Ped Bike Factor					1.00	0.98
Frt	0.998					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3577	0	1577	3618	3544	1617
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3577	0	1577	3618	3537	1591
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	1					84
Link Speed (k/h)	60			60	50	
Link Distance (m)	268.7			424.0	216.6	
Travel Time (s)	16.1			25.4	15.6	
Confl. Peds. (#/hr)					1	3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	5%	3%	2%	1%	1%
Adj. Flow (vph)	1692	23	184	709	662	100
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1715	0	184	709	662	100
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.1			3.1	7.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	0.98	1.03	1.14	0.97	0.97	0.99
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	10.0		2.0	10.0	2.0	2.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Size(m)	0.6		2.0	0.6	2.0	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		

Lanes, Volumes, Timings

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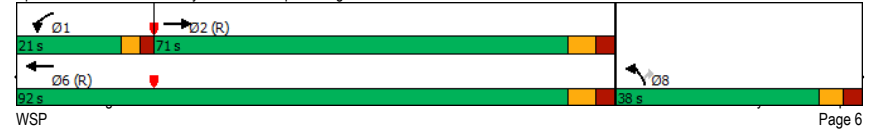
11: Hwy 401 WB Ramps & Kingston Road

12-20-2024

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		Prot	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases						8
Detector Phase	2		1	6	8	8
Switch Phase						
Minimum Initial (s)	20.0		5.0	20.0	8.0	8.0
Minimum Split (s)	50.0		10.0	50.0	38.0	38.0
Total Split (s)	71.0		21.0	92.0	38.0	38.0
Total Split (%)	54.6%		16.2%	70.8%	29.2%	29.2%
Maximum Green (s)	63.8		16.0	84.8	31.3	31.3
Yellow Time (s)	4.2		3.0	4.2	3.7	3.7
All-Red Time (s)	3.0		2.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	7.2		5.0	7.2	6.7	6.7
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?						
Vehicle Extension (s)	0.2		3.0	0.2	3.0	3.0
Recall Mode	C-Max		None	C-Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	35.0			35.0	24.0	24.0
Pedestrian Calls (#/hr)	0			0	14	14
Act Effct Green (s)	66.7		16.0	87.7	28.4	28.4
Actuated g/C Ratio	0.51		0.12	0.67	0.22	0.22
v/c Ratio	0.93		0.95	0.29	0.86	0.24
Control Delay	46.2		110.5	1.6	60.4	12.6
Queue Delay	0.8		0.0	0.0	0.0	0.0
Total Delay	47.0		110.5	1.6	60.4	12.6
LOS	D		F	A	E	B
Approach Delay	47.0			24.0	54.2	
Approach LOS	D			C	D	

Intersection Summary	
Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	69 (53%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle:	120
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.95
Intersection Signal Delay:	42.5
Intersection LOS:	D
Intersection Capacity Utilization:	93.0%
ICU Level of Service:	F
Analysis Period (min):	15

Splits and Phases: 11: Hwy 401 WB Ramps & Kingston Road



Lanes, Volumes, Timings
13: Whites Road & Kingston Road

<2043 Future Background_PHF>PM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	155	941	358	231	763	490	228	684	655	189	617	186
Future Volume (vph)	155	941	358	231	763	490	228	684	655	189	617	186
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.6	4.2	3.5	3.7	4.0	3.5	3.9	3.7	3.5	3.9	4.0
Grade (%)	6%		0%		0%		0%		0%		0%	
Storage Length (m)	127.0		123.0		87.1		35.0		72.0		47.0	
Storage Lanes	1		1		1		1		1		1	
Taper Length (m)	64.0		39.6		66.8		32.6					
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Ped Bike Factor	0.97		0.96		0.99		0.91		0.99		0.95	
Frt	0.850		0.850		0.850		0.850		0.850		0.850	
Flt Protected	0.950		0.950		0.950		0.950		0.950		0.950	
Satd. Flow (prot)	1681	3400	1622	1733	3579	1654	1767	5255	1588	1750	5105	1627
Flt Permitted	0.950		0.950		0.363		0.323					
Satd. Flow (perm)	1634	3400	1549	1717	3579	1502	666	5255	1470	582	5105	1550
Right Turn on Red	Yes		Yes		Yes		Yes		Yes		Yes	
Satd. Flow (RTOR)	187		147		60		59		60		186	
Link Speed (kh)	60		60		60		60		60		60	
Link Distance (m)	297.5		222.7		158.6		385.2					
Travel Time (s)	17.9		13.4		9.5		23.1					
Confl. Peds. (#/hr)	75	31	31	13.4	75	37	65	65	37	65	65	37
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	3%	3%	3%	2%	2%	1%	2%	2%	2%	5%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	2	0	0	0	4
Adj. Flow (vph)	155	941	358	231	763	490	228	684	655	189	617	186
Shared Lane Traffic (%)												
Lane Group Flow (vph)	155	941	358	231	763	490	228	684	655	189	617	186
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width(m)	3.5		3.5		3.5		3.5		3.5		3.5	
Link Offset(m)	0.0		0.0		0.0		0.0		0.0		0.0	
Crosswalk Width(m)	1.6		1.6		1.6		1.6		1.6		1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.04	0.96	1.01	0.99	0.94	1.01	0.96	1.00	1.01	0.96	0.96
Turning Speed (k/h)	24	14	24	14	24	14	24	14	24	14	24	14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4		9.4		9.4		9.4		9.4		9.4	
Detector 2 Size(m)	0.6		0.6		0.6		0.6		0.6		0.6	

Lanes, Volumes, Timings
13: Whites Road & Kingston Road

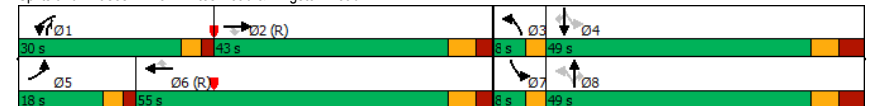
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12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type	CI+Ex		CI+Ex		CI+Ex		CI+Ex		CI+Ex		CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0		0.0		0.0		0.0		0.0		0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8	1	7	4	
Permitted Phases	2		6		8		8		4		4	
Detector Phase	5	2	2	1	6	6	3	8	1	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	5.0	8.0	5.0	5.0	8.0	8.0
Minimum Split (s)	10.0	43.0	43.0	10.0	43.0	43.0	8.0	49.0	10.0	8.0	49.0	49.0
Total Split (s)	18.0	43.0	43.0	30.0	55.0	55.0	8.0	49.0	30.0	8.0	49.0	49.0
Total Split (%)	13.8%	33.1%	33.1%	23.1%	42.3%	42.3%	6.2%	37.7%	23.1%	6.2%	37.7%	37.7%
Maximum Green (s)	13.0	36.0	36.0	25.0	48.0	48.0	5.0	40.6	25.0	5.0	40.6	40.6
Yellow Time (s)	3.0	4.2	4.2	3.0	4.2	4.2	3.0	4.3	3.0	3.0	4.3	4.3
All-Red Time (s)	2.0	2.8	2.8	2.0	2.8	2.8	0.0	4.1	2.0	0.0	4.1	4.1
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	0.0
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	3.0	8.4	5.0	3.0	8.4	8.4
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	0.2	0.2	3.0	0.2	0.2	3.0	0.2	3.0	3.0	0.2	0.2
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	None	None	Max	Max
Walk Time (s)	7.0		7.0		7.0		7.0		7.0		7.0	
Flash Dont Walk (s)	29.0		29.0		29.0		29.0		33.0		33.0	
Pedestrian Calls (#/hr)	13		13		38		38		20		20	
Act Effect Green (s)	13.0	39.5	39.5	21.5	48.0	48.0	51.0	40.6	65.5	51.0	40.6	40.6
Actuated g/C Ratio	0.10	0.30	0.30	0.17	0.37	0.37	0.39	0.31	0.50	0.39	0.31	0.31
v/c Ratio	0.92	0.91	0.60	0.81	0.58	0.76	0.75	0.42	0.83	0.69	0.39	0.30
Control Delay	109.5	57.7	23.1	84.6	24.5	20.2	47.4	36.3	32.1	43.6	35.8	5.8
Queue Delay	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	109.5	59.1	23.1	84.6	24.5	20.2	47.4	36.3	32.1	43.6	35.8	5.8
LOS	F	E	C	F	C	C	D	D	C	D	D	A
Approach Delay	55.6		32.4		36.2		31.7		31.7		31.7	
Approach LOS	E		C		D		C		D		C	

Intersection Summary

Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	32 (25%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle:	120
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.92
Intersection Signal Delay:	39.5
Intersection Capacity Utilization:	109.1%
Analysis Period (min):	15
Intersection LOS:	D
ICU Level of Service:	H

Splits and Phases: 13: Whites Road & Kingston Road



APPENDIX

G TTS DATA & MULTI-USE SHARE FACTOR

Fri May 07 2021 23:28:22 GMT-0400 (Eastern Daylight Time) - Run Time: 2576ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Primary travel mode of trip - mode_prime
Column: Planning district of household - pd_hhld

Filters:

(2006 GTA zone of origin - gta06_orig In 1041 1043 1039 1040
and
Start time of trip - start_time In 0630-0930
and
Trip purpose of origin - purp_orig In H)

Trip 2016

Table:

	Pickering	Mode Splits
Transit excluding GO rail	456	8%
Cycle	10	0%
Auto driver	3082	56%
GO rail only	305	6%
Joint GO rail and local transit	461	8%
Auto passenger	365	7%
School bus	491	9%
Taxi passenger	48	1%
Walk	302	5%

Fri May 07 2021 23:22:53 GMT-0400 (Eastern Daylight Time) - Run Time: 2776ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Primary travel mode of trip - mode_prime
Column: Planning district of household - pd_hhld

Filters:

(2006 GTA zone of destination - gta06_dest In 1041

1043

1039

1040

and

Start time of trip - start_time In 1530-1830

and

Trip purpose of destination - purp_dest In H)

Trip 2016

Table:

	Pickering	Mode Splits
Transit excluding GO rail	177	4%
Cycle	9	0%
Auto driver	3005	65%
GO rail only	425	9%
Joint GO rail and local transit	311	7%
Auto passenger	284	6%
School bus	226	5%
Paid rideshare	33	1%
Walk	170	4%

Fri May 07 2021 23:29:44 GMT-0400 (Eastern Daylight Time) - Run Time: 2591ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Primary travel mode of trip - mode_prime
Column: Planning district of household - pd_hhld

Filters:

(2006 GTA zone of origin - gta06_orig In 1041 1043 1039 1040
and
Start time of trip - start_time In 1530-1830
and
Trip purpose of origin - purp_orig In H)

Trip 2016

Table:

	Pickering	Mode Splits
Transit excluding GO rail	30	3%
Auto driver	738	83%
Auto passenger	118	13%

Tue Sep 19 2023 16:00:53 GMT-0400 (Eastern Daylight Time) - Run Time: 2527ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Primary travel mode of trip - mode_prime

Column: Planning district of household - pd_hhld

Filters:

(2006 GTA zone of destination - gta06_dest In 1041 1043 1039 1040

and

Start time of trip - start_time In 0630-0930

and

Trip purpose of destination - purp_dest In M)

Trip 2016

Table:

	PD 16 of Toronto	Pickering	Ajax	Clarington	Mode Splits
Auto driver	11	62	45	0	79%
Auto passenger	0	16	0	12	21%

Tue Sep 19 2023 16:45:48 GMT-0400 (Eastern Daylight Time) - Run Time: 2968ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Primary travel mode of trip - mode_prime
Column: Planning district of household - pd_hhld

Filters:

(2006 GTA zone of origin - gta06_orig In 1041 1043 1039 1040
and
Start time of trip - start_time In 0630-0930
and
Trip purpose of origin - purp_orig In M)

Trip 2016

Table:

	PD 16 of Tr Pickering	Ajax		Mode Splits
Auto driver	11	41	23	80%
Auto passenger	0	10	0	20%

Tue Sep 19 2023 16:04:54 GMT-0400 (Eastern Daylight Time) - Run Time: 3482ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Primary travel mode of trip - mode_prime
Column: Planning district of household - pd_hhld

Filters:

(2006 GTA zone of destination - gta06_dest In 1041 1043 1039 1040
and
Start time of trip - start_time In 1530-1830
and
Trip purpose of destination - purp_dest In M)

Trip 2016

Table:

	PD 6 of To	PD 15 of Tor	Pickering	Ajax	Whitby	Oshawa	Mode Splits
Auto driver	8	29	498	110	13	13	93%
Auto passenger	8	0	38	0	0	0	7%

Tue Sep 19 2023 16:46:44 GMT-0400 (Eastern Daylight Time) - Run Time: 2712ms

Cross Tabulation Query Form - Trip - 2016 v1.1

Row: Primary travel mode of trip - mode_prime

Column: Planning district of household - pd_hhld

Filters:

(2006 GTA zone of origin - gta06_orig In 1041 1043 1039 1040

and

Start time of trip - start_time In 1530-1830

and

Trip purpose of origin - purp_orig In M)

Trip 2016

Table:

	PD 6 of Tor	PD 15 of Tor	Scugog	Pickering	Ajax	Whitby	Oshawa	Clarington	Mode Splits
Transit excluding GO rail	0	0	0	0	19	0	0	0	0%
Cycle	0	0	0	9	0	0	0	0	1%
Auto driver	8	41	10	802	98	19	0	22	88%
GO rail only	0	0	0	0	0	0	13	0	0%
Auto passenger	8	10	10	102	0	0	0	0	11%

TTS Trip Distribution Summary

In order to inform the trip assignment stage of the analysis, information about the general trip distribution is required to inform the analysis. The distribution represents the proportion of trips to and away from the site in any given direction. The following pages summarize the general trip distribution results, which were calculated using Transportation Tomorrow Survey (TTS) 2016 trip origin and destination data. Trips were grouped under cardinal directions based on the relative angle between trip origin and destination, and appropriate adjustments were made to the calculation to conform to local geography and street grid.

The "TTS Directional Distribution Summary" on the next page presents a summary of the calculations described above, along with notes on any details specific to the analysis in this report. The table shows the total number of trips to and from the subject site categorized into general directions (North, Northeast, East etc.) and the percentage share of trips in each general direction in all directions.

The pages after show graphical illustrations of the categorizations for all Traffic Analysis Zones (TAZ) in the TTS survey area. Note that the latest survey zones were last updated in 2006.

These results are used as reference information for the trip assignment. They do not directly determine the trip assignment on the study network. The final trip assignments are completed based on a combination of local context, engineering experience, and engineering judgement, with the trip distribution information presented here to illustrate general travel behaviour.

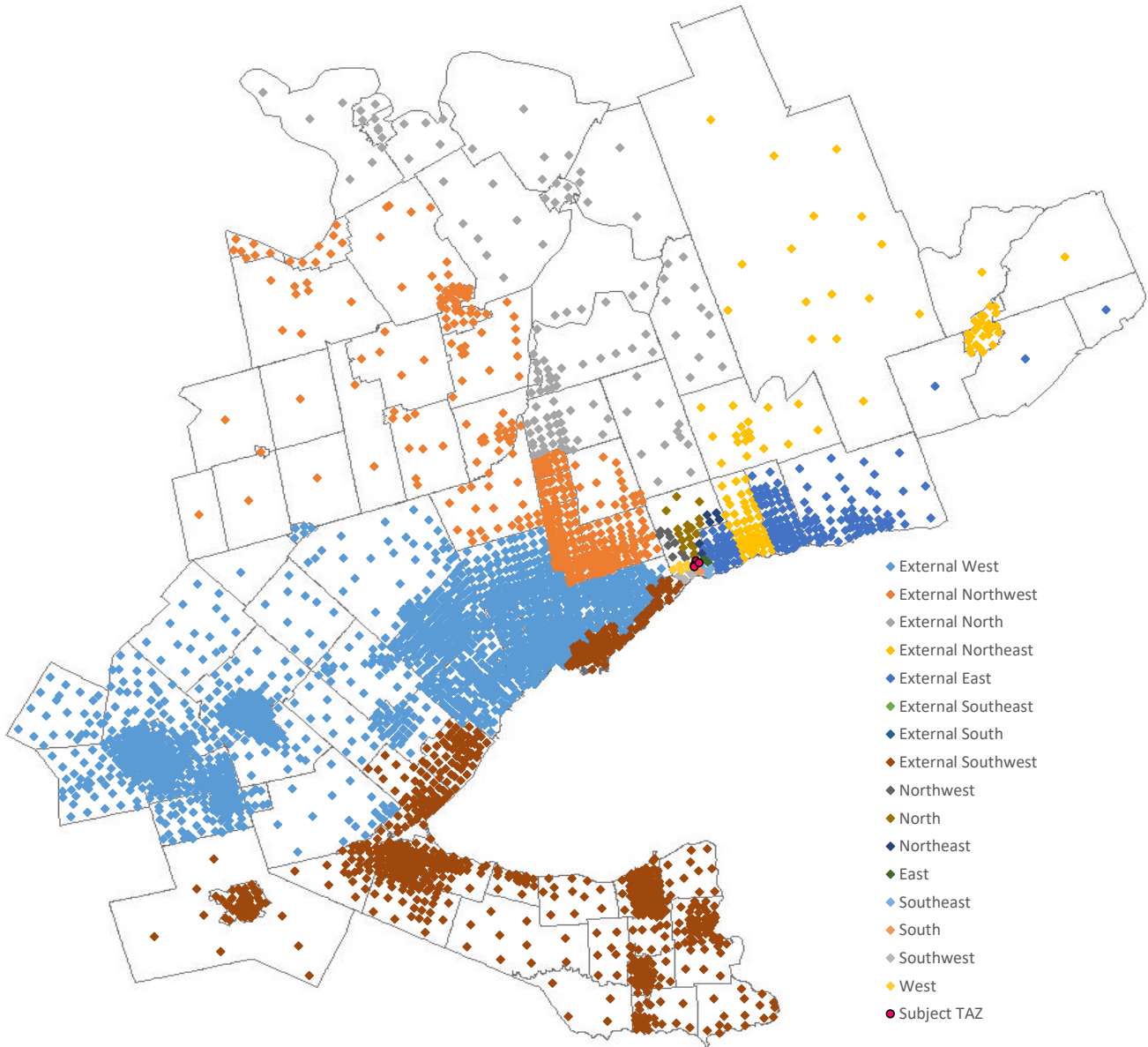
TTS Directional Distribution Summary: Tribute - Liverpool, Pickering

Notes:

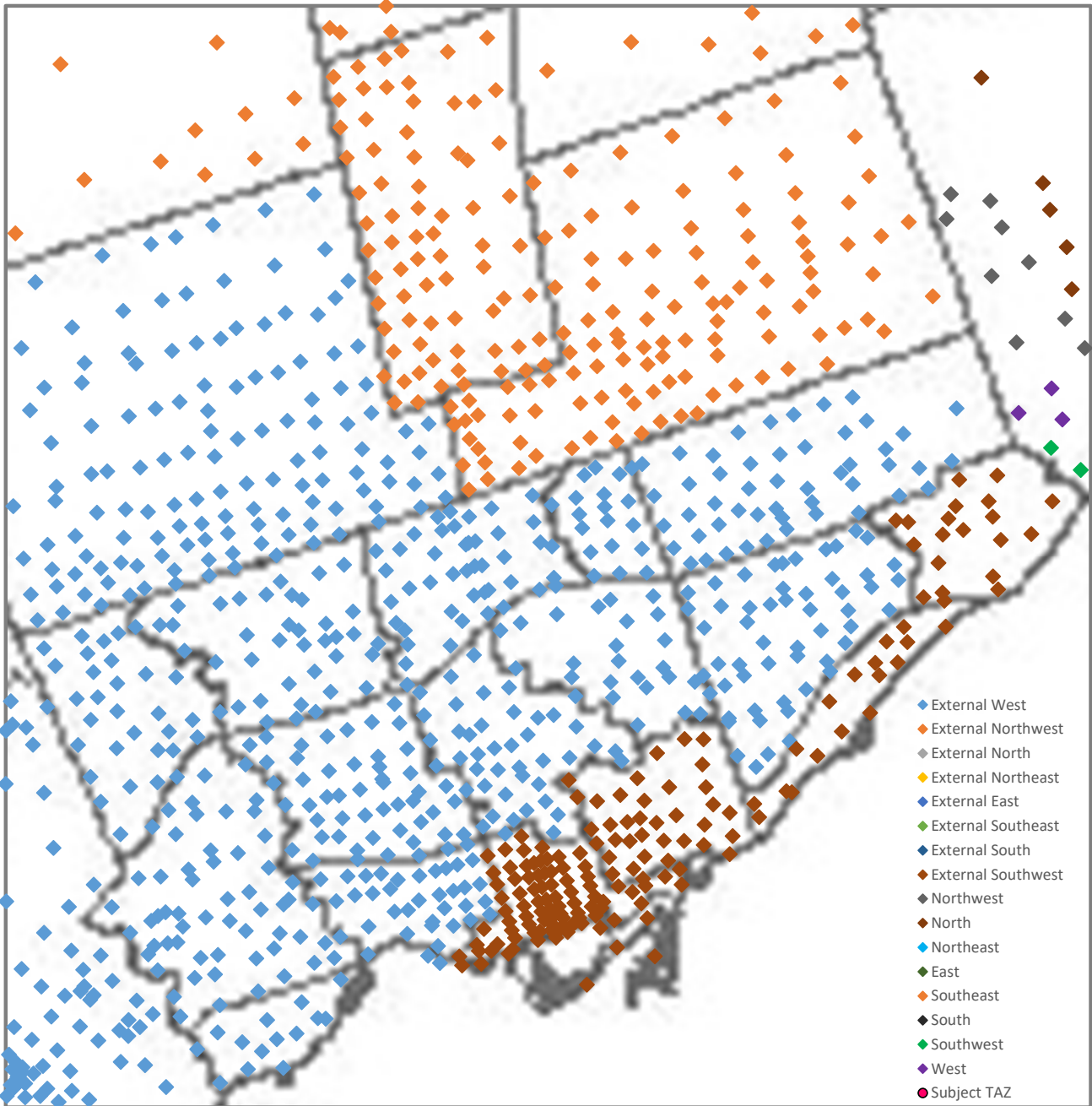
1. Directions determined based on centroid coordinates of destination/origin planning districts.
2. 'Internal' refers to local trips made within the home planning district(s), while 'External' refers to trips made to areas outside of the home planning district(s).

		Internal										External									
	Time Period	Direction	NW	N	NE	E	SE	S	SW	W	Total	NW	N	NE	E	SE	S	SW	W	Total	
Trips	A.M.	Inbound	0	111	0	13	21	0	0	0	145	0	0	0	42	0	0	0	0	0	42
		Outbound	0	446	53	13	260	151	208	137	1268	601	0	376	431	0	0	375	1149	2932	
	P.M.	Inbound	0	251	10	59	299	53	103	73	848	774	0	119	319	0	0	227	1556	2995	
		Outbound	0	47	10	94	96	87	29	25	388	0	0	53	204	0	0	68	38	363	
Percentage	A.M.	Inbound	0%	48%	0%	6%	9%	0%	0%	0%	63%	0%	0%	0%	18%	0%	0%	0%	0%	0%	18%
		Outbound	0%	10%	1%	0%	6%	3%	5%	3%	28%	13%	0%	8%	10%	0%	0%	8%	26%	65%	
	P.M.	Inbound	0%	6%	0%	1%	7%	1%	3%	2%	21%	19%	0%	3%	8%	0%	0%	6%	38%	74%	
		Outbound	0%	5%	1%	11%	11%	10%	3%	3%	45%	0%	0%	6%	24%	0%	0%	8%	4%	42%	

TAZ Directional Categorisation Visualisation (Complete TTS Survey Area)



TAZ Directional Categorisation Visualisation (City of Toronto)



2028 Horizon Year

New Internal Trip Capture Methodology for Multi-Use Developments

Based on NCHRP Project 8-51

Note: Saturday is assumed to be the same as PM Peak Hour for Multi-Use Reductions, if Saturday Multi-Use is assumed, this must be disclosed
Do not modify values in Grey Cells

INPUTS

Volumes

Use	AM Volumes		PM Volumes		Saturday Volumes	
	Entering	Exiting	Entering	Exiting	Entering	Exiting
Office						
Retail	112	69	246	267		
Restaurant						
Cinema/ Entertainment						
Residential	41	116	116	71		
Hotel						

Proximity of Uses

Separation Distance (In Feet)

Use	Separation Distance (In Feet)					
	Office	Retail	Restaurant	Cinema/ Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail			0	0	0	0
Restaurant				0	0	0
Cinema/ Entertainment					0	0
Residential						0
Hotel						

OUTPUTS

AM Peak Hour Multi-Use Reduction Summary

	Office	Retail	Restaurant	Cinema/ Entertainment	Residential	Hotel	In	In%
Office	0	0	0	0	0	0	0	0%
Retail	0	0	0	0	1	0	1	1%
Restaurant	0	0	0	0	0	0	0	0%
Cinema/ Entertainment	0	0	0	0	0	0	0	0%
Residential	0	1	0	0	0	0	1	2%
Hotel	0	0	0	0	0	0	0	0%
Out	0	1	0	0	1	0		
Out %	0%	1%	0%	0%	1%	0%		

PM Peak Hour Multi-Use Reduction Summary (Contains Proximity Factors)

	Office	Retail	Restaurant	Cinema/ Entertainment	Residential	Hotel	In	In%
Office	0	0	0	0	0	0	0	0%
Retail	0	0	0	0	25	0	25	10%
Restaurant	0	0	0	0	0	0	0	0%
Cinema/ Entertainment	0	0	0	0	0	0	0	0%
Residential	0	53	0	0	0	0	53	46%
Hotel	0	0	0	0	0	0	0	0%
Out	0	53	0	0	25	0		
Out %	0%	20%	0%	0%	35%	0%		

Supporting Data

Percentages from ITE Journal August 2010: "Improved Estimation of Internal Trip Capture for Mixed-Use Developments"

AM From-To Percentages Matrix						
To	From					
	Office	Retail	Restaurant	Cinema/ Entertainment	Residential	Hotel
Office		29%	31%		2%	75%
Retail	28%		14%		1%	14%
Restaurant	63%	13%			20%	9%
Cinema/ Entertainment						
Residential	1%	14%	4%			0%
Hotel	0%	0%	3%		0%	

AM To-From Percentages Matrix						
To	From					
	Office	Retail	Restaurant	Cinema/ Entertainment	Residential	Hotel
Office		4%	14%		3%	3%
Retail	32%		8%		17%	4%
Restaurant	23%	50%			20%	6%
Cinema/ Entertainment						
Residential	0%	2%	5%			0%
Hotel	0%	0%	4%		0%	

PM (Saturday) From-To Percentages Matrix						
To	From					
	Office	Retail	Restaurant	Cinema/ Entertainment	Residential	Hotel
Office		2%	3%	2%	4%	0%
Retail	20%		41%	21%	42%	16%
Restaurant	4%	29%		31%	21%	68%
Cinema/ Entertainment	0%	4%	8%		0%	68%
Residential	2%	26%	18%	8%		0%
Hotel	0%	5%	7%	2%	3%	2%

PM (Saturday) To-From Percentages Matrix						
To	From					
	Office	Retail	Restaurant	Cinema/ Entertainment	Residential	Hotel
Office		31%	30%	6%	57%	0%
Retail	8%		50%	4%	10%	2%
Restaurant	2%	29%		3%	14%	5%
Cinema/ Entertainment	1%	26%	32%		0%	0%
Residential	4%	46%	16%	4%		0%
Hotel	0%	17%	71%	1%	12%	

PM (Saturday) Only From-To Proximity Factors Matrix						
To	From					
	Office	Retail	Restaurant	Cinema/ Entertainment	Residential	Hotel
Office	1.00	1.00	1.00	1.00	1.00	1.00
Retail	1.00	1.00	1.00	1.00	1.00	1.00
Restaurant	1.00	1.00	1.00	1.00	1.00	1.00
Cinema/ Entertainment	1.00	1.00	1.00	1.00	1.00	1.00
Residential	1.00	1.00	1.00	1.00	1.00	1.00
Hotel	1.00	1.00	1.00	1.00	1.00	1.00

PM (Saturday) Only To-From Proximity Factors Matrix						
To	From					
	Office	Retail	Restaurant	Cinema/ Entertainment	Residential	Hotel
Office	1.00	1.00	1.00	1.00	1.00	1.00
Retail	1.00	1.00	1.00	1.00	1.00	1.00
Restaurant	1.00	1.00	1.00	1.00	1.00	1.00
Cinema/ Entertainment	1.00	1.00	1.00	1.00	1.00	1.00
Residential	1.00	1.00	1.00	1.00	1.00	1.00
Hotel	1.00	1.00	1.00	1.00	1.00	1.00

Red numbers for those land use pairs with proximity factors

2033/2038/2043 Horizon Year

New Internal Trip Capture Methodology for Multi-Use Developments

Based on NCHRP Project 8-51

Note: Saturday is assumed to be the same as PM Peak Hour for Multi-Use Reductions, if Saturday Multi-Use is assumed, this must be disclosed
Do not modify values in Grey Cells

INPUTS

Volumes

Use	AM Volumes		PM Volumes		Saturday Volumes	
	Entering	Exiting	Entering	Exiting	Entering	Exiting
Office						
Retail	155	95	318	344		
Restaurant						
Cinema/ Entertainment						
Residential	370	1052	1044	640		
Hotel						

Proximity of Uses

Separation Distance (In Feet)

Use	Separation Distance (In Feet)					
	Office	Retail	Restaurant	Cinema/ Entertainment	Residential	Hotel
Office		0	0	0	0	0
Retail			0	0	0	0
Restaurant				0	0	0
Cinema/ Entertainment					0	0
Residential						0
Hotel						

OUTPUTS

AM Peak Hour Multi-Use Reduction Summary

	Office	Retail	Restaurant	Cinema/ Entertainment	Residential	Hotel	In	In%
Office	0	0	0	0	0	0	0	0%
Retail	0	0	0	0	11	0	11	7%
Restaurant	0	0	0	0	0	0	0	0%
Cinema/ Entertainment	0	0	0	0	0	0	0	0%
Residential	0	7	0	0	0	0	7	2%
Hotel	0	0	0	0	0	0	0	0%
Out	0	7	0	0	11	0		
Out %	0%	8%	0%	0%	1%	0%		

PM Peak Hour Multi-Use Reduction Summary (Contains Proximity Factors)

	Office	Retail	Restaurant	Cinema/ Entertainment	Residential	Hotel	In	In%
Office	0	0	0	0	0	0	0	0%
Retail	0	0	0	0	32	0	32	10%
Restaurant	0	0	0	0	0	0	0	0%
Cinema/ Entertainment	0	0	0	0	0	0	0	0%
Residential	0	90	0	0	0	0	90	9%
Hotel	0	0	0	0	0	0	0	0%
Out	0	90	0	0	32	0		
Out %	0%	26%	0%	0%	5%	0%		

Supporting Data

Percentages from ITE Journal August 2010: "Improved Estimation of Internal Trip Capture for Mixed-Use Developments"

AM From-To Percentages Matrix						
To	From					
	Office	Retail	Restaurant	Cinema/ Entertainment	Residential	Hotel
Office		29%	31%		2%	75%
Retail	28%		14%		1%	14%
Restaurant	63%	13%			20%	9%
Cinema/ Entertainment						
Residential	1%	14%	4%			0%
Hotel	0%	0%	3%		0%	

AM To-From Percentages Matrix						
To	From					
	Office	Retail	Restaurant	Cinema/ Entertainment	Residential	Hotel
Office		4%	14%		3%	3%
Retail	32%		8%		17%	4%
Restaurant	23%	50%			20%	6%
Cinema/ Entertainment						
Residential	0%	2%	5%			0%
Hotel	0%	0%	4%		0%	

PM (Saturday) From-To Percentages Matrix						
To	From					
	Office	Retail	Restaurant	Cinema/ Entertainment	Residential	Hotel
Office		2%	3%	2%	4%	0%
Retail	20%		41%	21%	42%	16%
Restaurant	4%	29%		31%	21%	68%
Cinema/ Entertainment	0%	4%	8%		0%	68%
Residential	2%	26%	18%	8%		0%
Hotel	0%	5%	7%	2%	3%	2%

PM (Saturday) To-From Percentages Matrix						
To	From					
	Office	Retail	Restaurant	Cinema/ Entertainment	Residential	Hotel
Office		31%	30%	6%	57%	0%
Retail	8%		50%	4%	10%	2%
Restaurant	2%	29%		3%	14%	5%
Cinema/ Entertainment	1%	26%	32%		0%	0%
Residential	4%	46%	16%	4%		0%
Hotel	0%	17%	71%	1%	12%	

PM (Saturday) Only From-To Proximity Factors Matrix						
To	From					
	Office	Retail	Restaurant	Cinema/ Entertainment	Residential	Hotel
Office	1.00	1.00	1.00	1.00	1.00	1.00
Retail	1.00	1.00	1.00	1.00	1.00	1.00
Restaurant	1.00	1.00	1.00	1.00	1.00	1.00
Cinema/ Entertainment	1.00	1.00	1.00	1.00	1.00	1.00
Residential	1.00	1.00	1.00	1.00	1.00	1.00
Hotel	1.00	1.00	1.00	1.00	1.00	1.00

PM (Saturday) Only To-From Proximity Factors Matrix						
To	From					
	Office	Retail	Restaurant	Cinema/ Entertainment	Residential	Hotel
Office	1.00	1.00	1.00	1.00	1.00	1.00
Retail	1.00	1.00	1.00	1.00	1.00	1.00
Restaurant	1.00	1.00	1.00	1.00	1.00	1.00
Cinema/ Entertainment	1.00	1.00	1.00	1.00	1.00	1.00
Residential	1.00	1.00	1.00	1.00	1.00	1.00
Hotel	1.00	1.00	1.00	1.00	1.00	1.00

Red numbers for those land use pairs with proximity factors

APPENDIX

H FUTURE TOTAL CONDITIONS

APPENDIX

H-1 2028 FUTURE TOTAL CONDITIONS

Lanes, Volumes, Timings
1: Walnut Lane & Kingston Road

<2028 Future Total>AM
12-20-2024

	↖	→	↘	↙	←	↖	↙	↘	↙	↘	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖		↖	↖		↖	↖	↖	↖	↖	↖
Traffic Volume (vph)	20	770	75	131	443	30	251	0	209	14	6	29
Future Volume (vph)	20	770	75	131	443	30	251	0	209	14	6	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.0	3.6	3.5	3.0	3.6	3.7	3.3	3.5	3.7	3.2	3.7	3.7
Storage Length (m)	26.0		25.8	37.0		0.0	63.2		0.0	18.5		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	24.0			26.0			24.4			18.1		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		0.99	1.00		0.99		0.99	1.00	0.98	
Frt		0.987			0.990				0.850		0.877	
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1685	3409	0	1652	3379	0	1745	0	1585	1725	1601	0
Fit Permitted	0.950			0.950			0.732			0.950		
Satd. Flow (perm)	1677	3409	0	1643	3379	0	1330	0	1563	1720	1601	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10			8				225			32
Link Speed (k/h)		60			60				40			40
Link Distance (m)		129.3			694.6				114.0			179.7
Travel Time (s)		7.8			41.7				10.3			16.2
Conf. Peds. (#/hr)	4		8	8		4	9		2	2		9
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%	4%	6%	2%	5%	14%	0%	0%	3%	0%	0%	4%
Bus Blockages (#/hr)	0	0	6	0	0	0	0	0	0	0	0	0
Adj. Flow (vph)	22	837	82	142	482	33	273	0	227	15	7	32
Shared Lane Traffic (%)												
Lane Group Flow (vph)	22	919	0	142	515	0	273	0	227	15	39	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.1			3.1				3.3			3.3
Link Offset(m)		0.0			0.0				0.0			0.0
Crosswalk Width(m)		4.9			1.6				4.9			4.9
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.09	1.00	1.01	1.09	1.00	0.99	1.04	1.01	0.99	1.06	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	0	0		0	0		1		1	0		0
Detector Template									Right			
Leading Detector (m)	0.0	0.0		0.0	0.0		7.5		6.1	0.0		0.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		-1.5		0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		-1.5		0.0	0.0		0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8		9.0		6.1	6.1		1.8
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Turn Type	Prot	NA		Prot	NA		Perm		Perm	Perm		NA
Protected Phases	5	2		1	6							4
Permitted Phases							8		8			4

Lanes, Volumes, Timings
1: Walnut Lane & Kingston Road

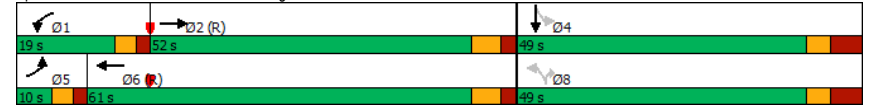
<2028 Future Total>AM
12-20-2024

	↖	→	↘	↙	←	↖	↙	↘	↙	↘	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2			1	6		8		8	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0		8.0		8.0	8.0		8.0
Minimum Split (s)	10.0	33.0		10.0	33.0		39.0		39.0	39.0		39.0
Total Split (s)	10.0	52.0		19.0	61.0		49.0		49.0	49.0		49.0
Total Split (%)	8.3%	43.3%		15.8%	50.8%		40.8%		40.8%	40.8%		40.8%
Maximum Green (s)	5.0	45.4		14.0	54.4		41.0		41.0	41.0		41.0
Yellow Time (s)	3.0	4.4		3.0	4.4		3.3		3.3	3.3		3.3
All-Red Time (s)	2.0	2.2		2.0	2.2		4.7		4.7	4.7		4.7
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Total Lost Time (s)	5.0	6.6		5.0	6.6		8.0		8.0	8.0		8.0
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0		3.0	3.0		3.0
Recall Mode	None	C-Max		None	C-Max		None		None	None		None
Walk Time (s)		7.0			7.0		7.0		7.0	7.0		7.0
Flash Dont Walk (s)		19.0			19.0		22.0		22.0	22.0		22.0
Pedestrian Calls (#/hr)		7			5		5		5	14		14
Act Effct Green (s)	6.4	55.6		14.6	68.1		30.2		30.2	30.2		30.2
Actuated g/C Ratio	0.05	0.46		0.12	0.57		0.25		0.25	0.25		0.25
v/c Ratio	0.25	0.58		0.71	0.27		0.82		0.40	0.03		0.09
Control Delay	53.0	40.7		53.7	18.0		60.6		6.2	29.9		12.4
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Total Delay	53.0	40.7		53.7	18.0		60.6		6.2	29.9		12.4
LOS	D	D		D	B		E		A	C		B
Approach Delay		41.0			25.7		35.9					17.3
Approach LOS		D			C		D					B

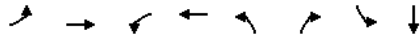
Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 111 (93%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 85
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.82
 Intersection Signal Delay: 34.6 Intersection LOS: C
 Intersection Capacity Utilization 64.6% ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 1: Walnut Lane & Kingston Road



Queues <2028 Future Total>AM
1: Walnut Lane & Kingston Road 12-20-2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBR	SBL	SBT
Lane Group Flow (vph)	22	919	142	515	273	227	15	39
w/c Ratio	0.25	0.58	0.71	0.27	0.82	0.40	0.03	0.09
Control Delay	53.0	40.7	53.7	18.0	60.6	6.2	29.9	12.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.0	40.7	53.7	18.0	60.6	6.2	29.9	12.4
Queue Length 50th (m)	5.0	111.5	33.5	49.8	60.7	0.4	2.7	1.2
Queue Length 95th (m)	m12.1	139.8	#60.6	70.3	82.4	16.9	7.2	8.7
Internal Link Dist (m)		105.3		670.6				155.7
Turn Bay Length (m)	26.0		37.0		63.2		18.5	
Base Capacity (vph)	89	1584	211	1921	454	682	587	568
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced w/c Ratio	0.25	0.58	0.67	0.27	0.60	0.33	0.03	0.07

Intersection Summary
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings <2028 Future Total>AM
2: Street B & Kingston Road 12-20-2024



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑		↑↑		↑
Traffic Volume (vph)	837	94	0	727	0	29
Future Volume (vph)	837	94	0	727	0	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.3	3.7	3.5	3.7	4.5
Storage Length (m)		45.0	0.0		0.0	0.0
Storage Lanes		1	0		0	1
Taper Length (m)			2.5		2.5	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Ped Bike Factor						
Frt		0.850				0.865
Fit Protected						
Satd. Flow (prot)	3433	1516	0	3400	0	1808
Fit Permitted						
Satd. Flow (perm)	3433	1516	0	3400	0	1808
Link Speed (k/h)	60			60	30	
Link Distance (m)	191.2			129.3	96.9	
Travel Time (s)	11.5			7.8	11.6	
Confl. Peds. (#/hr)		4				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	3%	2%	5%	2%	0%
Adj. Flow (vph)	910	102	0	790	0	32
Shared Lane Traffic (%)						
Lane Group Flow (vph)	910	102	0	790	0	32
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.0			3.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	1.01	1.04	0.99	1.01	0.99	0.88
Turning Speed (k/h)		14	24		24	14
Sign Control	Free			Free	Stop	

Intersection Summary
 Area Type: Other
 Control Type: Unsignalized
 Intersection Capacity Utilization 33.1% ICU Level of Service A
 Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
2: Street B & Kingston Road

<2028 Future Total>AM
12-20-2024

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑		↑↑		↑
Traffic Volume (veh/h)	837	94	0	727	0	29
Future Volume (Veh/h)	837	94	0	727	0	29
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	910	102	0	790	0	32
Pedestrians						4
Lane Width (m)					4.5	
Walking Speed (m/s)					1.1	
Percent Blockage						0
Right turn flare (veh)						
Median type	TWLTL		TWLTL			
Median storage (veh)	2		2			
Upstream signal (m)	191		129			
pX, platoon unblocked			0.88		0.91	0.88
vC, conflicting volume			914		1309	459
vC1, stage 1 conf vol					914	
vC2, stage 2 conf vol					395	
vCu, unblocked vol			620		794	101
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	96
cM capacity (veh/h)			835		416	821
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	455	455	102	395	395	32
Volume Left	0	0	0	0	0	0
Volume Right	0	0	102	0	0	32
cSH	1700	1700	1700	1700	1700	821
Volume to Capacity	0.27	0.27	0.06	0.23	0.23	0.04
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.9
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	9.6
Lane LOS						A
Approach Delay (s)	0.0			0.0		9.6
Approach LOS						A
Intersection Summary						
Average Delay	0.2					
Intersection Capacity Utilization	33.1%		ICU Level of Service		A	
Analysis Period (min)	15					

Lanes, Volumes, Timings
3: Dixie Road & Kingston Road

<2028 Future Total>AM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑		↑	↑↑		↑	↑		↑	↑	↑
Traffic Volume (vph)	80	770	96	78	560	88	41	15	29	137	35	144
Future Volume (vph)	80	770	96	78	560	88	41	15	29	137	35	144
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	2.8	3.6	3.4	2.8	3.5	3.1	3.6	4.0	3.7	3.8	4.2	3.7
Grade (%)	6%		0%		0%		0%		0%		0%	
Storage Length (m)	145.4		64.5	51.0		79.5	13.0		0.0	16.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	66.4			48.0			18.0			25.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		1.00	0.99		1.00	0.99		1.00	0.99	
Frt	0.983		0.980		0.900		0.879					
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1564	3305	0	1645	3301	0	1752	1769	0	1827	1759	0
Fit Permitted	0.950			0.950			0.543			0.726		
Satd. Flow (perm)	1554	3305	0	1639	3301	0	999	1769	0	1393	1759	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		14			18			32			157	
Link Speed (k/h)		60			60			40			60	
Link Distance (m)		896.3			191.2			44.0			236.2	
Travel Time (s)		53.8			11.5			4.0			14.2	
Confl. Peds. (#/hr)	6		4	4		6	3		2	2		3
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 (%)	2%	4%	2%	0%	6%	2%	3%	0%	0%	1%	0%	0%
Bus Blockages (#/hr)	0	0	6	0	0	6	0	0	0	0	0	0
Adj. Flow (vph)	87	837	104	85	609	96	45	16	32	149	38	157
Shared Lane Traffic (%)												
Lane Group Flow (vph)	87	941	0	85	705	0	45	48	0	149	195	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		2.8			2.8			3.8			3.8	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane	Yes											
Headway Factor	1.17	1.04	1.07	1.13	1.01	1.08	1.00	0.94	0.99	0.97	0.92	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	0	0		0	0		0	0		1	1	
Detector Template												
Leading Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		7.5	7.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		-1.5	-1.5	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		-1.5	-1.5	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		9.0	9.0	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	

Lanes, Volumes, Timings
3: Dixie Road & Kingston Road

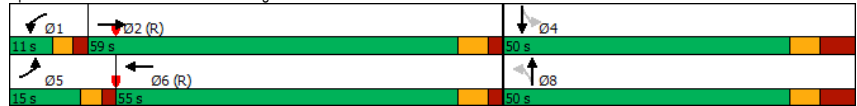
<2028 Future Total>AM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases							8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	10.0	28.0		10.0	28.0		43.0	43.0		41.0	41.0	
Total Split (s)	15.0	59.0		11.0	55.0		50.0	50.0		50.0	50.0	
Total Split (%)	12.5%	49.2%		9.2%	45.8%		41.7%	41.7%		41.7%	41.7%	
Maximum Green (s)	10.0	52.4		6.0	48.4		40.5	40.5		40.5	40.5	
Yellow Time (s)	3.0	4.2		3.0	4.2		4.4	4.4		4.4	4.4	
All-Red Time (s)	2.0	2.4		2.0	2.4		5.1	5.1		5.1	5.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.6		5.0	6.6		9.5	9.5		9.5	9.5	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes			Yes								
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		14.0			14.0		23.0	23.0		23.0	23.0	
Pedestrian Calls (#/hr)		6			1		7	7		4	4	
Act Effect Green (s)	9.5	73.8		6.0	70.3		19.1	19.1		19.1	19.1	
Actuated g/C Ratio	0.08	0.62		0.05	0.59		0.16	0.16		0.16	0.16	
v/c Ratio	0.71	0.46		1.04	0.36		0.28	0.16		0.67	0.47	
Control Delay	83.0	14.2		147.9	18.1		46.0	19.6		61.1	14.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	83.0	14.2		147.9	18.1		46.0	19.6		61.1	14.1	
LOS	F	B		F	B		D	B		E	B	
Approach Delay		20.0			32.0			32.4			34.5	
Approach LOS		B			C			C			C	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 44.8 (37%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 85
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.04
 Intersection Signal Delay: 26.9 Intersection LOS: C
 Intersection Capacity Utilization 73.2% ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 3: Dixie Road & Kingston Road



Queues
3: Dixie Road & Kingston Road

<2028 Future Total>AM
12-20-2024

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	87	941	85	705	45	48	149	195
v/c Ratio	0.71	0.46	1.04	0.36	0.28	0.16	0.67	0.47
Control Delay	83.0	14.2	147.9	18.1	46.0	19.6	61.1	14.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	83.0	14.2	147.9	18.1	46.0	19.6	61.1	14.1
Queue Length 50th (m)	20.2	56.6	~22.0	53.4	9.5	3.3	33.7	7.9
Queue Length 95th (m)	#43.5	91.6	m#53.3	72.4	18.6	12.4	49.6	25.6
Internal Link Dist (m)		872.3		167.2		20.0		212.2
Turn Bay Length (m)	145.4		51.0		13.0		16.0	
Base Capacity (vph)	130	2036	82	1940	337	618	470	697
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.67	0.46	1.04	0.36	0.13	0.08	0.32	0.28

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.
 m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings
4: Street B & Shopping Plaza Entrance

<2028 Future Total>AM
12-20-2024

	↖	↗	↖	↖	↘	↙
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖			↖	↘	↙
Traffic Volume (vph)	28	27	6	11	28	40
Future Volume (vph)	28	27	6	11	28	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.934			0.920		
Flt Protected	0.975			0.982		
Satd. Flow (prot)	1716	0	0	1887	1739	0
Flt Permitted	0.975			0.982		
Satd. Flow (perm)	1716	0	0	1887	1739	0
Link Speed (k/h)	30			30	30	
Link Distance (m)	193.0			49.0	49.9	
Travel Time (s)	23.2			5.9	6.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	4%	0%	0%	4%	0%
Adj. Flow (vph)	30	29	7	12	30	43
Shared Lane Traffic (%)						
Lane Group Flow (vph)	59	0	0	19	73	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24	14	24			14
Sign Control	Stop			Stop	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	15.9%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
4: Street B & Shopping Plaza Entrance

<2028 Future Total>AM
12-20-2024


	↖	↗	↖	↖	↘	↙
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖			↖	↘	↙
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	28	27	6	11	28	40
Future Volume (vph)	28	27	6	11	28	40
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	30	29	7	12	30	43
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total (vph)	59	19	73			
Volume Left (vph)	30	7	0			
Volume Right (vph)	29	0	43			
Hadj (s)	-0.16	0.07	-0.33			
Departure Headway (s)	3.9	4.2	3.7			
Degree Utilization, x	0.06	0.02	0.08			
Capacity (veh/h)	892	838	948			
Control Delay (s)	7.2	7.3	7.0			
Approach Delay (s)	7.2	7.3	7.0			
Approach LOS	A	A	A			

Intersection Summary

Delay	7.1
Level of Service	A
Intersection Capacity Utilization	15.9%
ICU Level of Service	A
Analysis Period (min)	15


Lanes, Volumes, Timings
5: Street B & Street A

<2028 Future Total>AM
12-20-2024

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	1	15	0	1	42	1
Future Volume (vph)	1	15	0	1	42	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.873	0.865				
Fit Protected	0.997					0.953
Satd. Flow (prot)	1579	0	1662	0	0	1779
Fit Permitted	0.997					0.953
Satd. Flow (perm)	1579	0	1662	0	0	1779
Link Speed (k/h)	30		30		30	
Link Distance (m)	193.3		78.3		49.0	
Travel Time (s)	23.2		9.4		5.9	
Confl. Peds. (#/hr)	1	4				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	100%	0%	2%	0%	3%	0%
Adj. Flow (vph)	1	16	0	1	46	1
Shared Lane Traffic (%)						
Lane Group Flow (vph)	17	0	1	0	0	47
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0		0.0	
Link Offset(m)	0.0		0.0		0.0	
Crosswalk Width(m)	1.6		1.6		1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14		24	
Sign Control	Stop		Stop		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	20.3%		ICU Level of Service A			
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
5: Street B & Street A

<2028 Future Total>AM
12-20-2024

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop		Stop	
Traffic Volume (vph)	1	15	0	1	42	1
Future Volume (vph)	1	15	0	1	42	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1	16	0	1	46	1
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total (vph)	17	1	47			
Volume Left (vph)	1	0	46			
Volume Right (vph)	16		1		0	
Hadj (s)	-0.45	-0.60	0.25			
Departure Headway (s)	3.6	3.4	4.2			
Degree Utilization, x	0.02	0.00	0.05			
Capacity (veh/h)	993	1054	853			
Control Delay (s)	6.6	6.4	7.4			
Approach Delay (s)	6.6	6.4	7.4			
Approach LOS	A	A	A			
Intersection Summary						
Delay			7.2			
Level of Service	A					
Intersection Capacity Utilization	20.3%		ICU Level of Service		A	
Analysis Period (min)	15					

Lanes, Volumes, Timings

6: Liverpool Road & Kingston Road

<2028 Future Total>AM

12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	181	532	277	149	465	50	134	379	146	84	664	145
Future Volume (vph)	181	532	277	149	465	50	134	379	146	84	664	145
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.1	3.4	3.6	3.3	3.7	3.4	3.8	4.1	4.8	4.7	3.8	3.3
Storage Length (m)	188.8	97.9	170.7		117.0	185.5		52.0	49.0		60.5	
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	31.6			22.7			20.8			25.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.97	0.99		0.96	0.99		0.93	0.98		0.96
Frt			0.850			0.850			0.850			0.850
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1671	3299	1538	1694	3510	1579	1774	3700	1647	2026	3618	1516
Fit Permitted	0.950			0.950			0.271			0.491		
Satd. Flow (perm)	1649	3299	1487	1677	3510	1517	501	3700	1536	1024	3618	1452
Right Turn on Red			Yes			Yes			Yes		Yes	
Satd. Flow (RTOR)			166			174			159			158
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		694.6			396.4			257.7			348.6	
Travel Time (s)		41.7			23.8			18.6			25.1	
Confl. Peds. (#/hr)	21		17	17		21	34		44	44		34
Confl. Bikes (#/hr)						1						
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 (%)	2%	7%	5%	3%	4%	0%	4%	3%	8%	0%	2%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	7	0	0	0
Adj. Flow (vph)	197	578	301	162	505	54	146	412	159	91	722	158
Shared Lane Traffic (%)												
Lane Group Flow (vph)	197	578	301	162	505	54	146	412	159	91	722	158
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width(m)		3.3			3.3			4.7			4.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane		Yes									Yes	
Headway Factor	1.08	1.03	1.00	1.04	0.99	1.03	0.97	0.93	0.88	0.86	0.97	1.04
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	

1105-1163 Kingston Road
WSP

Synchro 11 Report
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Lanes, Volumes, Timings

6: Liverpool Road & Kingston Road

<2028 Future Total>AM

12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type	CI+Ex			CI+Ex			CI+Ex			CI+Ex		
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	custom	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6	8		2	4		4
Detector Phase	5	2	2	1	6	6	3	8	2	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	5.0	8.0	20.0	5.0	8.0	8.0
Minimum Split (s)	10.0	36.0	36.0	10.0	36.0	36.0	8.0	51.0	36.0	8.0	51.0	51.0
Total Split (s)	25.0	42.0	42.0	19.0	36.0	36.0	8.0	51.0	42.0	8.0	51.0	51.0
Total Split (%)	20.8%	35.0%	35.0%	15.8%	30.0%	30.0%	6.7%	42.5%	35.0%	6.7%	42.5%	42.5%
Maximum Green (s)	20.0	34.9	34.9	14.0	28.9	28.9	5.0	41.9	34.9	5.0	41.9	41.9
Yellow Time (s)	3.0	4.3	4.3	3.0	4.3	4.3	3.0	3.8	4.3	3.0	3.8	3.8
All-Red Time (s)	2.0	2.8	2.8	2.0	2.8	2.8	0.0	5.3	2.8	0.0	5.3	5.3
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	0.0
Total Lost Time (s)	5.0	7.1	7.1	5.0	7.1	7.1	3.0	9.1	7.1	3.0	9.1	9.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
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	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	C-Max	None	Max	Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		21.0	21.0		21.0	21.0		33.0	21.0		33.0	33.0
Pedestrian Calls (#/hr)		44	44		31	31		61	44		40	40
Act Effect Green (s)	17.8	35.3	35.3	13.6	31.1	31.1	53.0	41.9	35.3	53.0	41.9	41.9
Actuated g/C Ratio	0.15	0.29	0.29	0.11	0.26	0.26	0.44	0.35	0.29	0.44	0.35	0.35
v/c Ratio	0.80	0.60	0.54	0.85	0.56	0.10	0.53	0.32	0.28	0.18	0.57	0.26
Control Delay	93.1	27.7	14.6	87.7	41.8	0.4	28.0	29.5	6.3	19.0	33.9	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	93.1	27.7	14.6	87.7	41.8	0.4	28.0	29.5	6.3	19.0	33.9	5.3
LOS	F	C	B	F	D	A	C	C	A	B	C	A
Approach Delay		36.0			49.0			24.0			27.9	
Approach LOS		D			D			C			C	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 24.4 (20%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 105

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 34.0

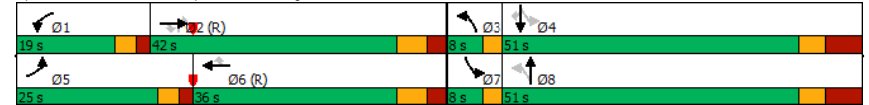
Intersection LOS: C

Intersection Capacity Utilization 95.1%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 6: Liverpool Road & Kingston Road



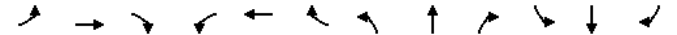
Queues <2028 Future Total>AM
6: Liverpool Road & Kingston Road 12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	197	578	301	162	505	54	146	412	159	91	722	158
w/c Ratio	0.80	0.60	0.54	0.85	0.56	0.10	0.53	0.32	0.28	0.18	0.57	0.26
Control Delay	93.1	27.7	14.6	87.7	41.8	0.4	28.0	29.5	6.3	19.0	33.9	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	93.1	27.7	14.6	87.7	41.8	0.4	28.0	29.5	6.3	19.0	33.9	5.3
Queue Length 50th (m)	48.9	18.3	0.0	37.8	55.5	0.0	19.5	37.1	0.0	11.7	72.2	0.0
Queue Length 95th (m)	#76.3	54.2	37.3	#73.6	73.4	0.0	32.4	50.2	15.4	21.1	91.4	13.9
Internal Link Dist (m)	670.6		372.4			233.7		324.6				
Turn Bay Length (m)	188.8	97.9	170.7	117.0	185.5	52.0	49.0	60.5				
Base Capacity (vph)	278	971	555	197	909	521	274	1291	564	494	1263	609
Starvation Cap Reductn	0	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced w/c Ratio	0.71	0.60	0.54	0.82	0.56	0.10	0.53	0.32	0.28	0.18	0.57	0.26

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

Lanes, Volumes, Timings <2028 Future Total>AM
8: Liverpool Road & Private Access/Pickering Parkway 12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔↔	↔	↔↔	↔	↔	↔↔	↔↔	↔	↔	↔↔	↔
Traffic Volume (vph)	10	17	36	194	19	59	53	528	272	146	871	24
Future Volume (vph)	10	17	36	194	19	59	53	528	272	146	871	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.1	3.1	3.7	3.0	3.4	3.2	2.8	3.6	3.5	3.2	3.5	3.5
Storage Length (m)	0.0	0.0	57.0	62.1	54.4	75.7	132.5	35.5				
Storage Lanes	1	0	1	1	1	1	1	1				
Taper Length (m)	2.5	12.0		29.5		28.9						
Lane Util. Factor	1.00	0.95	0.95	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99	0.897		0.850		0.850		0.850		0.850		
Flt Protected	0.950	0.950		0.950		0.950		0.950		0.950		
Satd. Flow (prot)	1705	3058	0	3113	1858	1204	1645	3505	1523	1675	3500	1521
Flt Permitted	0.000	0.000		0.255		0.382						
Satd. Flow (perm)	0	3058	0	0	1858	1181	440	3505	1483	670	3500	1458
Right Turn on Red	Yes		Yes		Yes		Yes		Yes			
Satd. Flow (RTOR)	39		141		296		144					
Link Speed (k/h)	30		50		50		50					
Link Distance (m)	82.8		328.5		162.3		257.7					
Travel Time (s)	9.9		23.7		11.7		18.6					
Confl. Peds. (#/hr)	7		7		10		11		11		10	
Confl. Bikes (#/hr)	1		1		1		1		1		1	
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%	5%	0%	23%	0%	3%	4%	3%	2%	5%
Bus Blockages (#/hr)	0	0	0	0	0	10	0	2	0	0	0	0
Adj. Flow (vph)	11	18	39	211	21	64	58	574	296	159	947	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	11	57	0	211	21	64	58	574	296	159	947	26
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	6.0		6.0		3.8		3.8		3.8			
Link Offset(m)	0.0		0.0		0.0		0.0		0.0			
Crosswalk Width(m)	1.6		1.6		1.6		1.6		1.6			
Two way Left Turn Lane												
Headway Factor	1.08	1.08	0.99	1.09	1.03	1.12	1.13	1.00	1.03	1.06	1.01	1.01
Turning Speed (k/h)	24	24	14	24	14	24	14	24	14	24	14	14
Number of Detectors	1	2	1	2	1	1	2	1	1	1	2	1
Detector Template	Left	Thru	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Right
Leading Detector (m)	2.0	10.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4		9.4		9.4		9.4					
Detector 2 Size(m)	0.6		0.6		0.6		0.6					

Lanes, Volumes, Timings

<2028 Future Total>AM

8: Liverpool Road & Private Access/Pickering Parkway

12-20-2024

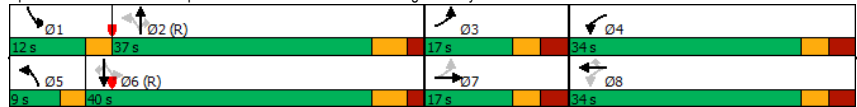


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type	CI+Ex		CI+Ex		CI+Ex		CI+Ex		CI+Ex		CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0		0.0		0.0		0.0		0.0		0.0	
Turn Type	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm
Protected Phases	3	7	4	8	8	5	2	2	6	1	6	6
Permitted Phases	7	8	8	8	8	2	2	2	6	1	6	6
Detector Phase	3	7	4	8	8	5	2	2	1	6	6	6
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	5.0	20.0	20.0	5.0	20.0	20.0	20.0
Minimum Split (s)	15.0	15.0	15.0	34.0	34.0	34.0	8.0	30.0	30.0	8.0	30.0	30.0
Total Split (s)	17.0	17.0	34.0	34.0	34.0	9.0	37.0	37.0	12.0	40.0	40.0	40.0
Total Split (%)	17.0%	17.0%	34.0%	34.0%	34.0%	9.0%	37.0%	37.0%	12.0%	40.0%	40.0%	40.0%
Maximum Green (s)	10.4	10.4	27.4	27.4	27.4	6.0	30.7	30.7	9.0	33.7	33.7	33.7
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.0	4.2	4.2	3.0	4.2	4.2	4.2
All-Red Time (s)	3.3	3.3	3.3	3.3	3.3	0.0	2.1	2.1	0.0	2.1	2.1	2.1
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	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.6	3.0	6.3	6.3	3.0	6.3	6.3	6.3
Lead/Lag												
Lead-Lag Optimize?												
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	3.0
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max	C-Max
Walk Time (s)			19.0	19.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0
Flash Dont Walk (s)			8.0	8.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Pedestrian Calls (#/hr)			0	0	21	21	21	21	21	21	21	21
Act Effect Green (s)	8.0	8.0	12.1	12.1	12.1	61.3	52.1	52.1	66.4	56.1	56.1	56.1
Actuated g/C Ratio	0.08	0.08	0.12	0.12	0.12	0.61	0.52	0.52	0.66	0.56	0.56	0.56
v/c Ratio	0.08	0.20	0.56	0.09	0.24	0.17	0.31	0.32	0.30	0.48	0.03	0.03
Control Delay	44.1	22.1	46.9	38.5	2.1	6.9	14.2	3.8	9.1	16.2	0.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.1	22.1	46.9	38.5	2.1	6.9	14.2	3.8	9.1	16.2	0.0	0.0
LOS	D	C	D	D	A	A	B	A	A	B	B	A
Approach Delay	25.7		36.6		10.4		14.9					
Approach LOS	C		D		B		B					

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 34 (34%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.56
 Intersection Signal Delay: 16.1 Intersection LOS: B
 Intersection Capacity Utilization 56.7% ICU Level of Service B
 Analysis Period (min) 15

Splits and Phases: 8: Liverpool Road & Private Access/Pickering Parkway



Queues

<2028 Future Total>AM

8: Liverpool Road & Private Access/Pickering Parkway

12-20-2024



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Group Flow (vph)	11	57	211	21	64	58	574	296	159	947	26	
v/c Ratio	0.08	0.20	0.56	0.09	0.24	0.17	0.31	0.32	0.30	0.48	0.03	
Control Delay	44.1	22.1	46.9	38.5	2.1	6.9	14.2	3.8	9.1	16.2	0.0	
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	44.1	22.1	46.9	38.5	2.1	6.9	14.2	3.8	9.1	16.2	0.0	
Queue Length 50th (m)	2.0	1.7	20.2	3.7	0.0	2.2	34.6	9.5	11.3	61.5	0.0	
Queue Length 95th (m)	7.4	7.8	30.3	10.1	0.0	m5.6	54.3	19.8	21.5	85.2	0.0	
Internal Link Dist (m)	58.8		304.5		138.3		233.7					
Turn Bay Length (m)			57.0		62.1		54.4		75.7		132.5	
Base Capacity (vph)	177	352	852	509	425	342	1824	913	536	1963	881	
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	0.06	0.16	0.25	0.04	0.15	0.17	0.31	0.32	0.30	0.48	0.03	

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings

<2028 Future Total>AM

9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp

12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	186	188	69	310	173	511	0	0	731	128
Future Volume (vph)	0	0	186	188	69	310	173	511	0	0	731	128
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.5	3.7	3.7	3.4	3.7
Storage Length (m)	0.0	0.0	0.0	0.0	125.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0
Storage Lanes	0		1	1		1	1		0	0		1
Taper Length (m)	2.5			2.5		30.0				2.5		
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	0.91	1.00
Ped Bike Factor							1.00					0.96
Frt			0.865			0.850						0.850
Fit Protected				0.950	0.977		0.950					
Satd. Flow (prot)	0	0	1108	1700	1767	1551	1460	3433	0	0	4877	1601
Fit Permitted				0.950	0.977		0.280					
Satd. Flow (perm)	0	0	1108	1700	1767	1551	429	3433	0	0	4877	1538
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)						337						139
Link Speed (kh)		50			50			50			50	
Link Distance (m)		433.1			226.7			372.2			162.3	
Travel Time (s)		31.2			16.3			26.8			11.7	
Confl. Peds. (#/hr)							7		14	14		7
Confl. Bikes (#/hr)								4				
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%	2%	50%	2%	0%	3%	25%	4%	4%	2%	4%	2%
Adj. Flow (vph)	0	0	202	204	75	337	188	555	0	0	795	139
Shared Lane Traffic (%)				32%								
Lane Group Flow (vph)	0	0	202	139	140	337	188	555	0	0	795	139
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	1.01	0.99	1.01	0.99	0.99	1.03	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors			1	1	2	1	1	2			2	1
Detector Template			Right	Left	Thru	Right	Left	Thru			Thru	Right
Leading Detector (m)			2.0	2.0	10.0	2.0	2.0	10.0			10.0	2.0
Trailing Detector (m)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Position(m)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Size(m)			2.0	2.0	0.6	2.0	2.0	0.6			0.6	2.0
Detector 1 Type			Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 2 Position(m)					9.4			9.4			9.4	
Detector 2 Size(m)					0.6			0.6			0.6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	

Lanes, Volumes, Timings

<2028 Future Total>AM

9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp

12-20-2024

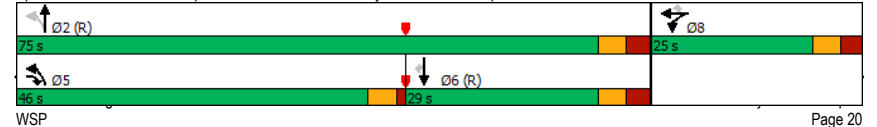


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0				0.0
Turn Type			Over	Split	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases			5	8	8		5	2			6	
Permitted Phases						8	2					6
Detector Phase			5	8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)			5.0	8.0	8.0	8.0	5.0	15.0			15.0	15.0
Minimum Split (s)			9.5	25.0	25.0	25.0	9.5	24.3			24.3	24.3
Total Split (s)			46.0	25.0	25.0	25.0	46.0	75.0			29.0	29.0
Total Split (%)			46.0%	25.0%	25.0%	25.0%	46.0%	75.0%			29.0%	29.0%
Maximum Green (s)			41.5	19.0	19.0	19.0	41.5	68.7			22.7	22.7
Yellow Time (s)			3.5	3.3	3.3	3.3	3.5	3.3			3.3	3.3
All-Red Time (s)			1.0	2.7	2.7	2.7	1.0	3.0			3.0	3.0
Lost Time Adjust (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Lost Time (s)			4.5	6.0	6.0	6.0	4.5	6.3			6.3	6.3
Lead/Lag			Lead				Lead				Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)			3.0	3.0	3.0	3.0	3.0	3.0			3.0	3.0
Recall Mode			None	None	None	None	None	C-Max			C-Max	C-Max
Walk Time (s)				14.0	14.0	14.0		13.0			13.0	13.0
Flash Dont Walk (s)				5.0	5.0	5.0		5.0			5.0	5.0
Pedestrian Calls (#/hr)				0	0	0		15			17	17
Act Effct Green (s)			24.0	13.7	13.7	13.7	75.8	74.0			45.6	45.6
Actuated g/C Ratio			0.24	0.14	0.14	0.14	0.76	0.74			0.46	0.46
v/c Ratio			0.76	0.60	0.58	0.67	0.33	0.22			0.36	0.18
Control Delay			52.6	50.7	49.5	11.3	5.5	4.7			11.9	1.8
Queue Delay			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay			52.6	50.7	49.5	11.3	5.5	4.7			11.9	1.8
LOS			D	D	D	B	A	A			B	A
Approach Delay			52.6			28.9		4.9			10.4	
Approach LOS			D			C		A			B	

Intersection Summary

Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	100
Offset:	38 (38%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle:	70
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.76
Intersection Signal Delay:	16.7
Intersection LOS:	B
Intersection Capacity Utilization:	47.5%
ICU Level of Service:	A
Analysis Period (min):	15

Splits and Phases: 9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp



Queues

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9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp

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Lane Group	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	202	139	140	337	188	555	795	139
w/c Ratio	0.76	0.60	0.58	0.67	0.33	0.22	0.36	0.18
Control Delay	52.6	50.7	49.5	11.3	5.5	4.7	11.9	1.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.6	50.7	49.5	11.3	5.5	4.7	11.9	1.8
Queue Length 50th (m)	36.5	27.1	27.2	0.0	8.2	14.5	19.8	0.2
Queue Length 95th (m)	54.1	44.3	44.3	23.2	18.0	25.1	32.6	2.4
Internal Link Dist (m)			202.7			348.2	138.3	
Turn Bay Length (m)				125.0	50.0			
Base Capacity (vph)	459	323	335	567	753	2541	2221	776
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced w/c Ratio	0.44	0.43	0.42	0.59	0.25	0.22	0.36	0.18

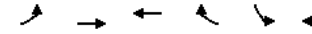
Intersection Summary

Lanes, Volumes, Timings

<2028 Future Total>AM

10: Kingston Road & Fairport Road

12-20-2024



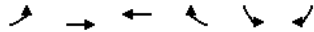
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø1
Lane Configurations	↘	↗	↗		↘	↗	
Traffic Volume (vph)	96	738	658	99	182	229	
Future Volume (vph)	96	738	658	99	182	229	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (m)	3.0	3.6	3.5	3.7	3.6	4.5	
Grade (%)		6%	0%			0%	
Storage Length (m)	75.0			18.5	15.5	0.0	
Storage Lanes	1			0	1	1	
Taper Length (m)	2.5				31.3		
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00	
Frnt			0.980			0.850	
Fit Protected	0.950				0.950		
Satd. Flow (prot)	1602	3335	3379	0	1736	1708	
Fit Permitted	0.950				0.950		
Satd. Flow (perm)	1602	3335	3379	0	1736	1708	
Right Turn on Red				Yes		Yes	
Satd. Flow (RTOR)			17			249	
Link Speed (k/h)		60	60		40		
Link Distance (m)		424.0	896.3		280.0		
Travel Time (s)		25.4	53.8		25.2		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Heavy Vehicles (%)	2%	5%	3%	7%	4%	4%	
Bus Blockages (#/hr)	0	0	0	9	0	0	
Adj. Flow (vph)	104	802	715	108	198	249	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	104	802	823	0	198	249	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Left	Left	Right	Left	Right	
Median Width(m)		3.0	3.0		3.6		
Link Offset(m)		0.0	0.0		0.0		
Crosswalk Width(m)		1.6	1.6		1.6		
Two way Left Turn Lane		Yes					
Headway Factor	1.14	1.04	1.01	0.99	1.00	0.88	
Turning Speed (k/h)		24		14	24	14	
Number of Detectors	1	2	2		1	1	
Detector Template	Left	Thru	Thru		Left	Right	
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0	
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	0.6		2.0	2.0	
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4	9.4				
Detector 2 Size(m)		0.6	0.6				
Detector 2 Type		CI+Ex	CI+Ex				
Detector 2 Channel							

Lanes, Volumes, Timings

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10: Kingston Road & Fairport Road

12-20-2024



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø1
Detector 2 Extend (s)		0.0	0.0				
Turn Type	Prot	NA	NA		Prot	Perm	
Protected Phases	5	2	6		4		1
Permitted Phases						4	
Detector Phase	5	2	6		4	4	
Switch Phase							
Minimum Initial (s)	5.0	20.0	20.0		8.0	8.0	5.0
Minimum Split (s)	10.0	32.3	32.3		38.1	38.1	8.0
Total Split (s)	22.0	79.0	65.0		43.0	43.0	8.0
Total Split (%)	16.9%	60.8%	50.0%		33.1%	33.1%	6%
Maximum Green (s)	17.0	72.7	58.7		35.7	35.7	5.0
Yellow Time (s)	3.0	4.3	4.3		3.3	3.3	3.0
All-Red Time (s)	2.0	2.0	2.0		4.0	4.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.3	6.3		7.3	7.3	
Lead/Lag	Lead	Lag	Lag				Lead
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	0.2	0.2		3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max		None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0	5.0
Flash Dont Walk (s)		19.0	19.0		23.0	23.0	0.0
Pedestrian Calls (#/hr)		0	1		2	2	20
Act Effect Green (s)	13.3	90.9	77.4		20.7	20.7	
Actuated g/C Ratio	0.10	0.70	0.60		0.16	0.16	
v/c Ratio	0.64	0.34	0.41		0.72	0.52	
Control Delay	90.8	1.3	15.8		65.5	9.1	
Queue Delay	0.0	0.0	0.0		0.0	0.0	
Total Delay	90.8	1.3	15.8		65.5	9.1	
LOS	F	A	B		E	A	
Approach Delay		11.6	15.8		34.1		
Approach LOS		B	B		C		

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 95 (73%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 85

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.72

Intersection Signal Delay: 17.8

Intersection LOS: B

Intersection Capacity Utilization 52.2%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 10: Kingston Road & Fairport Road



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WSP

Synchro 11 Report
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Queues

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10: Kingston Road & Fairport Road

12-20-2024



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	104	802	823	198	249
v/c Ratio	0.64	0.34	0.41	0.72	0.52
Control Delay	90.8	1.3	15.8	65.5	9.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	90.8	1.3	15.8	65.5	9.1
Queue Length 50th (m)	28.3	2.6	54.9	49.0	0.0
Queue Length 95th (m)	47.5	6.9	87.6	68.5	20.6
Internal Link Dist (m)		400.0	872.3	256.0	
Turn Bay Length (m)	75.0			15.5	
Base Capacity (vph)	209	2331	2018	476	649
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.50	0.34	0.41	0.42	0.38

Intersection Summary

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WSP

Synchro 11 Report
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Lanes, Volumes, Timings

<2028 Future Total>AM

11: Hwy 401 WB Ramps & Kingston Road

12-20-2024

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↖	↑↑	↖	↗
Traffic Volume (vph)	772	12	284	622	461	65
Future Volume (vph)	772	12	284	622	461	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.0	3.7	2.7	3.8	3.8	3.7
Grade (%)	6%			0%	0%	
Storage Length (m)		0.0	47.5		0.0	52.0
Storage Lanes		0	1		2	1
Taper Length (m)			22.3		2.5	
Lane Util. Factor	0.95	0.95	1.00	0.95	0.97	1.00
Frt	0.998					0.850
Fit Protected			0.950		0.950	
Satd. Flow (prot)	3479	0	1593	3548	3442	1633
Fit Permitted			0.950		0.950	
Satd. Flow (perm)	3479	0	1593	3548	3442	1633
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	1					71
Link Speed (k/h)	60			60	50	
Link Distance (m)	268.7			424.0	216.6	
Travel Time (s)	16.1			25.4	15.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	0%	2%	4%	4%	0%
Adj. Flow (vph)	839	13	309	676	501	71
Shared Lane Traffic (%)						
Lane Group Flow (vph)	852	0	309	676	501	71
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.1			3.1	7.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	0.98	1.03	1.14	0.97	0.97	0.99
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	10.0		2.0	10.0	2.0	2.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Size(m)	0.6		2.0	0.6	2.0	2.0
Detector 1 Type	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	CI+Ex			CI+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		

Lanes, Volumes, Timings

<2028 Future Total>AM

11: Hwy 401 WB Ramps & Kingston Road

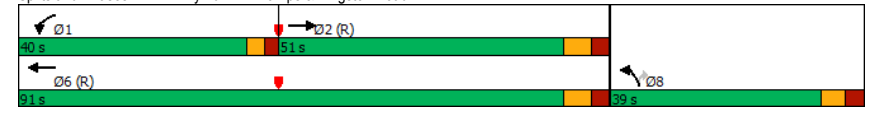
12-20-2024

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Turn Type	NA		Prot	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases						8
Detector Phase	2		1	6	8	8
Switch Phase						
Minimum Initial (s)	20.0		5.0	20.0	8.0	8.0
Minimum Split (s)	50.0		10.0	50.0	39.0	39.0
Total Split (s)	51.0		40.0	91.0	39.0	39.0
Total Split (%)	39.2%		30.8%	70.0%	30.0%	30.0%
Maximum Green (s)	43.8		35.0	83.8	32.3	32.3
Yellow Time (s)	4.2		3.0	4.2	3.7	3.7
All-Red Time (s)	3.0		2.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	7.2		5.0	7.2	6.7	6.7
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?						
Vehicle Extension (s)	0.2		3.0	0.2	3.0	3.0
Recall Mode	C-Max		None	C-Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	35.0			35.0	24.0	24.0
Pedestrian Calls (#/hr)	0			3	3	3
Act Effect Green (s)	57.3		29.4	91.7	24.4	24.4
Actuated g/C Ratio	0.44		0.23	0.71	0.19	0.19
v/c Ratio	0.56		0.86	0.27	0.78	0.20
Control Delay	13.2		68.0	10.8	58.6	10.2
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	13.2		68.0	10.8	58.6	10.2
LOS	B		E	B	E	B
Approach Delay	13.2			28.7	52.6	
Approach LOS	B			C	D	

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 81 (62%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.86
 Intersection Signal Delay: 28.9
 Intersection Capacity Utilization 66.4%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service C

Splits and Phases: 11: Hwy 401 WB Ramps & Kingston Road



Queues <2028 Future Total>AM
11: Hwy 401 WB Ramps & Kingston Road 12-20-2024

	→	↖	←	↙	↘
Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	852	309	676	501	71
w/c Ratio	0.56	0.86	0.27	0.78	0.20
Control Delay	13.2	68.0	10.8	58.6	10.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	13.2	68.0	10.8	58.6	10.2
Queue Length 50th (m)	21.0	82.8	29.8	63.7	0.0
Queue Length 95th (m)	54.5	112.2	72.6	77.4	12.0
Internal Link Dist (m)	244.7		400.0	192.6	
Turn Bay Length (m)		47.5			52.0
Base Capacity (vph)	1534	428	2502	855	459
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.56	0.72	0.27	0.59	0.15

Intersection Summary

Lanes, Volumes, Timings <2028 Future Total>AM
12: Plaza Entrance/Delta Blvd & Kingston Road 12-20-2024

	↖	→	↘	↙	←	↖	↙	↘	↙	↘	↖	↙	↘	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR			
Lane Configurations	↖	↖↗		↖	↖↗		↖	↖↗		↖	↖↗	↖			
Traffic Volume (vph)	76	999	37	96	990	74	140	6	92	42	13	124			
Future Volume (vph)	76	999	37	96	990	74	140	6	92	42	13	124			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900			
Lane Width (m)	3.2	3.4	3.5	3.1	3.4	3.4	3.6	4.6	3.7	3.2	2.8	3.7			
Grade (%)		6%			0%			0%				0%			
Storage Length (m)	51.8		148.5	100.0		18.0	0.0		0.0	0.0		0.0			
Storage Lanes	1		0	1		0	1		0	1		0			
Taper Length (m)	35.3			2.5			2.5			2.5					
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00			
Ped Bike Factor	0.99				1.00		0.99	0.98		1.00		0.98			
Frt		0.995			0.990			0.860				0.864			
Fit Protected	0.950			0.950			0.950			0.950					
Satd. Flow (prot)	1673	3280	0	1671	3380	0	1805	1755	0	1643	1468	0			
Fit Permitted	0.950			0.950			0.662			0.688					
Satd. Flow (perm)	1662	3280	0	1671	3380	0	1249	1755	0	1185	1468	0			
Right Turn on Red			Yes			Yes			Yes			Yes			
Satd. Flow (RTOR)		4			9			100				135			
Link Speed (k/h)		60			60			30				40			
Link Distance (m)		222.7			268.7			130.9				169.9			
Travel Time (s)		13.4			16.1			15.7				15.3			
Confl. Peds. (#/hr)	13					13	6		3	3		6			
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%	4%	0%	2%	3%	3%	0%	0%	2%	5%	0%	0%			
Adj. Flow (vph)	83	1086	40	104	1076	80	152	7	100	46	14	135			
Shared Lane Traffic (%)															
Lane Group Flow (vph)	83	1126	0	104	1156	0	152	107	0	46	149	0			
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No			
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right			
Median Width(m)		3.5			3.5			3.6				3.6			
Link Offset(m)		0.0			0.0			0.0				0.0			
Crosswalk Width(m)		1.6			1.6			1.6				1.6			
Two way Left Turn Lane					Yes										
Headway Factor	1.10	1.07	1.06	1.08	1.03	1.03	1.00	0.87	0.99	1.06	1.13	0.99			
Turning Speed (k/h)	24		14	24		14	24		14	24		14			
Number of Detectors	1	2		1	2		1	2		1	2				
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru				
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0				
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0				
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0				
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6				
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex				
Detector 1 Channel															
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0				
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0				
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0				
Detector 2 Position(m)		9.4			9.4			9.4			9.4				
Detector 2 Size(m)		0.6			0.6			0.6			0.6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex				

Lanes, Volumes, Timings

<2028 Future Total>AM

12: Plaza Entrance/Delta Blvd & Kingston Road

12-20-2024

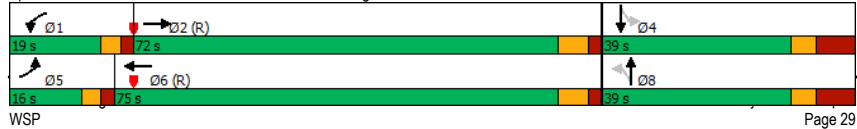


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	10.0	31.9		10.0	31.9		37.6	37.6		37.6	37.6	
Total Split (s)	16.0	72.0		19.0	75.0		39.0	39.0		39.0	39.0	
Total Split (%)	12.3%	55.4%		14.6%	57.7%		30.0%	30.0%		30.0%	30.0%	
Maximum Green (s)	11.0	65.1		14.0	68.1		29.0	29.0		29.0	29.0	
Yellow Time (s)	3.0	4.7		3.0	4.7		3.8	3.8		3.8	3.8	
All-Red Time (s)	2.0	2.2		2.0	2.2		6.2	6.2		6.2	6.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.9		5.0	6.9		10.0	10.0		10.0	10.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	0.2		3.0	0.2		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		18.0			18.0		20.0	20.0		20.0	20.0	
Pedestrian Calls (#/hr)		1			16		0	0		1	1	
Act Effct Green (s)	10.0	75.0		12.1	77.1		20.9	20.9		20.9	20.9	
Actuated g/C Ratio	0.08	0.58		0.09	0.59		0.16	0.16		0.16	0.16	
v/c Ratio	0.65	0.59		0.67	0.58		0.76	0.29		0.24	0.43	
Control Delay	82.0	27.4		68.3	30.6		74.1	11.5		48.1	12.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	82.0	27.4		68.3	30.6		74.1	11.5		48.1	12.9	
LOS	F	C		E	C		E	B		D	B	
Approach Delay		31.2			33.7			48.2			21.2	
Approach LOS		C			C			D			C	

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 66 (51%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.76
 Intersection Signal Delay: 33.1 Intersection LOS: C
 Intersection Capacity Utilization 79.8% ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 12: Plaza Entrance/Delta Blvd & Kingston Road

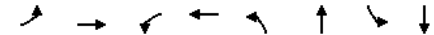


Queues

<2028 Future Total>AM

12: Plaza Entrance/Delta Blvd & Kingston Road

12-20-2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	83	1126	104	1156	152	107	46	149
v/c Ratio	0.65	0.59	0.67	0.58	0.76	0.29	0.24	0.43
Control Delay	82.0	27.4	68.3	30.6	74.1	11.5	48.1	12.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	82.0	27.4	68.3	30.6	74.1	11.5	48.1	12.9
Queue Length 50th (m)	21.6	127.8	26.1	125.1	37.6	1.5	10.4	3.1
Queue Length 95th (m)	#39.8	162.1	43.0	180.6	57.4	16.2	20.7	20.6
Internal Link Dist (m)		198.7		244.7		106.9		145.9
Turn Bay Length (m)	51.8		100.0					
Base Capacity (vph)	141	1894	179	2009	278	469	264	432
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.59	0.58	0.58	0.55	0.23	0.17	0.34

Intersection Summary

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

Lanes, Volumes, Timings
13: Whites Road & Kingston Road

<2028 Future Total>AM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	78	344	294	243	563	283	146	390	408	162	796	175
Future Volume (vph)	78	344	294	243	563	283	146	390	408	162	796	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.6	4.2	3.5	3.7	4.0	3.5	3.9	3.7	3.5	3.9	4.0
Grade (%)	6%		0%		0%		0%		0%		0%	
Storage Length (m)	127.0		123.0	87.1		35.0	72.0		35.0	88.5		47.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	64.0			39.6			66.8			32.6		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Ped Bike Factor	0.98		0.97	0.99		0.95	0.99		0.97	0.99		0.97
Frt		0.850				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1633	3335	1607	1767	3510	1606	1700	5057	1558	1750	5057	1625
Flt Permitted	0.950			0.950			0.232			0.495		
Satd. Flow (perm)	1605	3335	1565	1752	3510	1522	413	5057	1509	902	5057	1574
Right Turn on Red			Yes		Yes		Yes		Yes		Yes	
Satd. Flow (RTOR)			154		241				191			173
Link Speed (k/h)	60		60		60		60		60		60	
Link Distance (m)	297.5		222.7		158.6		385.2					
Travel Time (s)	17.9		13.4		9.5		23.1					
Confl. Peds. (#/hr)	38		13	13		38	20		20	20		20
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 (%)	6%	5%	4%	1%	4%	5%	5%	6%	4%	2%	6%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	2	0	0	2
Adj. Flow (vph)	85	374	320	264	612	308	159	424	443	176	865	190
Shared Lane Traffic (%)												
Lane Group Flow (vph)	85	374	320	264	612	308	159	424	443	176	865	190
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width(m)	3.5		3.5		3.5		3.5		3.5		3.5	
Link Offset(m)	0.0		0.0		0.0		0.0		0.0		0.0	
Crosswalk Width(m)	1.6		1.6		1.6		1.6		1.6		1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.04	0.96	1.01	0.99	0.94	1.01	0.96	1.00	1.01	0.96	0.95
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4		9.4		9.4		9.4		9.4		9.4	
Detector 2 Size(m)	0.6		0.6		0.6		0.6		0.6		0.6	

Lanes, Volumes, Timings
13: Whites Road & Kingston Road

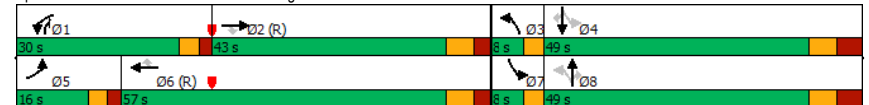
<2028 Future Total>AM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type	Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8	1	7	4	
Permitted Phases			2			6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	1	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	5.0	8.0	5.0	5.0	8.0	8.0
Minimum Split (s)	10.0	43.0	43.0	10.0	43.0	43.0	8.0	49.0	10.0	8.0	49.0	49.0
Total Split (s)	16.0	43.0	43.0	30.0	57.0	57.0	8.0	49.0	30.0	8.0	49.0	49.0
Total Split (%)	12.3%	33.1%	33.1%	23.1%	43.8%	43.8%	6.2%	37.7%	23.1%	6.2%	37.7%	37.7%
Maximum Green (s)	11.0	36.0	36.0	25.0	50.0	50.0	5.0	40.6	25.0	5.0	40.6	40.6
Yellow Time (s)	3.0	4.2	4.2	3.0	4.2	4.2	3.0	4.3	3.0	3.0	4.3	4.3
All-Red Time (s)	2.0	2.8	2.8	2.0	2.8	2.8	0.0	4.1	2.0	0.0	4.1	4.1
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	0.0
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	3.0	8.4	5.0	3.0	8.4	8.4
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	0.2	0.2	3.0	0.2	0.2	3.0	0.2	3.0	3.0	0.2	0.2
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	None	None	Max	Max
Walk Time (s)	7.0		7.0		7.0		7.0		7.0		7.0	
Flash Dont Walk (s)	29.0		29.0		29.0		29.0		33.0		33.0	
Pedestrian Calls (#/hr)	31		31		75		75		65		37	
Act Effect Green (s)	10.1	38.2	38.2	22.8	50.9	50.9	51.0	40.6	66.8	51.0	40.6	40.6
Actuated g/C Ratio	0.08	0.29	0.29	0.18	0.39	0.39	0.39	0.31	0.51	0.39	0.31	0.31
v/c Ratio	0.67	0.38	0.56	0.85	0.45	0.42	0.75	0.27	0.51	0.46	0.55	0.31
Control Delay	83.0	38.5	24.4	63.9	28.7	15.4	52.0	34.1	11.3	31.0	38.7	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	83.0	38.5	24.4	63.9	28.7	15.4	52.0	34.1	11.3	31.0	38.7	7.6
LOS	F	D	C	E	C	B	D	C	B	C	D	A
Approach Delay	37.6			33.1			27.1			32.8		
Approach LOS	D			C			C			C		

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 120
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.85
 Intersection Signal Delay: 32.4 Intersection LOS: C
 Intersection Capacity Utilization 106.1% ICU Level of Service G
 Analysis Period (min) 15

Splits and Phases: 13: Whites Road & Kingston Road



Queues <2028 Future Total>AM
13: Whites Road & Kingston Road 12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	85	374	320	264	612	308	159	424	443	176	865	190
w/c Ratio	0.67	0.38	0.56	0.85	0.45	0.42	0.75	0.27	0.51	0.46	0.55	0.31
Control Delay	83.0	38.5	24.4	63.9	28.7	15.4	52.0	34.1	11.3	31.0	38.7	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	83.0	38.5	24.4	63.9	28.7	15.4	52.0	34.1	11.3	31.0	38.7	7.6
Queue Length 50th (m)	21.4	41.2	36.4	70.7	62.3	36.5	25.9	29.8	33.9	28.9	67.3	3.0
Queue Length 95th (m)	#42.5	55.7	67.4	#101.1	93.3	70.3	#50.2	39.1	57.7	45.5	81.1	19.8
Internal Link Dist (m)		273.5			198.7			134.6			361.2	
Turn Bay Length (m)	127.0		123.0	87.1		35.0	72.0		35.0	88.5		47.0
Base Capacity (vph)	138	979	568	339	1373	742	211	1579	899	386	1579	610
Starvation Cap Reductn	0	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced w/c Ratio	0.62	0.38	0.56	0.78	0.45	0.42	0.75	0.27	0.49	0.46	0.55	0.31

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

Lanes, Volumes, Timings <2028 Future Total>AM
14: Whites Road & Highway 401 EB Off Ramp 12-20-2024



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↑↑↑	↑		↑↑	↑↑	
Traffic Volume (vph)	602	268	0	695	422	0
Future Volume (vph)	602	268	0	695	422	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.7	3.6	3.8	3.7
Storage Length (m)	0.0	225.0	0.0			0.0
Storage Lanes	2	1	0			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	0.97	0.91	1.00	0.95	0.95	1.00
Ped Bike Factor						
Frt	0.994	0.850				
Flt Protected	0.954					
Satd. Flow (prot)	3391	1400	0	3374	3481	0
Flt Permitted	0.954					
Satd. Flow (perm)	3391	1400	0	3374	3481	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	5	262				
Link Speed (k/h)	50			60	60	
Link Distance (m)	295.9			185.9	316.9	
Travel Time (s)	21.3			11.2	19.0	
Confl. Peds. (#/hr)			7			7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	5%	2%	7%	6%	2%
Adj. Flow (vph)	654	291	0	755	459	0
Shared Lane Traffic (%)		10%				
Lane Group Flow (vph)	683	262	0	755	459	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.2			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	0.99	1.00	0.97	0.99
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	2.0	2.0		10.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	2.0		0.6	0.6	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				CI+Ex	CI+Ex	
Detector 2 Channel						

Lanes, Volumes, Timings

<2028 Future Total>AM

14: Whites Road & Highway 401 EB Off Ramp

12-20-2024

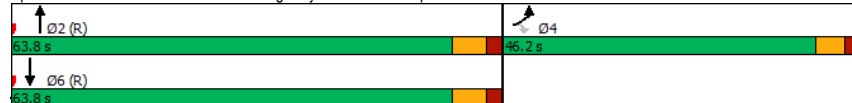


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	8.0	8.0		20.0	20.0	
Minimum Split (s)	28.5	28.5		27.7	27.7	
Total Split (s)	46.2	46.2		63.8	63.8	
Total Split (%)	42.0%	42.0%		58.0%	58.0%	
Maximum Green (s)	40.7	40.7		57.1	57.1	
Yellow Time (s)	3.7	3.7		4.5	4.5	
All-Red Time (s)	1.8	1.8		2.2	2.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.5	5.5		6.7	6.7	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		0.2	0.2	
Recall Mode	None	None		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	16.0	16.0		14.0	14.0	
Pedestrian Calls (#/hr)	3	3		0	0	
Act Effect Green (s)	28.4	28.4		69.4	69.4	
Actuated g/C Ratio	0.26	0.26		0.63	0.63	
v/c Ratio	0.78	0.47		0.35	0.21	
Control Delay	43.7	6.5		10.9	9.6	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	43.7	6.5		10.9	9.6	
LOS	D	A		B	A	
Approach Delay	33.4			10.9	9.6	
Approach LOS	C			B	A	

Intersection Summary

Area Type: Other
 Cycle Length: 110
 Actuated Cycle Length: 110
 Offset: 79.2 (72%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.78
 Intersection Signal Delay: 20.5 Intersection LOS: C
 Intersection Capacity Utilization 49.4% ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 14: Whites Road & Highway 401 EB Off Ramp



Queues

<2028 Future Total>AM

14: Whites Road & Highway 401 EB Off Ramp

12-20-2024



Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	683	262	755	459
v/c Ratio	0.78	0.47	0.35	0.21
Control Delay	43.7	6.5	10.9	9.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	43.7	6.5	10.9	9.6
Queue Length 50th (m)	69.7	0.0	37.5	20.3
Queue Length 95th (m)	82.6	19.2	57.5	33.0
Internal Link Dist (m)	271.9		161.9	292.9
Turn Bay Length (m)		225.0		
Base Capacity (vph)	1257	683	2128	2195
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.54	0.38	0.35	0.21

Intersection Summary

Lanes, Volumes, Timings
15: Dixie Road & Shopping Plaza Entrance

<2028 Future Total>AM
12-20-2024

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	0	85	0	0	209	0
Future Volume (vph)	0	85	0	0	209	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.1	3.7	4.0	3.7	3.7	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.865					
Fit Protected				0.950		
Satd. Flow (prot)	1701	0	1946	0	0	1867
Fit Permitted	0.950					
Satd. Flow (perm)	1701	0	1946	0	0	1867
Link Speed (k/h)	30	40		40		
Link Distance (m)	193.0	106.6		44.0		
Travel Time (s)	23.2	9.6		4.0		
Confl. Peds. (#/hr)	5		8			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	1%	2%
Adj. Flow (vph)	0	92	0	0	227	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	92	0	0	0	0	227
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	4.1	3.6		3.6		
Link Offset(m)	0.0	0.0		0.0		
Crosswalk Width(m)	1.6	1.6		1.6		
Two way Left Turn Lane						
Headway Factor	0.93	0.99	0.94	0.99	0.99	0.94
Turning Speed (k/h)	24	14	14		24	
Sign Control	Stop	Free		Free		

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

HCM Unsignalized Intersection Capacity Analysis
15: Dixie Road & Shopping Plaza Entrance

<2028 Future Total>AM
12-20-2024

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	0	85	0	0	209	0
Future Volume (Veh/h)	0	85	0	0	209	0
Sign Control	Stop	Free		Free		
Grade	0%	0%		0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	92	0	0	227	0
Pedestrians	8			5		
Lane Width (m)	4.1	3.7		4.0		
Walking Speed (m/s)	1.1			1.1		
Percent Blockage	1			1		
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	44					
pX, platoon unblocked						
vC, conflicting volume	462	13	8			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	462	13	8			
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	91	86			
cM capacity (veh/h)	475	1053	1605			

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	92	0	227
Volume Left	0	0	227
Volume Right	92	0	0
cSH	1053	1700	1605
Volume to Capacity	0.09	0.00	0.14
Queue Length 95th (m)	2.2	0.0	3.7
Control Delay (s)	8.7	0.0	7.6
Lane LOS	A	A	A
Approach Delay (s)	8.7	0.0	7.6
Approach LOS	A	A	A

Intersection Summary			
Average Delay	7.9		
Intersection Capacity Utilization	25.2%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings

<2028 Future Total>AM

17: Street B

12-20-2024

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	68	15	0	98	4
Future Volume (vph)	0	68	15	0	98	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Fit Protected					0.954	
Satd. Flow (prot)	1629	0	1883	0	0	1797
Fit Permitted					0.954	
Satd. Flow (perm)	1629	0	1883	0	0	1797
Link Speed (k/h)	30		30		30	
Link Distance (m)	112.2		49.9		96.9	
Travel Time (s)	13.5		6.0		11.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	74	16	0	107	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	74	0	16	0	0	111
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0		0.0	
Link Offset(m)	0.0		0.0		0.0	
Crosswalk Width(m)	1.6		1.6		1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14		24	
Sign Control	Stop		Stop		Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	23.2%
Analysis Period (min)	15
	ICU Level of Service A

HCM Unsignalized Intersection Capacity Analysis

<2028 Future Total>AM

17: Street B

12-20-2024

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop		Stop	
Traffic Volume (vph)	0	68	15	0	98	4
Future Volume (vph)	0	68	15	0	98	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	74	16	0	107	4
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total (vph)	74	16	111			
Volume Left (vph)	0	0	107			
Volume Right (vph)	74	0	0			
Hadj (s)	-0.57	0.03	0.23			
Departure Headway (s)	3.6	4.2	4.3			
Degree Utilization, x	0.07	0.02	0.13			
Capacity (veh/h)	958	829	822			
Control Delay (s)	6.9	7.3	7.9			
Approach Delay (s)	6.9	7.3	7.9			
Approach LOS	A	A	A			

Intersection Summary

Delay	7.5
Level of Service	A
Intersection Capacity Utilization	23.2%
Analysis Period (min)	15
	ICU Level of Service A

Lanes, Volumes, Timings
19: Walnut Lane & Street B

<2028 Future Total>AM
12-20-2024

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	73	26	41	228	169	28
Future Volume (vph)	73	26	41	228	169	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.965					
Flt Protected	0.964			0.992		
Satd. Flow (prot)	1752	0	0	1868	1848	0
Flt Permitted	0.964					
Satd. Flow (perm)	1752	0	0	1868	1848	0
Link Speed (k/h)	30		40		40	
Link Distance (m)	112.2		121.1		114.0	
Travel Time (s)	13.5		10.9		10.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	79	28	45	248	184	30
Shared Lane Traffic (%)						
Lane Group Flow (vph)	107	0	0	293	214	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7		3.3		3.3	
Link Offset(m)	0.0		0.0		0.0	
Crosswalk Width(m)	1.6		1.6		1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24	14	24	14		
Sign Control	Stop			Free		

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	40.5%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
19: Walnut Lane & Street B

<2028 Future Total>AM
12-20-2024

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	73	26	41	228	169	28
Future Volume (Veh/h)	73	26	41	228	169	28
Sign Control	Stop			Free		
Grade	0%					
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	79	28	45	248	184	30
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (m)	114					
pX, platoon unblocked						
vC, conflicting volume	537	199	214			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	537	199	214			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	84	97	97			
cM capacity (veh/h)	488	842	1356			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	107	293	214
Volume Left	79	45	0
Volume Right	28	0	30
cSH	548	1356	1700
Volume to Capacity	0.20	0.03	0.13
Queue Length 95th (m)	5.5	0.8	0.0
Control Delay (s)	13.2	1.4	0.0
Lane LOS	B	A	
Approach Delay (s)	13.2	1.4	0.0
Approach LOS	B		

Intersection Summary

Average Delay	3.0		
Intersection Capacity Utilization	40.5%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings
20: Street A & Walnut Lane

<2028 Future Total>AM
12-20-2024

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↗	
Traffic Volume (vph)	38	0	0	230	0	0
Future Volume (vph)	38	0	0	230	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fit						
Fit Protected						
Satd. Flow (prot)	1883	0	0	1883	1883	0
Fit Permitted						
Satd. Flow (perm)	1883	0	0	1883	1883	0
Link Speed (k/h)	40			40	30	
Link Distance (m)	121.1			433.1	80.3	
Travel Time (s)	10.9			39.0	9.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	41	0	0	250	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	41	0	0	250	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)		14	24		24	14
Sign Control	Stop			Stop	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	15.4%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
20: Street A & Walnut Lane

<2028 Future Total>AM
12-20-2024

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↗	
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	38	0	0	230	0	0
Future Volume (vph)	38	0	0	230	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	41	0	0	250	0	0
Direction, Lane #						
Volume Total (vph)	41	250	0			
Volume Left (vph)	0	0	0			
Volume Right (vph)	0	0	0			
Hadj (s)	0.03	0.03	0.00			
Departure Headway (s)	4.2	4.0	4.5			
Degree Utilization, x	0.05	0.28	0.00			
Capacity (veh/h)	850	901	759			
Control Delay (s)	7.4	8.5	7.5			
Approach Delay (s)	7.4	8.5	0.0			
Approach LOS	A	A	A			

Intersection Summary

Delay	8.3
Level of Service	A
Intersection Capacity Utilization	15.4%
ICU Level of Service	A
Analysis Period (min)	15

Lanes, Volumes, Timings
21: Building Driveways & Street A

<2028 Future Total>AM
12-20-2024

	↖	→	↘	↙	←	↖	↙	↘	↙	↘	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fit												
Fit Protected												
Satd. Flow (prot)	0	1883	0	0	1883	0	0	1883	0	0	1883	0
Fit Permitted												
Satd. Flow (perm)	0	1883	0	0	1883	0	0	1883	0	0	1883	0
Link Speed (k/h)	30		30		30		30		30		30	
Link Distance (m)	193.3		80.3		63.7		34.1		34.1		34.1	
Travel Time (s)	23.2		9.6		7.6		4.1		4.1		4.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	0.0		0.0		0.0		0.0		0.0		0.0	
Link Offset(m)	0.0		0.0		0.0		0.0		0.0		0.0	
Crosswalk Width(m)	1.6		1.6		1.6		1.6		1.6		1.6	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24	24	14	24	24	14	24	14	24	24	14	24
Sign Control	Stop		Stop		Stop		Stop		Stop		Stop	
Intersection Summary												
Area Type:	Other											
Control Type:	Unsignalized											
Intersection Capacity Utilization	0.0%		ICU Level of Service A		ICU Level of Service A		ICU Level of Service A		ICU Level of Service A		ICU Level of Service A	
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis
21: Building Driveways & Street A

<2028 Future Total>AM
12-20-2024

	↖	→	↘	↙	←	↖	↙	↘	↙	↘	↙	↘
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control	Stop		Stop		Stop		Stop		Stop		Stop	
Traffic Volume (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Direction, Lane #												
	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	0	0	0	0								
Volume Left (vph)	0	0	0	0								
Volume Right (vph)	0	0	0	0								
Hadj (s)	0.00	0.00	0.00	0.00								
Departure Headway (s)	3.9	3.9	3.9	3.9								
Degree Utilization, x	0.00	0.00	0.00	0.00								
Capacity (veh/h)	917	917	917	917								
Control Delay (s)	6.9	6.9	6.9	6.9								
Approach Delay (s)	0.0	0.0	0.0	0.0								
Approach LOS	A	A	A	A								
Intersection Summary												
Delay	0.0											
Level of Service	A											
Intersection Capacity Utilization	0.0%		ICU Level of Service		ICU Level of Service		ICU Level of Service		ICU Level of Service		ICU Level of Service	
Analysis Period (min)	15											

Lanes, Volumes, Timings
3: Dixie Road & Kingston Road

<2028 Future Total_PHF>AM
12/20/2024

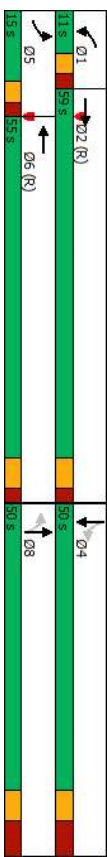
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	80	770	96	78	560	88	41	15	29	137	35	144
Future Volume (vph)	80	770	96	78	560	88	41	15	29	137	35	144
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	2.8	3.6	3.4	2.8	3.5	3.1	3.6	4.0	3.7	3.8	4.2	3.7
Grade (%)		6%			0%			0%			0%	
Storage Length (m)	145.4		64.5	51.0		79.5	13.0		0.0	16.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Tapel Length (m)	66.4			48.0			18.0			25.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	0.99	1.00
Fit	0.983			0.980		0.980	0.901			0.879		
Fit Protected	0.950			0.950		0.950	0.950			0.950		
Satd. Flow (prot)	1564	3305	0	1645	3301	0	1752	1771	0	1827	1759	0
Fit Permitted	0.950			0.950			0.533			0.728		
Satd. Flow (perm)	1553	3305	0	1639	3301	0	1072	1771	0	1397	1759	0
Right Turn on Red			Yes			Yes		Yes			Yes	
Satd. Flow (RTOR)	14			17			29			144		
Link Speed (km/h)	60			60			40			60		
Link Distance (m)	896.3			191.2			44.0			236.2		
Travel Time (s)	53.8			11.5			4.0			14.2		
Confl. Peds. (#/hr)	6		4	4		6	3		2	2		3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	4%	2%	0%	6%	2%	3%	0%	0%	1%	0%	0%
Bus Blockages (#/hr)	0	0	6	0	0	6	0	0	0	0	0	0
Adj. Flow (vph)	80	770	96	78	560	88	41	15	29	137	35	144
Shared Lane Traffic (%)												
Lane Group Flow (vph)	80	866	0	78	648	0	41	44	0	137	179	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Left	Left	Right	Left	Left	Left	Right
Median Width(m)	2.8			2.8			3.8			3.8		
Link Offset(m)	0.0			0.0			0.0			0.0		
Crosswalk Width(m)	4.9			4.9			4.9			4.9		
Two way Left Turn Lane			Yes			Yes						
Headway Factor	1.17	1.04	1.07	1.13	1.01	1.08	1.00	0.94	0.99	0.97	0.92	0.99
Turning Speed (km/h)	24		14	24		14	24		14	24		14
Number of Detectors	0	0	0	0	0	0	0	0	0	1	1	1
Detector Template												
Detector 1 (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.5	7.5	0.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-1.5	-1.5	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-1.5	-1.5	0.0
Detector 1 Size(m)	6.1	1.8	6.1	1.8	6.1	1.8	6.1	1.8	9.0	9.0	9.0	6.1
Detector 1 Type	CH+EX	CH+EX	CH+EX	CH+EX	CH+EX	CH+EX	CH+EX	CH+EX	CH+EX	CH+EX	CH+EX	CH+EX
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Turn Type	Prot	NA	Prot	NA	Prot	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases	5	2		1	6		8			4		

Lanes, Volumes, Timings
3: Dixie Road & Kingston Road

<2028 Future Total_PHF>AM
12/20/2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Detector Phase	5	2		1	6		8		8	4		4
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0		8.0		8.0	8.0		8.0
Minimum Split (s)	10.0	28.0		10.0	28.0		43.0		43.0	41.0		41.0
Total Split (s)	15.0	59.0		11.0	56.0		50.0		50.0	50.0		50.0
Total Split (%)	12.5%	49.2%		9.2%	45.8%		41.7%		41.7%	41.7%		41.7%
Maximum Green (s)	10.0	52.4		6.0	48.4		40.5		40.5	40.5		40.5
Yellow Time (s)	3.0	4.2		3.0	4.2		4.4		4.4	4.4		4.4
All-Red Time (s)	2.0	2.4		2.0	2.4		5.1		5.1	5.1		5.1
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Total Lost Time (s)	5.0	6.6		5.0	6.6		9.5		9.5	9.5		9.5
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimizer?	Yes			Yes								
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0		3.0	3.0		3.0
Recall Mode	None	C-Max		None	C-Max		None		None	None		None
Walk Time (s)	7.0			7.0			7.0		7.0	7.0		7.0
Flash Don't Walk (s)	14.0			14.0			23.0		23.0	23.0		23.0
Pedestrian Calls (#/hr)	6			7			7		7	4		4
Act Effct Green (s)	9.3	74.6		6.0	73.6		18.3		18.3	18.3		18.3
Activated g/c Ratio	0.08	0.62		0.05	0.61		0.15		0.15	0.15		0.15
w/c Ratio	0.66	0.42		0.95	0.32		0.25		0.15	0.64		0.46
Control Delay	788	13.2		125.1	16.5		45.4		20.2	60.1		14.4
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Total Delay	788	13.2		125.1	16.5		45.4		20.2	60.1		14.4
LOS	E	B		F	B		D		C	E		B
Approach Delay												
Approach LOS			B			C						C
Intersection Summary	Other											
Area Type:	Other											
Cycle Length:	120											
Actuated Cycle Length:	120											
Offset:	44.8 (37%), Referenced to phase 2:EBT and 6:WBT, Start of Green											
Natural Cycle:	85											
Control Type:	Actuated-Coordinated											
Maximum w/c Ratio:	0.95											
Intersection Signal Delay:	25.0											
Intersection Capacity Utilization:	73.2%											
Analysis Period (min):	15											
	Intersection LOS: C						ICU Level of Service D					

Splits and Phases: 3: Dixie Road & Kingston Road



Lanes, Volumes, Timings
1: Walnut Lane & Kingston Road

<2028 Future Total>PM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Traffic Volume (vph)	38	1449	270	128	646	43	307	0	337	24	16	26
Future Volume (vph)	38	1449	270	128	646	43	307	0	337	24	16	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.0	3.6	3.5	3.0	3.6	3.7	3.3	3.5	3.7	3.2	3.7	3.7
Storage Length (m)	26.0		25.8	37.0		0.0	63.2		0.0	18.5		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	24.0			26.0			24.4			18.1		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.99		1.00	1.00		0.98		0.98	0.99	0.98	
Frt		0.976			0.991			0.850			0.907	
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1685	3444	0	1685	3505	0	1745	0	1633	1725	1709	0
Fit Permitted	0.950			0.950			0.728			0.950		
Satd. Flow (perm)	1677	3444	0	1682	3505	0	1313	0	1603	1713	1709	0
Right Turn on Red			Yes			Yes		Yes			Yes	
Satd. Flow (RTOR)		25			9				91			28
Link Speed (k/h)		60			60			40				40
Link Distance (m)		129.3			694.6			114.0				179.7
Travel Time (s)		7.8			41.7			10.3				16.2
Confl. Peds. (#/hr)	5		7	7		5	14		5	5		14
Confl. Bikes (#/hr)			1									
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%	2%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	3	0	0	0	0	0	0	0	0	0
Adj. Flow (vph)	41	1575	293	139	702	47	334	0	366	26	17	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	41	1868	0	139	749	0	334	0	366	26	45	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.1			3.1			3.3				3.3
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			1.6			4.9				4.9
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.09	1.00	1.01	1.09	1.00	0.99	1.04	1.01	0.99	1.06	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	0	0		0	0		1		1	0		0
Detector Template								Right				
Leading Detector (m)	0.0	0.0		0.0	0.0		7.5		6.1	0.0		0.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		-1.5		0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		-1.5		0.0	0.0		0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8		9.0		6.1	6.1		1.8
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Turn Type	Prot	NA		Prot	NA		Perm		Perm	Perm		NA
Protected Phases	5	2		1	6							4

Lanes, Volumes, Timings
1: Walnut Lane & Kingston Road

<2028 Future Total>PM
12-20-2024

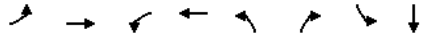
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases										8	8	4
Detector Phase	5	2			1	6			8	8	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0			5.0	20.0			8.0	8.0	8.0	8.0
Minimum Split (s)	10.0	33.0			10.0	33.0			38.0	38.0	38.0	38.0
Total Split (s)	10.0	76.0			15.0	81.0			39.0	39.0	39.0	39.0
Total Split (%)	7.7%	58.5%			11.5%	62.3%			30.0%	30.0%	30.0%	30.0%
Maximum Green (s)	5.0	69.4			10.0	74.4			31.0	31.0	31.0	31.0
Yellow Time (s)	3.0	4.4			3.0	4.4			3.3	3.3	3.3	3.3
All-Red Time (s)	2.0	2.2			2.0	2.2			4.7	4.7	4.7	4.7
Lost Time Adjust (s)	0.0	0.0			0.0	0.0			0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.6			5.0	6.6			8.0	8.0	8.0	8.0
Lead/Lag	Lead	Lag			Lead	Lag						
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0			3.0	3.0			3.0	3.0	3.0	3.0
Recall Mode	None	C-Max			None	C-Max			None	None	None	None
Walk Time (s)		7.0			7.0	7.0			7.0	7.0	7.0	7.0
Flash Dont Walk (s)		19.0			19.0	19.0			22.0	22.0	22.0	22.0
Pedestrian Calls (#/hr)		8			8	8			2	2	9	9
Act Effect Green (s)	5.0	69.4			10.0	76.4			31.0	31.0	31.0	31.0
Actuated g/C Ratio	0.04	0.53			0.08	0.59			0.24	0.24	0.24	0.24
v/c Ratio	0.64	1.01			1.08	0.36			1.07	0.81	0.06	0.11
Control Delay	84.4	46.1			165.2	5.5			116.8	50.1	39.0	20.3
Queue Delay	0.0	0.0			0.0	0.0			0.0	0.0	0.0	0.0
Total Delay	84.4	46.1			165.2	5.5			116.8	50.1	39.0	20.3
LOS	F	D			F	A			F	D	D	C
Approach Delay		47.0				30.5			81.9			27.1
Approach LOS		D				C			F			C
Intersection Summary												
Area Type:	Other											
Cycle Length:	130											
Actuated Cycle Length:	130											
Offset:	77 (59%), Referenced to phase 2:EBT and 6:WBT, Start of Green											
Natural Cycle:	135											
Control Type:	Actuated-Coordinated											
Maximum v/c Ratio:	1.08											
Intersection Signal Delay:	49.3						Intersection LOS: D					
Intersection Capacity Utilization:	96.1%						ICU Level of Service F					
Analysis Period (min):	15											
Splits and Phases:	1: Walnut Lane & Kingston Road											

Queues

<2028 Future Total>PM

1: Walnut Lane & Kingston Road

12-20-2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBR	SBL	SBT
Lane Group Flow (vph)	41	1868	139	749	334	366	26	45
w/c Ratio	0.64	1.01	1.08	0.36	1.07	0.81	0.06	0.11
Control Delay	84.4	46.1	165.2	5.5	116.8	50.1	39.0	20.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	84.4	46.1	165.2	5.5	116.8	50.1	39.0	20.3
Queue Length 50th (m)	0.0	~153.7	~40.6	14.5	~94.4	68.6	5.2	3.4
Queue Length 95th (m)	m15.2	#300.5	#83.4	21.5	#152.5	#116.0	12.9	13.3
Internal Link Dist (m)		105.3		670.6				155.7
Turn Bay Length (m)	26.0		37.0		63.2		18.5	
Base Capacity (vph)	64	1850	129	2063	313	451	408	428
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced w/c Ratio	0.64	1.01	1.08	0.36	1.07	0.81	0.06	0.11

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.

m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings

<2028 Future Total>PM

2: Street B & Kingston Road

12-20-2024



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑		↑↑		↑
Traffic Volume (vph)	1647	84	0	990	0	107
Future Volume (vph)	1647	84	0	990	0	107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.3	3.7	3.5	3.7	4.5
Storage Length (m)		45.0	0.0		0.0	0.0
Storage Lanes		1	0		0	1
Taper Length (m)			2.5		2.5	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Ped Bike Factor						
Frt		0.850				0.865
Flt Protected						
Satd. Flow (prot)	3500	1561	0	3500	0	1808
Flt Permitted						
Satd. Flow (perm)	3500	1561	0	3500	0	1808
Link Speed (k/h)	60			60	30	
Link Distance (m)	191.2			129.3	96.9	
Travel Time (s)	11.5			7.8	11.6	
Confl. Peds. (#/hr)		3		3		
Confl. Bikes (#/hr)		1				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	2%	2%	2%	0%
Adj. Flow (vph)	1790	91	0	1076	0	116
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1790	91	0	1076	0	116
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.0			3.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	1.01	1.04	0.99	1.01	0.99	0.88
Turning Speed (k/h)		14	24		24	14
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 58.8%

ICU Level of Service B

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
2: Street B & Kingston Road

<2028 Future Total>PM
12-20-2024

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑		↑↑		↑
Traffic Volume (veh/h)	1647	84	0	990	0	107
Future Volume (Veh/h)	1647	84	0	990	0	107
Sign Control	Free		Free		Stop	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1790	91	0	1076	0	116
Pedestrians	3					
Lane Width (m)					4.5	
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type	TWLTL		TWLTL			
Median storage (veh)	2		2			
Upstream signal (m)	191		129			
pX, platoon unblocked			0.59		0.64 0.59	
vC, conflicting volume			1793		2331 898	
vC1, stage 1 conf vol			1793			
vC2, stage 2 conf vol			538			
vCu, unblocked vol			941		1188 0	
tC, single (s)			4.1		6.8 6.9	
tC, 2 stage (s)			5.8			
tF (s)			2.2		3.5 3.3	
p0 queue free %			100		100 82	
cM capacity (veh/h)			423		192 637	
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	895	895	91	538	538	116
Volume Left	0	0	0	0	0	0
Volume Right	0	0	91	0	0	116
cSH	1700	1700	1700	1700	1700	637
Volume to Capacity	0.53	0.53	0.05	0.32	0.32	0.18
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	5.0
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	11.9
Lane LOS	B					
Approach Delay (s)	0.0		0.0		11.9	
Approach LOS	B					
Intersection Summary						
Average Delay	0.4					
Intersection Capacity Utilization	58.8%		ICU Level of Service		B	
Analysis Period (min)	15					

Lanes, Volumes, Timings
3: Dixie Road & Kingston Road

<2028 Future Total>PM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑		↑	↑↑		↑	↑		↑	↑	↑
Traffic Volume (vph)	204	1516	153	40	783	165	120	54	63	144	28	92
Future Volume (vph)	204	1516	153	40	783	165	120	54	63	144	28	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	2.8	3.6	3.4	2.8	3.5	3.1	3.6	4.0	3.7	3.8	4.2	3.7
Grade (%)	6%		0%		0%		0%		0%		0%	
Storage Length (m)	145.4		64.5	51.0		79.5	13.0		0.0	16.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	66.4			48.0			18.0			25.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	1.00		1.00	0.99		0.99	0.99	0.99
Frt	0.986		0.974		0.920		0.885					
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1579	3373	0	1597	3407	0	1770	1786	0	1827	1730	0
Fit Permitted	0.950			0.950			0.674			0.676		
Satd. Flow (perm)	1578	3373	0	1594	3407	0	1250	1786	0	1290	1730	0
Right Turn on Red	Yes		Yes		Yes		Yes		Yes			
Satd. Flow (RTOR)	13		24		42		100		Yes			
Link Speed (k/h)	60		60		40		60		60			
Link Distance (m)	896.3		191.2		44.0		236.2		14.2			
Travel Time (s)	53.8		11.5		4.0		14.2		4			
Confl. Peds. (#/hr)	1		6	6		1	4		7	7		4
Confl. Bikes (#/hr)	1											
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 (%)	1%	2%	2%	3%	2%	0%	2%	0%	2%	1%	0%	3%
Bus Blockages (#/hr)	0	0	5	0	0	5	0	0	0	0	0	0
Adj. Flow (vph)	222	1648	166	43	851	179	130	59	68	157	30	100
Shared Lane Traffic (%)												
Lane Group Flow (vph)	222	1814	0	43	1030	0	130	127	0	157	130	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	2.8		2.8		3.8		3.8		3.8			
Link Offset(m)	0.0		0.0		0.0		0.0		0.0			
Crosswalk Width(m)	4.9		4.9		4.9		4.9		4.9			
Two way Left Turn Lane	Yes											
Headway Factor	1.17	1.04	1.07	1.13	1.01	1.08	1.00	0.94	0.99	0.97	0.92	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	0	0		0	0		0	0		1	1	
Detector Template												
Leading Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		7.5	7.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		-1.5	-1.5	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		-1.5	-1.5	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		9.0	9.0	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	

Lanes, Volumes, Timings
3: Dixie Road & Kingston Road

<2028 Future Total>PM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	5	2		1	6			8			4	4
Permitted Phases							8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	10.0	28.0		10.0	28.0		41.0	41.0		41.0	41.0	
Total Split (s)	26.0	79.0		10.0	63.0		41.0	41.0		41.0	41.0	
Total Split (%)	20.0%	60.8%		7.7%	48.5%		31.5%	31.5%		31.5%	31.5%	
Maximum Green (s)	21.0	72.4		5.0	56.4		31.5	31.5		31.5	31.5	
Yellow Time (s)	3.0	4.2		3.0	4.2		4.4	4.4		4.4	4.4	
All-Red Time (s)	2.0	2.4		2.0	2.4		5.1	5.1		5.1	5.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.6		5.0	6.6		9.5	9.5		9.5	9.5	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		14.0			14.0		23.0	23.0		23.0	23.0	
Pedestrian Calls (#/hr)		4			6		2	2		3	3	
Act Effct Green (s)	20.3	84.7		5.0	67.5		21.2	21.2		21.2	21.2	
Actuated g/C Ratio	0.16	0.65		0.04	0.52		0.16	0.16		0.16	0.16	
v/c Ratio	0.90	0.82		0.70	0.58		0.64	0.39		0.75	0.36	
Control Delay	74.0	26.8		111.7	26.3		64.0	34.0		72.2	15.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	74.0	26.8		111.7	26.3		64.0	34.0		72.2	15.8	
LOS	E	C		F	C		E	C		E	B	
Approach Delay		32.0			29.7			49.2			46.6	
Approach LOS		C			C			D			D	

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 115 (88%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 120
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.90
 Intersection Signal Delay: 33.7 Intersection LOS: C
 Intersection Capacity Utilization 84.5% ICU Level of Service E
 Analysis Period (min) 15

Splits and Phases: 3: Dixie Road & Kingston Road



Queues
3: Dixie Road & Kingston Road

<2028 Future Total>PM
12-20-2024

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	222	1814	43	1030	130	127	157	130
v/c Ratio	0.90	0.82	0.70	0.58	0.64	0.39	0.75	0.36
Control Delay	74.0	26.8	111.7	26.3	64.0	34.0	72.2	15.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	74.0	26.8	111.7	26.3	64.0	34.0	72.2	15.8
Queue Length 50th (m)	52.2	225.1	11.7	125.0	31.5	19.4	38.8	6.6
Queue Length 95th (m)	m#83.6	#283.8	m#24.0	m145.5	49.0	35.4	58.2	22.4
Internal Link Dist (m)		872.3		167.2		20.0		212.2
Turn Bay Length (m)	145.4		51.0		13.0		16.0	
Base Capacity (vph)	255	2202	61	1779	302	464	312	494
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.87	0.82	0.70	0.58	0.43	0.27	0.50	0.26

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings
4: Street B & Shopping Plaza Entrance

<2028 Future Total>PM
12-20-2024

	↖	↗	↙	↘	↕	↔
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖			↘	↔	↔
Traffic Volume (vph)	109	26	19	29	21	61
Future Volume (vph)	109	26	19	29	21	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.974			0.900		
Fit Protected	0.961			0.981		
Satd. Flow (prot)	1784	0	0	1885	1729	0
Fit Permitted	0.961			0.981		
Satd. Flow (perm)	1784	0	0	1885	1729	0
Link Speed (k/h)	30			30	30	
Link Distance (m)	193.0			49.0	49.9	
Travel Time (s)	23.2			5.9	6.0	
Confl. Peds. (#/hr)		1				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	4%	0%	0%	0%	0%
Adj. Flow (vph)	118	28	21	32	23	66
Shared Lane Traffic (%)						
Lane Group Flow (vph)	146	0	0	53	89	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	97	97	97			97
Sign Control	Stop			Stop	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	23.7%		ICU Level of Service A			
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
4: Street B & Shopping Plaza Entrance

<2028 Future Total>PM
12-20-2024

	↖	↗	↙	↘	↕	↔
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖			↘	↔	↔
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	109	26	19	29	21	61
Future Volume (vph)	109	26	19	29	21	61
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	118	28	21	32	23	66
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total (vph)	146	53	89			
Volume Left (vph)	118	21	0			
Volume Right (vph)	28	0	66			
Hadj (s)	0.06	0.08	-0.44			
Departure Headway (s)	4.3	4.4	3.8			
Degree Utilization, x	0.17	0.06	0.10			
Capacity (veh/h)	818	781	897			
Control Delay (s)	8.1	7.7	7.2			
Approach Delay (s)	8.1	7.7	7.2			
Approach LOS	A	A	A			
Intersection Summary						
Delay			7.8			
Level of Service			A			
Intersection Capacity Utilization			23.7%	ICU Level of Service		A
Analysis Period (min)			15			

Lanes, Volumes, Timings
5: Street B & Street A

<2028 Future Total>PM
12-20-2024

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	5	25	1	2	39	3
Future Volume (vph)	5	25	1	2	39	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.886		0.910			
Fit Protected	0.992					0.955
Satd. Flow (prot)	1688	0	1748	0	0	1785
Fit Permitted	0.992					0.955
Satd. Flow (perm)	1688	0	1748	0	0	1785
Link Speed (k/h)	30		30			30
Link Distance (m)	193.3		78.3			49.0
Travel Time (s)	23.2		9.4			5.9
Confl. Peds. (#/hr)	5	5				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	3%	0%
Adj. Flow (vph)	5	27	1	2	42	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	32	0	3	0	0	45
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	97	97		97	97	
Sign Control	Stop		Stop			Stop
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	20.5%		ICU Level of Service		A	
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
5: Street B & Street A

<2028 Future Total>PM
12-20-2024

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	5	25	1	2	39	3
Future Volume (vph)	5	25	1	2	39	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	27	1	2	42	3
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total (vph)	32	3	45			
Volume Left (vph)	5	0	42			
Volume Right (vph)	27	2	0			
Hadj (s)	-0.47	-0.40	0.23			
Departure Headway (s)	3.5	3.6	4.2			
Degree Utilization, x	0.03	0.00	0.05			
Capacity (veh/h)	999	984	846			
Control Delay (s)	6.6	6.6	7.4			
Approach Delay (s)	6.6	6.6	7.4			
Approach LOS	A	A	A			
Intersection Summary						
Delay			7.1			
Level of Service			A			
Intersection Capacity Utilization			20.5%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings

<2028 Future Total>PM

6: Liverpool Road & Kingston Road

12-20-2024



Table with 12 columns representing lane groups (EBL, EBT, EBR, WBL, WBT, WBR, NBL, NBT, NBR, SBL, SBT, SBR) and multiple rows of traffic data including Lane Configurations, Traffic Volume (vph), Future Volume (vph), Ideal Flow (vphpl), Lane Width (m), Storage Length (m), Storage Lanes, Taper Length (m), Lane Util. Factor, Ped Bike Factor, Frt, Fit Protected, Satd. Flow (prot), Fit Permitted, Satd. Flow (perm), Right Turn on Red, Satd. Flow (RTOR), Link Speed (kh), Link Distance (m), Travel Time (s), Conf. Peds. (#/hr), Peak Hour Factor, Heavy Vehicles (%), Bus Blockages (#/hr), Adj. Flow (vph), Shared Lane Traffic (%), Lane Group Flow (vph), Enter Blocked Intersection, Lane Alignment, Median Width(m), Link Offset(m), Crosswalk Width(m), Two way Left Turn Lane, Headway Factor, Turning Speed (kh), Number of Detectors, Detector Template, Leading Detector (m), Trailing Detector (m), Detector 1 Position(m), Detector 1 Size(m), Detector 1 Type, Detector 1 Channel, Detector 1 Extend (s), Detector 1 Queue (s), Detector 1 Delay (s), Detector 2 Position(m), Detector 2 Size(m), and Detector 2 Type.

1105-1163 Kingston Road
WSP

Synchro 11 Report
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Lanes, Volumes, Timings

<2028 Future Total>PM

6: Liverpool Road & Kingston Road

12-20-2024



Table with 12 columns representing lane groups (EBL, EBT, EBR, WBL, WBT, WBR, NBL, NBT, NBR, SBL, SBT, SBR) and rows of timing data including Detector 2 Channel, Detector 2 Extend (s), Turn Type, Protected Phases, Permitted Phases, Detector Phase, Switch Phase, Minimum Initial (s), Minimum Split (s), Total Split (s), Total Split (%), Maximum Green (s), Yellow Time (s), All-Red Time (s), Lost Time Adjust (s), Total Lost Time (s), Lead/Lag, Lead-Lag Optimize?, Vehicle Extension (s), Recall Mode, Walk Time (s), Flash Dont Walk (s), Pedestrian Calls (#/hr), Act Effct Green (s), Actuated g/C Ratio, v/c Ratio, Control Delay, Queue Delay, Total Delay, LOS, Approach Delay, and Approach LOS.

Intersection Summary

Area Type: Other
Cycle Length: 130
Actuated Cycle Length: 130
Offset: 53 (41%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 135
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.09
Intersection Signal Delay: 50.1
Intersection LOS: D
Intersection Capacity Utilization 104.6%
ICU Level of Service G
Analysis Period (min) 15

Splits and Phases: 6: Liverpool Road & Kingston Road



WSP

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Queues

<2028 Future Total>PM

6: Liverpool Road & Kingston Road

12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	274	1153	423	242	592	73	168	835	252	103	575	127
w/c Ratio	0.84	1.09	0.67	0.90	0.62	0.14	0.56	0.70	0.42	0.49	0.50	0.22
Control Delay	47.7	84.3	27.4	87.8	45.9	0.6	34.6	43.1	13.4	31.8	38.1	4.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.7	84.3	27.4	87.8	45.9	0.6	34.6	43.1	13.4	31.8	38.1	4.6
Queue Length 50th (m)	61.9	~179.4	83.7	61.2	71.3	0.0	27.0	99.0	14.0	15.8	63.0	0.0
Queue Length 95th (m)	m62.2	m#185.8	m86.5	#106.2	93.7	0.0	42.7	121.7	37.0	27.4	80.7	11.0
Internal Link Dist (m)		670.6			372.4			233.7			324.6	
Turn Bay Length (m)	188.8		97.9	170.7		117.0	185.5		52.0	49.0		60.5
Base Capacity (vph)	376	1054	633	279	958	523	298	1187	600	210	1149	569
Starvation Cap Reductn	0	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced w/c Ratio	0.73	1.09	0.67	0.87	0.62	0.14	0.56	0.70	0.42	0.49	0.50	0.22

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.

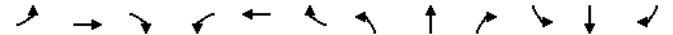
m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings

<2028 Future Total>PM

8: Liverpool Road & Private Access/Pickering Parkway

12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔↔		↔↔	↔	↔	↔↔	↔↔	↔	↔	↔↔	↔
Traffic Volume (vph)	87	69	130	412	58	174	116	832	401	196	1063	46
Future Volume (vph)	87	69	130	412	58	174	116	832	401	196	1063	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.1	3.1	3.7	3.0	3.4	3.2	2.8	3.6	3.5	3.2	3.5	3.5
Storage Length (m)	0.0	0.0	57.0		62.1	54.4		75.7	132.5		35.5	
Storage Lanes	1		0	1		1		1	1		1	
Taper Length (m)	2.5			12.0				29.5			28.9	
Lane Util. Factor	1.00	0.95	0.95	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor		0.96		0.98					0.96	1.00		0.93
Frt		0.902				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1705	2959	0	3204	1858	1399	1645	3539	1569	1708	3535	1597
Flt Permitted	0.000			0.000			0.101			0.193		
Satd. Flow (perm)	0	2959	0	0	1858	1399	175	3539	1502	345	3535	1482
Right Turn on Red			Yes			Yes		Yes		Yes		Yes
Satd. Flow (RTOR)		141				189		436				144
Link Speed (k/h)	30			50			50			50		
Link Distance (m)	82.8			328.5			162.3			257.7		
Travel Time (s)	9.9			23.7			11.7			18.6		
Confl. Peds. (#/hr)			21	21			21		21	21		21
Confl. Bikes (#/hr)			2				5					6
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%	2%	0%	5%	0%	2%	1%	1%	1%	0%
Bus Blockages (#/hr)	0	0	0	0	0	12	0	0	2	0	0	0
Adj. Flow (vph)	95	75	141	448	63	189	126	904	436	213	1155	50
Shared Lane Traffic (%)												
Lane Group Flow (vph)	95	216	0	448	63	189	126	904	436	213	1155	50
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	6.0			6.0			3.8			3.8		
Link Offset(m)	0.0			0.0			0.0			0.0		
Crosswalk Width(m)	1.6			1.6			1.6			1.6		
Two way Left Turn Lane												
Headway Factor	1.08	1.08	0.99	1.09	1.03	1.13	1.13	1.00	1.03	1.06	1.01	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	

Lanes, Volumes, Timings

<2028 Future Total>PM

8: Liverpool Road & Private Access/Pickering Parkway

12-20-2024

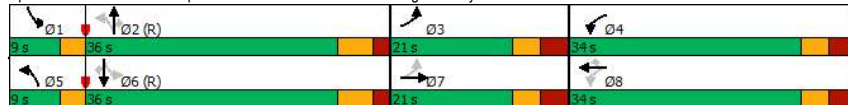


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type	CI+Ex			CI+Ex			CI+Ex			CI+Ex		
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	7		4	8		5	2		1	6	
Permitted Phases	7			8		8	2			2	6	6
Detector Phase	3	7		4	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0	8.0	5.0	20.0	20.0	5.0	8.0	8.0
Minimum Split (s)	15.0	15.0		34.0	34.0	34.0	8.0	30.0	30.0	8.0	30.0	30.0
Total Split (s)	21.0	21.0		34.0	34.0	34.0	9.0	36.0	36.0	9.0	36.0	36.0
Total Split (%)	21.0%	21.0%		34.0%	34.0%	34.0%	9.0%	36.0%	36.0%	9.0%	36.0%	36.0%
Maximum Green (s)	14.4	14.4		27.4	27.4	27.4	6.0	29.7	29.7	6.0	29.7	29.7
Yellow Time (s)	3.3	3.3		3.3	3.3	3.3	3.0	4.2	4.2	3.0	4.2	4.2
All-Red Time (s)	3.3	3.3		3.3	3.3	3.3	0.0	2.1	2.1	0.0	2.1	2.1
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)	6.6	6.6		6.6	6.6	6.6	3.0	6.3	6.3	3.0	6.3	6.3
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
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
Recall Mode	None	None		None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)				19.0	19.0		17.0	17.0		17.0	17.0	
Flash Dont Walk (s)				8.0	8.0		6.0	6.0		6.0	6.0	
Pedestrian Calls (#/hr)				20	20		28	28		15	15	
Act Effect Green (s)	11.0	11.0		20.9	20.9	20.9	48.9	39.6	39.6	48.9	39.6	39.6
Actuated g/C Ratio	0.11	0.11		0.21	0.21	0.21	0.49	0.40	0.40	0.49	0.40	0.40
v/c Ratio	0.51	0.48		0.67	0.16	0.43	0.73	0.65	0.51	0.85	0.83	0.07
Control Delay	51.0	18.9		40.8	31.2	7.5	38.7	26.5	8.0	51.2	35.4	0.2
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.0	18.9		40.8	31.2	7.5	38.7	26.5	8.0	51.2	35.4	0.2
LOS	D	B		D	C	A	D	C	A	D	D	A
Approach Delay	28.7			31.0			22.1			36.6		
Approach LOS	C			C			C			D		

Intersection Summary

Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	100
Offset:	15 (15%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
Natural Cycle:	90
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.85
Intersection Signal Delay:	29.5
Intersection Capacity Utilization:	74.6%
Analysis Period (min):	15
Intersection LOS:	C
ICU Level of Service:	D

Splits and Phases: 8: Liverpool Road & Private Access/Pickering Parkway



Queues

<2028 Future Total>PM

8: Liverpool Road & Private Access/Pickering Parkway

12-20-2024



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	95	216	448	63	189	126	904	436	213	1155	50
v/c Ratio	0.51	0.48	0.67	0.16	0.43	0.73	0.65	0.51	0.85	0.83	0.07
Control Delay	51.0	18.9	40.8	31.2	7.5	38.7	26.5	8.0	51.2	35.4	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.0	18.9	40.8	31.2	7.5	38.7	26.5	8.0	51.2	35.4	0.2
Queue Length 50th (m)	17.7	7.1	42.3	10.3	0.0	13.8	77.3	23.1	20.8	100.3	0.0
Queue Length 95th (m)	32.2	17.3	52.8	19.3	15.9	m#41.1	#115.8	53.8	#67.2	#172.6	0.0
Internal Link Dist (m)	58.8		304.5			138.3			233.7		
Turn Bay Length (m)			57.0		62.1	54.4	75.7		132.5	35.5	
Base Capacity (vph)	245	546	877	509	520	173	1400	857	250	1399	673
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	0.39	0.40	0.51	0.12	0.36	0.73	0.65	0.51	0.85	0.83	0.07

Intersection Summary

- # 95th percentile volume exceeds capacity, queue may be longer.
- Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings

<2028 Future Total>PM

9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp

12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	263	278	227	293	136	1058	0	0	989	88
Future Volume (vph)	0	0	263	278	227	293	136	1058	0	0	989	88
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.5	3.7	3.7	3.4	3.7
Storage Length (m)	0.0	0.0	0.0	0.0	125.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0
Storage Lanes	0		1	1		1	1		0	0		1
Taper Length (m)	2.5			2.5			30.0			2.5		
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	0.91	1.00
Ped Bike Factor												0.92
Frt			0.865			0.850						0.850
Fit Protected				0.950	0.994		0.950					
Satd. Flow (prot)	0	0	1662	1734	1814	1581	1825	3535	0	0	4972	1633
Fit Permitted				0.950	0.994		0.165					
Satd. Flow (perm)	0	0	1662	1734	1814	1581	317	3535	0	0	4972	1508
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)						85						96
Link Speed (kh)		50			50			50				50
Link Distance (m)		433.1			226.7			372.2				162.3
Travel Time (s)		31.2			16.3			26.8				11.7
Confl. Peds. (#/hr)							17		15	15		17
Confl. Bikes (#/hr)								6				7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	0%	0%	0%	1%	0%	1%	6%	2%	2%	0%
Adj. Flow (vph)	0	0	286	302	247	318	148	1150	0	0	1075	96
Shared Lane Traffic (%)				11%								
Lane Group Flow (vph)	0	0	286	269	280	318	148	1150	0	0	1075	96
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	1.01	0.99	1.01	0.99	0.99	1.03	0.99
Turning Speed (k/h)	97		97	24		14	97		14	24		97
Number of Detectors			1	1	2	1	1	2			2	1
Detector Template			Right	Left	Thru	Right	Left	Thru			Thru	Right
Leading Detector (m)			2.0	2.0	10.0	2.0	2.0	10.0			10.0	2.0
Trailing Detector (m)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Position(m)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Size(m)			2.0	2.0	0.6	2.0	2.0	0.6			0.6	2.0
Detector 1 Type			Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 2 Position(m)						9.4		9.4				9.4
Detector 2 Size(m)						0.6		0.6				0.6
Detector 2 Type						Cl+Ex		Cl+Ex				Cl+Ex

Lanes, Volumes, Timings

<2028 Future Total>PM

9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp

12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)						0.0					0.0	0.0
Turn Type			Over	Split	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases			5	8	8		5	2			6	
Permitted Phases						8	2					6
Detector Phase			5	8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)			5.0	8.0	8.0	8.0	5.0	15.0			15.0	15.0
Minimum Split (s)			9.5	25.0	25.0	25.0	9.5	24.3			24.3	24.3
Total Split (s)			33.0	36.0	36.0	36.0	33.0	64.0			31.0	31.0
Total Split (%)			33.0%	36.0%	36.0%	36.0%	33.0%	64.0%			31.0%	31.0%
Maximum Green (s)			28.5	30.0	30.0	30.0	28.5	57.7			24.7	24.7
Yellow Time (s)			3.5	3.3	3.3	3.3	3.5	3.3			3.3	3.3
All-Red Time (s)			1.0	2.7	2.7	2.7	1.0	3.0			3.0	3.0
Lost Time Adjust (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Lost Time (s)			4.5	6.0	6.0	6.0	4.5	6.3			6.3	6.3
Lead/Lag			Lead				Lead				Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)			3.0	3.0	3.0	3.0	3.0	3.0			3.0	3.0
Recall Mode			None	None	None	None	None	C-Max			C-Max	C-Max
Walk Time (s)				14.0	14.0	14.0		13.0			13.0	13.0
Flash Dont Walk (s)				5.0	5.0	5.0		5.0			5.0	5.0
Pedestrian Calls (#/hr)				0	0	0		14			7	7
Act Effct Green (s)			22.1	22.0	22.0	22.0	67.5	65.7			39.1	39.1
Actuated g/C Ratio			0.22	0.22	0.22	0.22	0.68	0.66			0.39	0.39
v/c Ratio			0.78	0.70	0.70	0.77	0.27	0.50			0.55	0.15
Control Delay			51.1	45.4	44.8	38.4	8.2	10.6			30.0	14.0
Queue Delay			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay			51.1	45.4	44.8	38.4	8.2	10.6			30.0	14.0
LOS			D	D	D	D	A	B			C	B
Approach Delay			51.1			42.6		10.3			28.7	
Approach LOS			D			D		B			C	

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 8 (8%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
 Natural Cycle: 70
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.78
 Intersection Signal Delay: 27.2
 Intersection LOS: C
 Intersection Capacity Utilization 63.1%
 ICU Level of Service B
 Analysis Period (min) 15

Splits and Phases: 9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp



Queues

<2028 Future Total>PM

9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp

12-20-2024



Lane Group	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	286	269	280	318	148	1150	1075	96
w/c Ratio	0.78	0.70	0.70	0.77	0.27	0.50	0.55	0.15
Control Delay	51.1	45.4	44.8	38.4	8.2	10.6	30.0	14.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.1	45.4	44.8	38.4	8.2	10.6	30.0	14.0
Queue Length 50th (m)	52.3	51.1	53.1	43.2	8.9	53.1	51.9	1.4
Queue Length 95th (m)	74.8	71.1	73.2	66.2	20.2	86.8	#85.9	m9.0
Internal Link Dist (m)			202.7			348.2	138.3	
Turn Bay Length (m)				125.0	50.0			
Base Capacity (vph)	473	520	544	533	643	2321	1943	647
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced w/c Ratio	0.60	0.52	0.51	0.60	0.23	0.50	0.55	0.15

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

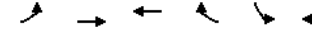
m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings

<2028 Future Total>PM

10: Kingston Road & Fairport Road

12-20-2024



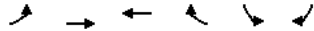
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø1
Lane Configurations	↔	↕↕	↕↕	↔	↔	↕	↕
Traffic Volume (vph)	205	1650	778	223	271	137	
Future Volume (vph)	205	1650	778	223	271	137	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (m)	3.0	3.6	3.5	3.7	3.6	4.5	
Grade (%)		6%	0%			0%	
Storage Length (m)	75.0			18.5	15.5	0.0	
Storage Lanes	1			0	1	1	
Taper Length (m)	2.5				31.3		
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00	
Ped Bike Factor	1.00		1.00			0.99	
Frt			0.967			0.850	
Fit Protected	0.950				0.950		
Satd. Flow (prot)	1618	3433	3349	0	1805	1777	
Fit Permitted	0.950				0.950		
Satd. Flow (perm)	1617	3433	3349	0	1805	1751	
Right Turn on Red				Yes		Yes	
Satd. Flow (RTOR)			38			149	
Link Speed (k/h)		60	60		40		
Link Distance (m)		424.0	896.3		280.0		
Travel Time (s)		25.4	53.8		25.2		
Confl. Peds. (#/hr)	1			1		2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Heavy Vehicles (%)	1%	2%	3%	1%	0%	0%	
Bus Blockages (#/hr)	0	0	0	9	0	0	
Adj. Flow (vph)	223	1793	846	242	295	149	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	223	1793	1088	0	295	149	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Left	Left	Right	Left	Right	
Median Width(m)		3.0	3.0		3.6		
Link Offset(m)		0.0	0.0		0.0		
Crosswalk Width(m)		1.6	1.6		1.6		
Two way Left Turn Lane		Yes					
Headway Factor	1.14	1.04	1.01	0.99	1.00	0.88	
Turning Speed (k/h)		24		14	24	14	
Number of Detectors	1	2	2		1	1	
Detector Template	Left	Thru	Thru		Left	Right	
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0	
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	0.6		2.0	2.0	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4	9.4				
Detector 2 Size(m)		0.6	0.6				

Lanes, Volumes, Timings

<2028 Future Total>PM

10: Kingston Road & Fairport Road

12-20-2024



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø1
Detector 2 Type	CI+Ex		CI+Ex				
Detector 2 Channel							
Detector 2 Extend (s)	0.0		0.0				
Turn Type	Prot	NA	NA		Prot	Perm	
Protected Phases	5	2	6		4		1
Permitted Phases						4	
Detector Phase	5	2	6		4	4	
Switch Phase							
Minimum Initial (s)	5.0	20.0	20.0		8.0	8.0	5.0
Minimum Split (s)	10.0	33.0	33.0		38.0	38.0	8.0
Total Split (s)	25.0	84.0	67.0		38.0	38.0	8.0
Total Split (%)	19.2%	64.6%	51.5%		29.2%	29.2%	6%
Maximum Green (s)	20.0	77.7	60.7		30.7	30.7	5.0
Yellow Time (s)	3.0	4.3	4.3		3.3	3.3	3.0
All-Red Time (s)	2.0	2.0	2.0		4.0	4.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.3	6.3		7.3	7.3	
Lead/Lag	Lead	Lag	Lag				Lead
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	0.2	0.2		3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max		None	None	None
Walk Time (s)	7.0		7.0		7.0	7.0	5.0
Flash Dont Walk (s)	19.0		19.0		23.0	23.0	0.0
Pedestrian Calls (#/hr)	0		0		0	0	20
Act Effect Green (s)	19.5	86.0	66.3		25.6	25.6	
Actuated g/C Ratio	0.15	0.66	0.51		0.20	0.20	
v/c Ratio	0.92	0.79	0.63		0.83	0.32	
Control Delay	49.8	40.7	10.0		69.5	8.0	
Queue Delay	0.0	0.0	0.0		0.0	0.0	
Total Delay	49.8	40.7	10.0		69.5	8.0	
LOS	D	D	A		E	A	
Approach Delay	41.7		10.0		48.9		
Approach LOS	D		A		D		

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 27 (21%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 105
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.92
 Intersection Signal Delay: 32.9 Intersection LOS: C
 Intersection Capacity Utilization 72.6% ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 10: Kingston Road & Fairport Road



Queues

<2028 Future Total>PM

10: Kingston Road & Fairport Road

12-20-2024



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	223	1793	1088	295	149
v/c Ratio	0.92	0.79	0.63	0.83	0.32
Control Delay	49.8	40.7	10.0	69.5	8.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	49.8	40.7	10.0	69.5	8.0
Queue Length 50th (m)	50.8	256.5	28.2	72.7	0.0
Queue Length 95th (m)	m50.6	m249.0	34.5	101.2	16.7
Internal Link Dist (m)	400.0		872.3	256.0	
Turn Bay Length (m)	75.0		15.5		
Base Capacity (vph)	248	2270	1725	426	527
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.90	0.79	0.63	0.69	0.28

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings

<2028 Future Total>PM

11: Hwy 401 WB Ramps & Kingston Road

12-20-2024

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↑	↑↑	↑↑	↑
Traffic Volume (vph)	1708	23	184	730	662	144
Future Volume (vph)	1708	23	184	730	662	144
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.0	3.7	2.7	3.8	3.8	3.7
Grade (%)	6%			0%	0%	
Storage Length (m)		0.0	47.5		0.0	52.0
Storage Lanes		0	1		2	1
Taper Length (m)			22.3		2.5	
Lane Util. Factor	0.95	0.95	1.00	0.95	0.97	1.00
Ped Bike Factor					1.00	0.98
Frt	0.998					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3577	0	1577	3618	3544	1617
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3577	0	1577	3618	3537	1591
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	1					121
Link Speed (k/h)	60			60	50	
Link Distance (m)	268.7			424.0	216.6	
Travel Time (s)	16.1			25.4	15.6	
Confl. Peds. (#/hr)					1	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	5%	3%	2%	1%	1%
Adj. Flow (vph)	1857	25	200	793	720	157
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1882	0	200	793	720	157
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.1			3.1	7.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	0.98	1.03	1.14	0.97	0.97	0.99
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	10.0		2.0	10.0	2.0	2.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Size(m)	0.6		2.0	0.6	2.0	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		

Lanes, Volumes, Timings

<2028 Future Total>PM

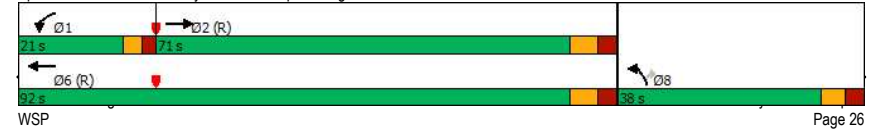
11: Hwy 401 WB Ramps & Kingston Road

12-20-2024

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		Prot	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases						8
Detector Phase	2		1	6	8	8
Switch Phase						
Minimum Initial (s)	20.0		5.0	20.0	8.0	8.0
Minimum Split (s)	50.0		10.0	50.0	38.0	38.0
Total Split (s)	71.0		21.0	92.0	38.0	38.0
Total Split (%)	54.6%		16.2%	70.8%	29.2%	29.2%
Maximum Green (s)	63.8		16.0	84.8	31.3	31.3
Yellow Time (s)	4.2		3.0	4.2	3.7	3.7
All-Red Time (s)	3.0		2.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	7.2		5.0	7.2	6.7	6.7
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?						
Vehicle Extension (s)	0.2		3.0	0.2	3.0	3.0
Recall Mode	C-Max		None	C-Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	35.0			35.0	24.0	24.0
Pedestrian Calls (#/hr)	0			0	14	14
Act Effct Green (s)	65.4		16.0	86.4	29.7	29.7
Actuated g/C Ratio	0.50		0.12	0.66	0.23	0.23
v/c Ratio	1.05		1.03	0.33	0.89	0.34
Control Delay	70.0		128.4	1.8	62.5	13.7
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	70.0		128.4	1.8	62.5	13.7
LOS	E		F	A	E	B
Approach Delay	70.0			27.3	53.8	
Approach LOS	E			C	D	

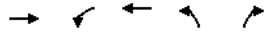
Intersection Summary	
Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	69 (53%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle:	130
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.05
Intersection Signal Delay:	54.9
Intersection LOS:	D
Intersection Capacity Utilization:	93.4%
ICU Level of Service:	F
Analysis Period (min):	15

Splits and Phases: 11: Hwy 401 WB Ramps & Kingston Road



Queues
11: Hwy 401 WB Ramps & Kingston Road

<2028 Future Total>PM
12-20-2024



Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1882	200	793	720	157
w/c Ratio	1.05	1.03	0.33	0.89	0.34
Control Delay	70.0	128.4	1.8	62.5	13.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	70.0	128.4	1.8	62.5	13.7
Queue Length 50th (m)	-289.6	-47.9	6.4	91.1	7.2
Queue Length 95th (m)	#332.6	#101.1	6.1	#114.7	25.4
Internal Link Dist (m)	244.7		400.0	192.6	
Turn Bay Length (m)		47.5			52.0
Base Capacity (vph)	1799	194	2404	853	474
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced w/c Ratio	1.05	1.03	0.33	0.84	0.33

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

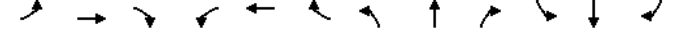
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Lanes, Volumes, Timings
12: Plaza Entrance/Delta Blvd & Kingston Road

<2028 Future Total>PM
12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔		↔	↔		↔	↔		↔	↔	↔
Traffic Volume (vph)	130	1579	38	89	1189	121	198	15	138	82	13	143
Future Volume (vph)	130	1579	38	89	1189	121	198	15	138	82	13	143
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.2	3.4	3.5	3.1	3.4	3.4	3.6	4.6	3.7	3.2	2.8	3.7
Grade (%)		6%			0%			0%				0%
Storage Length (m)	51.8		148.5	100.0		18.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	35.3			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		1.00	0.99		1.00					0.99
Frt		0.996			0.986			0.864				0.862
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1656	3343	0	1705	3399	0	1770	1824	0	1725	1474	0
Fit Permitted	0.950			0.950			0.630			0.637		
Satd. Flow (perm)	1647	3343	0	1704	3399	0	1172	1824	0	1157	1474	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			13			128				147
Link Speed (k/h)		60			60			30				40
Link Distance (m)		222.7			268.7			130.9				169.9
Travel Time (s)		13.4			16.1			15.7				15.3
Confl. Peds. (#/hr)	16		1	1		16	1					1
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 (%)	1%	2%	0%	0%	2%	0%	2%	0%	0%	0%	0%	0%
Adj. Flow (vph)	141	1716	41	97	1292	132	215	16	150	89	14	155
Shared Lane Traffic (%)												
Lane Group Flow (vph)	141	1757	0	97	1424	0	215	166	0	89	169	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.6				3.6
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		1.6			1.6			1.6				1.6
Two way Left Turn Lane					Yes							
Headway Factor	1.10	1.07	1.06	1.08	1.03	1.03	1.00	0.87	0.99	1.06	1.13	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4				9.4
Detector 2 Size(m)		0.6			0.6			0.6				0.6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex

Lanes, Volumes, Timings

<2028 Future Total>PM

12: Plaza Entrance/Delta Blvd & Kingston Road

12-20-2024

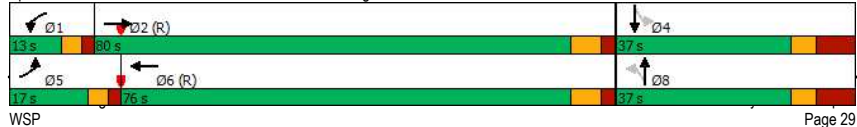


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	10.0	32.0		10.0	32.0		37.0	37.0		37.0	37.0	
Total Split (s)	17.0	80.0		13.0	76.0		37.0	37.0		37.0	37.0	
Total Split (%)	13.1%	61.5%		10.0%	58.5%		28.5%	28.5%		28.5%	28.5%	
Maximum Green (s)	12.0	73.1		8.0	69.1		27.0	27.0		27.0	27.0	
Yellow Time (s)	3.0	4.7		3.0	4.7		3.8	3.8		3.8	3.8	
All-Red Time (s)	2.0	2.2		2.0	2.2		6.2	6.2		6.2	6.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.9		5.0	6.9		10.0	10.0		10.0	10.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	0.2		3.0	0.2		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		18.0			18.0		20.0	20.0		20.0	20.0	
Pedestrian Calls (#/hr)		0			13		3	3		6	6	
Act Effct Green (s)	12.0	74.3		8.0	70.3		25.8	25.8		25.8	25.8	
Actuated g/C Ratio	0.09	0.57		0.06	0.54		0.20	0.20		0.20	0.20	
v/c Ratio	0.93	0.92		0.93	0.77		0.93	0.36		0.39	0.41	
Control Delay	82.2	23.0		123.7	20.8		93.7	14.6		50.3	12.9	
Queue Delay	0.0	1.6		0.0	0.0		0.0	76.9		172.1	0.0	
Total Delay	82.2	24.6		123.7	20.8		93.7	91.5		222.4	12.9	
LOS	F	C		F	C		F	F		F	B	
Approach Delay		28.9			27.4			92.8			85.1	
Approach LOS		C			C			F			F	

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 6 (5%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.93
 Intersection Signal Delay: 37.9 Intersection LOS: D
 Intersection Capacity Utilization 97.4% ICU Level of Service F
 Analysis Period (min) 15

Splits and Phases: 12: Plaza Entrance/Delta Blvd & Kingston Road

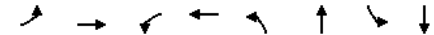


Queues

<2028 Future Total>PM

12: Plaza Entrance/Delta Blvd & Kingston Road

12-20-2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	141	1757	97	1424	215	166	89	169
v/c Ratio	0.93	0.92	0.93	0.77	0.93	0.36	0.39	0.41
Control Delay	82.2	23.0	123.7	20.8	93.7	14.6	50.3	12.9
Queue Delay	0.0	1.6	0.0	0.0	0.0	76.9	172.1	0.0
Total Delay	82.2	24.6	123.7	20.8	93.7	91.5	222.4	12.9
Queue Length 50th (m)	36.7	137.9	26.3	75.6	54.0	7.9	19.7	4.6
Queue Length 95th (m)	m39.0	m138.3	m#47.5	103.1	#99.2	27.1	36.4	24.3
Internal Link Dist (m)		198.7		244.7		106.9		145.9
Turn Bay Length (m)	51.8		100.0					
Base Capacity (vph)	152	1912	104	1843	243	480	240	422
Starvation Cap Reductn	0	37	0	0	0	0	0	0
Spillback Cap Reductn	0	62	0	0	0	374	228	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.95	0.93	0.77	0.88	1.57	7.42	0.40

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings

13: Whites Road & Kingston Road

<2028 Future Total>PM

12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	
Traffic Volume (vph)	155	941	358	251	763	492	228	684	670	191	617	186	
Future Volume (vph)	155	941	358	251	763	492	228	684	670	191	617	186	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Lane Width (m)	3.5	3.6	4.2	3.5	3.7	4.0	3.5	3.9	3.7	3.5	3.9	4.0	
Grade (%)	6%		0%			0%			0%			0%	
Storage Length (m)	127.0		123.0		87.1		35.0		72.0		47.0		
Storage Lanes	1		1		1		1		1		1		
Taper Length (m)	64.0		39.6			66.8			32.6				
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00	
Ped Bike Factor	0.97		0.96			0.99			0.91			0.98	
Frt	0.850		0.850			0.850			0.850			0.850	
Fit Protected	0.950		0.950			0.950			0.950			0.950	
Satd. Flow (prot)	1681	3400	1622	1733	3579	1654	1767	5255	1588	1750	5105	1627	
Fit Permitted	0.950		0.950			0.331			0.292			0.292	
Satd. Flow (perm)	1638	3400	1549	1719	3579	1502	608	5255	1470	527	5105	1550	
Right Turn on Red	Yes		Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)	60		162			136			59			202	
Link Speed (k/h)	60		60			60			60			60	
Link Distance (m)	297.5		222.7			158.6			385.2				
Travel Time (s)	17.9		13.4			9.5			23.1				
Confl. Peds. (#/hr)	75		31		31		75		37		65		
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 (%)	3%	3%	3%	3%	2%	2%	1%	2%	2%	2%	5%	2%	
Bus Blockages (#/hr)	0		0			0			2			0	
Adj. Flow (vph)	168	1023	389	273	829	535	248	743	728	208	671	202	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	168	1023	389	273	829	535	248	743	728	208	671	202	
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No	
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right	
Median Width(m)	3.5		3.5			3.5			3.5			3.5	
Link Offset(m)	0.0		0.0			0.0			0.0			0.0	
Crosswalk Width(m)	1.6		1.6			1.6			1.6			1.6	
Two way Left Turn Lane													
Headway Factor	1.06	1.04	0.96	1.01	0.99	0.94	1.01	0.96	1.00	1.01	0.96	0.96	
Turning Speed (k/h)	24		14		24		14		24		14		
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1	
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	
Detector 1 Channel													
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)	9.4		9.4			9.4			9.4			9.4	
Detector 2 Size(m)	0.6		0.6			0.6			0.6			0.6	

Lanes, Volumes, Timings

13: Whites Road & Kingston Road

<2028 Future Total>PM

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type	CI+Ex			CI+Ex			CI+Ex			CI+Ex		
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8	1	7	4	
Permitted Phases	2		6			8		8		4		
Detector Phase	5	2	2	1	6	6	3	8	1	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	5.0	8.0	5.0	5.0	8.0	8.0
Minimum Split (s)	10.0	43.0	43.0	10.0	43.0	43.0	8.0	49.0	10.0	8.0	49.0	49.0
Total Split (s)	18.0	43.0	43.0	30.0	55.0	55.0	8.0	49.0	30.0	8.0	49.0	49.0
Total Split (%)	13.8%	33.1%	33.1%	23.1%	42.3%	42.3%	6.2%	37.7%	23.1%	6.2%	37.7%	37.7%
Maximum Green (s)	13.0	36.0	36.0	25.0	48.0	48.0	5.0	40.6	25.0	5.0	40.6	40.6
Yellow Time (s)	3.0	4.2	4.2	3.0	4.2	4.2	3.0	4.3	3.0	3.0	4.3	4.3
All-Red Time (s)	2.0	2.8	2.8	2.0	2.8	2.8	0.0	4.1	2.0	0.0	4.1	4.1
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	0.0
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	3.0	8.4	5.0	3.0	8.4	8.4
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	0.2	0.2	3.0	0.2	0.2	3.0	0.2	3.0	3.0	0.2	0.2
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	None	None	Max	Max
Walk Time (s)	7.0		7.0		7.0		7.0		7.0		7.0	
Flash Dont Walk (s)	29.0		29.0		29.0		29.0		33.0		33.0	
Pedestrian Calls (#/hr)	13		13		38		38		20		20	
Act Effect Green (s)	13.0	37.5	37.5	23.5	48.0	48.0	51.0	40.6	67.5	51.0	40.6	40.6
Actuated g/C Ratio	0.10	0.29	0.29	0.18	0.37	0.37	0.39	0.31	0.52	0.39	0.31	0.31
v/c Ratio	1.00	1.04	0.69	0.88	0.63	0.84	0.88	0.45	0.90	0.82	0.42	0.32
Control Delay	127.6	85.3	31.1	86.3	25.7	26.4	63.3	36.9	38.4	57.3	36.4	5.8
Queue Delay	0.0	10.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	127.6	95.5	31.1	86.3	25.7	26.4	63.3	36.9	38.4	57.3	36.4	5.8
LOS	F	F	C	F	C	C	E	D	D	E	D	A
Approach Delay	83.1			36.0			41.3			34.7		
Approach LOS	F			D			D			C		
Intersection Summary												
Area Type:	Other											
Cycle Length:	130											
Actuated Cycle Length:	130											
Offset: 32 (25%), Referenced to phase 2:EBT and 6:WBT, Start of Green												
Natural Cycle:	120											
Control Type:	Actuated-Coordinated											
Maximum v/c Ratio:	1.04											
Intersection Signal Delay:	49.7						Intersection LOS: D					
Intersection Capacity Utilization:	110.2%						ICU Level of Service H					
Analysis Period (min):	15											
Splits and Phases: 13: Whites Road & Kingston Road												

Queues <2028 Future Total>PM
13: Whites Road & Kingston Road 12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	168	1023	389	273	829	535	248	743	728	208	671	202
w/c Ratio	1.00	1.04	0.69	0.88	0.63	0.84	0.88	0.45	0.90	0.82	0.42	0.32
Control Delay	127.6	85.3	31.1	86.3	25.7	26.4	63.3	36.9	38.4	57.3	36.4	5.8
Queue Delay	0.0	10.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	127.6	95.5	31.1	86.3	25.7	26.4	63.3	36.9	38.4	57.3	36.4	5.8
Queue Length 50th (m)	43.7	~154.6	53.6	66.2	53.0	41.9	42.7	55.8	129.1	34.9	49.8	0.0
Queue Length 95th (m)	#89.4	#195.8	91.1	m#96.1	m81.0	m#134.2	#83.4	68.3	#207.2	#67.7	61.7	17.0
Internal Link Dist (m)		273.5		198.7		134.6		361.2				
Turn Bay Length (m)	127.0		123.0	87.1		35.0	72.0		35.0	88.5		47.0
Base Capacity (vph)	168	981	562	333	1321	640	283	1641	830	253	1594	622
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	25	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced w/c Ratio	1.00	1.07	0.69	0.82	0.63	0.84	0.88	0.45	0.88	0.82	0.42	0.32

- 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.
 - m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings <2028 Future Total>PM
14: Whites Road & Highway 401 EB Off Ramp 12-20-2024



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↑↑↑	↑		↑↑	↑↑	
Traffic Volume (vph)	1194	589	0	845	560	0
Future Volume (vph)	1194	589	0	845	560	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.7	3.6	3.8	3.7
Storage Length (m)	0.0	225.0	0.0	0.0	0.0	0.0
Storage Lanes	2	1	0			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	0.97	0.91	1.00	0.95	0.95	1.00
Ped Bike Factor	1.00	0.98				
Frt	0.993	0.850				
Flt Protected	0.955					
Satd. Flow (prot)	3453	1427	0	3539	3618	0
Flt Permitted	0.955					
Satd. Flow (perm)	3453	1404	0	3539	3618	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	7	123				
Link Speed (k/h)	50			60	60	
Link Distance (m)	295.9			185.9	316.9	
Travel Time (s)	21.3			11.2	19.0	
Confl. Peds. (#/hr)		3	4			4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	3%	2%	2%	2%	2%
Adj. Flow (vph)	1298	640	0	918	609	0
Shared Lane Traffic (%)		10%				
Lane Group Flow (vph)	1362	576	0	918	609	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.2			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	0.99	1.00	0.97	0.99
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	2.0	2.0		10.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	2.0		0.6	0.6	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				CI+Ex	CI+Ex	
Detector 2 Channel						

Lanes, Volumes, Timings

<2028 Future Total>PM

14: Whites Road & Highway 401 EB Off Ramp

12-20-2024

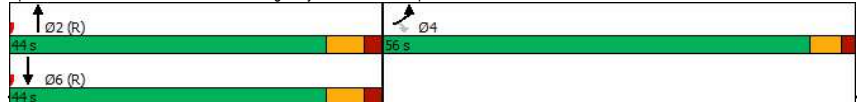


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	8.0	8.0		20.0	20.0	
Minimum Split (s)	28.5	28.5		27.7	27.7	
Total Split (s)	56.0	56.0		44.0	44.0	
Total Split (%)	56.0%	56.0%		44.0%	44.0%	
Maximum Green (s)	50.5	50.5		37.3	37.3	
Yellow Time (s)	3.7	3.7		4.5	4.5	
All-Red Time (s)	1.8	1.8		2.2	2.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.5	5.5		6.7	6.7	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		0.2	0.2	
Recall Mode	None	None		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	16.0	16.0		14.0	14.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effect Green (s)	47.0	47.0		40.8	40.8	
Actuated g/C Ratio	0.47	0.47		0.41	0.41	
v/c Ratio	0.84	0.80		0.64	0.41	
Control Delay	28.3	26.2		26.9	22.8	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	28.3	26.2		26.9	22.8	
LOS	C	C		C	C	
Approach Delay	27.6			26.9	22.8	
Approach LOS	C			C	C	

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 8 (8%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.84
 Intersection Signal Delay: 26.6 Intersection LOS: C
 Intersection Capacity Utilization 73.8% ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 14: Whites Road & Highway 401 EB Off Ramp



Queues

<2028 Future Total>PM

14: Whites Road & Highway 401 EB Off Ramp

12-20-2024



Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	1362	576	918	609
v/c Ratio	0.84	0.80	0.64	0.41
Control Delay	28.3	26.2	26.9	22.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	28.3	26.2	26.9	22.8
Queue Length 50th (m)	111.2	78.5	75.0	44.3
Queue Length 95th (m)	132.8	125.0	99.8	61.4
Internal Link Dist (m)	271.9		161.9	292.9
Turn Bay Length (m)		225.0		
Base Capacity (vph)	1747	769	1444	1476
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.78	0.75	0.64	0.41

Intersection Summary

Lanes, Volumes, Timings

<2028 Future Total>PM

15: Dixie Road & Shopping Plaza Entrance

12-20-2024

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	237	0	0	221	0
Future Volume (vph)	0	237	0	0	221	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.1	3.7	4.0	3.7	3.7	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.865					
Fit Protected						0.950
Satd. Flow (prot)	1701	0	1946	0	0	1848
Fit Permitted						0.950
Satd. Flow (perm)	1701	0	1946	0	0	1848
Link Speed (k/h)	30	40			40	
Link Distance (m)	193.0	106.6			44.0	
Travel Time (s)	23.2	9.6			4.0	
Confl. Peds. (#/hr)	11		12			
Confl. Bikes (#/hr)						1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	258	0	0	240	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	258	0	0	0	0	240
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	4.1	3.6			3.6	
Link Offset(m)	0.0	0.0			0.0	
Crosswalk Width(m)	1.6	1.6			1.6	
Two way Left Turn Lane						
Headway Factor	0.93	0.99	0.94	0.99	0.99	0.94
Turning Speed (k/h)	97	97	97		97	
Sign Control	Stop	Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	34.7%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis

<2028 Future Total>PM

15: Dixie Road & Shopping Plaza Entrance

12-20-2024

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	237	0	0	221	0
Future Volume (Veh/h)	0	237	0	0	221	0
Sign Control	Stop	Free			Free	
Grade	0%	0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	258	0	0	240	0
Pedestrians	12					11
Lane Width (m)	4.1	3.7			4.0	
Walking Speed (m/s)	1.1	1.1			1.1	
Percent Blockage	1	1			1	
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						44
pX, platoon unblocked						
vC, conflicting volume	492	23				12
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	492	23				12
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	75				85
cM capacity (veh/h)	449	1029				1587

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	258	0	240
Volume Left	0	0	240
Volume Right	258	0	0
cSH	1029	1700	1587
Volume to Capacity	0.25	0.00	0.15
Queue Length 95th (m)	7.6	0.0	4.0
Control Delay (s)	9.7	0.0	7.7
Lane LOS	A		A
Approach Delay (s)	9.7	0.0	7.7
Approach LOS	A		

Intersection Summary

Average Delay	8.7
Intersection Capacity Utilization	34.7%
ICU Level of Service	A
Analysis Period (min)	15

Lanes, Volumes, Timings
17: Street B

<2028 Future Total>PM
12-20-2024

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	100	53	0	111	9
Future Volume (vph)	0	100	53	0	111	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Fit Protected						0.956
Satd. Flow (prot)	1629	0	1883	0	0	1801
Fit Permitted						0.956
Satd. Flow (perm)	1629	0	1883	0	0	1801
Link Speed (k/h)	30		30			30
Link Distance (m)	112.2		49.9			96.9
Travel Time (s)	13.5		6.0			11.6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	109	58	0	121	10
Shared Lane Traffic (%)						
Lane Group Flow (vph)	109	0	58	0	0	131
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	97	97		97	97	
Sign Control	Stop		Stop			Stop

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	26.1%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
17: Street B

<2028 Future Total>PM
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Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	0	100	53	0	111	9
Future Volume (vph)	0	100	53	0	111	9
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	109	58	0	121	10
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total (vph)	109	58	131			
Volume Left (vph)	0	0	121			
Volume Right (vph)	109	0	0			
Hadj (s)	-0.57	0.03	0.22			
Departure Headway (s)	3.8	4.3	4.4			
Degree Utilization, x	0.11	0.07	0.16			
Capacity (veh/h)	910	804	796			
Control Delay (s)	7.2	7.6	8.2			
Approach Delay (s)	7.2	7.6	8.2			
Approach LOS	A	A	A			

Intersection Summary

Delay	7.8
Level of Service	A
Intersection Capacity Utilization	26.1%
ICU Level of Service	A
Analysis Period (min)	15

Lanes, Volumes, Timings
19: Walnut Lane & Street B

<2028 Future Total>PM
12-20-2024

	↖	↗	↙	↘	↕	↔
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖			↘	↔	↔
Traffic Volume (vph)	85	26	91	450	256	9
Future Volume (vph)	85	26	91	450	256	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.968			0.995		
Flt Protected	0.963			0.992		
Satd. Flow (prot)	1756	0	0	1868	1874	0
Flt Permitted	0.963			0.992		
Satd. Flow (perm)	1756	0	0	1868	1874	0
Link Speed (k/h)	30			40	40	
Link Distance (m)	112.2			121.1	114.0	
Travel Time (s)	13.5			10.9	10.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	92	28	99	489	278	10
Shared Lane Traffic (%)						
Lane Group Flow (vph)	120	0	0	588	288	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.3	3.3	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	97	97	97			97
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	59.0%
Analysis Period (min)	15
	ICU Level of Service B

HCM Unsignalized Intersection Capacity Analysis
19: Walnut Lane & Street B

<2028 Future Total>PM
12-20-2024

	↖	↗	↙	↘	↕	↔
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖			↘	↔	↔
Traffic Volume (veh/h)	85	26	91	450	256	9
Future Volume (Veh/h)	85	26	91	450	256	9
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	92	28	99	489	278	10
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)					114	
pX, platoon unblocked						
vC, conflicting volume	970	283	288			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	970	283	288			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	64	96	92			
cM capacity (veh/h)	259	756	1274			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	120	588	288
Volume Left	92	99	0
Volume Right	28	0	10
cSH	306	1274	1700
Volume to Capacity	0.39	0.08	0.17
Queue Length 95th (m)	13.7	1.9	0.0
Control Delay (s)	24.2	2.1	0.0
Lane LOS	C	A	
Approach Delay (s)	24.2	2.1	0.0
Approach LOS	C		

Intersection Summary

Average Delay	4.1
Intersection Capacity Utilization	59.0%
Analysis Period (min)	15
	ICU Level of Service B

Lanes, Volumes, Timings
20: Street A & Walnut Lane

<2028 Future Total>PM
12-20-2024

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↗	
Traffic Volume (vph)	118	0	0	307	0	0
Future Volume (vph)	118	0	0	307	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fit						
Fit Protected						
Satd. Flow (prot)	1883	0	0	1883	1883	0
Fit Permitted						
Satd. Flow (perm)	1883	0	0	1883	1883	0
Link Speed (k/h)	40			40	30	
Link Distance (m)	121.1			433.1	80.3	
Travel Time (s)	10.9			39.0	9.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	128	0	0	334	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	128	0	0	334	0	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)		97	97		97	97
Sign Control	Stop			Stop	Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	19.5%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
20: Street A & Walnut Lane

<2028 Future Total>PM
12-20-2024

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↗	
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	118	0	0	307	0	0
Future Volume (vph)	118	0	0	307	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	128	0	0	334	0	0
Direction, Lane #						
Volume Total (vph)	128	334	0			
Volume Left (vph)	0	0	0			
Volume Right (vph)	0	0	0			
Hadj (s)	0.03	0.03	0.00			
Departure Headway (s)	4.2	4.1	4.9			
Degree Utilization, x	0.15	0.38	0.00			
Capacity (veh/h)	833	880	675			
Control Delay (s)	8.0	9.5	7.9			
Approach Delay (s)	8.0	9.5	0.0			
Approach LOS	A	A	A			

Intersection Summary	
Delay	9.1
Level of Service	A
Intersection Capacity Utilization	19.5%
ICU Level of Service	A
Analysis Period (min)	15

Lanes, Volumes, Timings
21: Building Driveways & Street A

<2028 Future Total>PM
12-20-2024

	↖	→	↘	↙	←	↖	↙	↑	↘	↙	↓	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fit												
Fit Protected												
Satd. Flow (prot)	0	1883	0	0	1883	0	0	1883	0	0	1883	0
Fit Permitted												
Satd. Flow (perm)	0	1883	0	0	1883	0	0	1883	0	0	1883	0
Link Speed (k/h)	30		30		30		30		30		30	
Link Distance (m)	193.3		80.3		63.7		34.1		34.1		34.1	
Travel Time (s)	23.2		9.6		7.6		4.1		4.1		4.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	0.0		0.0		0.0		0.0		0.0		0.0	
Link Offset(m)	0.0		0.0		0.0		0.0		0.0		0.0	
Crosswalk Width(m)	1.6		1.6		1.6		1.6		1.6		1.6	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	97	97	97	97	97	97	97	97	97	97	97	97
Sign Control	Stop		Stop		Stop		Stop		Stop		Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	0.0%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
21: Building Driveways & Street A

<2028 Future Total>PM
12-20-2024

	↖	→	↘	↙	←	↖	↙	↑	↘	↙	↓	↘
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control	Stop		Stop		Stop		Stop		Stop		Stop	
Traffic Volume (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Future Volume (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Direction, Lane #												
	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	0	0	0	0								
Volume Left (vph)	0	0	0	0								
Volume Right (vph)	0	0	0	0								
Hadj (s)	0.00	0.00	0.00	0.00								
Departure Headway (s)	3.9	3.9	3.9	3.9								
Degree Utilization, x	0.00	0.00	0.00	0.00								
Capacity (veh/h)	917	917	917	917								
Control Delay (s)	6.9	6.9	6.9	6.9								
Approach Delay (s)	0.0	0.0	0.0	0.0								
Approach LOS	A	A	A	A								

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

Lanes, Volumes, Timings
1: Walnut Lane & Kingston Road

<2028 Future Total_PHF>PM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↔	↔
Traffic Volume (vph)	38	1449	270	128	646	43	307	0	337	24	16	26
Future Volume (vph)	38	1449	270	128	646	43	307	0	337	24	16	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.0	3.6	3.5	3.0	3.6	3.7	3.3	3.5	3.7	3.2	3.7	3.7
Storage Length (m)	26.0		25.8	37.0		0.0	63.2		0.0	18.5		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	24.0			26.0			24.4			18.1		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.99		1.00	1.00		0.98		0.98	0.99	0.98	
Frt		0.976			0.991			0.850			0.907	
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1685	3444	0	1685	3505	0	1745	0	1633	1725	1710	0
Fit Permitted	0.950			0.950			0.730			0.950		
Satd. Flow (perm)	1677	3444	0	1682	3505	0	1317	0	1603	1713	1710	0
Right Turn on Red			Yes			Yes		Yes			Yes	
Satd. Flow (RTOR)		25			9				98			26
Link Speed (k/h)		60			60			40				40
Link Distance (m)		129.3			694.6			114.0				179.7
Travel Time (s)		7.8			41.7			10.3				16.2
Conf. Peds. (#/hr)	5		7	7		5	14		5	5		14
Conf. Bikes (#/hr)			1									
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	2%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	3	0	0	0	0	0	0	0	0	0
Adj. Flow (vph)	38	1449	270	128	646	43	307	0	337	24	16	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	1719	0	128	689	0	307	0	337	24	42	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	
Median Width(m)		3.1			3.1			3.3				3.3
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			1.6			4.9				4.9
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.09	1.00	1.01	1.09	1.00	0.99	1.04	1.01	0.99	1.06	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	0	0		0	0		1		1	0		0
Detector Template								Right				
Leading Detector (m)	0.0	0.0		0.0	0.0		7.5		6.1	0.0		0.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		-1.5		0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		-1.5		0.0	0.0		0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8		9.0		6.1	6.1		1.8
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Turn Type	Prot	NA		Prot	NA		Perm		Perm	Perm		NA
Protected Phases	5	2		1	6							4

Lanes, Volumes, Timings
1: Walnut Lane & Kingston Road

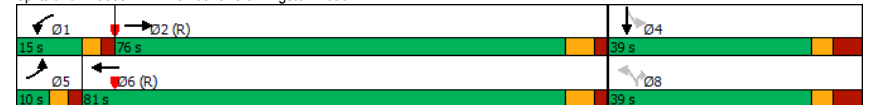
<2028 Future Total_PHF>PM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases										8	8	4
Detector Phase	5	2			1	6			8	8	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0			5.0	20.0			8.0	8.0	8.0	8.0
Minimum Split (s)	10.0	33.0			10.0	33.0			38.0	38.0	38.0	38.0
Total Split (s)	10.0	76.0			15.0	81.0			39.0	39.0	39.0	39.0
Total Split (%)	7.7%	58.5%			11.5%	62.3%			30.0%	30.0%	30.0%	30.0%
Maximum Green (s)	5.0	69.4			10.0	74.4			31.0	31.0	31.0	31.0
Yellow Time (s)	3.0	4.4			3.0	4.4			3.3	3.3	3.3	3.3
All-Red Time (s)	2.0	2.2			2.0	2.2			4.7	4.7	4.7	4.7
Lost Time Adjust (s)	0.0	0.0			0.0	0.0			0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	6.6			5.0	6.6			8.0	8.0	8.0	8.0
Lead/Lag	Lead	Lag			Lead	Lag						
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0			3.0	3.0			3.0	3.0	3.0	3.0
Recall Mode	None	C-Max			None	C-Max			None	None	None	None
Walk Time (s)		7.0			7.0	7.0			7.0	7.0	7.0	7.0
Flash Dont Walk (s)		19.0			19.0	22.0			22.0	22.0	22.0	22.0
Pedestrian Calls (#/hr)		8			4	2			2	9	9	9
Act Effect Green (s)	5.0	69.4			10.0	76.4			31.0	31.0	31.0	31.0
Actuated g/C Ratio	0.04	0.53			0.08	0.59			0.24	0.24	0.24	0.24
v/c Ratio	0.59	0.93			0.99	0.33			0.98	0.74	0.06	0.10
Control Delay	79.7	32.6			150.1	5.2			94.8	42.9	38.9	20.5
Queue Delay	0.0	0.0			0.0	0.0			0.0	0.0	0.0	0.0
Total Delay	79.7	32.6			150.1	5.2			94.8	42.9	38.9	20.5
LOS	E	C			F	A			F	D	D	C
Approach Delay		33.6				27.9			67.7			27.2
Approach LOS		C				C			E			C

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 77 (59%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 105
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.99
 Intersection Signal Delay: 38.8
 Intersection LOS: D
 Intersection Capacity Utilization 96.1%
 ICU Level of Service F
 Analysis Period (min) 15

Splits and Phases: 1: Walnut Lane & Kingston Road



Lanes, Volumes, Timings

6: Liverpool Road & Kingston Road

<2028 Future Total_PHF>PM

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑	↑	↓	↓↑	↓	↓	↓↑	↓	↓	↓↑	↓
Traffic Volume (vph)	252	1061	389	223	545	67	155	768	232	95	529	117
Future Volume (vph)	252	1061	389	223	545	67	155	768	232	95	529	117
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.1	3.4	3.6	3.3	3.7	3.4	3.8	4.1	4.8	4.7	3.8	3.3
Storage Length (m)	188.8		97.9	170.7		117.0	185.5		52.0	49.0		60.5
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	31.6			22.7			20.8			25.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.95	0.99		0.96	0.99		0.90	0.98		0.96
Frt			0.850			0.850			0.850			0.850
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1688	3461	1599	1728	3579	1579	1791	3773	1732	2026	3654	1561
Fit Permitted	0.950			0.950			0.375			0.213		
Satd. Flow (perm)	1666	3461	1512	1710	3579	1517	698	3773	1564	447	3654	1499
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			121			160			178			143
Link Speed (kh)		60			60			50				50
Link Distance (m)		694.6			396.4			257.7				348.6
Travel Time (s)		41.7			23.8			18.6				25.1
Conf. Peds. (#/hr)	20		31	31		20	29		62	62		29
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	2%	1%	1%	2%	0%	3%	1%	4%	0%	1%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	4	0	0	0
Adj. Flow (vph)	252	1061	389	223	545	67	155	768	232	95	529	117
Shared Lane Traffic (%)												
Lane Group Flow (vph)	252	1061	389	223	545	67	155	768	232	95	529	117
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.3			3.3			4.7				4.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		1.6			1.6			1.6				1.6
Two way Left Turn Lane		Yes										Yes
Headway Factor	1.08	1.03	1.00	1.04	0.99	1.03	0.97	0.93	0.87	0.86	0.97	1.04
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4				9.4
Detector 2 Size(m)		0.6			0.6			0.6				0.6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex

Lanes, Volumes, Timings

6: Liverpool Road & Kingston Road

<2028 Future Total_PHF>PM

12-20-2024

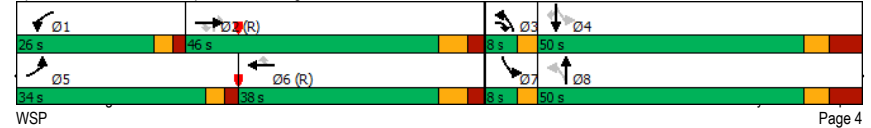


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	Prot	NA	pm+ov	Prot	NA	Perm	pm+pt	NA	custom	pm+pt	NA	Perm
Protected Phases	5	2	3	1	6		3	8		7	4	
Permitted Phases			2			6	8		2	4		4
Detector Phase	5	2	3	1	6	6	3	8	2	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	5.0	5.0	20.0	20.0	5.0	8.0	20.0	5.0	8.0	8.0
Minimum Split (s)	10.0	36.0	8.0	10.0	36.0	36.0	8.0	50.0	36.0	8.0	50.0	50.0
Total Split (s)	34.0	46.0	8.0	26.0	38.0	38.0	8.0	50.0	46.0	8.0	50.0	50.0
Total Split (%)	26.2%	35.4%	6.2%	20.0%	29.2%	29.2%	6.2%	38.5%	35.4%	6.2%	38.5%	38.5%
Maximum Green (s)	29.0	38.9	5.0	21.0	30.9	30.9	5.0	40.9	38.9	5.0	40.9	40.9
Yellow Time (s)	3.0	4.3	3.0	3.0	4.3	4.3	3.0	3.8	4.3	3.0	3.8	3.8
All-Red Time (s)	2.0	2.8	0.0	2.0	2.8	2.8	0.0	5.3	2.8	0.0	5.3	5.3
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	0.0
Total Lost Time (s)	5.0	7.1	3.0	5.0	7.1	7.1	3.0	9.1	7.1	3.0	9.1	9.1
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
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	3.0
Recall Mode	None	C-Max	None	None	C-Max	C-Max	None	Max	C-Max	None	Max	Max
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		21.0			21.0	21.0		33.0	21.0		33.0	33.0
Pedestrian Calls (#/hr)		15			20	20		28	15		15	15
Act Effct Green (s)	23.8	40.3	49.4	19.6	36.1	36.1	52.0	40.9	40.3	52.0	40.9	40.9
actuated g/C Ratio	0.18	0.31	0.38	0.15	0.28	0.28	0.40	0.31	0.31	0.40	0.31	0.31
v/c Ratio	0.82	0.99	0.60	0.86	0.55	0.12	0.48	0.65	0.38	0.40	0.46	0.21
Control Delay	50.0	54.4	25.3	82.5	43.5	0.5	31.2	41.4	11.4	28.3	37.3	3.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.0	54.4	25.3	82.5	43.5	0.5	31.2	41.4	11.4	28.3	37.3	3.6
LOS	D	D	C	F	D	A	C	D	B	C	D	A
Approach Delay		47.1			50.5			34.0				30.8
Approach LOS		D			D			C				C

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 53 (41%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 115
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.99
 Intersection Signal Delay: 41.6
 Intersection LOS: D
 Intersection Capacity Utilization 104.6%
 ICU Level of Service G
 Analysis Period (min) 15

Splits and Phases: 6: Liverpool Road & Kingston Road



Lanes, Volumes, Timings

<2028 Future Total_PHF>PM

11: Hwy 401 WB Ramps & Kingston Road

12-20-2024

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↕↕		↖	↕↕	↖↖	↖
Traffic Volume (vph)	1708	23	184	730	662	144
Future Volume (vph)	1708	23	184	730	662	144
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.0	3.7	2.7	3.8	3.8	3.7
Grade (%)	6%			0%	0%	
Storage Length (m)		0.0	47.5		0.0	52.0
Storage Lanes		0	1		2	1
Taper Length (m)			22.3		2.5	
Lane Util. Factor	0.95	0.95	1.00	0.95	0.97	1.00
Ped Bike Factor					1.00	0.98
Frt	0.998					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3577	0	1577	3618	3544	1617
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3577	0	1577	3618	3537	1591
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	1					121
Link Speed (k/h)	60			60	50	
Link Distance (m)	268.7			424.0	216.6	
Travel Time (s)	16.1			25.4	15.6	
Confl. Peds. (#/hr)					1	3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	5%	3%	2%	1%	1%
Adj. Flow (vph)	1708	23	184	730	662	144
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1731	0	184	730	662	144
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.1			3.1	7.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	0.98	1.03	1.14	0.97	0.97	0.99
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	10.0		2.0	10.0	2.0	2.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Size(m)	0.6		2.0	0.6	2.0	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		

Lanes, Volumes, Timings

<2028 Future Total_PHF>PM

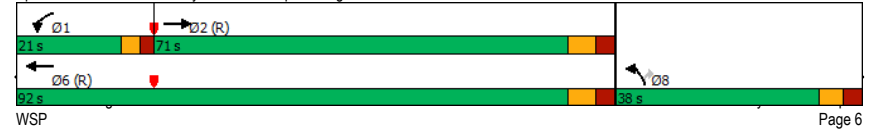
11: Hwy 401 WB Ramps & Kingston Road

12-20-2024

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		Prot	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases						8
Detector Phase	2		1	6	8	8
Switch Phase						
Minimum Initial (s)	20.0		5.0	20.0	8.0	8.0
Minimum Split (s)	50.0		10.0	50.0	38.0	38.0
Total Split (s)	71.0		21.0	92.0	38.0	38.0
Total Split (%)	54.6%		16.2%	70.8%	29.2%	29.2%
Maximum Green (s)	63.8		16.0	84.8	31.3	31.3
Yellow Time (s)	4.2		3.0	4.2	3.7	3.7
All-Red Time (s)	3.0		2.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	7.2		5.0	7.2	6.7	6.7
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?						
Vehicle Extension (s)	0.2		3.0	0.2	3.0	3.0
Recall Mode	C-Max		None	C-Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	35.0			35.0	24.0	24.0
Pedestrian Calls (#/hr)	0			0	14	14
Act Effct Green (s)	66.6		16.0	87.6	28.5	28.5
Actuated g/C Ratio	0.51		0.12	0.67	0.22	0.22
v/c Ratio	0.95		0.95	0.30	0.85	0.33
Control Delay	47.0		111.8	1.6	59.9	12.0
Queue Delay	0.4		0.0	0.0	0.0	0.0
Total Delay	47.4		111.8	1.6	59.9	12.0
LOS	D		F	A	E	B
Approach Delay	47.4			23.8	51.3	
Approach LOS	D			C	D	

Intersection Summary	
Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	69 (53%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle:	120
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.95
Intersection Signal Delay:	42.1
Intersection Capacity Utilization:	93.4%
Analysis Period (min):	15
Intersection LOS:	D
ICU Level of Service:	F

Splits and Phases: 11: Hwy 401 WB Ramps & Kingston Road



Lanes, Volumes, Timings
13: Whites Road & Kingston Road

<2028 Future Total_PHF>PM
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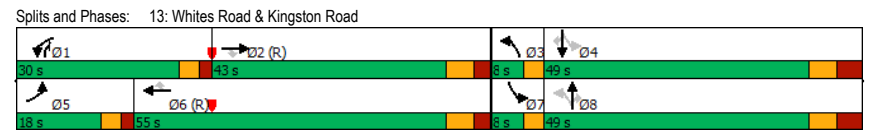
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	155	941	358	251	763	492	228	684	670	191	617	186
Future Volume (vph)	155	941	358	251	763	492	228	684	670	191	617	186
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.6	4.2	3.5	3.7	4.0	3.5	3.9	3.7	3.5	3.9	4.0
Grade (%)	6%			0%			0%			0%		
Storage Length (m)	127.0			123.0			87.1			47.0		
Storage Lanes	1			1			1			1		
Taper Length (m)	64.0			39.6			66.8			32.6		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Ped Bike Factor	0.97			0.96			0.99			0.95		
Frt	0.850			0.850			0.850			0.850		
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1681	3400	1622	1733	3579	1654	1767	5255	1588	1750	5105	1627
Flt Permitted	0.950			0.950			0.363			0.323		
Satd. Flow (perm)	1634	3400	1549	1717	3579	1502	666	5255	1470	582	5105	1550
Right Turn on Red	Yes			Yes			Yes			Yes		
Satd. Flow (RTOR)	178			147			59			186		
Link Speed (kh)	60			60			60			60		
Link Distance (m)	297.5			222.7			158.6			385.2		
Travel Time (s)	17.9			13.4			9.5			23.1		
Confl. Peds. (#/hr)	75		31	31		75	37		65	65		37
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	3%	3%	3%	2%	2%	1%	2%	2%	2%	5%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	2	0	0	4
Adj. Flow (vph)	155	941	358	251	763	492	228	684	670	191	617	186
Shared Lane Traffic (%)												
Lane Group Flow (vph)	155	941	358	251	763	492	228	684	670	191	617	186
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width(m)	3.5			3.5			3.5			3.5		
Link Offset(m)	0.0			0.0			0.0			0.0		
Crosswalk Width(m)	1.6			1.6			1.6			1.6		
Two way Left Turn Lane												
Headway Factor	1.06	1.04	0.96	1.01	0.99	0.94	1.01	0.96	1.00	1.01	0.96	0.96
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4			9.4			9.4		
Detector 2 Size(m)	0.6			0.6			0.6			0.6		

Lanes, Volumes, Timings
13: Whites Road & Kingston Road

<2028 Future Total_PHF>PM
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type	Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8	1	7	4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2	2	1	6	6	3	8	1	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	5.0	8.0	5.0	5.0	8.0	8.0
Minimum Split (s)	10.0	43.0	43.0	10.0	43.0	43.0	8.0	49.0	10.0	8.0	49.0	49.0
Total Split (s)	18.0	43.0	43.0	30.0	55.0	55.0	8.0	49.0	30.0	8.0	49.0	49.0
Total Split (%)	13.8%	33.1%	33.1%	23.1%	42.3%	42.3%	6.2%	37.7%	23.1%	6.2%	37.7%	37.7%
Maximum Green (s)	13.0	36.0	36.0	25.0	48.0	48.0	5.0	40.6	25.0	5.0	40.6	40.6
Yellow Time (s)	3.0	4.2	4.2	3.0	4.2	4.2	3.0	4.3	3.0	3.0	4.3	4.3
All-Red Time (s)	2.0	2.8	2.8	2.0	2.8	2.8	0.0	4.1	2.0	0.0	4.1	4.1
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	0.0
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	3.0	8.4	5.0	3.0	8.4	8.4
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	0.2	0.2	3.0	0.2	0.2	3.0	0.2	3.0	3.0	0.2	0.2
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	None	None	Max	Max
Walk Time (s)	7.0		7.0	7.0		7.0	7.0		7.0		7.0	7.0
Flash Dont Walk (s)	29.0		29.0	29.0		29.0	33.0		33.0		33.0	33.0
Pedestrian Calls (#/hr)	13		13	38		38	20		20		20	20
Act Effect Green (s)	13.0	38.3	38.3	22.7	48.0	48.0	51.0	40.6	66.7	51.0	40.6	40.6
Actuated g/C Ratio	0.10	0.29	0.29	0.17	0.37	0.37	0.39	0.31	0.51	0.39	0.31	0.31
v/c Ratio	0.92	0.94	0.62	0.83	0.58	0.76	0.75	0.42	0.83	0.70	0.39	0.30
Control Delay	109.5	62.4	25.0	83.8	24.8	20.7	47.4	36.3	32.0	44.1	35.8	5.8
Queue Delay	0.0	3.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	109.5	65.6	25.0	83.8	24.8	20.7	47.4	36.3	32.0	44.1	35.8	5.8
LOS	F	E	C	F	C	C	D	D	C	D	D	A
Approach Delay	60.3			33.3			36.1			31.8		
Approach LOS	E			C			D			C		

Intersection Summary												
Area Type: Other												
Cycle Length: 130												
Actuated Cycle Length: 130												
Offset: 32 (25%), Referenced to phase 2:EBT and 6:WBT, Start of Green												
Natural Cycle: 120												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 0.94												
Intersection Signal Delay: 40.9						Intersection LOS: D						
Intersection Capacity Utilization 110.2%						ICU Level of Service H						
Analysis Period (min) 15												



APPENDIX

H-2 2033 FUTURE TOTAL CONDITIONS

Lanes, Volumes, Timings
1: Walnut Lane & Kingston Road

<2033 Future Total>AM
12-20-2024

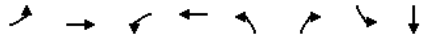
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Traffic Volume (vph)	20	872	56	102	443	30	224	0	344	14	6	29
Future Volume (vph)	20	872	56	102	443	30	224	0	344	14	6	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.0	3.6	3.5	3.0	3.6	3.7	3.3	3.5	3.7	3.2	3.7	3.7
Storage Length (m)	26.0		25.8	37.0		0.0	63.2		0.0	18.5		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	24.0			26.0			24.4			18.1		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	1.00		0.99		0.99	1.00	0.98	
Frt		0.991			0.990				0.850		0.877	
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1685	3428	0	1652	3379	0	1745	0	1585	1725	1601	0
Fit Permitted	0.950			0.950			0.732			0.950		
Satd. Flow (perm)	1677	3428	0	1644	3379	0	1330	0	1563	1720	1601	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			8				210			32
Link Speed (k/h)		60			60				40			40
Link Distance (m)		129.3			694.6				114.0			179.7
Travel Time (s)		7.8			41.7				10.3			16.2
Conf. Peds. (#/hr)	4		8	8		4	9		2	2		9
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%	4%	6%	2%	5%	14%	0%	0%	3%	0%	0%	4%
Bus Blockages (#/hr)	0	0	6	0	0	0	0	0	0	0	0	0
Adj. Flow (vph)	22	948	61	111	482	33	243	0	374	15	7	32
Shared Lane Traffic (%)												
Lane Group Flow (vph)	22	1009	0	111	515	0	243	0	374	15	39	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.1			3.1				3.3			3.3
Link Offset(m)		0.0			0.0				0.0			0.0
Crosswalk Width(m)		4.9			1.6				4.9			4.9
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.09	1.00	1.01	1.09	1.00	0.99	1.04	1.01	0.99	1.06	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	0	0		0	0		1		1	0		0
Detector Template									Right			
Leading Detector (m)	0.0	0.0		0.0	0.0		7.5		6.1	0.0		0.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		-1.5		0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		-1.5		0.0	0.0		0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8		9.0		6.1	6.1		1.8
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Turn Type	Prot	NA		Prot	NA		Perm		Perm	Perm		NA
Protected Phases	5	2		1	6							4
Permitted Phases							8		8			4

Lanes, Volumes, Timings
1: Walnut Lane & Kingston Road

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2		1	6		8		8	4	4	
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0		8.0		8.0	8.0		8.0
Minimum Split (s)	10.0	33.0		10.0	33.0		39.0		39.0	39.0		39.0
Total Split (s)	10.0	52.0		19.0	61.0		49.0		49.0	49.0		49.0
Total Split (%)	8.3%	43.3%		15.8%	50.8%		40.8%		40.8%	40.8%		40.8%
Maximum Green (s)	5.0	45.4		14.0	54.4		41.0		41.0	41.0		41.0
Yellow Time (s)	3.0	4.4		3.0	4.4		3.3		3.3	3.3		3.3
All-Red Time (s)	2.0	2.2		2.0	2.2		4.7		4.7	4.7		4.7
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Total Lost Time (s)	5.0	6.6		5.0	6.6		8.0		8.0	8.0		8.0
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0		3.0	3.0		3.0
Recall Mode	None	C-Max		None	C-Max		None		None	None		None
Walk Time (s)		7.0			7.0		7.0		7.0	7.0		7.0
Flash Dont Walk (s)		19.0			19.0		22.0		22.0	22.0		22.0
Pedestrian Calls (#/hr)		7			5		5		5	14		14
Act Effect Green (s)	7.0	59.6		13.1	70.0		27.8		27.8	27.8		27.8
Actuated g/C Ratio	0.06	0.50		0.11	0.58		0.23		0.23	0.23		0.23
v/c Ratio	0.23	0.59		0.62	0.26		0.79		0.72	0.04		0.10
Control Delay	74.5	20.6		55.5	17.8		60.8		25.1	31.8		13.2
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Total Delay	74.5	20.6		55.5	17.8		60.8		25.1	31.8		13.2
LOS	E	C		E	B		E		C	C		B
Approach Delay		21.7			24.5		39.2					18.4
Approach LOS		C			C		D					B
Intersection Summary												
Area Type:	Other											
Cycle Length:	120											
Actuated Cycle Length:	120											
Offset:	1 (1%), Referenced to phase 2:EBT and 6:WBT, Start of Green											
Natural Cycle:	85											
Control Type:	Actuated-Coordinated											
Maximum v/c Ratio:	0.79											
Intersection Signal Delay:	27.0						Intersection LOS: C					
Intersection Capacity Utilization:	73.1%						ICU Level of Service D					
Analysis Period (min):	15											
Splits and Phases: 1: Walnut Lane & Kingston Road												

Queues <2033 Future Total>AM
1: Walnut Lane & Kingston Road 12-20-2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBR	SBL	SBT
Lane Group Flow (vph)	22	1009	111	515	243	374	15	39
w/c Ratio	0.23	0.59	0.62	0.26	0.79	0.72	0.04	0.10
Control Delay	74.5	20.6	55.5	17.8	60.8	25.1	31.8	13.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	74.5	20.6	55.5	17.8	60.8	25.1	31.8	13.2
Queue Length 50th (m)	5.4	96.1	26.2	44.1	54.3	35.8	2.8	1.3
Queue Length 95th (m)	m12.5	139.1	42.8	67.8	75.1	62.8	7.5	9.0
Internal Link Dist (m)		105.3		670.6				155.7
Turn Bay Length (m)	26.0		37.0		63.2		18.5	
Base Capacity (vph)	97	1704	205	1974	454	672	587	568
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced w/c Ratio	0.23	0.59	0.54	0.26	0.54	0.56	0.03	0.07

Intersection Summary
m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings <2033 Future Total>AM
2: Street B & Kingston Road 12-20-2024



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑		↑↑		↑
Traffic Volume (vph)	818	98	0	752	0	131
Future Volume (vph)	818	98	0	752	0	131
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.3	3.7	3.5	3.7	4.5
Storage Length (m)		45.0	0.0		0.0	0.0
Storage Lanes		1	0		0	1
Taper Length (m)			2.5		2.5	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Ped Bike Factor						
Frt		0.850				0.865
Fit Protected						
Satd. Flow (prot)	3433	1516	0	3400	0	1808
Fit Permitted						
Satd. Flow (perm)	3433	1516	0	3400	0	1808
Link Speed (k/h)	60			60		30
Link Distance (m)	191.2			129.3		96.9
Travel Time (s)	11.5			7.8		11.6
Confl. Peds. (#/hr)		4				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	3%	2%	5%	2%	0%
Adj. Flow (vph)	889	107	0	817	0	142
Shared Lane Traffic (%)						
Lane Group Flow (vph)	889	107	0	817	0	142
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.0			3.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	1.01	1.04	0.99	1.01	0.99	0.88
Turning Speed (k/h)		14	24		24	14
Sign Control	Free			Free	Stop	

Intersection Summary
Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 37.4% ICU Level of Service A
Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
2: Street B & Kingston Road

<2033 Future Total>AM
12-20-2024

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑		↑↑		↑
Traffic Volume (veh/h)	818	98	0	752	0	131
Future Volume (Veh/h)	818	98	0	752	0	131
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	889	107	0	817	0	142
Pedestrians						4
Lane Width (m)					4.5	
Walking Speed (m/s)					1.1	
Percent Blockage					0	
Right turn flare (veh)						
Median type	TWLTL		TWLTL			
Median storage (veh)	2		2			
Upstream signal (m)	191		129			
pX, platoon unblocked			0.88		0.91	0.88
vC, conflicting volume			893		1302	448
vC1, stage 1 conf vol					893	
vC2, stage 2 conf vol					408	
vCu, unblocked vol			601		801	95
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	83
cM capacity (veh/h)			850		423	830
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	444	444	107	408	408	142
Volume Left	0	0	0	0	0	0
Volume Right	0	0	107	0	0	142
cSH	1700	1700	1700	1700	1700	830
Volume to Capacity	0.26	0.26	0.06	0.24	0.24	0.17
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	4.7
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	10.2
Lane LOS						B
Approach Delay (s)	0.0		0.0		10.2	
Approach LOS						B
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization			37.4%	ICU Level of Service		A
Analysis Period (min)			15			

Lanes, Volumes, Timings
3: Dixie Road & Kingston Road

<2033 Future Total>AM
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑		↑	↑↑		↑	↑		↑	↑	↑
Traffic Volume (vph)	80	738	139	78	579	94	67	15	29	155	35	144
Future Volume (vph)	80	738	139	78	579	94	67	15	29	155	35	144
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	2.8	3.6	3.4	2.8	3.5	3.1	3.6	4.0	3.7	3.8	4.2	3.7
Grade (%)	6%		0%		0%		0%		0%		0%	
Storage Length (m)	145.4		64.5	51.0		79.5	13.0		0.0	16.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	66.4			48.0			18.0			25.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		1.00	0.99		1.00	0.99		1.00	0.99	
Fr	0.976		0.979		0.900		0.879					
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1564	3280	0	1645	3298	0	1752	1769	0	1827	1759	0
Fit Permitted	0.950			0.950			0.554			0.726		
Satd. Flow (perm)	1554	3280	0	1640	3298	0	1019	1769	0	1393	1759	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)	23		18		32		157					
Link Speed (k/h)	60		60		40		60					
Link Distance (m)	896.3		191.2		44.0		236.2					
Travel Time (s)	53.8		11.5		4.0		14.2					
Confl. Peds. (#/hr)	6		4	4		6	3		2	2		3
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 (%)	2%	4%	2%	0%	6%	2%	3%	0%	0%	1%	0%	0%
Bus Blockages (#/hr)	0	0	6	0	0	6	0	0	0	0	0	0
Adj. Flow (vph)	87	802	151	85	629	102	73	16	32	168	38	157
Shared Lane Traffic (%)												
Lane Group Flow (vph)	87	953	0	85	731	0	73	48	0	168	195	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	2.8		3.8		3.8		4.9					
Link Offset(m)	0.0		0.0		0.0		4.9					
Crosswalk Width(m)	4.9		4.9		4.9		4.9					
Two way Left Turn Lane	Yes											
Headway Factor	1.17	1.04	1.07	1.13	1.01	1.08	1.00	0.94	0.99	0.97	0.92	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	0	0		0	0		0	0		1	1	
Detector Template												
Leading Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		7.5	7.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		-1.5	-1.5	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		-1.5	-1.5	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		9.0	9.0	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	

Lanes, Volumes, Timings
3: Dixie Road & Kingston Road

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases							8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	10.0	28.0		10.0	28.0		43.0	43.0		41.0	41.0	
Total Split (s)	15.0	59.0		11.0	55.0		50.0	50.0		50.0	50.0	
Total Split (%)	12.5%	49.2%		9.2%	45.8%		41.7%	41.7%		41.7%	41.7%	
Maximum Green (s)	10.0	52.4		6.0	48.4		40.5	40.5		40.5	40.5	
Yellow Time (s)	3.0	4.2		3.0	4.2		4.4	4.4		4.4	4.4	
All-Red Time (s)	2.0	2.4		2.0	2.4		5.1	5.1		5.1	5.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.6		5.0	6.6		9.5	9.5		9.5	9.5	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes			Yes								
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		14.0			14.0		23.0	23.0		23.0	23.0	
Pedestrian Calls (#/hr)		6			1		7	7		4	4	
Act Effect Green (s)	9.5	72.5		6.0	69.0		20.4	20.4		20.4	20.4	
Actuated g/C Ratio	0.08	0.60		0.05	0.58		0.17	0.17		0.17	0.17	
v/c Ratio	0.71	0.48		1.04	0.38		0.42	0.15		0.71	0.45	
Control Delay	83.0	14.8		169.9	8.3		50.1	19.1		62.4	13.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	83.0	14.8		169.9	8.3		50.1	19.1		62.4	13.5	
LOS	F	B		F	A		D	B		E	B	
Approach Delay		20.5			25.1			37.8			36.2	
Approach LOS		C			C			D			D	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 107.8 (90%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 85
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.04
 Intersection Signal Delay: 25.4 Intersection LOS: C
 Intersection Capacity Utilization 73.7% ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 3: Dixie Road & Kingston Road



Queues
3: Dixie Road & Kingston Road

<2033 Future Total>AM
12-20-2024

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	87	953	85	731	73	48	168	195
v/c Ratio	0.71	0.48	1.04	0.38	0.42	0.15	0.71	0.45
Control Delay	83.0	14.8	169.9	8.3	50.1	19.1	62.4	13.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	83.0	14.8	169.9	8.3	50.1	19.1	62.4	13.5
Queue Length 50th (m)	20.2	59.7	~21.0	36.7	15.6	3.2	37.9	7.7
Queue Length 95th (m)	#43.5	92.8	#53.9	50.4	27.6	12.4	55.9	25.6
Internal Link Dist (m)		872.3		167.2		20.0		212.2
Turn Bay Length (m)	145.4		51.0		13.0		16.0	
Base Capacity (vph)	130	1991	82	1904	343	618	470	697
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.67	0.48	1.04	0.38	0.21	0.08	0.36	0.28

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.

Lanes, Volumes, Timings
4: Street B & Shopping Plaza Entrance

<2033 Future Total>AM
12-20-2024

	↖		↗		↘	
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖		↗		↘	
Traffic Volume (vph)	13	85	22	102	66	51
Future Volume (vph)	13	85	22	102	66	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.883		0.942		0.991	
Fit Protected	0.993		0.991		0.991	
Satd. Flow (prot)	1628	0	0	1904	1770	0
Fit Permitted	0.993		0.991		0.991	
Satd. Flow (perm)	1628	0	0	1904	1770	0
Link Speed (k/h)	30		30		30	
Link Distance (m)	193.0		49.0		49.9	
Travel Time (s)	23.2		5.9		6.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	4%	0%	0%	4%	0%
Adj. Flow (vph)	14	92	24	111	72	55
Shared Lane Traffic (%)						
Lane Group Flow (vph)	106	0	0	135	127	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7		0.0		0.0	
Link Offset(m)	0.0		0.0		0.0	
Crosswalk Width(m)	1.6		1.6		1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24	14	24			14
Sign Control	Stop		Stop		Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	25.9% ICU Level of Service A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
4: Street B & Shopping Plaza Entrance

<2033 Future Total>AM
12-20-2024

	↖		↗		↘	
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖		↗		↘	
Sign Control	Stop		Stop		Stop	
Traffic Volume (vph)	13	85	22	102	66	51
Future Volume (vph)	13	85	22	102	66	51
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	14	92	24	111	72	55
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total (vph)	106	135	127			
Volume Left (vph)	14	24	0			
Volume Right (vph)	92	0	55			
Hadj (s)	-0.44	0.04	-0.22			
Departure Headway (s)	4.0	4.3	4.1			
Degree Utilization, x	0.12	0.16	0.14			
Capacity (veh/h)	840	809	860			
Control Delay (s)	7.6	8.1	7.7			
Approach Delay (s)	7.6	8.1	7.7			
Approach LOS	A	A	A			

Intersection Summary	
Delay	7.8
Level of Service	A
Intersection Capacity Utilization	25.9% ICU Level of Service A
Analysis Period (min)	15

Lanes, Volumes, Timings
5: Street B & Street A

<2033 Future Total>AM
12-20-2024

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	121	0	0	137	1
Future Volume (vph)	0	121	0	0	137	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.865					
Fit Protected						0.953
Satd. Flow (prot)	1662	0	1883	0	0	1778
Fit Permitted						0.953
Satd. Flow (perm)	1662	0	1883	0	0	1778
Link Speed (k/h)	30		30		30	
Link Distance (m)	193.3		78.3		49.0	
Travel Time (s)	23.2		9.4		5.9	
Confl. Peds. (#/hr)	1	4				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	100%	0%	2%	0%	3%	0%
Adj. Flow (vph)	0	132	0	0	149	1
Shared Lane Traffic (%)						
Lane Group Flow (vph)	132	0	0	0	0	150
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0		0.0	
Link Offset(m)	0.0		0.0		0.0	
Crosswalk Width(m)	1.6		1.6		1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14		24	
Sign Control	Stop		Stop		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	22.9%		ICU Level of Service		A	
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
5: Street B & Street A

<2033 Future Total>AM
12-20-2024

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop		Stop	
Traffic Volume (vph)	0	121	0	0	137	1
Future Volume (vph)	0	121	0	0	137	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	132	0	0	149	1
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total (vph)	132	0	150			
Volume Left (vph)	0	0	149			
Volume Right (vph)	132	0	0			
Hadj (s)	-0.60	0.00	0.25			
Departure Headway (s)	3.7	4.3	4.4			
Degree Utilization, x	0.13	0.00	0.18			
Capacity (veh/h)	945	807	793			
Control Delay (s)	7.2	7.3	8.4			
Approach Delay (s)	7.2	0.0	8.4			
Approach LOS	A	A	A			
Intersection Summary						
Delay	7.8					
Level of Service	A					
Intersection Capacity Utilization	22.9%		ICU Level of Service		A	
Analysis Period (min)	15					

Lanes, Volumes, Timings

6: Liverpool Road & Kingston Road

<2033 Future Total>AM

12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	253	492	482	185	351	50	134	388	146	84	733	230
Future Volume (vph)	253	492	482	185	351	50	134	388	146	84	733	230
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.1	3.4	3.6	3.3	3.7	3.4	3.8	4.1	4.8	4.7	3.8	3.3
Storage Length (m)	188.8	97.9	170.7		117.0	185.5		52.0	49.0		60.5	
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	31.6			22.7			20.8			25.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.98		0.97	0.99		0.96	0.99		0.93	0.98		0.96
Frt			0.850			0.850			0.850			0.850
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1671	3299	1538	1694	3510	1579	1774	3700	1647	2026	3618	1516
Fit Permitted	0.950			0.950			0.228			0.483		
Satd. Flow (perm)	1645	3299	1487	1676	3510	1517	422	3700	1536	1008	3618	1452
Right Turn on Red			Yes			Yes			Yes		Yes	
Satd. Flow (RTOR)			142			174			159			246
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		694.6			396.4			257.7			348.6	
Travel Time (s)		41.7			23.8			18.6			25.1	
Confl. Peds. (#/hr)	21		17	17		21	34		44	44		34
Confl. Bikes (#/hr)						1						
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 (%)	2%	7%	5%	3%	4%	0%	4%	3%	8%	0%	2%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	7	0	0	0
Adj. Flow (vph)	275	535	524	201	382	54	146	422	159	91	797	250
Shared Lane Traffic (%)												
Lane Group Flow (vph)	275	535	524	201	382	54	146	422	159	91	797	250
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.3			3.3			4.7			4.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane	Yes											
Headway Factor	1.08	1.03	1.00	1.04	0.99	1.03	0.97	0.93	0.88	0.86	0.97	1.04
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	

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WSP

Syncho 11 Report
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Lanes, Volumes, Timings

6: Liverpool Road & Kingston Road

<2033 Future Total>AM

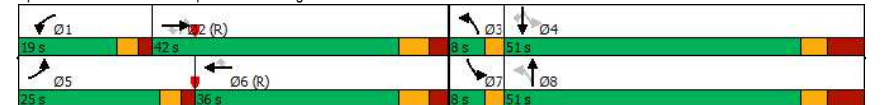
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type	Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	custom	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6	8		2	4		4
Detector Phase	5	2	2	1	6	6	3	8	2	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	5.0	8.0	20.0	5.0	8.0	8.0
Minimum Split (s)	10.0	36.0	36.0	10.0	36.0	36.0	8.0	51.0	36.0	8.0	51.0	51.0
Total Split (s)	25.0	42.0	42.0	19.0	36.0	36.0	8.0	51.0	42.0	8.0	51.0	51.0
Total Split (%)	20.8%	35.0%	35.0%	15.8%	30.0%	30.0%	6.7%	42.5%	35.0%	6.7%	42.5%	42.5%
Maximum Green (s)	20.0	34.9	34.9	14.0	28.9	28.9	5.0	41.9	34.9	5.0	41.9	41.9
Yellow Time (s)	3.0	4.3	4.3	3.0	4.3	4.3	3.0	3.8	4.3	3.0	3.8	3.8
All-Red Time (s)	2.0	2.8	2.8	2.0	2.8	2.8	0.0	5.3	2.8	0.0	5.3	5.3
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	0.0
Total Lost Time (s)	5.0	7.1	7.1	5.0	7.1	7.1	3.0	9.1	7.1	3.0	9.1	9.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
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	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	C-Max	None	Max	Max
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	21.0	21.0		21.0	21.0		33.0	21.0		33.0	33.0	
Pedestrian Calls (#/hr)	44	44		31	31		61	44		40	40	
Act Effect Green (s)	20.0	34.9	34.9	14.0	28.9	28.9	53.0	41.9	34.9	53.0	41.9	41.9
Actuated g/C Ratio	0.17	0.29	0.29	0.12	0.24	0.24	0.44	0.35	0.29	0.44	0.35	0.35
v/c Ratio	0.99	0.56	0.98	1.02	0.45	0.11	0.60	0.33	0.28	0.19	0.63	0.37
Control Delay	110.4	34.5	57.5	121.9	40.9	0.4	32.0	29.6	6.3	19.0	35.3	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	110.4	34.5	57.5	121.9	40.9	0.4	32.0	29.6	6.3	19.0	35.3	5.3
LOS	F	C	E	F	D	A	C	C	A	B	D	A
Approach Delay	59.2			63.0			25.0			27.4		
Approach LOS	E			E			C			C		

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 29.4 (25%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 115
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.02
 Intersection Signal Delay: 43.9 Intersection LOS: D
 Intersection Capacity Utilization 99.1% ICU Level of Service F
 Analysis Period (min) 15

Splits and Phases: 6: Liverpool Road & Kingston Road



Queues

<2033 Future Total>AM

6: Liverpool Road & Kingston Road

12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	275	535	524	201	382	54	146	422	159	91	797	250
w/c Ratio	0.99	0.56	0.98	1.02	0.45	0.11	0.60	0.33	0.28	0.19	0.63	0.37
Control Delay	110.4	34.5	57.5	121.9	40.9	0.4	32.0	29.6	6.3	19.0	35.3	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	110.4	34.5	57.5	121.9	40.9	0.4	32.0	29.6	6.3	19.0	35.3	5.3
Queue Length 50th (m)	69.0	28.4	30.5	-49.1	40.5	0.0	19.5	38.1	0.0	11.7	81.8	0.6
Queue Length 95th (m)	#122.6	64.2	#164.4	#96.6	55.4	0.0	32.4	51.3	15.4	21.1	102.6	17.6
Internal Link Dist (m)	670.6		372.4			233.7		324.6				
Turn Bay Length (m)	188.8	97.9	170.7	117.0	185.5	52.0	49.0	60.5				
Base Capacity (vph)	278	959	533	197	845	497	242	1291	559	487	1263	667
Starvation Cap Reductn	0	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced w/c Ratio	0.99	0.56	0.98	1.02	0.45	0.11	0.60	0.33	0.28	0.19	0.63	0.37

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.

Lanes, Volumes, Timings

<2033 Future Total>AM

8: Liverpool Road & Private Access/Pickering Parkway

12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑↑	↑	↑	↑↑↑	↑↑↑	↑	↑↑↑	↑↑↑	↑
Traffic Volume (vph)	10	17	36	194	19	59	53	541	272	146	1184	24
Future Volume (vph)	10	17	36	194	19	59	53	541	272	146	1184	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.1	3.1	3.7	3.0	3.4	3.2	2.8	3.6	3.5	3.2	3.5	3.5
Storage Length (m)	0.0	0.0	57.0	62.1	54.4	75.7	132.5	35.5				
Storage Lanes	1	0	1	1	1	1	1	1				
Taper Length (m)	2.5	12.0			29.5		28.9					
Lane Util. Factor	1.00	0.95	0.95	0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Ped Bike Factor	0.99	0.897		0.850		0.98	1.00	0.97	0.99	0.850		
Fit Protected	0.950	0.950		0.950		0.950		0.950				
Satd. Flow (prot)	1705	3058	0	3113	1858	1204	1645	5036	1523	1675	5029	1521
Fit Permitted	0.000	0.000		0.177		0.393						
Satd. Flow (perm)	0	3058	0	1858	1181	306	5036	1483	689	5029	1458	
Right Turn on Red	Yes			Yes		Yes		Yes		Yes		
Satd. Flow (RTOR)	39			141		296		144				
Link Speed (k/h)	30			50		50		50				
Link Distance (m)	82.8			328.5		162.3		257.7				
Travel Time (s)	9.9			23.7		11.7		18.6				
Confl. Peds. (#/hr)	7			7		10		11		11		
Confl. Bikes (#/hr)	1			1		1		1		1		
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%	5%	0%	23%	0%	3%	4%	3%	2%	5%
Bus Blockages (#/hr)	0	0	0	0	0	10	0	2	0	2	0	0
Adj. Flow (vph)	11	18	39	211	21	64	58	588	296	159	1287	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	11	57	0	211	21	64	58	588	296	159	1287	26
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	6.0			6.0		3.8		3.8				
Link Offset(m)	0.0			0.0		0.0		0.0				
Crosswalk Width(m)	1.6			1.6		1.6		1.6				
Two way Left Turn Lane												
Headway Factor	1.08	1.08	0.99	1.09	1.03	1.12	1.13	1.00	1.03	1.06	1.01	1.01
Turning Speed (k/h)	24	24	14	24	14	24	14	24	14	24	14	24
Number of Detectors	1	2	1	2	1	2	1	2	1	1	2	1
Detector Template	Left	Thru	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left
Leading Detector (m)	2.0	10.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		9.4		9.4				
Detector 2 Size(m)	0.6			0.6		0.6		0.6				

Lanes, Volumes, Timings

<2033 Future Total>AM

8: Liverpool Road & Private Access/Pickering Parkway

12-20-2024

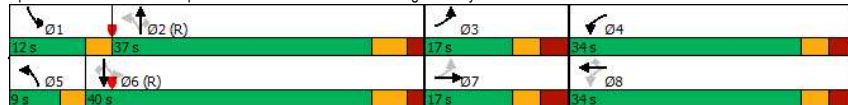


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type	CI+Ex		CI+Ex		CI+Ex		CI+Ex		CI+Ex		CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0		0.0		0.0		0.0		0.0		0.0	
Turn Type	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm
Protected Phases	3	7	4	8	8	5	2	2	6	1	6	6
Permitted Phases	7	8	8	8	2	2	2	6	6	6	6	6
Detector Phase	3	7	4	8	8	5	2	2	1	6	6	6
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	5.0	20.0	20.0	5.0	20.0	20.0	20.0
Minimum Split (s)	15.0	15.0	15.0	34.0	34.0	34.0	8.0	30.0	30.0	8.0	30.0	30.0
Total Split (s)	17.0	17.0	34.0	34.0	34.0	9.0	37.0	37.0	12.0	40.0	40.0	40.0
Total Split (%)	17.0%	17.0%	34.0%	34.0%	34.0%	9.0%	37.0%	37.0%	12.0%	40.0%	40.0%	40.0%
Maximum Green (s)	10.4	10.4	27.4	27.4	27.4	6.0	30.7	30.7	9.0	33.7	33.7	33.7
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.0	4.2	4.2	3.0	4.2	4.2	4.2
All-Red Time (s)	3.3	3.3	3.3	3.3	3.3	0.0	2.1	2.1	0.0	2.1	2.1	2.1
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	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.6	3.0	6.3	6.3	3.0	6.3	6.3	6.3
Lead/Lag												
Lead-Lag Optimize?												
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	3.0
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max	C-Max
Walk Time (s)			19.0	19.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0
Flash Dont Walk (s)			8.0	8.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Pedestrian Calls (#/hr)			0	0	21	21	21	21	21	21	21	21
Act Effect Green (s)	8.0	8.0	12.1	12.1	12.1	61.3	52.1	52.1	66.4	56.1	56.1	56.1
Actuated g/C Ratio	0.08	0.08	0.12	0.12	0.12	0.61	0.52	0.52	0.66	0.56	0.56	0.56
v/c Ratio	0.08	0.20	0.56	0.09	0.24	0.22	0.22	0.32	0.30	0.46	0.03	0.03
Control Delay	44.1	22.1	46.9	38.5	2.1	7.8	13.1	4.0	9.0	15.4	0.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.1	22.1	46.9	38.5	2.1	7.8	13.1	4.0	9.0	15.4	0.0	0.0
LOS	D	C	D	D	A	A	B	A	A	B	B	A
Approach Delay	25.7		36.6		9.9		14.4					
Approach LOS	C		D		A		B					

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 34 (34%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.56
 Intersection Signal Delay: 15.5 Intersection LOS: B
 Intersection Capacity Utilization 55.7% ICU Level of Service B
 Analysis Period (min) 15

Splits and Phases: 8: Liverpool Road & Private Access/Pickering Parkway



Queues

<2033 Future Total>AM

8: Liverpool Road & Private Access/Pickering Parkway

12-20-2024



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Group Flow (vph)	11	57	211	21	64	58	588	296	159	1287	26	
v/c Ratio	0.08	0.20	0.56	0.09	0.24	0.22	0.22	0.32	0.30	0.46	0.03	
Control Delay	44.1	22.1	46.9	38.5	2.1	7.8	13.1	4.0	9.0	15.4	0.0	
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	44.1	22.1	46.9	38.5	2.1	7.8	13.1	4.0	9.0	15.4	0.0	
Queue Length 50th (m)	2.0	1.7	20.2	3.7	0.0	2.5	23.4	9.6	11.3	57.0	0.0	
Queue Length 95th (m)	7.4	7.8	30.3	10.1	0.0	m5.5	36.1	19.7	21.5	74.7	0.0	
Internal Link Dist (m)	58.8		304.5		138.3		233.7					
Turn Bay Length (m)	57.0		62.1		54.4		75.7		132.5		35.5	
Base Capacity (vph)	177	352	852	509	425	268	2621	913	547	2821	881	
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	0.06	0.16	0.25	0.04	0.15	0.22	0.22	0.32	0.29	0.46	0.03	

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings

<2033 Future Total>AM

9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp

12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations			↗	↘	↖	↗	↘	↖	↗	↘	↖	↗
Traffic Volume (vph)	0	0	424	188	69	310	203	523	0	0	950	220
Future Volume (vph)	0	0	424	188	69	310	203	523	0	0	950	220
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.5	3.7	3.7	3.4	3.7
Storage Length (m)	0.0	0.0	0.0	0.0		125.0	50.0		0.0	0.0		0.0
Storage Lanes	0		1	1		1	1		0	0		1
Taper Length (m)	2.5			2.5			30.0			2.5		
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	1.00	0.91	1.00
Ped Bike Factor												0.96
Frt			0.865			0.850						0.850
Fit Protected				0.950	0.977		0.950					
Satd. Flow (prot)	0	0	1108	1700	1767	1551	1460	4932	0	0	4877	1601
Fit Permitted				0.950	0.977		0.141					
Satd. Flow (perm)	0	0	1108	1700	1767	1551	217	4932	0	0	4877	1538
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)						337						239
Link Speed (kh)		50		50		50		50		50		50
Link Distance (m)		433.1			226.7		372.2			162.3		
Travel Time (s)		31.2			16.3		26.8			11.7		
Confl. Peds. (#/hr)							7		14	14		7
Confl. Bikes (#/hr)								4				
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%	2%	50%	2%	0%	3%	25%	4%	4%	2%	4%	2%
Adj. Flow (vph)	0	0	461	204	75	337	221	568	0	0	1033	239
Shared Lane Traffic (%)				32%								
Lane Group Flow (vph)	0	0	461	139	140	337	221	568	0	0	1033	239
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	1.01	0.99	1.01	0.99	0.99	1.03	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors			1	1	2	1	1	2			2	1
Detector Template			Right	Left	Thru	Right	Left	Thru			Thru	Right
Leading Detector (m)			2.0	2.0	10.0	2.0	2.0	10.0			10.0	2.0
Trailing Detector (m)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Position(m)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Size(m)			2.0	2.0	0.6	2.0	2.0	0.6			0.6	2.0
Detector 1 Type			Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 2 Position(m)						9.4		9.4			9.4	
Detector 2 Size(m)						0.6		0.6			0.6	
Detector 2 Type						Cl+Ex		Cl+Ex			Cl+Ex	

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WSP

Synchro 11 Report
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Lanes, Volumes, Timings

<2033 Future Total>AM

9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp

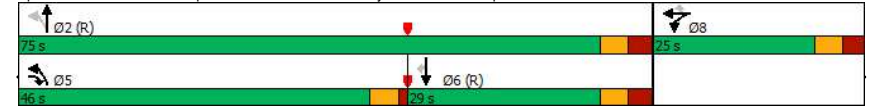
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)					0.0			0.0				0.0
Turn Type			Over	Split	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases			5	8	8		5	2			6	
Permitted Phases					8	2						6
Detector Phase			5	8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)			5.0	8.0	8.0	8.0	5.0	15.0			15.0	15.0
Minimum Split (s)			9.5	25.0	25.0	25.0	9.5	24.3			24.3	24.3
Total Split (s)			46.0	25.0	25.0	25.0	46.0	75.0			29.0	29.0
Total Split (%)			46.0%	25.0%	25.0%	25.0%	46.0%	75.0%			29.0%	29.0%
Maximum Green (s)			41.5	19.0	19.0	19.0	41.5	68.7			22.7	22.7
Yellow Time (s)			3.5	3.3	3.3	3.3	3.5	3.3			3.3	3.3
All-Red Time (s)			1.0	2.7	2.7	2.7	1.0	3.0			3.0	3.0
Lost Time Adjust (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Lost Time (s)			4.5	6.0	6.0	6.0	4.5	6.3			6.3	6.3
Lead/Lag			Lead				Lead				Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)			3.0	3.0	3.0	3.0	3.0	3.0			3.0	3.0
Recall Mode			None	None	None	None	None	C-Max			C-Max	C-Max
Walk Time (s)				14.0	14.0	14.0		13.0			13.0	13.0
Flash Dont Walk (s)				5.0	5.0	5.0		5.0			5.0	5.0
Pedestrian Calls (#/hr)				0	0	0		15			17	17
Act Effct Green (s)			45.6	13.7	13.7	13.7	75.8	74.0			23.9	23.9
Actuated g/C Ratio			0.46	0.14	0.14	0.14	0.76	0.74			0.24	0.24
v/c Ratio			0.91	0.60	0.58	0.67	0.30	0.16			0.89	0.44
Control Delay			51.2	50.7	49.5	11.3	7.5	4.3			37.1	5.5
Queue Delay			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay			51.2	50.7	49.5	11.3	7.5	4.3			37.1	5.5
LOS			D	D	D	B	A	A			D	A
Approach Delay		51.2			28.9			5.2			31.1	
Approach LOS		D			C			A			C	

Intersection Summary

Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	100
Offset:	38 (38%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle:	100
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.91
Intersection Signal Delay:	27.1
Intersection LOS:	C
Intersection Capacity Utilization:	65.6%
ICU Level of Service:	C
Analysis Period (min):	15

Splits and Phases: 9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp



WSP

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Queues

<2033 Future Total>AM

9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp

12-20-2024



Lane Group	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	461	139	140	337	221	568	1033	239
w/c Ratio	0.91	0.60	0.58	0.67	0.30	0.16	0.89	0.44
Control Delay	51.2	50.7	49.5	11.3	7.5	4.3	37.1	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.2	50.7	49.5	11.3	7.5	4.3	37.1	5.5
Queue Length 50th (m)	78.2	27.1	27.2	0.0	10.1	9.7	73.6	12.7
Queue Length 95th (m)	#152.5	44.3	44.3	23.2	30.3	16.5	#99.3	9.8
Internal Link Dist (m)			202.7			348.2	138.3	
Turn Bay Length (m)				125.0	50.0			
Base Capacity (vph)	505	323	335	567	731	3651	1165	549
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced w/c Ratio	0.91	0.43	0.42	0.59	0.30	0.16	0.89	0.44

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

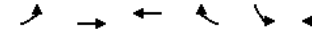
Queue shown is maximum after two cycles.

Lanes, Volumes, Timings

<2033 Future Total>AM

10: Kingston Road & Fairport Road

12-20-2024



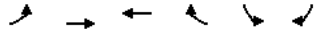
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø1
Lane Configurations	↔	↕	↕	↔	↔	↕	
Traffic Volume (vph)	96	749	703	99	182	229	
Future Volume (vph)	96	749	703	99	182	229	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (m)	3.0	3.6	3.5	3.7	3.6	4.5	
Grade (%)		6%	0%			0%	
Storage Length (m)	75.0			18.5	15.5	0.0	
Storage Lanes	1			0	1	1	
Taper Length (m)	2.5				31.3		
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00	
Frnt			0.981			0.850	
Fit Protected	0.950				0.950		
Satd. Flow (prot)	1602	3335	3384	0	1736	1708	
Fit Permitted	0.950				0.950		
Satd. Flow (perm)	1602	3335	3384	0	1736	1708	
Right Turn on Red				Yes		Yes	
Satd. Flow (RTOR)			16			249	
Link Speed (k/h)		60	60		40		
Link Distance (m)		424.0	896.3		280.0		
Travel Time (s)		25.4	53.8		25.2		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Heavy Vehicles (%)	2%	5%	3%	7%	4%	4%	
Bus Blockages (#/hr)	0	0	0	9	0	0	
Adj. Flow (vph)	104	814	764	108	198	249	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	104	814	872	0	198	249	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Left	Left	Right	Left	Right	
Median Width(m)		3.0	3.0		3.6		
Link Offset(m)		0.0	0.0		0.0		
Crosswalk Width(m)		1.6	1.6		1.6		
Two way Left Turn Lane		Yes					
Headway Factor	1.14	1.04	1.01	0.99	1.00	0.88	
Turning Speed (k/h)		24		14	24	14	
Number of Detectors	1	2	2		1	1	
Detector Template	Left	Thru	Thru		Left	Right	
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0	
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	0.6		2.0	2.0	
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4	9.4				
Detector 2 Size(m)		0.6	0.6				
Detector 2 Type		CI+Ex	CI+Ex				
Detector 2 Channel							

Lanes, Volumes, Timings

<2033 Future Total>AM

10: Kingston Road & Fairport Road

12-20-2024



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø1
Detector 2 Extend (s)		0.0	0.0				
Turn Type	Prot	NA	NA		Prot	Perm	
Protected Phases	5	2	6		4		1
Permitted Phases						4	
Detector Phase	5	2	6		4	4	
Switch Phase							
Minimum Initial (s)	5.0	20.0	20.0		8.0	8.0	5.0
Minimum Split (s)	10.0	32.3	32.3		38.1	38.1	8.0
Total Split (s)	22.0	79.0	65.0		43.0	43.0	8.0
Total Split (%)	16.9%	60.8%	50.0%		33.1%	33.1%	6%
Maximum Green (s)	17.0	72.7	58.7		35.7	35.7	5.0
Yellow Time (s)	3.0	4.3	4.3		3.3	3.3	3.0
All-Red Time (s)	2.0	2.0	2.0		4.0	4.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.3	6.3		7.3	7.3	
Lead/Lag	Lead	Lag	Lag				Lead
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	0.2	0.2		3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max		None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0	5.0
Flash Dont Walk (s)		19.0	19.0		23.0	23.0	0.0
Pedestrian Calls (#/hr)		0	1		2	2	20
Act Effect Green (s)	13.3	90.9	77.4		20.7	20.7	
Actuated g/C Ratio	0.10	0.70	0.60		0.16	0.16	
v/c Ratio	0.64	0.35	0.43		0.72	0.52	
Control Delay	104.2	0.8	16.2		65.5	9.1	
Queue Delay	0.0	0.0	0.0		0.0	0.0	
Total Delay	104.2	0.8	16.2		65.5	9.1	
LOS	F	A	B		E	A	
Approach Delay		12.5	16.2		34.1		
Approach LOS		B	B		C		

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 105 (81%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 85

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.72

Intersection Signal Delay: 18.3

Intersection LOS: B

Intersection Capacity Utilization 53.5%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 10: Kingston Road & Fairport Road



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WSP

Synchro 11 Report
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Queues

<2033 Future Total>AM

10: Kingston Road & Fairport Road

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Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	104	814	872	198	249
v/c Ratio	0.64	0.35	0.43	0.72	0.52
Control Delay	104.2	0.8	16.2	65.5	9.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	104.2	0.8	16.2	65.5	9.1
Queue Length 50th (m)	26.4	2.6	59.3	49.0	0.0
Queue Length 95th (m)	42.6	2.5	94.4	68.5	20.6
Internal Link Dist (m)		400.0	872.3	256.0	
Turn Bay Length (m)	75.0			15.5	
Base Capacity (vph)	209	2331	2021	476	649
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.50	0.35	0.43	0.42	0.38

Intersection Summary

1105-1163 Kingston Road
WSP

Synchro 11 Report
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Lanes, Volumes, Timings

<2033 Future Total>AM

11: Hwy 401 WB Ramps & Kingston Road

12-20-2024

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↖	↑↑	↖	↗
Traffic Volume (vph)	783	12	284	667	461	65
Future Volume (vph)	783	12	284	667	461	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.0	3.7	2.7	3.8	3.8	3.7
Grade (%)	6%			0%	0%	
Storage Length (m)		0.0	47.5		0.0	52.0
Storage Lanes		0	1		2	1
Taper Length (m)			22.3		2.5	
Lane Util. Factor	0.95	0.95	1.00	0.95	0.97	1.00
Frt	0.998					0.850
Fit Protected			0.950		0.950	
Satd. Flow (prot)	3479	0	1593	3548	3442	1633
Fit Permitted			0.950		0.950	
Satd. Flow (perm)	3479	0	1593	3548	3442	1633
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	1					71
Link Speed (k/h)	60			60	50	
Link Distance (m)	268.7			424.0	216.6	
Travel Time (s)	16.1			25.4	15.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	0%	2%	4%	4%	0%
Adj. Flow (vph)	851	13	309	725	501	71
Shared Lane Traffic (%)						
Lane Group Flow (vph)	864	0	309	725	501	71
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.1			3.1	7.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	0.98	1.03	1.14	0.97	0.97	0.99
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	10.0		2.0	10.0	2.0	2.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Size(m)	0.6		2.0	0.6	2.0	2.0
Detector 1 Type	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	CI+Ex			CI+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		

Lanes, Volumes, Timings

<2033 Future Total>AM

11: Hwy 401 WB Ramps & Kingston Road

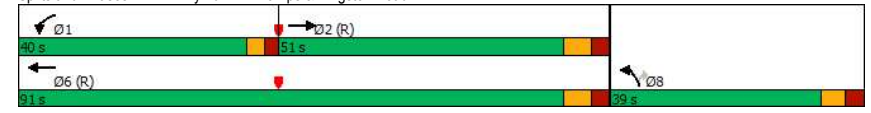
12-20-2024

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Turn Type	NA		Prot	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases						8
Detector Phase	2		1	6	8	8
Switch Phase						
Minimum Initial (s)	20.0		5.0	20.0	8.0	8.0
Minimum Split (s)	50.0		10.0	50.0	39.0	39.0
Total Split (s)	51.0		40.0	91.0	39.0	39.0
Total Split (%)	39.2%		30.8%	70.0%	30.0%	30.0%
Maximum Green (s)	43.8		35.0	83.8	32.3	32.3
Yellow Time (s)	4.2		3.0	4.2	3.7	3.7
All-Red Time (s)	3.0		2.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	7.2		5.0	7.2	6.7	6.7
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?						
Vehicle Extension (s)	0.2		3.0	0.2	3.0	3.0
Recall Mode	C-Max		None	C-Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	35.0			35.0	24.0	24.0
Pedestrian Calls (#/hr)	0			3	3	3
Act Effect Green (s)	57.3		29.4	91.7	24.4	24.4
Actuated g/C Ratio	0.44		0.23	0.71	0.19	0.19
v/c Ratio	0.56		0.86	0.29	0.78	0.20
Control Delay	12.9		58.9	15.7	58.6	10.2
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	12.9		58.9	15.7	58.6	10.2
LOS	B		E	B	E	B
Approach Delay	12.9			28.6	52.6	
Approach LOS	B			C	D	

Intersection Summary

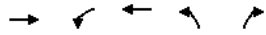
Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 66 (51%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.86
 Intersection Signal Delay: 28.7
 Intersection Capacity Utilization 66.7%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service C

Splits and Phases: 11: Hwy 401 WB Ramps & Kingston Road



Queues
11: Hwy 401 WB Ramps & Kingston Road

<2033 Future Total>AM
12-20-2024



Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	864	309	725	501	71
w/c Ratio	0.56	0.86	0.29	0.78	0.20
Control Delay	12.9	58.9	15.7	58.6	10.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	12.9	58.9	15.7	58.6	10.2
Queue Length 50th (m)	20.8	75.6	69.7	63.7	0.0
Queue Length 95th (m)	58.3	106.7	90.3	77.4	12.0
Internal Link Dist (m)	244.7		400.0	192.6	
Turn Bay Length (m)		47.5			52.0
Base Capacity (vph)	1534	428	2502	855	459
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.56	0.72	0.29	0.59	0.15

Intersection Summary

Lanes, Volumes, Timings
12: Plaza Entrance/Delta Blvd & Kingston Road

<2033 Future Total>AM
12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	76	1010	37	96	1035	74	140	6	92	42	13	124
Future Volume (vph)	76	1010	37	96	1035	74	140	6	92	42	13	124
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.2	3.4	3.5	3.1	3.4	3.4	3.6	4.6	3.7	3.2	2.8	3.7
Grade (%)		6%			0%			0%				0%
Storage Length (m)	51.8		148.5	100.0		18.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	35.3			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99				1.00		0.99	0.98		1.00		0.98
Frt		0.995			0.990			0.860				0.864
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1673	3280	0	1671	3381	0	1805	1755	0	1643	1468	0
Fit Permitted	0.950			0.950			0.662			0.688		
Satd. Flow (perm)	1662	3280	0	1671	3381	0	1249	1755	0	1185	1468	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			8			100				135
Link Speed (k/h)		60			60			30				40
Link Distance (m)		222.7			268.7			130.9				169.9
Travel Time (s)		13.4			16.1			15.7				15.3
Confl. Peds. (#/hr)	13					13	6		3	3		6
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%	4%	0%	2%	3%	3%	0%	0%	2%	5%	0%	0%
Adj. Flow (vph)	83	1098	40	104	1125	80	152	7	100	46	14	135
Shared Lane Traffic (%)												
Lane Group Flow (vph)	83	1138	0	104	1205	0	152	107	0	46	149	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.6				3.6
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		1.6			1.6			1.6				1.6
Two way Left Turn Lane					Yes							
Headway Factor	1.10	1.07	1.06	1.08	1.03	1.03	1.00	0.87	0.99	1.06	1.13	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	

Lanes, Volumes, Timings

<2033 Future Total>AM

12: Plaza Entrance/Delta Blvd & Kingston Road

12-20-2024

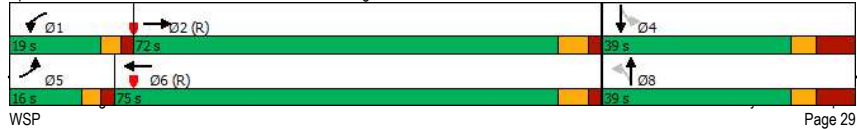


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	10.0	31.9		10.0	31.9		37.6	37.6		37.6	37.6	
Total Split (s)	16.0	72.0		19.0	75.0		39.0	39.0		39.0	39.0	
Total Split (%)	12.3%	55.4%		14.6%	57.7%		30.0%	30.0%		30.0%	30.0%	
Maximum Green (s)	11.0	65.1		14.0	68.1		29.0	29.0		29.0	29.0	
Yellow Time (s)	3.0	4.7		3.0	4.7		3.8	3.8		3.8	3.8	
All-Red Time (s)	2.0	2.2		2.0	2.2		6.2	6.2		6.2	6.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.9		5.0	6.9		10.0	10.0		10.0	10.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	0.2		3.0	0.2		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		18.0			18.0		20.0	20.0		20.0	20.0	
Pedestrian Calls (#/hr)		1			16		0	0		1	1	
Act Effct Green (s)	10.0	75.0		12.1	77.1		20.9	20.9		20.9	20.9	
Actuated g/C Ratio	0.08	0.58		0.09	0.59		0.16	0.16		0.16	0.16	
v/c Ratio	0.65	0.60		0.67	0.60		0.76	0.29		0.24	0.43	
Control Delay	86.0	27.4		80.4	28.5		74.1	11.5		48.1	12.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	86.0	27.4		80.4	28.5		74.1	11.5		48.1	12.9	
LOS	F	C		F	C		E	B		D	B	
Approach Delay		31.4			32.7			48.2			21.2	
Approach LOS		C			C			D			C	

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 49 (38%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.76
 Intersection Signal Delay: 32.7 Intersection LOS: C
 Intersection Capacity Utilization 81.0% ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 12: Plaza Entrance/Delta Blvd & Kingston Road

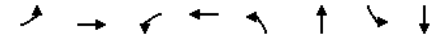


Queues

<2033 Future Total>AM

12: Plaza Entrance/Delta Blvd & Kingston Road

12-20-2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	83	1138	104	1205	152	107	46	149
v/c Ratio	0.65	0.60	0.67	0.60	0.76	0.29	0.24	0.43
Control Delay	86.0	27.4	80.4	28.5	74.1	11.5	48.1	12.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	86.0	27.4	80.4	28.5	74.1	11.5	48.1	12.9
Queue Length 50th (m)	21.9	127.4	27.4	162.3	37.6	1.5	10.4	3.1
Queue Length 95th (m)	#40.7	162.8	44.7	187.7	57.4	16.2	20.7	20.6
Internal Link Dist (m)		198.7		244.7		106.9		145.9
Turn Bay Length (m)	51.8		100.0					
Base Capacity (vph)	141	1894	179	2009	278	469	264	432
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.60	0.58	0.60	0.55	0.23	0.17	0.34

Intersection Summary

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

Lanes, Volumes, Timings

13: Whites Road & Kingston Road

<2033 Future Total>AM

12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	78	283	294	286	557	290	146	390	462	180	796	175
Future Volume (vph)	78	283	294	286	557	290	146	390	462	180	796	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.6	4.2	3.5	3.7	4.0	3.5	3.9	3.7	3.5	3.9	4.0
Grade (%)	6%		0%		0%		0%		0%		0%	
Storage Length (m)	127.0		123.0		87.1		35.0		72.0		47.0	
Storage Lanes	1		1		1		1		1		1	
Taper Length (m)	64.0		39.6		66.8		32.6		32.6		32.6	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Ped Bike Factor	0.98		0.97		0.99		0.95		0.99		0.97	
Frt	0.850		0.850		0.850		0.850		0.850		0.850	
Fit Protected	0.950		0.950		0.950		0.950		0.950		0.950	
Satd. Flow (prot)	1633	3335	1607	1767	3510	1606	1700	5057	1558	1750	5057	1625
Fit Permitted	0.950		0.950		0.232		0.495		0.495		0.495	
Satd. Flow (perm)	1604	3335	1565	1751	3510	1522	413	5057	1509	902	5057	1574
Right Turn on Red	Yes		Yes		Yes		Yes		Yes		Yes	
Satd. Flow (RTOR)	154		250		240		173		173		173	
Link Speed (k/h)	60		60		60		60		60		60	
Link Distance (m)	297.5		222.7		158.6		385.2		385.2		385.2	
Travel Time (s)	17.9		13.4		9.5		23.1		23.1		23.1	
Confl. Peds. (#/hr)	38	13	13	38	20	20	20	20	20	20	20	20
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 (%)	6%	5%	4%	1%	4%	5%	5%	6%	4%	2%	6%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	2	0	0	0	2
Adj. Flow (vph)	85	308	320	311	605	315	159	424	502	196	865	190
Shared Lane Traffic (%)	85		308		320		311		605		315	
Lane Group Flow (vph)	85	308	320	311	605	315	159	424	502	196	865	190
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width(m)	3.5		3.5		3.5		3.5		3.5		3.5	
Link Offset(m)	0.0		0.0		0.0		0.0		0.0		0.0	
Crosswalk Width(m)	1.6		1.6		1.6		1.6		1.6		1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.04	0.96	1.01	0.99	0.94	1.01	0.96	1.00	1.01	0.96	0.95
Turning Speed (k/h)	24	14	14	24	14	24	14	24	14	24	14	24
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4		9.4		9.4		9.4		9.4		9.4	
Detector 2 Size(m)	0.6		0.6		0.6		0.6		0.6		0.6	

Lanes, Volumes, Timings

13: Whites Road & Kingston Road

<2033 Future Total>AM

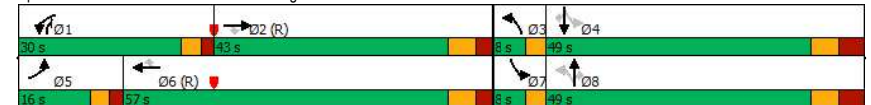
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type	Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0		0.0		0.0		0.0		0.0		0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8	1	7	4	
Permitted Phases			2			6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	1	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	5.0	8.0	5.0	5.0	8.0	8.0
Minimum Split (s)	10.0	43.0	43.0	10.0	43.0	43.0	8.0	49.0	10.0	8.0	49.0	49.0
Total Split (s)	16.0	43.0	43.0	30.0	57.0	57.0	8.0	49.0	30.0	8.0	49.0	49.0
Total Split (%)	12.3%	33.1%	33.1%	23.1%	43.8%	43.8%	6.2%	37.7%	23.1%	6.2%	37.7%	37.7%
Maximum Green (s)	11.0	36.0	36.0	25.0	50.0	50.0	5.0	40.6	25.0	5.0	40.6	40.6
Yellow Time (s)	3.0	4.2	4.2	3.0	4.2	4.2	3.0	4.3	3.0	3.0	4.3	4.3
All-Red Time (s)	2.0	2.8	2.8	2.0	2.8	2.8	0.0	4.1	2.0	0.0	4.1	4.1
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	0.0
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	3.0	8.4	5.0	3.0	8.4	8.4
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	0.2	0.2	3.0	0.2	0.2	3.0	0.2	3.0	3.0	0.2	0.2
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	None	None	Max	Max
Walk Time (s)	7.0		7.0		7.0		7.0		7.0		7.0	
Flash Dont Walk (s)	29.0		29.0		29.0		29.0		33.0		33.0	
Pedestrian Calls (#/hr)	31		31		75		75		65		37	
Act Effect Green (s)	10.1	36.5	36.5	24.5	50.9	50.9	51.0	40.6	68.5	51.0	40.6	40.6
Actuated g/C Ratio	0.08	0.28	0.28	0.19	0.39	0.39	0.39	0.31	0.53	0.39	0.31	0.31
v/c Ratio	0.67	0.33	0.58	0.94	0.44	0.42	0.75	0.27	0.55	0.51	0.55	0.31
Control Delay	83.0	38.4	25.1	65.9	28.9	14.3	52.0	34.1	10.8	32.7	38.7	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	83.0	38.4	25.1	65.9	28.9	14.3	52.0	34.1	10.8	32.7	38.7	7.6
LOS	F	D	C	E	C	B	D	C	B	C	D	A
Approach Delay	37.8		34.5		26.0		33.0		33.0		33.0	
Approach LOS	D		C		C		C		C		C	

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 107 (82%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 120
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.94
 Intersection Signal Delay: 32.4
 Intersection Capacity Utilization 109.5%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service H

Splits and Phases: 13: Whites Road & Kingston Road



Queues <2033 Future Total>AM
13: Whites Road & Kingston Road 12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	85	308	320	311	605	315	159	424	502	196	865	190
w/c Ratio	0.67	0.33	0.58	0.94	0.44	0.42	0.75	0.27	0.55	0.51	0.55	0.31
Control Delay	83.0	38.4	25.1	65.9	28.9	14.3	52.0	34.1	10.8	32.7	38.7	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	83.0	38.4	25.1	65.9	28.9	14.3	52.0	34.1	10.8	32.7	38.7	7.6
Queue Length 50th (m)	21.4	33.2	36.4	80.3	77.0	46.7	25.9	29.8	36.3	32.6	67.3	3.0
Queue Length 95th (m)	#42.5	46.2	67.4	#129.4	90.5	63.5	#50.2	39.1	63.0	50.3	81.1	19.8
Internal Link Dist (m)		273.5			198.7			134.6			361.2	
Turn Bay Length (m)	127.0		123.0	87.1		35.0	72.0		35.0	88.5		47.0
Base Capacity (vph)	138	936	550	339	1373	747	211	1579	922	386	1579	610
Starvation Cap Reductn	0	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced w/c Ratio	0.62	0.33	0.58	0.92	0.44	0.42	0.75	0.27	0.54	0.51	0.55	0.31

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

Lanes, Volumes, Timings <2033 Future Total>AM
14: Whites Road & Highway 401 EB Off Ramp 12-20-2024



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↑↑↑	↑		↑↑	↑↑	
Traffic Volume (vph)	653	268	0	698	447	0
Future Volume (vph)	653	268	0	698	447	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.7	3.6	3.8	3.7
Storage Length (m)	0.0	225.0	0.0			0.0
Storage Lanes	2	1	0			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	0.97	0.91	1.00	0.95	0.95	1.00
Ped Bike Factor						
Frt	0.994	0.850				
Flt Protected	0.954					
Satd. Flow (prot)	3391	1400	0	3374	3481	0
Flt Permitted	0.954					
Satd. Flow (perm)	3391	1400	0	3374	3481	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	4	262				
Link Speed (k/h)	50			60	60	
Link Distance (m)	295.9			185.9	316.9	
Travel Time (s)	21.3			11.2	19.0	
Confl. Peds. (#/hr)			7			7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	5%	2%	7%	6%	2%
Adj. Flow (vph)	710	291	0	759	486	0
Shared Lane Traffic (%)		10%				
Lane Group Flow (vph)	739	262	0	759	486	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.2			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	0.99	1.00	0.97	0.99
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	2.0	2.0		10.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	2.0		0.6	0.6	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				CI+Ex	CI+Ex	
Detector 2 Channel						

Lanes, Volumes, Timings

<2033 Future Total>AM

14: Whites Road & Highway 401 EB Off Ramp

12-20-2024

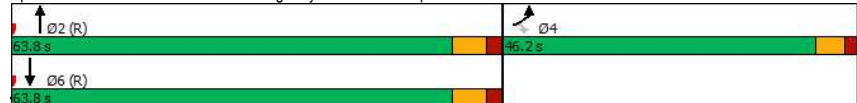


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	8.0	8.0		20.0	20.0	
Minimum Split (s)	28.5	28.5		27.7	27.7	
Total Split (s)	46.2	46.2		63.8	63.8	
Total Split (%)	42.0%	42.0%		58.0%	58.0%	
Maximum Green (s)	40.7	40.7		57.1	57.1	
Yellow Time (s)	3.7	3.7		4.5	4.5	
All-Red Time (s)	1.8	1.8		2.2	2.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.5	5.5		6.7	6.7	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		0.2	0.2	
Recall Mode	None	None		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	16.0	16.0		14.0	14.0	
Pedestrian Calls (#/hr)	3	3		0	0	
Act Effect Green (s)	30.3	30.3		67.5	67.5	
Actuated g/C Ratio	0.28	0.28		0.61	0.61	
v/c Ratio	0.79	0.46		0.37	0.23	
Control Delay	42.9	6.1		11.9	10.6	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	42.9	6.1		11.9	10.6	
LOS	D	A		B	B	
Approach Delay	33.2			11.9	10.6	
Approach LOS	C			B	B	

Intersection Summary

Area Type: Other
 Cycle Length: 110
 Actuated Cycle Length: 110
 Offset: 79.2 (72%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.79
 Intersection Signal Delay: 21.1 Intersection LOS: C
 Intersection Capacity Utilization 50.9% ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 14: Whites Road & Highway 401 EB Off Ramp



Queues

<2033 Future Total>AM

14: Whites Road & Highway 401 EB Off Ramp

12-20-2024



Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	739	262	759	486
v/c Ratio	0.79	0.46	0.37	0.23
Control Delay	42.9	6.1	11.9	10.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	42.9	6.1	11.9	10.6
Queue Length 50th (m)	75.3	0.0	39.7	22.8
Queue Length 95th (m)	88.3	18.7	60.4	36.5
Internal Link Dist (m)	271.9		161.9	292.9
Turn Bay Length (m)		225.0		
Base Capacity (vph)	1257	683	2069	2135
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.59	0.38	0.37	0.23

Intersection Summary

Lanes, Volumes, Timings
15: Dixie Road & Shopping Plaza Entrance

<2033 Future Total>AM
12-20-2024

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	111	0	0	252	0
Future Volume (vph)	0	111	0	0	252	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.1	3.7	4.0	3.7	3.7	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.865					
Fit Protected				0.950		
Satd. Flow (prot)	1701	0	1946	0	0	1867
Fit Permitted	0.950					
Satd. Flow (perm)	1701	0	1946	0	0	1867
Link Speed (k/h)	30	40		40		
Link Distance (m)	193.0	106.6		44.0		
Travel Time (s)	23.2	9.6		4.0		
Confl. Peds. (#/hr)	5		8			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	1%	2%
Adj. Flow (vph)	0	121	0	0	274	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	121	0	0	0	0	274
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	4.1	3.6		3.6		
Link Offset(m)	0.0	0.0		0.0		
Crosswalk Width(m)	1.6	1.6		1.6		
Two way Left Turn Lane						
Headway Factor	0.93	0.99	0.94	0.99	0.99	0.94
Turning Speed (k/h)	24	14	14		24	
Sign Control	Stop	Free		Free		

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	28.9%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
15: Dixie Road & Shopping Plaza Entrance

<2033 Future Total>AM
12-20-2024

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	111	0	0	252	0
Future Volume (Veh/h)	0	111	0	0	252	0
Sign Control	Stop	Free		Free		
Grade	0%	0%		0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	121	0	0	274	0
Pedestrians	8					5
Lane Width (m)	4.1					4.0
Walking Speed (m/s)	1.1					1.1
Percent Blockage	1					1
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						44
pX, platoon unblocked						
vC, conflicting volume	556	13			8	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	556	13			8	
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	89			83	
cM capacity (veh/h)	405	1053			1605	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	121	0	274
Volume Left	0	0	274
Volume Right	121	0	0
cSH	1053	1700	1605
Volume to Capacity	0.11	0.00	0.17
Queue Length 95th (m)	3.0	0.0	4.7
Control Delay (s)	8.9	0.0	7.7
Lane LOS	A		A
Approach Delay (s)	8.9	0.0	7.7
Approach LOS	A		

Intersection Summary			
Average Delay	8.1		
Intersection Capacity Utilization	28.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings
17: Street B

<2033 Future Total>AM
12-20-2024

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	43	70	76	24	75	52
Future Volume (vph)	43	70	76	24	75	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.917		0.968			
Fit Protected	0.981					0.971
Satd. Flow (prot)	1694	0	1823	0	0	1829
Fit Permitted	0.981					0.971
Satd. Flow (perm)	1694	0	1823	0	0	1829
Link Speed (k/h)	30		30			30
Link Distance (m)	112.2		49.9			96.9
Travel Time (s)	13.5		6.0			11.6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	47	76	83	26	82	57
Shared Lane Traffic (%)						
Lane Group Flow (vph)	123	0	109	0	0	139
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Stop			Stop

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	26.9%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
17: Street B

<2033 Future Total>AM
12-20-2024

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	43	70	76	24	75	52
Future Volume (vph)	43	70	76	24	75	52
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	47	76	83	26	82	57
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total (vph)	123	109	139			
Volume Left (vph)	47	0	82			
Volume Right (vph)	76	26	0			
Hadj (s)	-0.26	-0.11	0.15			
Departure Headway (s)	4.2	4.2	4.4			
Degree Utilization, x	0.14	0.13	0.17			
Capacity (veh/h)	812	818	775			
Control Delay (s)	7.9	7.8	8.4			
Approach Delay (s)	7.9	7.8	8.4			
Approach LOS	A	A	A			

Intersection Summary

Delay	8.1
Level of Service	A
Intersection Capacity Utilization	26.9%
ICU Level of Service	A
Analysis Period (min)	15

Lanes, Volumes, Timings
19: Walnut Lane & Street B

<2033 Future Total>AM
12-20-2024

	↖		↗		↘	
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖		↗		↘	
Traffic Volume (vph)	32	67	42	507	211	71
Future Volume (vph)	32	67	42	507	211	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.909		0.966			
Flt Protected	0.984		0.996			
Satd. Flow (prot)	1685		1876		1819	
Flt Permitted	0.984		0.996			
Satd. Flow (perm)	1685		1876		1819	
Link Speed (k/h)	30		40		40	
Link Distance (m)	112.2		121.1		114.0	
Travel Time (s)	13.5		10.9		10.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	35	73	46	551	229	77
Shared Lane Traffic (%)						
Lane Group Flow (vph)	108	0	0	597	306	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7		3.3		3.3	
Link Offset(m)	0.0		0.0		0.0	
Crosswalk Width(m)	1.6		1.6		1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24	14	24	14		
Sign Control	Stop		Free		Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	60.3%
Analysis Period (min)	15
	ICU Level of Service B

HCM Unsignalized Intersection Capacity Analysis
19: Walnut Lane & Street B

<2033 Future Total>AM
12-20-2024

	↖		↗		↘	
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖		↗		↘	
Traffic Volume (veh/h)	32	67	42	507	211	71
Future Volume (Veh/h)	32	67	42	507	211	71
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	35	73	46	551	229	77
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (m)	114					
pX, platoon unblocked						
vC, conflicting volume	910	268	306			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	910	268	306			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	88	91	96			
cM capacity (veh/h)	293	771	1255			

Direction, Lane #

	EB 1	NB 1	SB 1
Volume Total	108	597	306
Volume Left	35	46	0
Volume Right	73	0	77
cSH	505	1255	1700
Volume to Capacity	0.21	0.04	0.18
Queue Length 95th (m)	6.1	0.9	0.0
Control Delay (s)	14.1	1.0	0.0
Lane LOS	B	A	
Approach Delay (s)	14.1	1.0	0.0
Approach LOS	B		

Intersection Summary

Average Delay	2.1	
Intersection Capacity Utilization	60.3%	ICU Level of Service B
Analysis Period (min)	15	

Lanes, Volumes, Timings
20: Street A & Walnut Lane

<2033 Future Total>AM
12-20-2024

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↗	↗
Traffic Volume (vph)	79	42	123	231	279	197
Future Volume (vph)	79	42	123	231	279	197
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.953			0.983	0.944	
Fit Protected				0.983	0.972	
Satd. Flow (prot)	1795	0	0	1851	1728	0
Fit Permitted				0.983	0.972	
Satd. Flow (perm)	1795	0	0	1851	1728	0
Link Speed (k/h)	40			40	30	
Link Distance (m)	121.1			433.1	80.3	
Travel Time (s)	10.9			39.0	9.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	86	46	134	251	303	214
Shared Lane Traffic (%)						
Lane Group Flow (vph)	132	0	0	385	517	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)		14	24		24	14
Sign Control	Stop			Stop	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	63.2%
ICU Level of Service	B
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
20: Street A & Walnut Lane

<2033 Future Total>AM
12-20-2024

	→	↖	↗	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↗	↗
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	79	42	123	231	279	197
Future Volume (vph)	79	42	123	231	279	197
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	86	46	134	251	303	214
Direction, Lane #						
Volume Total (vph)	EB 1	WB 1	NB 1			
Volume Left (vph)	132	385	517			
Volume Right (vph)	0	134	303			
Hadj (s)	46	0	214			
Departure Headway (s)	-0.18	0.10	-0.10			
Degree Utilization, x	5.9	5.7	5.3			
Capacity (veh/h)	0.22	0.61	0.76			
Control Delay (s)	549	598	659			
Approach Delay (s)	10.5	17.4	23.2			
Approach LOS	B	C	C			

Intersection Summary

Delay	19.4
Level of Service	C
Intersection Capacity Utilization	63.2%
ICU Level of Service	B
Analysis Period (min)	15

Lanes, Volumes, Timings
21: Building Driveways & Street A

<2033 Future Total>AM
12-20-2024

	↖	→	↘	↙	←	↖	↙	↘	↙	↘	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	30	241	38	46	83	36	0	0	132	104	0	0
Future Volume (vph)	30	241	38	46	83	36	0	0	132	104	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.984			0.971			0.865				
Flt Protected		0.995			0.986						0.950	
Satd. Flow (prot)	0	1844	0	0	1803	0	0	1629	0	0	1789	0
Flt Permitted		0.995			0.986						0.950	
Satd. Flow (perm)	0	1844	0	0	1803	0	0	1629	0	0	1789	0
Link Speed (k/h)		30			30			30			30	
Link Distance (m)		193.3			80.3			63.7			34.1	
Travel Time (s)		23.2			9.6			7.6			4.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	262	41	50	90	39	0	0	143	113	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	336	0	0	179	0	0	143	0	0	113	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	43.2%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
21: Building Driveways & Street A

<2033 Future Total>AM
12-20-2024

	↖	→	↘	↙	←	↖	↙	↘	↙	↘	↙	↘
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	30	241	38	46	83	36	0	0	132	104	0	0
Future Volume (vph)	30	241	38	46	83	36	0	0	132	104	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)	33	262	41	50	90	39	0	0	143	113	0	0
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	336	179	143	113								
Volume Left (vph)	33	50	0	113								
Volume Right (vph)	41	39	143	0								
Hadj (s)	-0.02	-0.04	-0.57	0.23								
Departure Headway (s)	4.8	5.0	4.8	5.6								
Degree Utilization, x	0.45	0.25	0.19	0.18								
Capacity (veh/h)	709	668	660	572								
Control Delay (s)	11.7	9.6	8.9	9.8								
Approach Delay (s)	11.7	9.6	8.9	9.8								
Approach LOS	B	A	A	A								

Intersection Summary	
Delay	10.4
Level of Service	B
Intersection Capacity Utilization	43.2%
ICU Level of Service	A
Analysis Period (min)	15

Lanes, Volumes, Timings
20: Street A & Walnut Lane

<2033 Future Total_Signal>AM
12-20-2024

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↗	↗
Traffic Volume (vph)	79	42	123	231	279	197
Future Volume (vph)	79	42	123	231	279	197
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.953			0.944		
Flt Protected				0.983	0.972	
Satd. Flow (prot)	1795	0	0	1851	1728	0
Flt Permitted				0.839	0.972	
Satd. Flow (perm)	1795	0	0	1580	1728	0
Right Turn on Red		Yes			Yes	
Satd. Flow (RTOR)	46				61	
Link Speed (k/h)	40			40	30	
Link Distance (m)	121.1			433.1	80.3	
Travel Time (s)	10.9			39.0	9.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	86	46	134	251	303	214
Shared Lane Traffic (%)						
Lane Group Flow (vph)	132	0	0	385	517	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2		1	2	1	
Detector Template	Thru		Left	Thru	Left	
Leading Detector (m)	10.0		2.0	10.0	2.0	
Trailing Detector (m)	0.0		0.0	0.0	0.0	
Detector 1 Position(m)	0.0		0.0	0.0	0.0	
Detector 1 Size(m)	0.6		2.0	0.6	2.0	
Detector 1 Type	CI+Ex		CI+Ex	CI+Ex	CI+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	CI+Ex			CI+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		Perm	NA	Prot	
Protected Phases	2			6	8	
Permitted Phases				6		
Detector Phase	2			6	8	
Switch Phase						
Minimum Initial (s)	20.0			20.0	8.0	

Lanes, Volumes, Timings
20: Street A & Walnut Lane

<2033 Future Total_Signal>AM
12-20-2024

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Minimum Split (s)	28.0		28.0	28.0	23.0	
Total Split (s)	35.0		35.0	35.0	25.0	
Total Split (%)	58.3%		58.3%	58.3%	41.7%	
Maximum Green (s)	29.2		29.2	29.2	18.3	
Yellow Time (s)	3.3		3.3	3.3	3.0	
All-Red Time (s)	2.5		2.5	2.5	3.7	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	5.8			5.8	6.7	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	Max		Max	Max	None	
Walk Time (s)	7.0		7.0	7.0	7.0	
Flash Dont Walk (s)	15.0		15.0	15.0	9.0	
Pedestrian Calls (#/hr)	0		0	0	0	
Act Effct Green (s)	29.2			29.2	17.8	
Actuated g/C Ratio	0.49			0.49	0.30	
v/c Ratio	0.15			0.50	0.92	
Control Delay	6.3			13.2	44.1	
Queue Delay	0.0			0.0	0.0	
Total Delay	6.3			13.2	44.1	
LOS	A			B	D	
Approach Delay	6.3			13.2	44.1	
Approach LOS	A			B	D	

Intersection Summary

Area Type:	Other
Cycle Length: 60	
Actuated Cycle Length: 59.5	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.92	
Intersection Signal Delay: 27.8	Intersection LOS: C
Intersection Capacity Utilization 78.4%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 20: Street A & Walnut Lane



Lanes, Volumes, Timings
3: Dixie Road & Kingston Road

<2033 Future Total_PHF>AM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Traffic Volume (vph)	80	738	139	78	579	94	67	15	29	155	35	144
Future Volume (vph)	80	738	139	78	579	94	67	15	29	155	35	144
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	2.8	3.6	3.4	2.8	3.5	3.1	3.6	4.0	3.7	3.8	4.2	3.7
Grade (%)	6%		0%		0%		0%		0%		0%	
Storage Length (m)	145.4		64.5	51.0		79.5	13.0		0.0	16.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	66.4			48.0			18.0			25.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		1.00	0.99		1.00	0.99		1.00	0.99	
Frt	0.976		0.979		0.901		0.879					
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1564	3280	0	1645	3298	0	1752	1771	0	1827	1759	0
Flt Permitted	0.950			0.950			0.592			0.728		
Satd. Flow (perm)	1553	3280	0	1639	3298	0	1089	1771	0	1397	1759	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		23			18			29			144	
Link Speed (kh)	60		60		40		60		60		60	
Link Distance (m)	896.3		191.2		44.0		236.2					
Travel Time (s)	53.8		11.5		4.0		14.2					
Confl. Peds. (#/hr)	6		4	4		6	3		2	2		3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	4%	2%	0%	6%	2%	3%	0%	0%	1%	0%	0%
Bus Blockages (#/hr)	0	0	6	0	0	6	0	0	0	0	0	0
Adj. Flow (vph)	80	738	139	78	579	94	67	15	29	155	35	144
Shared Lane Traffic (%)												
Lane Group Flow (vph)	80	877	0	78	673	0	67	44	0	155	179	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	
Median Width(m)	2.8		2.8		3.8		4.9		4.9		4.9	
Link Offset(m)	0.0		0.0		0.0		0.0		0.0		0.0	
Crosswalk Width(m)	4.9		4.9		4.9		4.9		4.9		4.9	
Two way Left Turn Lane	Yes											
Headway Factor	1.17	1.04	1.07	1.13	1.01	1.08	1.00	0.94	0.99	0.97	0.92	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	0	0		0	0		0	0		1	1	
Detector Template												
Leading Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		7.5	7.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		-1.5	-1.5	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		-1.5	-1.5	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		9.0	9.0	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	

Lanes, Volumes, Timings
3: Dixie Road & Kingston Road

<2033 Future Total_PHF>AM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases							8		4			
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	10.0	28.0		10.0	28.0		43.0	43.0		41.0	41.0	
Total Split (s)	15.0	59.0		11.0	55.0		50.0	50.0		50.0	50.0	
Total Split (%)	12.5%	49.2%		9.2%	45.8%		41.7%	41.7%		41.7%	41.7%	
Maximum Green (s)	10.0	52.4		6.0	48.4		40.5	40.5		40.5	40.5	
Yellow Time (s)	3.0	4.2		3.0	4.2		4.4	4.4		4.4	4.4	
All-Red Time (s)	2.0	2.4		2.0	2.4		5.1	5.1		5.1	5.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.6		5.0	6.6		9.5	9.5		9.5	9.5	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes			Yes								
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		14.0			14.0		23.0	23.0		23.0	23.0	
Pedestrian Calls (#/hr)		6			1		7	7		4	4	
Act Effect Green (s)	9.3	73.4		6.0	72.5		19.5	19.5		19.5	19.5	
Actuated g/C Ratio	0.08	0.61		0.05	0.60		0.16	0.16		0.16	0.16	
v/c Ratio	0.66	0.44		0.95	0.34		0.38	0.14		0.69	0.44	
Control Delay	78.8	13.8		149.3	7.1		48.7	19.8		61.5	13.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	78.8	13.8		149.3	7.1		48.7	19.8		61.5	13.9	
LOS	E	B		F	A		D	B		E	B	
Approach Delay		19.2			21.9			37.3			36.0	
Approach LOS		B			C			D			D	

Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	107.8 (90%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle:	85
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.95
Intersection Signal Delay:	23.7
Intersection LOS:	C
Intersection Capacity Utilization:	73.7%
ICU Level of Service:	D
Analysis Period (min):	15

Splits and Phases: 3: Dixie Road & Kingston Road



Lanes, Volumes, Timings

6: Liverpool Road & Kingston Road

<2033 Future Total_PHF>AM

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	253	492	482	185	351	50	134	388	146	84	733	230
Future Volume (vph)	253	492	482	185	351	50	134	388	146	84	733	230
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.1	3.4	3.6	3.3	3.7	3.4	3.8	4.1	4.8	4.7	3.8	3.3
Storage Length (m)	188.8	97.9	170.7		117.0	185.5		52.0	49.0		60.5	
Storage Lanes	1	1	1		1	1		1	1		1	
Taper Length (m)	31.6		22.7			20.8			25.0			
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.98		0.97	0.99		0.96	0.99		0.93	0.98		0.96
Frt		0.850			0.850			0.850			0.850	
Fit Protected	0.950		0.950		0.950		0.950		0.950		0.950	
Satd. Flow (prot)	1671	3299	1538	1694	3510	1579	1774	3700	1647	2026	3618	1516
Fit Permitted	0.950		0.950		0.261		0.522		0.522		0.522	
Satd. Flow (perm)	1644	3299	1487	1675	3510	1517	483	3700	1536	1088	3618	1452
Right Turn on Red			Yes		Yes		Yes		Yes		Yes	
Satd. Flow (RTOR)			155		174		146		146		230	
Link Speed (k/h)		60		60		50		50		50		50
Link Distance (m)		694.6		396.4		257.7		348.6		251.1		251.1
Travel Time (s)		41.7		23.8		18.6		25.1		25.1		25.1
Confl. Peds. (#/hr)	21		17	17		21	34		44	44		34
Confl. Bikes (#/hr)						1						
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	7%	5%	3%	4%	0%	4%	3%	8%	0%	2%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	7	0	0	0
Adj. Flow (vph)	253	492	482	185	351	50	134	388	146	84	733	230
Shared Lane Traffic (%)												
Lane Group Flow (vph)	253	492	482	185	351	50	134	388	146	84	733	230
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width(m)		3.3		3.3		4.7		4.7		4.7		4.7
Link Offset(m)		0.0		0.0		0.0		0.0		0.0		0.0
Crosswalk Width(m)		1.6		1.6		1.6		1.6		1.6		1.6
Two way Left Turn Lane		Yes									Yes	
Headway Factor	1.08	1.03	1.00	1.04	0.99	1.03	0.97	0.93	0.88	0.86	0.97	1.04
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	

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WSP

Synchro 11 Report
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Lanes, Volumes, Timings

6: Liverpool Road & Kingston Road

<2033 Future Total_PHF>AM

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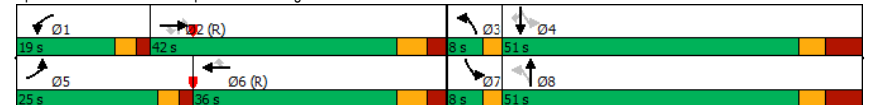


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type	CI+Ex			CI+Ex			CI+Ex			CI+Ex		
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	custom	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6	8		2	4		4
Detector Phase	5	2	2	1	6	6	3	8	2	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	5.0	8.0	20.0	5.0	8.0	8.0
Minimum Split (s)	10.0	36.0	36.0	10.0	36.0	36.0	8.0	51.0	36.0	8.0	51.0	51.0
Total Split (s)	25.0	42.0	42.0	19.0	36.0	36.0	8.0	51.0	42.0	8.0	51.0	51.0
Total Split (%)	20.8%	35.0%	35.0%	15.8%	30.0%	30.0%	6.7%	42.5%	35.0%	6.7%	42.5%	42.5%
Maximum Green (s)	20.0	34.9	34.9	14.0	28.9	28.9	5.0	41.9	34.9	5.0	41.9	41.9
Yellow Time (s)	3.0	4.3	4.3	3.0	4.3	4.3	3.0	3.8	4.3	3.0	3.8	3.8
All-Red Time (s)	2.0	2.8	2.8	2.0	2.8	2.8	0.0	5.3	2.8	0.0	5.3	5.3
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	0.0
Total Lost Time (s)	5.0	7.1	7.1	5.0	7.1	7.1	3.0	9.1	7.1	3.0	9.1	9.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
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	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	C-Max	None	Max	Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		21.0	21.0		21.0	21.0		33.0	21.0		33.0	33.0
Pedestrian Calls (#/hr)		44	44		31	31		61	44		40	40
Act Effect Green (s)	19.7	34.9	34.9	14.0	29.2	29.2	53.6	43.5	34.9	53.0	41.9	41.9
Actuated g/C Ratio	0.16	0.29	0.29	0.12	0.24	0.24	0.45	0.36	0.29	0.44	0.35	0.35
v/c Ratio	0.93	0.51	0.89	0.94	0.41	0.10	0.50	0.29	0.27	0.16	0.58	0.35
Control Delay	98.2	34.0	39.5	103.0	40.0	0.4	26.6	28.5	6.4	18.7	34.1	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	98.2	34.0	39.5	103.0	40.0	0.4	26.6	28.5	6.4	18.7	34.1	5.0
LOS	F	C	D	F	D	A	C	C	A	B	C	A
Approach Delay		49.4			56.5			23.3				26.5
Approach LOS		D			E			C				C

Intersection Summary

Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	29.4 (25%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle:	115
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.94
Intersection Signal Delay:	38.8
Intersection Capacity Utilization:	99.1%
Analysis Period (min):	15
Intersection LOS:	D
ICU Level of Service:	F

Splits and Phases: 6: Liverpool Road & Kingston Road



Lanes, Volumes, Timings
1: Walnut Lane & Kingston Road

<2033 Future Total>PM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Traffic Volume (vph)	38	1592	225	37	646	43	223	0	323	24	16	26
Future Volume (vph)	38	1592	225	37	646	43	223	0	323	24	16	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.0	3.6	3.5	3.0	3.6	3.7	3.3	3.5	3.7	3.2	3.7	3.7
Storage Length (m)	26.0		25.8	37.0		0.0	63.2		0.0	18.5		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	24.0			26.0			24.4			18.1		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	1.00		0.98		0.98	0.99	0.98	
Frt		0.981			0.991				0.850		0.907	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1685	3464	0	1685	3505	0	1745	0	1633	1725	1709	0
Flt Permitted	0.950			0.950			0.728			0.950		
Satd. Flow (perm)	1677	3464	0	1683	3505	0	1313	0	1603	1713	1709	0
Right Turn on Red			Yes			Yes		Yes			Yes	
Satd. Flow (RTOR)		18			9				85			28
Link Speed (k/h)		60			60			40			40	
Link Distance (m)		129.3			694.6			114.0			179.7	
Travel Time (s)		7.8			41.7			10.3			16.2	
Confl. Peds. (#/hr)	5		7	7		5	14		5	5		14
Confl. Bikes (#/hr)			1									
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%	2%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	3	0	0	0	0	0	0	0	0	0
Adj. Flow (vph)	41	1730	245	40	702	47	242	0	351	26	17	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	41	1975	0	40	749	0	242	0	351	26	45	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.1			3.1			3.3			3.3	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			1.6			4.9			4.9	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.09	1.00	1.01	1.09	1.00	0.99	1.04	1.01	0.99	1.06	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	0	0		0	0		1		1	0		0
Detector Template								Right				
Leading Detector (m)	0.0	0.0		0.0	0.0		7.5		6.1	0.0		0.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		-1.5		0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		-1.5		0.0	0.0		0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8		9.0		6.1	6.1		1.8
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Turn Type	Prot	NA		Prot	NA		Perm		Perm	Perm		NA
Protected Phases	5	2		1	6							4

Lanes, Volumes, Timings
1: Walnut Lane & Kingston Road

<2033 Future Total>PM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases										8	8	4
Detector Phase	5	2			1	6				8	8	4
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0		8.0			8.0	8.0	8.0
Minimum Split (s)	10.0	33.0		10.0	33.0		38.0			38.0	38.0	38.0
Total Split (s)	10.0	76.0		15.0	81.0		39.0			39.0	39.0	39.0
Total Split (%)	7.7%	58.5%		11.5%	62.3%		30.0%			30.0%	30.0%	30.0%
Maximum Green (s)	5.0	69.4		10.0	74.4		31.0			31.0	31.0	31.0
Yellow Time (s)	3.0	4.4		3.0	4.4		3.3			3.3	3.3	3.3
All-Red Time (s)	2.0	2.2		2.0	2.2		4.7			4.7	4.7	4.7
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0			0.0	0.0	0.0
Total Lost Time (s)	5.0	6.6		5.0	6.6		8.0			8.0	8.0	8.0
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0			3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max		None			None	None	None
Walk Time (s)		7.0			7.0		7.0			7.0	7.0	7.0
Flash Dont Walk (s)		19.0			19.0		22.0			22.0	22.0	22.0
Pedestrian Calls (#/hr)		8			4		2			2	9	9
Act Effect Green (s)	5.0	76.8		8.2	79.9		27.5			27.5	27.5	27.5
Actuated g/C Ratio	0.04	0.59		0.06	0.61		0.21			0.21	0.21	0.21
v/c Ratio	0.64	0.96		0.38	0.35		0.87			0.86	0.07	0.12
Control Delay	80.2	37.1		63.6	10.6		78.7			58.1	39.5	20.5
Queue Delay	0.0	0.0		0.0	0.0		0.0			0.0	0.0	0.0
Total Delay	80.2	37.1		63.6	10.6		78.7			58.1	39.5	20.5
LOS	F	D		E	B		E			E	D	C
Approach Delay		38.0			13.3		66.5					27.5
Approach LOS		D			B		E					C

Intersection Summary

Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	77 (59%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle:	115
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.96
Intersection Signal Delay:	37.0
Intersection LOS:	D
Intersection Capacity Utilization:	97.9%
ICU Level of Service:	F
Analysis Period (min):	15

Splits and Phases: 1: Walnut Lane & Kingston Road

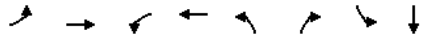


Queues

<2033 Future Total>PM

1: Walnut Lane & Kingston Road

12-20-2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBR	SBL	SBT
Lane Group Flow (vph)	41	1975	40	749	242	351	26	45
w/c Ratio	0.64	0.96	0.38	0.35	0.87	0.86	0.07	0.12
Control Delay	80.2	37.1	63.6	10.6	78.7	58.1	39.5	20.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	80.2	37.1	63.6	10.6	78.7	58.1	39.5	20.5
Queue Length 50th (m)	10.9	~279.5	10.7	33.3	59.0	66.3	5.3	3.4
Queue Length 95th (m)	m14.2	m#316.7	m20.4	46.5	#97.1	#109.3	12.9	13.3
Internal Link Dist (m)		105.3		670.6				155.7
Turn Bay Length (m)	26.0		37.0		63.2		18.5	
Base Capacity (vph)	64	2054	129	2157	313	446	408	428
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced w/c Ratio	0.64	0.96	0.31	0.35	0.77	0.79	0.06	0.11

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.

m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings

<2033 Future Total>PM

2: Street B & Kingston Road

12-20-2024



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑		↑↑		↑
Traffic Volume (vph)	1602	78	0	1023	0	250
Future Volume (vph)	1602	78	0	1023	0	250
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.3	3.7	3.5	3.7	4.5
Storage Length (m)		45.0	0.0		0.0	0.0
Storage Lanes		1	0		0	1
Taper Length (m)			2.5		2.5	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Ped Bike Factor						
Frt		0.850				0.865
Flt Protected						
Satd. Flow (prot)	3500	1561	0	3500	0	1808
Flt Permitted						
Satd. Flow (perm)	3500	1561	0	3500	0	1808
Link Speed (k/h)	60			60		30
Link Distance (m)	191.2			129.3		96.9
Travel Time (s)	11.5			7.8		11.6
Confl. Peds. (#/hr)		3		3		
Confl. Bikes (#/hr)		1				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	2%	2%	2%	0%
Adj. Flow (vph)	1741	85	0	1112	0	272
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1741	85	0	1112	0	272
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.0			3.0		0.0
Link Offset(m)	0.0			0.0		0.0
Crosswalk Width(m)	1.6			1.6		1.6
Two way Left Turn Lane	Yes			Yes		
Headway Factor	1.01	1.04	0.99	1.01	0.99	0.88
Turning Speed (k/h)		14	24		24	14
Sign Control	Free			Free		Stop

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 66.4%

ICU Level of Service C

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
2: Street B & Kingston Road

<2033 Future Total>PM
12-20-2024

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑		↑↑		↑
Traffic Volume (veh/h)	1602	78	0	1023	0	250
Future Volume (Veh/h)	1602	78	0	1023	0	250
Sign Control	Free		Free		Stop	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1741	85	0	1112	0	272
Pedestrians	3					
Lane Width (m)					4.5	
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type	TWLTL		TWLTL			
Median storage (veh)	2		2			
Upstream signal (m)	191		129			
pX, platoon unblocked			0.43	0.48	0.43	
vC, conflicting volume			1744	2300	874	
vC1, stage 1 conf vol			1744			
vC2, stage 2 conf vol			556			
vCU, unblocked vol			103	609	0	
tC, single (s)			4.1	6.8	6.9	
tC, 2 stage (s)			5.8			
tF (s)			2.2	3.5	3.3	
p0 queue free %			100	100	42	
cM capacity (veh/h)			642	365	471	
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	870	870	85	556	556	272
Volume Left	0	0	0	0	0	0
Volume Right	0	0	85	0	0	272
cSH	1700	1700	1700	1700	1700	471
Volume to Capacity	0.51	0.51	0.05	0.33	0.33	0.58
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	27.2
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	22.5
Lane LOS	C					
Approach Delay (s)	0.0		0.0		22.5	
Approach LOS	C					
Intersection Summary						
Average Delay			1.9			
Intersection Capacity Utilization			66.4%		ICU Level of Service C	
Analysis Period (min)	15					

Lanes, Volumes, Timings
3: Dixie Road & Kingston Road

<2033 Future Total>PM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑		↑	↑↑		↑	↑		↑	↑	↑
Traffic Volume (vph)	204	1461	398	40	813	169	164	54	63	148	28	92
Future Volume (vph)	204	1461	398	40	813	169	164	54	63	148	28	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	2.8	3.6	3.4	2.8	3.5	3.1	3.6	4.0	3.7	3.8	4.2	3.7
Grade (%)	6%			0%			0%			0%		
Storage Length (m)	145.4		64.5	51.0		79.5	13.0		0.0	16.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	66.4			48.0			18.0			25.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.99		1.00	1.00		1.00	0.99		0.99	0.99	
Frt	0.968		0.974		0.920		0.885					
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1579	3296	0	1597	3407	0	1770	1786	0	1827	1730	0
Fit Permitted	0.950			0.950			0.674			0.676		
Satd. Flow (perm)	1578	3296	0	1595	3407	0	1250	1786	0	1290	1730	0
Right Turn on Red			Yes			Yes			Yes			
Satd. Flow (RTOR)	43		24		42		100			Yes		
Link Speed (k/h)	60		60		40		60					
Link Distance (m)	896.3		191.2		44.0		236.2					
Travel Time (s)	53.8		11.5		4.0		14.2					
Confl. Peds. (#/hr)	1		6	6		1	4		7	7		4
Confl. Bikes (#/hr)	1											
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 (%)	1%	2%	2%	3%	2%	0%	2%	0%	2%	1%	0%	3%
Bus Blockages (#/hr)	0	0	5	0	0	5	0	0	0	0	0	0
Adj. Flow (vph)	222	1588	433	43	884	184	178	59	68	161	30	100
Shared Lane Traffic (%)												
Lane Group Flow (vph)	222	2021	0	43	1068	0	178	127	0	161	130	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	2.8		2.8		3.8			3.8				
Link Offset(m)	0.0		0.0		0.0			0.0				
Crosswalk Width(m)	4.9		4.9		4.9			4.9				
Two way Left Turn Lane	Yes											
Headway Factor	1.17	1.04	1.07	1.13	1.01	1.08	1.00	0.94	0.99	0.97	0.92	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	0	0		0	0		0	0		1	1	
Detector Template												
Leading Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		7.5	7.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		-1.5	-1.5	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		-1.5	-1.5	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		9.0	9.0	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	

Lanes, Volumes, Timings
3: Dixie Road & Kingston Road

<2033 Future Total>PM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	5	2		1	6			8			4	4
Permitted Phases							8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	10.0	28.0		10.0	28.0		41.0	41.0		41.0	41.0	
Total Split (s)	26.0	79.0		10.0	63.0		41.0	41.0		41.0	41.0	
Total Split (%)	20.0%	60.8%		7.7%	48.5%		31.5%	31.5%		31.5%	31.5%	
Maximum Green (s)	21.0	72.4		5.0	56.4		31.5	31.5		31.5	31.5	
Yellow Time (s)	3.0	4.2		3.0	4.2		4.4	4.4		4.4	4.4	
All-Red Time (s)	2.0	2.4		2.0	2.4		5.1	5.1		5.1	5.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.6		5.0	6.6		9.5	9.5		9.5	9.5	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		14.0			14.0		23.0	23.0		23.0	23.0	
Pedestrian Calls (#/hr)		4			6		2	2		3	3	
Act Effect Green (s)	20.3	82.4		5.0	65.2		23.5	23.5		23.5	23.5	
Actuated g/C Ratio	0.16	0.63		0.04	0.50		0.18	0.18		0.18	0.18	
v/c Ratio	0.90	0.96		0.70	0.62		0.79	0.36		0.69	0.33	
Control Delay	71.8	35.4		117.4	25.6		74.1	32.0		64.5	14.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	71.8	35.4		117.4	25.6		74.1	32.0		64.5	14.8	
LOS	E	D		F	C		E	C		E	B	
Approach Delay		39.0			29.2			56.6			42.3	
Approach LOS		D			C			E			D	

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 115 (88%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 140
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.96
 Intersection Signal Delay: 37.8 Intersection LOS: D
 Intersection Capacity Utilization 92.7% ICU Level of Service F
 Analysis Period (min) 15

Splits and Phases: 3: Dixie Road & Kingston Road



Queues
3: Dixie Road & Kingston Road

<2033 Future Total>PM
12-20-2024

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	222	2021	43	1068	178	127	161	130
v/c Ratio	0.90	0.96	0.70	0.62	0.79	0.36	0.69	0.33
Control Delay	71.8	35.4	117.4	25.6	74.1	32.0	64.5	14.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.8	35.4	117.4	25.6	74.1	32.0	64.5	14.8
Queue Length 50th (m)	53.2	275.4	11.7	84.0	43.9	18.9	38.9	6.5
Queue Length 95th (m)	m#68.0	#350.7	m#26.9	102.8	65.4	34.9	58.8	22.1
Internal Link Dist (m)		872.3		167.2		20.0		212.2
Turn Bay Length (m)	145.4		51.0		13.0		16.0	
Base Capacity (vph)	255	2105	61	1720	302	464	312	494
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.87	0.96	0.70	0.62	0.59	0.27	0.52	0.26

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings
4: Street B & Shopping Plaza Entrance

<2033 Future Total>PM
12-20-2024

	↖	↗	↙	↘	↕	↔
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖			↘	↘	
Traffic Volume (vph)	56	324	47	148	26	78
Future Volume (vph)	56	324	47	148	26	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.885					0.898
Fit Protected	0.993					0.988
Satd. Flow (prot)	1633	0	0	1898	1725	0
Fit Permitted	0.993					0.988
Satd. Flow (perm)	1633	0	0	1898	1725	0
Link Speed (k/h)	30					30
Link Distance (m)	193.0			49.0	49.9	
Travel Time (s)	23.2			5.9	6.0	
Confl. Peds. (#/hr)	1					
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	4%	0%	0%	0%	0%
Adj. Flow (vph)	61	352	51	161	28	85
Shared Lane Traffic (%)						
Lane Group Flow (vph)	413	0	0	212	113	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7					0.0
Link Offset(m)	0.0					0.0
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	97	97	97			
Sign Control	Stop			Stop		
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	46.9%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
4: Street B & Shopping Plaza Entrance

<2033 Future Total>PM
12-20-2024

	↖	↗	↙	↘	↕	↔
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖			↘	↘	
Sign Control	Stop			Stop		
Traffic Volume (vph)	56	324	47	148	26	78
Future Volume (vph)	56	324	47	148	26	78
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	61	352	51	161	28	85
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total (vph)	413	212	113			
Volume Left (vph)	61	51	0			
Volume Right (vph)	352	0	85			
Hadj (s)	-0.42	0.05	-0.45			
Departure Headway (s)	4.3	5.1	4.7			
Degree Utilization, x	0.49	0.30	0.15			
Capacity (veh/h)	796	664	693			
Control Delay (s)	11.4	10.2	8.5			
Approach Delay (s)	11.4	10.2	8.5			
Approach LOS	B	B	A			
Intersection Summary						
Delay			10.6			
Level of Service	B					
Intersection Capacity Utilization			46.9%		ICU Level of Service A	
Analysis Period (min)	15					

Lanes, Volumes, Timings
5: Street B & Street A

<2033 Future Total>PM
12-20-2024

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	171	0	0	342	3
Future Volume (vph)	0	171	0	0	342	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.865					
Fit Protected						0.953
Satd. Flow (prot)	1662	0	1921	0	0	1778
Fit Permitted						0.953
Satd. Flow (perm)	1662	0	1921	0	0	1778
Link Speed (k/h)	30		30			30
Link Distance (m)	193.3		78.3			49.0
Travel Time (s)	23.2		9.4			5.9
Confl. Peds. (#/hr)	5	5				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	3%	0%
Adj. Flow (vph)	0	186	0	0	372	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	186	0	0	0	0	375
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	97	97		97	97	
Sign Control	Stop		Stop			Stop
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	37.2%		ICU Level of Service		A	
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
5: Street B & Street A

<2033 Future Total>PM
12-20-2024

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	0	171	0	0	342	3
Future Volume (vph)	0	171	0	0	342	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	186	0	0	372	3
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total (vph)	186	0	375			
Volume Left (vph)	0	0	372			
Volume Right (vph)	186	0	0			
Hadj (s)	-0.60	0.00	0.25			
Departure Headway (s)	4.2	4.8	4.6			
Degree Utilization, x	0.22	0.00	0.48			
Capacity (veh/h)	788	713	761			
Control Delay (s)	8.4	7.8	11.7			
Approach Delay (s)	8.4	0.0	11.7			
Approach LOS	A	A	B			
Intersection Summary						
Delay			10.6			
Level of Service			B			
Intersection Capacity Utilization			37.2%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings

6: Liverpool Road & Kingston Road

<2033 Future Total>PM

12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	284	1001	546	274	413	67	155	787	232	95	568	159
Future Volume (vph)	284	1001	546	274	413	67	155	787	232	95	568	159
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.1	3.4	3.6	3.3	3.7	3.4	3.8	4.1	4.8	4.7	3.8	3.3
Storage Length (m)	188.8		97.9	170.7		117.0	185.5		52.0	49.0		60.5
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	31.6			22.7			20.8			25.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.95	0.99		0.96	0.99		0.90	0.99		0.96
Frt			0.850			0.850			0.850			0.850
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1688	3461	1599	1728	3579	1579	1791	3773	1732	2026	3654	1561
Fit Permitted	0.950			0.950			0.311			0.164		
Satd. Flow (perm)	1663	3461	1512	1711	3579	1517	580	3773	1564	345	3654	1499
Right Turn on Red			Yes			Yes			Yes		Yes	
Satd. Flow (RTOR)			93			160			174			173
Link Speed (k/h)		60			60			50				50
Link Distance (m)		694.6			396.4			257.7				348.6
Travel Time (s)		41.7			23.8			18.6				25.1
Conf. Peds. (#/hr)	20		31	31		20	29		62	62		29
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 (%)	1%	2%	1%	1%	2%	0%	3%	1%	4%	0%	1%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	4	0	0	0
Adj. Flow (vph)	309	1088	593	298	449	73	168	855	252	103	617	173
Shared Lane Traffic (%)												
Lane Group Flow (vph)	309	1088	593	298	449	73	168	855	252	103	617	173
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.3			3.3			4.7				4.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		1.6			1.6			1.6				1.6
Two way Left Turn Lane		Yes										Yes
Headway Factor	1.08	1.03	1.00	1.04	0.99	1.03	0.97	0.93	0.87	0.86	0.97	1.04
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4				9.4
Detector 2 Size(m)		0.6			0.6			0.6				0.6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex

1105-1163 Kingston Road
WSP

Synchro 11 Report
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Lanes, Volumes, Timings

6: Liverpool Road & Kingston Road

<2033 Future Total>PM

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		
Turn Type	Prot	NA	pm+ov	Prot	NA	Perm	pm+pt	NA	custom	pm+pt	NA	Perm
Protected Phases	5	2	3	1	6		3	8		7	4	
Permitted Phases			2			6	8		2	4		4
Detector Phase	5	2	3	1	6	6	3	8	2	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	5.0	5.0	20.0	20.0	5.0	8.0	20.0	5.0	8.0	8.0
Minimum Split (s)	10.0	36.0	8.0	10.0	36.0	36.0	8.0	50.0	36.0	8.0	50.0	50.0
Total Split (s)	34.0	46.0	8.0	26.0	38.0	38.0	8.0	50.0	46.0	8.0	50.0	50.0
Total Split (%)	26.2%	35.4%	6.2%	20.0%	29.2%	29.2%	6.2%	38.5%	35.4%	6.2%	38.5%	38.5%
Maximum Green (s)	29.0	38.9	5.0	21.0	30.9	30.9	5.0	40.9	38.9	5.0	40.9	40.9
Yellow Time (s)	3.0	4.3	3.0	3.0	4.3	4.3	3.0	3.8	4.3	3.0	3.8	3.8
All-Red Time (s)	2.0	2.8	0.0	2.0	2.8	2.8	0.0	5.3	2.8	0.0	5.3	5.3
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	0.0
Total Lost Time (s)	5.0	7.1	3.0	5.0	7.1	7.1	3.0	9.1	7.1	3.0	9.1	9.1
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
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	3.0
Recall Mode	None	C-Max	None	None	C-Max	C-Max	None	Max	C-Max	None	Max	Max
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		21.0			21.0	21.0		33.0	21.0		33.0	33.0
Pedestrian Calls (#/hr)		15			20	20		28	15		15	15
Act Effct Green (s)	26.8	38.9	48.0	21.0	33.1	33.1	52.0	40.9	38.9	52.0	40.9	40.9
actuated g/C Ratio	0.21	0.30	0.37	0.16	0.25	0.25	0.40	0.31	0.30	0.40	0.31	0.31
v/c Ratio	0.89	1.05	0.96	1.07	0.49	0.14	0.60	0.72	0.43	0.51	0.54	0.29
Control Delay	54.0	86.5	60.7	124.3	44.1	0.6	36.9	43.6	14.0	32.9	38.8	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	0.0
Total Delay	54.0	86.5	60.7	124.3	44.1	0.6	36.9	43.6	14.0	32.9	38.8	5.9
LOS	D	F	E	F	D	A	D	D	B	C	D	A
Approach Delay		73.7			69.4			36.9				31.8
Approach LOS		E			E			D				C
Intersection Summary												
Area Type:	Other											
Cycle Length:	130											
Actuated Cycle Length:	130											
Offset:	78 (60%), Referenced to phase 2:EBT and 6:WBT, Start of Green											
Natural Cycle:	145											
Control Type:	Actuated-Coordinated											
Maximum v/c Ratio:	1.07											
Intersection Signal Delay:	56.1						Intersection LOS: E					
Intersection Capacity Utilization:	105.8%						ICU Level of Service G					
Analysis Period (min):	15											
Splits and Phases:	6: Liverpool Road & Kingston Road											



WSP

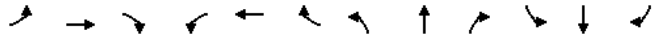
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Queues

<2033 Future Total>PM

6: Liverpool Road & Kingston Road

12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	309	1088	593	298	449	73	168	855	252	103	617	173
w/c Ratio	0.89	1.05	0.96	1.07	0.49	0.14	0.60	0.72	0.43	0.51	0.54	0.29
Control Delay	54.0	86.5	60.7	124.3	44.1	0.6	36.9	43.6	14.0	32.9	38.8	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	0.0
Total Delay	54.0	86.5	60.7	124.3	44.1	0.6	36.9	43.6	14.0	32.9	38.8	5.9
Queue Length 50th (m)	79.7	~164.6	138.8	~84.3	53.1	0.0	27.0	102.1	14.8	15.8	68.5	0.0
Queue Length 95th (m)	m87.5	m#182.6	m#159.9	#139.7	70.0	0.0	42.7	125.2	38.0	27.4	87.0	15.8
Internal Link Dist (m)		670.6			372.4			233.7			324.6	
Turn Bay Length (m)	188.8		97.9	170.7		117.0	185.5		52.0	49.0		60.5
Base Capacity (vph)	376	1035	620	279	911	505	278	1187	589	202	1149	590
Starvation Cap Reductn	0	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced w/c Ratio	0.82	1.05	0.96	1.07	0.49	0.14	0.60	0.72	0.43	0.51	0.54	0.29

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.

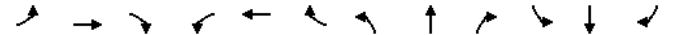
m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings

<2033 Future Total>PM

8: Liverpool Road & Private Access/Pickering Parkway

12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔↔		↔↔	↔	↔	↔↔	↔↔↔	↔	↔↔	↔↔↔	↔
Traffic Volume (vph)	87	69	130	412	58	174	116	852	401	196	1318	46
Future Volume (vph)	87	69	130	412	58	174	116	852	401	196	1318	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.1	3.1	3.7	3.0	3.4	3.2	2.8	3.6	3.5	3.2	3.5	3.5
Storage Length (m)	0.0	0.0	57.0		62.1	54.4		75.7	132.5		35.5	
Storage Lanes	1		0	1		1		1	1		1	
Taper Length (m)	2.5			12.0				29.5			28.9	
Lane Util. Factor	1.00	0.95	0.95	0.97	1.00	1.00	1.00	0.91	1.00	0.91	1.00	0.91
Ped Bike Factor		0.96		0.98				1.00	0.96	0.99		0.93
Frt		0.902				0.850		0.850				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1705	2959	0	3204	1858	1399	1645	5085	1569	1708	5079	1597
Flt Permitted	0.000			0.000			0.101			0.238		
Satd. Flow (perm)	0	2959	0	0	1858	1399	174	5085	1502	425	5079	1482
Right Turn on Red			Yes			Yes		Yes		Yes		Yes
Satd. Flow (RTOR)		141				189		436				144
Link Speed (k/h)	30			50			50			50		
Link Distance (m)	82.8			328.5			162.3			257.7		
Travel Time (s)	9.9			23.7			11.7			18.6		
Confl. Peds. (#/hr)			21	21			21		21	21		21
Confl. Bikes (#/hr)			2				5					6
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%	2%	0%	5%	0%	2%	1%	1%	1%	0%
Bus Blockages (#/hr)	0	0	0	0	0	12	0	0	2	0	0	0
Adj. Flow (vph)	95	75	141	448	63	189	126	926	436	213	1433	50
Shared Lane Traffic (%)												
Lane Group Flow (vph)	95	216	0	448	63	189	126	926	436	213	1433	50
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	6.0			6.0			3.8			3.8		
Link Offset(m)	0.0			0.0			0.0			0.0		
Crosswalk Width(m)	1.6			1.6			1.6			1.6		
Two way Left Turn Lane												
Headway Factor	1.08	1.08	0.99	1.09	1.03	1.13	1.13	1.00	1.03	1.06	1.01	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	

Lanes, Volumes, Timings

<2033 Future Total>PM

8: Liverpool Road & Private Access/Pickering Parkway

12-20-2024

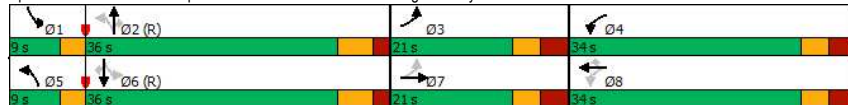


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type	CI+Ex			CI+Ex			CI+Ex			CI+Ex		
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	3	7		4	8		5	2		1	6	
Permitted Phases	7			8		8	2			2	6	
Detector Phase	3	7		4	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0	8.0	5.0	20.0	20.0	5.0	8.0	8.0
Minimum Split (s)	15.0	15.0		34.0	34.0	34.0	8.0	30.0	30.0	8.0	30.0	30.0
Total Split (s)	21.0	21.0		34.0	34.0	34.0	9.0	36.0	36.0	9.0	36.0	36.0
Total Split (%)	21.0%	21.0%		34.0%	34.0%	34.0%	9.0%	36.0%	36.0%	9.0%	36.0%	36.0%
Maximum Green (s)	14.4	14.4		27.4	27.4	27.4	6.0	29.7	29.7	6.0	29.7	29.7
Yellow Time (s)	3.3	3.3		3.3	3.3	3.3	3.0	4.2	4.2	3.0	4.2	4.2
All-Red Time (s)	3.3	3.3		3.3	3.3	3.3	0.0	2.1	2.1	0.0	2.1	2.1
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)	6.6	6.6		6.6	6.6	6.6	3.0	6.3	6.3	3.0	6.3	6.3
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
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
Recall Mode	None	None		None	None	None	None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)				19.0	19.0		17.0	17.0		17.0	17.0	
Flash Dont Walk (s)				8.0	8.0		6.0	6.0		6.0	6.0	
Pedestrian Calls (#/hr)				20	20		28	28		15	15	
Act Effect Green (s)	11.0	11.0		20.9	20.9	20.9	48.9	39.6	39.6	48.9	39.6	39.6
Actuated g/C Ratio	0.11	0.11		0.21	0.21	0.21	0.49	0.40	0.40	0.49	0.40	0.40
v/c Ratio	0.51	0.48		0.67	0.16	0.43	0.73	0.46	0.51	0.75	0.71	0.07
Control Delay	51.0	18.9		40.8	31.2	7.5	38.8	20.4	8.8	37.1	29.6	0.2
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.0	18.9		40.8	31.2	7.5	38.8	20.4	8.8	37.1	29.6	0.2
LOS	D	B		D	C	A	D	C	A	D	C	A
Approach Delay	28.7			31.0			18.5			29.7		
Approach LOS	C			C			B			C		

Intersection Summary

Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	100
Offset:	15 (15%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle:	90
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.75
Intersection Signal Delay:	25.9
Intersection Capacity Utilization:	70.6%
Analysis Period (min):	15
Intersection LOS:	C
ICU Level of Service:	C

Splits and Phases: 8: Liverpool Road & Private Access/Pickering Parkway



Queues

<2033 Future Total>PM

8: Liverpool Road & Private Access/Pickering Parkway

12-20-2024



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Group Flow (vph)	95	216	448	63	189	126	926	436	213	1433	50	
v/c Ratio	0.51	0.48	0.67	0.16	0.43	0.73	0.46	0.51	0.75	0.71	0.07	
Control Delay	51.0	18.9	40.8	31.2	7.5	38.8	20.4	8.8	37.1	29.6	0.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	51.0	18.9	40.8	31.2	7.5	38.8	20.4	8.8	37.1	29.6	0.2	
Queue Length 50th (m)	17.7	7.1	42.3	10.3	0.0	8.5	50.9	32.0	20.8	81.2	0.0	
Queue Length 95th (m)	32.2	17.3	52.8	19.3	15.9	m#43.0	73.2	54.4	#61.0	#127.9	0.0	
Internal Link Dist (m)	58.8		304.5		138.3		233.7					
Turn Bay Length (m)	57.0			62.1		54.4		75.7		132.5		35.5
Base Capacity (vph)	245	546	877	509	520	173	2012	857	284	2010	673	
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	0.39	0.40	0.51	0.12	0.36	0.73	0.46	0.51	0.75	0.71	0.07	

Intersection Summary

- # 95th percentile volume exceeds capacity, queue may be longer.
- Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings

<2033 Future Total>PM

9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp

12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	454	278	500	293	204	1084	0	0	1167	166
Future Volume (vph)	0	0	454	278	500	293	204	1084	0	0	1167	166
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.5	3.7	3.7	3.4	3.7
Storage Length (m)	0.0	0.0	0.0	0.0	125.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0
Storage Lanes	0		1	1		1	1		0	0		1
Taper Length (m)	2.5			2.5			30.0			2.5		
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	1.00	0.91	1.00
Ped Bike Factor												0.92
Frt			0.865			0.850						0.850
Fit Protected				0.950	0.997		0.950					
Satd. Flow (prot)	0	0	1662	1734	1820	1581	1825	5079	0	0	4972	1633
Fit Permitted				0.950	0.997		0.137					
Satd. Flow (perm)	0	0	1662	1734	1820	1581	263	5079	0	0	4972	1508
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)						85						180
Link Speed (kh)		50			50			50				50
Link Distance (m)		433.1			226.7			372.2				162.3
Travel Time (s)		31.2			16.3			26.8				11.7
Confl. Peds. (#/hr)							17		15	15		17
Confl. Bikes (#/hr)								6				7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	0%	0%	0%	1%	0%	1%	6%	2%	2%	0%
Adj. Flow (vph)	0	0	493	302	543	318	222	1178	0	0	1268	180
Shared Lane Traffic (%)				10%								
Lane Group Flow (vph)	0	0	493	272	573	318	222	1178	0	0	1268	180
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	1.01	0.99	1.01	0.99	0.99	1.03	0.99
Turning Speed (k/h)	97		97	24		14	97		14	24		97
Number of Detectors			1	1	2	1	1	2			2	1
Detector Template			Right	Left	Thru	Right	Left	Thru			Thru	Right
Leading Detector (m)			2.0	2.0	10.0	2.0	2.0	10.0			10.0	2.0
Trailing Detector (m)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Position(m)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Size(m)			2.0	2.0	0.6	2.0	2.0	0.6			0.6	2.0
Detector 1 Type			Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 2 Position(m)					9.4			9.4			9.4	
Detector 2 Size(m)					0.6			0.6			0.6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	

Lanes, Volumes, Timings

<2033 Future Total>PM

9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp

12-20-2024

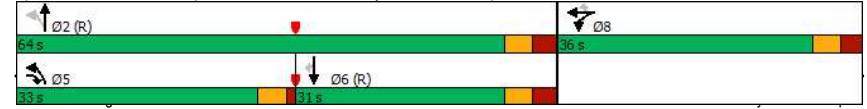


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)						0.0					0.0	0.0
Turn Type			Over	Split	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases			5	8	8		5	2			6	
Permitted Phases						8	2					6
Detector Phase			5	8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)			5.0	8.0	8.0	8.0	5.0	15.0			15.0	15.0
Minimum Split (s)			9.5	25.0	25.0	25.0	9.5	24.3			24.3	24.3
Total Split (s)			33.0	36.0	36.0	36.0	33.0	64.0			31.0	31.0
Total Split (%)			33.0%	36.0%	36.0%	36.0%	33.0%	64.0%			31.0%	31.0%
Maximum Green (s)			28.5	30.0	30.0	30.0	28.5	57.7			24.7	24.7
Yellow Time (s)			3.5	3.3	3.3	3.3	3.5	3.3			3.3	3.3
All-Red Time (s)			1.0	2.7	2.7	2.7	1.0	3.0			3.0	3.0
Lost Time Adjust (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Lost Time (s)			4.5	6.0	6.0	6.0	4.5	6.3			6.3	6.3
Lead/Lag			Lead				Lead				Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)			3.0	3.0	3.0	3.0	3.0	3.0			3.0	3.0
Recall Mode			None	None	None	None	None	C-Max			C-Max	C-Max
Walk Time (s)				14.0	14.0	14.0		13.0			13.0	13.0
Flash Dont Walk (s)				5.0	5.0	5.0		5.0			5.0	5.0
Pedestrian Calls (#/hr)				0	0	0		14			7	7
Act Effct Green (s)			28.5	30.0	30.0	30.0	59.5	57.7			24.7	24.7
Actuated g/C Ratio			0.28	0.30	0.30	0.30	0.60	0.58			0.25	0.25
v/c Ratio			1.04	0.52	1.05	0.60	0.37	0.40			1.03	0.35
Control Delay			89.2	33.4	87.6	26.9	12.7	12.2			67.4	13.9
Queue Delay			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay			89.2	33.4	87.6	26.9	12.7	12.2			67.4	13.9
LOS			F	C	F	C	B	B			E	B
Approach Delay			89.2			58.3		12.2			60.8	
Approach LOS			F			E		B			E	

Intersection Summary

Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	100
Offset:	8 (8%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle:	120
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.05
Intersection Signal Delay:	48.2
Intersection LOS:	D
Intersection Capacity Utilization:	91.0%
ICU Level of Service:	E
Analysis Period (min):	15

Splits and Phases: 9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp



Queues

<2033 Future Total>PM

9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp

12-20-2024



Lane Group	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	493	272	573	318	222	1178	1268	180
w/c Ratio	1.04	0.52	1.05	0.60	0.37	0.40	1.03	0.35
Control Delay	89.2	33.4	87.6	26.9	12.7	12.2	67.4	13.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	89.2	33.4	87.6	26.9	12.7	12.2	67.4	13.9
Queue Length 50th (m)	~103.9	45.8	~128.1	38.1	18.5	43.0	~69.9	1.9
Queue Length 95th (m)	#163.9	72.1	#194.2	66.2	35.1	52.4	#120.1	m22.2
Internal Link Dist (m)			202.7			348.2	138.3	
Turn Bay Length (m)			125.0	50.0				
Base Capacity (vph)	473	520	546	533	601	2930	1228	508
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced w/c Ratio	1.04	0.52	1.05	0.60	0.37	0.40	1.03	0.35

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.

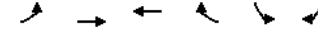
m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings

<2033 Future Total>PM

10: Kingston Road & Fairport Road

12-20-2024



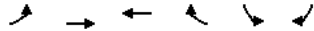
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø1
Lane Configurations	↘	↗	↗	↘	↘	↗	
Traffic Volume (vph)	205	1839	852	223	271	137	
Future Volume (vph)	205	1839	852	223	271	137	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (m)	3.0	3.6	3.5	3.7	3.6	4.5	
Grade (%)		6%	0%			0%	
Storage Length (m)	75.0			18.5	15.5	0.0	
Storage Lanes	1			0	1	1	
Taper Length (m)	2.5				31.3		
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00	
Ped Bike Factor	1.00		1.00			0.99	
Frt			0.969			0.850	
Fit Protected	0.950				0.950		
Satd. Flow (prot)	1618	3433	3356	0	1805	1777	
Fit Permitted	0.950				0.950		
Satd. Flow (perm)	1617	3433	3356	0	1805	1751	
Right Turn on Red				Yes		Yes	
Satd. Flow (RTOR)			34			149	
Link Speed (k/h)		60	60		40		
Link Distance (m)		424.0	896.3		280.0		
Travel Time (s)		25.4	53.8		25.2		
Confl. Peds. (#/hr)	1			1		2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Heavy Vehicles (%)	1%	2%	3%	1%	0%	0%	
Bus Blockages (#/hr)	0	0	0	9	0	0	
Adj. Flow (vph)	223	1999	926	242	295	149	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	223	1999	1168	0	295	149	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Left	Left	Right	Left	Right	
Median Width(m)		3.0	3.0		3.6		
Link Offset(m)		0.0	0.0		0.0		
Crosswalk Width(m)		1.6	1.6		1.6		
Two way Left Turn Lane		Yes					
Headway Factor	1.14	1.04	1.01	0.99	1.00	0.88	
Turning Speed (k/h)		24		14	24	14	
Number of Detectors	1	2	2		1	1	
Detector Template	Left	Thru	Thru		Left	Right	
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0	
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	0.6		2.0	2.0	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4	9.4				
Detector 2 Size(m)		0.6	0.6				

Lanes, Volumes, Timings

<2033 Future Total>PM

10: Kingston Road & Fairport Road

12-20-2024



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø1
Detector 2 Type	CI+Ex		CI+Ex				
Detector 2 Channel							
Detector 2 Extend (s)	0.0		0.0				
Turn Type	Prot	NA	NA		Prot	Perm	
Protected Phases	5	2	6		4		1
Permitted Phases						4	
Detector Phase	5	2	6		4	4	
Switch Phase							
Minimum Initial (s)	5.0	20.0	20.0		8.0	8.0	5.0
Minimum Split (s)	10.0	33.0	33.0		38.0	38.0	8.0
Total Split (s)	25.0	84.0	67.0		38.0	38.0	8.0
Total Split (%)	19.2%	64.6%	51.5%		29.2%	29.2%	6%
Maximum Green (s)	20.0	77.7	60.7		30.7	30.7	5.0
Yellow Time (s)	3.0	4.3	4.3		3.3	3.3	3.0
All-Red Time (s)	2.0	2.0	2.0		4.0	4.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.3	6.3		7.3	7.3	
Lead/Lag	Lead	Lag	Lag				Lead
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	0.2	0.2		3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max		None	None	None
Walk Time (s)	7.0		7.0		7.0	7.0	5.0
Flash Dont Walk (s)	19.0		19.0		23.0	23.0	0.0
Pedestrian Calls (#/hr)	0		0		0	0	20
Act Effect Green (s)	19.5	86.0	66.3		25.6	25.6	
Actuated g/C Ratio	0.15	0.66	0.51		0.20	0.20	
v/c Ratio	0.92	0.88	0.68		0.83	0.32	
Control Delay	54.5	40.9	11.8		69.5	8.0	
Queue Delay	0.0	0.0	0.0		0.0	0.0	
Total Delay	54.5	40.9	11.8		69.5	8.0	
LOS	D	D	B		E	A	
Approach Delay	42.2		11.8		48.9		
Approach LOS	D		B		D		

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 27 (21%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 115
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.92
 Intersection Signal Delay: 33.7 Intersection LOS: C
 Intersection Capacity Utilization 77.8% ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 10: Kingston Road & Fairport Road



Queues

<2033 Future Total>PM

10: Kingston Road & Fairport Road

12-20-2024



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	223	1999	1168	295	149
v/c Ratio	0.92	0.88	0.68	0.83	0.32
Control Delay	54.5	40.9	11.8	69.5	8.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	54.5	40.9	11.8	69.5	8.0
Queue Length 50th (m)	52.2	285.8	36.3	72.7	0.0
Queue Length 95th (m)	m55.0	m281.6	43.5	101.2	16.7
Internal Link Dist (m)		400.0	872.3	256.0	
Turn Bay Length (m)	75.0			15.5	
Base Capacity (vph)	248	2270	1727	426	527
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.90	0.88	0.68	0.69	0.28

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings
11: Hwy 401 WB Ramps & Kingston Road

<2033 Future Total>PM
12-20-2024

	→		↙		←	
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↕↕		↙	↕↕	↙↙	↙
Traffic Volume (vph)	1696	23	184	804	662	346
Future Volume (vph)	1696	23	184	804	662	346
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.0	3.7	2.7	3.8	3.8	3.7
Grade (%)	6%			0%	0%	
Storage Length (m)		0.0	47.5		0.0	52.0
Storage Lanes		0	1		2	1
Taper Length (m)			22.3		2.5	
Lane Util. Factor	0.95	0.95	1.00	0.95	0.97	1.00
Ped Bike Factor					1.00	0.98
Frt	0.998					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3577	0	1577	3618	3544	1617
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3577	0	1577	3618	3537	1591
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	1					224
Link Speed (k/h)	60			60	50	
Link Distance (m)	268.7			424.0	216.6	
Travel Time (s)	16.1			25.4	15.6	
Confl. Peds. (#/hr)					1	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	5%	3%	2%	1%	1%
Adj. Flow (vph)	1843	25	200	874	720	376
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1868	0	200	874	720	376
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.1			3.1	7.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	0.98	1.03	1.14	0.97	0.97	0.99
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	10.0		2.0	10.0	2.0	2.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Size(m)	0.6		2.0	0.6	2.0	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		

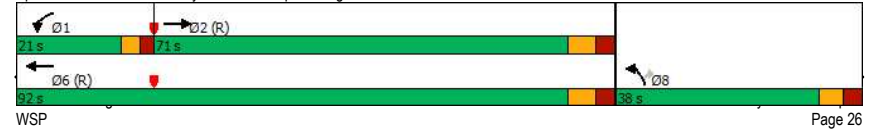
Lanes, Volumes, Timings
11: Hwy 401 WB Ramps & Kingston Road

<2033 Future Total>PM
12-20-2024

	→		↙		←	
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		Prot	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases						8
Detector Phase	2		1	6	8	8
Switch Phase						
Minimum Initial (s)	20.0		5.0	20.0	8.0	8.0
Minimum Split (s)	50.0		10.0	50.0	38.0	38.0
Total Split (s)	71.0		21.0	92.0	38.0	38.0
Total Split (%)	54.6%		16.2%	70.8%	29.2%	29.2%
Maximum Green (s)	63.8		16.0	84.8	31.3	31.3
Yellow Time (s)	4.2		3.0	4.2	3.7	3.7
All-Red Time (s)	3.0		2.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	7.2		5.0	7.2	6.7	6.7
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?						
Vehicle Extension (s)	0.2		3.0	0.2	3.0	3.0
Recall Mode	C-Max		None	C-Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	35.0			35.0	24.0	24.0
Pedestrian Calls (#/hr)	0			0	14	14
Act Effct Green (s)	65.3		16.0	86.3	29.8	29.8
Actuated g/C Ratio	0.50		0.12	0.66	0.23	0.23
v/c Ratio	1.04		1.03	0.36	0.89	0.70
Control Delay	68.3		127.0	1.8	62.0	25.4
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	68.3		127.0	1.8	62.0	25.4
LOS	E		F	A	E	C
Approach Delay	68.3			25.1	49.4	
Approach LOS	E			C	D	

Intersection Summary	
Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	69 (53%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle:	130
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.04
Intersection Signal Delay:	51.7
Intersection Capacity Utilization:	93.1%
Analysis Period (min):	15
Intersection LOS:	D
ICU Level of Service:	F

Splits and Phases: 11: Hwy 401 WB Ramps & Kingston Road



Queues
11: Hwy 401 WB Ramps & Kingston Road

<2033 Future Total>PM
12-20-2024

	→	↖	←	↙	↘
Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1868	200	874	720	376
w/c Ratio	1.04	1.03	0.36	0.89	0.70
Control Delay	68.3	127.0	1.8	62.0	25.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	68.3	127.0	1.8	62.0	25.4
Queue Length 50th (m)	-285.7	-48.6	6.4	91.1	35.3
Queue Length 95th (m)	#329.1	#100.6	6.0	#114.7	71.2
Internal Link Dist (m)	244.7		400.0	192.6	
Turn Bay Length (m)		47.5			52.0
Base Capacity (vph)	1795	194	2401	853	553
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced w/c Ratio	1.04	1.03	0.36	0.84	0.68

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.

Lanes, Volumes, Timings
12: Plaza Entrance/Delta Blvd & Kingston Road

<2033 Future Total>PM
12-20-2024

	↖	→	↘	↙	←	↗	↖	↗	↘	↙	↘	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖	↖↗		↖	↖↗		↖	↖↗		↖	↖↗	↖	↖↗
Traffic Volume (vph)	130	1567	38	89	1263	121	198	15	138	82	13	143	
Future Volume (vph)	130	1567	38	89	1263	121	198	15	138	82	13	143	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.2	3.4	3.5	3.1	3.4	3.4	3.6	4.6	3.7	3.2	2.8	3.7	
Grade (%)		6%			0%			0%					0%
Storage Length (m)	51.8		148.5	100.0		18.0	0.0		0.0	0.0		0.0	0.0
Storage Lanes	1		0	1		0	1		0	1		0	0
Taper Length (m)	35.3			2.5			2.5			2.5			
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		1.00	0.99		1.00					0.99	
Frt		0.996			0.987			0.864				0.862	
Fit Protected	0.950			0.950			0.950			0.950			
Satd. Flow (prot)	1656	3343	0	1705	3403	0	1770	1824	0	1725	1474	0	
Fit Permitted	0.950			0.950			0.630			0.637			
Satd. Flow (perm)	1648	3343	0	1704	3403	0	1172	1824	0	1157	1474	0	
Right Turn on Red			Yes			Yes			Yes			Yes	
Satd. Flow (RTOR)		3			12			129				141	
Link Speed (k/h)		60			60			30				40	
Link Distance (m)		222.7			268.7			130.9				169.9	
Travel Time (s)		13.4			16.1			15.7				15.3	
Confl. Peds. (#/hr)	16		1	1		16	1						1
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	0.92
Heavy Vehicles (%)	1%	2%	0%	0%	2%	0%	2%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	141	1703	41	97	1373	132	215	16	150	89	14	155	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	141	1744	0	97	1505	0	215	166	0	89	169	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right	
Median Width(m)		3.5			3.5			3.6				3.6	
Link Offset(m)		0.0			0.0			0.0				0.0	
Crosswalk Width(m)		1.6			1.6			1.6				1.6	
Two way Left Turn Lane					Yes								
Headway Factor	1.10	1.07	1.06	1.08	1.03	1.03	1.00	0.87	0.99	1.06	1.13	0.99	
Turning Speed (k/h)	24		14	24		14	24		14	24		14	
Number of Detectors	1	2		1	2		1	2		1	2		
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru		
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0		
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0		
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0		
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6		
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		
Detector 1 Channel													
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0		
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0		
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0		
Detector 2 Position(m)		9.4			9.4			9.4			9.4		
Detector 2 Size(m)		0.6			0.6			0.6			0.6		
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex		

Lanes, Volumes, Timings

<2033 Future Total>PM

12: Plaza Entrance/Delta Blvd & Kingston Road

12-20-2024

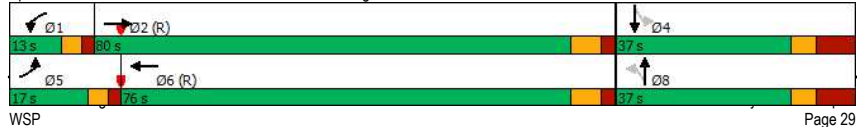


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	10.0	32.0		10.0	32.0		37.0	37.0		37.0	37.0	
Total Split (s)	17.0	80.0		13.0	76.0		37.0	37.0		37.0	37.0	
Total Split (%)	13.1%	61.5%		10.0%	58.5%		28.5%	28.5%		28.5%	28.5%	
Maximum Green (s)	12.0	73.1		8.0	69.1		27.0	27.0		27.0	27.0	
Yellow Time (s)	3.0	4.7		3.0	4.7		3.8	3.8		3.8	3.8	
All-Red Time (s)	2.0	2.2		2.0	2.2		6.2	6.2		6.2	6.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.9		5.0	6.9		10.0	10.0		10.0	10.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	0.2		3.0	0.2		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		18.0			18.0		20.0	20.0		20.0	20.0	
Pedestrian Calls (#/hr)		0			13		3	3		6	6	
Act Effct Green (s)	12.0	74.3		8.0	70.3		25.8	25.8		25.8	25.8	
Actuated g/C Ratio	0.09	0.57		0.06	0.54		0.20	0.20		0.20	0.20	
v/c Ratio	0.93	0.91		0.93	0.82		0.93	0.36		0.39	0.42	
Control Delay	81.9	21.0		122.1	23.9		93.7	14.4		50.3	13.9	
Queue Delay	0.0	1.2		0.0	0.0		0.0	75.1		148.6	0.0	
Total Delay	81.9	22.2		122.1	24.0		93.7	89.5		198.9	13.9	
LOS	F	C		F	C		F	F		F	B	
Approach Delay		26.7			29.9			91.9			77.7	
Approach LOS		C			C			F			E	

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 6 (5%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.93
 Intersection Signal Delay: 37.2 Intersection LOS: D
 Intersection Capacity Utilization 97.1% ICU Level of Service F
 Analysis Period (min) 15

Splits and Phases: 12: Plaza Entrance/Delta Blvd & Kingston Road

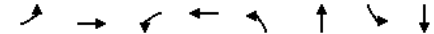


Queues

<2033 Future Total>PM

12: Plaza Entrance/Delta Blvd & Kingston Road

12-20-2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	141	1744	97	1505	215	166	89	169
v/c Ratio	0.93	0.91	0.93	0.82	0.93	0.36	0.39	0.42
Control Delay	81.9	21.0	122.1	23.9	93.7	14.4	50.3	13.9
Queue Delay	0.0	1.2	0.0	0.0	0.0	75.1	148.6	0.0
Total Delay	81.9	22.2	122.1	24.0	93.7	89.5	198.9	13.9
Queue Length 50th (m)	36.7	144.1	26.0	85.8	54.0	7.7	19.7	5.9
Queue Length 95th (m)	m38.0	m147.6	m#48.1	218.0	#99.2	26.9	36.4	25.8
Internal Link Dist (m)		198.7		244.7		106.9		145.9
Turn Bay Length (m)	51.8		100.0					
Base Capacity (vph)	152	1912	104	1845	243	481	240	417
Starvation Cap Reductn	0	38	0	10	0	0	0	0
Spillback Cap Reductn	0	57	0	0	0	366	223	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.94	0.93	0.82	0.88	1.44	5.24	0.41

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings

13: Whites Road & Kingston Road

<2033 Future Total>PM

12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	155	857	358	331	753	496	228	684	737	196	617	186
Future Volume (vph)	155	857	358	331	753	496	228	684	737	196	617	186
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.6	4.2	3.5	3.7	4.0	3.5	3.9	3.7	3.5	3.9	4.0
Grade (%)	6%		0%		0%		0%		0%		0%	
Storage Length (m)	127.0		123.0	87.1		35.0	72.0		35.0	88.5		47.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	64.0			39.6			66.8			32.6		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Ped Bike Factor	0.97		0.96	0.99		0.91	0.99		0.93	0.98		0.95
Frt	0.850		0.850		0.850		0.850		0.850		0.850	
Flt Protected	0.950		0.950		0.950		0.950		0.950		0.950	
Satd. Flow (prot)	1681	3400	1622	1733	3579	1654	1767	5255	1588	1750	5105	1627
Flt Permitted	0.950		0.950		0.331		0.292		0.292		0.292	
Satd. Flow (perm)	1637	3400	1549	1717	3579	1502	608	5255	1470	527	5105	1550
Right Turn on Red	Yes		Yes		Yes		Yes		Yes		Yes	
Satd. Flow (RTOR)	154		136		59		202		202		202	
Link Speed (k/h)	60		60		60		60		60		60	
Link Distance (m)	297.5		222.7		158.6		385.2		385.2		385.2	
Travel Time (s)	17.9		13.4		9.5		23.1		23.1		23.1	
Confl. Peds. (#/hr)	75		31	31		75	37		65	65		37
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 (%)	3%	3%	3%	3%	2%	2%	1%	2%	2%	2%	5%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	2	0	0	4
Adj. Flow (vph)	168	932	389	360	818	539	248	743	801	213	671	202
Shared Lane Traffic (%)												
Lane Group Flow (vph)	168	932	389	360	818	539	248	743	801	213	671	202
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width(m)	3.5		3.5		3.5		3.5		3.5		3.5	
Link Offset(m)	0.0		0.0		0.0		0.0		0.0		0.0	
Crosswalk Width(m)	1.6		1.6		1.6		1.6		1.6		1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.04	0.96	1.01	0.99	0.94	1.01	0.96	1.00	1.01	0.96	0.96
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4		9.4		9.4		9.4		9.4		9.4	
Detector 2 Size(m)	0.6		0.6		0.6		0.6		0.6		0.6	

Lanes, Volumes, Timings

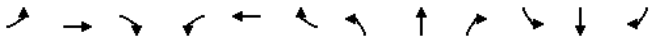
13: Whites Road & Kingston Road

<2033 Future Total>PM

12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type	Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0		0.0		0.0		0.0		0.0		0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8	1	7	4	4
Permitted Phases			2			6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	1	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	5.0	8.0	5.0	5.0	8.0	8.0
Minimum Split (s)	10.0	43.0	43.0	10.0	43.0	43.0	8.0	49.0	10.0	8.0	49.0	49.0
Total Split (s)	18.0	43.0	43.0	30.0	55.0	55.0	8.0	49.0	30.0	8.0	49.0	49.0
Total Split (%)	13.8%	33.1%	33.1%	23.1%	42.3%	42.3%	6.2%	37.7%	23.1%	6.2%	37.7%	37.7%
Maximum Green (s)	13.0	36.0	36.0	25.0	48.0	48.0	5.0	40.6	25.0	5.0	40.6	40.6
Yellow Time (s)	3.0	4.2	4.2	3.0	4.2	4.2	3.0	4.3	3.0	3.0	4.3	4.3
All-Red Time (s)	2.0	2.8	2.8	2.0	2.8	2.8	0.0	4.1	2.0	0.0	4.1	4.1
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	0.0
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	3.0	8.4	5.0	3.0	8.4	8.4
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	0.2	0.2	3.0	0.2	0.2	3.0	0.2	3.0	3.0	0.2	0.2
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	None	None	Max	Max
Walk Time (s)	7.0		7.0		7.0		7.0		7.0		7.0	
Flash Dont Walk (s)	29.0		29.0		29.0		29.0		33.0		33.0	
Pedestrian Calls (#/hr)	13		13		38		38		20		20	
Act Effect Green (s)	13.0	36.0	36.0	25.0	48.0	48.0	51.0	40.6	69.0	51.0	40.6	40.6
Actuated g/C Ratio	0.10	0.28	0.28	0.19	0.37	0.37	0.39	0.31	0.53	0.39	0.31	0.31
v/c Ratio	1.00	0.99	0.72	1.08	0.62	0.84	0.88	0.45	0.97	0.84	0.42	0.32
Control Delay	127.6	73.9	33.7	123.1	26.4	27.2	63.3	36.9	49.3	60.0	36.4	5.8
Queue Delay	0.0	11.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	127.6	85.0	33.7	123.1	26.4	27.2	63.3	36.9	49.3	60.0	36.4	5.8
LOS	F	F	C	F	C	C	E	D	D	E	D	A
Approach Delay	76.4		46.9		46.1		35.3		35.3		35.3	
Approach LOS	E		D		D		D		D		D	
Intersection Summary												
Area Type:	Other											
Cycle Length:	130											
Actuated Cycle Length:	130											
Offset: 32 (25%), Referenced to phase 2:EBT and 6:WBT, Start of Green												
Natural Cycle:	130											
Control Type:	Actuated-Coordinated											
Maximum v/c Ratio:	1.08											
Intersection Signal Delay:	51.8						Intersection LOS: D					
Intersection Capacity Utilization:	114.6%						ICU Level of Service H					
Analysis Period (min):	15											
Splits and Phases: 13: Whites Road & Kingston Road												

Queues <2033 Future Total>PM
13: Whites Road & Kingston Road 12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	168	932	389	360	818	539	248	743	801	213	671	202
w/c Ratio	1.00	0.99	0.72	1.08	0.62	0.84	0.88	0.45	0.97	0.84	0.42	0.32
Control Delay	127.6	73.9	33.7	123.1	26.4	27.2	63.3	36.9	49.3	60.0	36.4	5.8
Queue Delay	0.0	11.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	127.6	85.0	33.7	123.1	26.4	27.2	63.3	36.9	49.3	60.0	36.4	5.8
Queue Length 50th (m)	43.7	125.5	55.7	~100.9	48.8	37.1	42.7	55.8	156.8	35.9	49.8	0.0
Queue Length 95th (m)	#89.4	#169.5	93.4 m	#144.4	m83.0 m	#138.2	#83.4	68.3	#189.3	#70.3	61.7	17.0
Internal Link Dist (m)		273.5			198.7			134.6			361.2	
Turn Bay Length (m)	127.0		123.0	87.1		35.0	72.0		35.0	88.5		47.0
Base Capacity (vph)	168	941	540	333	1321	640	283	1641	830	253	1594	622
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	37	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced w/c Ratio	1.00	1.03	0.72	1.08	0.62	0.84	0.88	0.45	0.97	0.84	0.42	0.32


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.

m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings <2033 Future Total>PM
14: Whites Road & Highway 401 EB Off Ramp 12-20-2024



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↑↑	↑		↑↑	↑↑	
Traffic Volume (vph)	1244	589	0	862	610	0
Future Volume (vph)	1244	589	0	862	610	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.7	3.6	3.8	3.7
Storage Length (m)	0.0	225.0	0.0			0.0
Storage Lanes	2	1	0			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	0.97	0.91	1.00	0.95	0.95	1.00
Ped Bike Factor	1.00	0.98				
Frt	0.993	0.850				
Flt Protected	0.954					
Satd. Flow (prot)	3450	1427	0	3539	3618	0
Flt Permitted	0.954					
Satd. Flow (perm)	3450	1404	0	3539	3618	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	7	100				
Link Speed (k/h)	50			60	60	
Link Distance (m)	295.9			185.9	316.9	
Travel Time (s)	21.3			11.2	19.0	
Confl. Peds. (#/hr)		3	4			4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	3%	2%	2%	2%	2%
Adj. Flow (vph)	1352	640	0	937	663	0
Shared Lane Traffic (%)		10%				
Lane Group Flow (vph)	1416	576	0	937	663	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.2			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	0.99	1.00	0.97	0.99
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	2.0	2.0		10.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	2.0		0.6	0.6	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				CI+Ex	CI+Ex	
Detector 2 Channel						

Lanes, Volumes, Timings

<2033 Future Total>PM

14: Whites Road & Highway 401 EB Off Ramp

12-20-2024

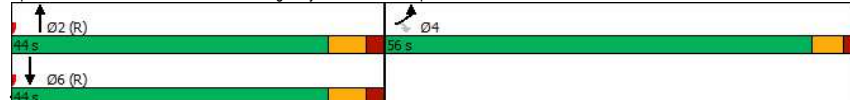


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	8.0	8.0		20.0	20.0	
Minimum Split (s)	28.5	28.5		27.7	27.7	
Total Split (s)	56.0	56.0		44.0	44.0	
Total Split (%)	56.0%	56.0%		44.0%	44.0%	
Maximum Green (s)	50.5	50.5		37.3	37.3	
Yellow Time (s)	3.7	3.7		4.5	4.5	
All-Red Time (s)	1.8	1.8		2.2	2.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.5	5.5		6.7	6.7	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		0.2	0.2	
Recall Mode	None	None		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	16.0	16.0		14.0	14.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effect Green (s)	47.7	47.7		40.1	40.1	
Actuated g/C Ratio	0.48	0.48		0.40	0.40	
v/c Ratio	0.86	0.80		0.66	0.46	
Control Delay	29.0	27.1		27.8	23.9	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	29.0	27.1		27.8	23.9	
LOS	C	C		C	C	
Approach Delay	28.5			27.8	23.9	
Approach LOS	C			C	C	

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 8 (8%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.86
 Intersection Signal Delay: 27.5
 Intersection LOS: C
 Intersection Capacity Utilization 75.7%
 ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 14: Whites Road & Highway 401 EB Off Ramp



Queues

<2033 Future Total>PM

14: Whites Road & Highway 401 EB Off Ramp

12-20-2024



Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	1416	576	937	663
v/c Ratio	0.86	0.80	0.66	0.46
Control Delay	29.0	27.1	27.8	23.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	29.0	27.1	27.8	23.9
Queue Length 50th (m)	115.7	81.0	78.9	50.2
Queue Length 95th (m)	141.9	130.5	102.6	67.3
Internal Link Dist (m)	271.9		161.9	292.9
Turn Bay Length (m)		225.0		
Base Capacity (vph)	1745	758	1417	1449
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.81	0.76	0.66	0.46

Intersection Summary

Lanes, Volumes, Timings

<2033 Future Total>PM

15: Dixie Road & Shopping Plaza Entrance

12-20-2024

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	0	281	0	0	466	0
Future Volume (vph)	0	281	0	0	466	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.1	3.7	4.0	3.7	3.7	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.865					
Fit Protected				0.950		
Satd. Flow (prot)	1701	0	1946	0	0	1848
Fit Permitted	0.950					
Satd. Flow (perm)	1701	0	1946	0	0	1848
Link Speed (k/h)	30	40		40		
Link Distance (m)	193.0	106.6		44.0		
Travel Time (s)	23.2	9.6		4.0		
Confl. Peds. (#/hr)	11		12			
Confl. Bikes (#/hr)	1					
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	305	0	0	507	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	305	0	0	0	0	507
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	4.1	3.6		3.6		
Link Offset(m)	0.0	0.0		0.0		
Crosswalk Width(m)	1.6	1.6		1.6		
Two way Left Turn Lane						
Headway Factor	0.93	0.99	0.94	0.99	0.99	0.94
Turning Speed (k/h)	97	97	97		97	
Sign Control	Stop	Free		Free		

Intersection Summary

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

HCM Unsignalized Intersection Capacity Analysis

<2033 Future Total>PM

15: Dixie Road & Shopping Plaza Entrance

12-20-2024

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	0	281	0	0	466	0
Future Volume (Veh/h)	0	281	0	0	466	0
Sign Control	Stop	Free		Free		
Grade	0%	0%		0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	305	0	0	507	0
Pedestrians	12					11
Lane Width (m)	4.1					4.0
Walking Speed (m/s)	1.1					1.1
Percent Blockage	1					1
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	44					
pX, platoon unblocked						
vC, conflicting volume	1026	23			12	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1026	23			12	
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	70			68	
cM capacity (veh/h)	175	1029			1587	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	305	0	507
Volume Left	0	0	507
Volume Right	305	0	0
cSH	1029	1700	1587
Volume to Capacity	0.30	0.00	0.32
Queue Length 95th (m)	9.5	0.0	10.6
Control Delay (s)	10.0	0.0	8.3
Lane LOS	A		A
Approach Delay (s)	10.0	0.0	8.3
Approach LOS	A		

Intersection Summary

Average Delay	8.9	
Intersection Capacity Utilization	51.0%	ICU Level of Service A
Analysis Period (min)	15	

Lanes, Volumes, Timings
17: Street B

<2033 Future Total>PM
12-20-2024

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	19	142	112	22	63	50
Future Volume (vph)	19	142	112	22	63	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.881		0.978			
Fit Protected	0.994					0.973
Satd. Flow (prot)	1649	0	1842	0	0	1833
Fit Permitted	0.994					0.973
Satd. Flow (perm)	1649	0	1842	0	0	1833
Link Speed (k/h)	30		30			30
Link Distance (m)	112.2		49.9			96.9
Travel Time (s)	13.5		6.0			11.6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	21	154	122	24	68	54
Shared Lane Traffic (%)						
Lane Group Flow (vph)	175	0	146	0	0	122
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	97	97		97	97	
Sign Control	Stop		Stop			Stop

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	33.2%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
17: Street B

<2033 Future Total>PM
12-20-2024

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	19	142	112	22	63	50
Future Volume (vph)	19	142	112	22	63	50
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	21	154	122	24	68	54
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total (vph)	175	146	122			
Volume Left (vph)	21	0	68			
Volume Right (vph)	154	24	0			
Hadj (s)	-0.47	-0.06	0.15			
Departure Headway (s)	4.0	4.4	4.6			
Degree Utilization, x	0.20	0.18	0.16			
Capacity (veh/h)	830	787	742			
Control Delay (s)	8.0	8.3	8.4			
Approach Delay (s)	8.0	8.3	8.4			
Approach LOS	A	A	A			

Intersection Summary

Delay	8.2
Level of Service	A
Intersection Capacity Utilization	33.2%
ICU Level of Service	A
Analysis Period (min)	15

Lanes, Volumes, Timings
19: Walnut Lane & Street B

<2033 Future Total>PM
12-20-2024

	↖		↗		↘	
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖		↗		↘	
Traffic Volume (vph)	29	55	129	706	275	32
Future Volume (vph)	29	55	129	706	275	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.912		0.986			
Flt Protected	0.983		0.992			
Satd. Flow (prot)	1688		1868		1857	
Flt Permitted	0.983		0.992			
Satd. Flow (perm)	1688		1868		1857	
Link Speed (k/h)	30		40		40	
Link Distance (m)	112.2		121.1		114.0	
Travel Time (s)	13.5		10.9		10.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	32	60	140	767	299	35
Shared Lane Traffic (%)						
Lane Group Flow (vph)	92	0	0	907	334	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7		3.3		3.3	
Link Offset(m)	0.0		0.0		0.0	
Crosswalk Width(m)	1.6		1.6		1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	97	97	97	97		
Sign Control	Stop		Free		Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	75.7%
Analysis Period (min)	15
	ICU Level of Service D

HCM Unsignalized Intersection Capacity Analysis
19: Walnut Lane & Street B

<2033 Future Total>PM
12-20-2024

	↖		↗		↘	
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖		↗		↘	
Traffic Volume (veh/h)	29	55	129	706	275	32
Future Volume (Veh/h)	29	55	129	706	275	32
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	32	60	140	767	299	35
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (m)	114					
pX, platoon unblocked						
vC, conflicting volume	1364	316	334			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1364	316	334			
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	92	89			
cM capacity (veh/h)	144	724	1225			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	92	907	334
Volume Left	32	140	0
Volume Right	60	0	35
cSH	302	1225	1700
Volume to Capacity	0.30	0.11	0.20
Queue Length 95th (m)	9.5	2.9	0.0
Control Delay (s)	22.1	2.7	0.0
Lane LOS	C	A	
Approach Delay (s)	22.1	2.7	0.0
Approach LOS	C		

Intersection Summary

Average Delay	3.4
Intersection Capacity Utilization	75.7%
Analysis Period (min)	15
	ICU Level of Service D

Lanes, Volumes, Timings
20: Street A & Walnut Lane

<2033 Future Total>PM
12-20-2024

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	↔
Traffic Volume (vph)	147	19	381	345	256	163
Future Volume (vph)	147	19	381	345	256	163
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.984			0.974	0.947	
Fit Protected				0.974	0.970	
Satd. Flow (prot)	1853	0	0	1834	1730	0
Fit Permitted				0.974	0.970	
Satd. Flow (perm)	1853	0	0	1834	1730	0
Link Speed (k/h)	40			40	30	
Link Distance (m)	121.1			433.1	80.3	
Travel Time (s)	10.9			39.0	9.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	160	21	414	375	278	177
Shared Lane Traffic (%)						
Lane Group Flow (vph)	181	0	0	789	455	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)		97	97		97	97
Sign Control	Stop			Stop	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	82.3%
ICU Level of Service	E
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
20: Street A & Walnut Lane

<2033 Future Total>PM
12-20-2024

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	↔
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	147	19	381	345	256	163
Future Volume (vph)	147	19	381	345	256	163
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	160	21	414	375	278	177
Direction, Lane #						
Volume Total (vph)	181	789	455			
Volume Left (vph)	0	414	278			
Volume Right (vph)	21	0	177			
Hadj (s)	-0.04	0.14	-0.08			
Departure Headway (s)	6.4	5.9	6.1			
Degree Utilization, x	0.32	1.30	0.77			
Capacity (veh/h)	535	602	581			
Control Delay (s)	12.5	165.8	26.5			
Approach Delay (s)	12.5	165.8	26.5			
Approach LOS	B	F	D			

Intersection Summary

Delay	101.9
Level of Service	F
Intersection Capacity Utilization	82.3%
ICU Level of Service	E
Analysis Period (min)	15

Lanes, Volumes, Timings
21: Building Driveways & Street A

<2033 Future Total>PM
12-20-2024

	↖	→	↘	↙	←	↖	↙	↘	↙	↘	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	75	212	95	111	202	87	0	0	116	91	0	0
Future Volume (vph)	75	212	95	111	202	87	0	0	116	91	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.966			0.971			0.865				
Flt Protected		0.990			0.986						0.950	
Satd. Flow (prot)	0	1801	0	0	1803	0	0	1629	0	0	1789	0
Flt Permitted		0.990			0.986						0.950	
Satd. Flow (perm)	0	1801	0	0	1803	0	0	1629	0	0	1789	0
Link Speed (k/h)		30			30			30			30	
Link Distance (m)		193.3			80.3			63.7			34.1	
Travel Time (s)		23.2			9.6			7.6			4.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	230	103	121	220	95	0	0	126	99	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	415	0	0	436	0	0	126	0	0	99	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	97	97	97	97	97	97	97	97	97	97	97	97
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary
 Area Type: Other
 Control Type: Unsignalized
 Intersection Capacity Utilization 52.2% ICU Level of Service A
 Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
21: Building Driveways & Street A

<2033 Future Total>PM
12-20-2024

	↖	→	↘	↙	←	↖	↙	↘	↙	↘	↙	↘
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	75	212	95	111	202	87	0	0	116	91	0	0
Future Volume (vph)	75	212	95	111	202	87	0	0	116	91	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)	82	230	103	121	220	95	0	0	126	99	0	0
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	415	436	126	99								
Volume Left (vph)	82	121	0	99								
Volume Right (vph)	103	95	126	0								
Hadj (s)	-0.08	-0.04	-0.57	0.23								
Departure Headway (s)	5.2	5.2	5.7	6.6								
Degree Utilization, x	0.60	0.63	0.20	0.18								
Capacity (veh/h)	664	670	525	452								
Control Delay (s)	15.5	16.5	10.2	11.0								
Approach Delay (s)	15.5	16.5	10.2	11.0								
Approach LOS	C	C	B	B								

Intersection Summary
 Delay 14.9
 Level of Service B
 Intersection Capacity Utilization 52.2% ICU Level of Service A
 Analysis Period (min) 15

Lanes, Volumes, Timings
20: Street A & Walnut Lane

<2033 Future Total_Signal>PM
12-20-2024

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↗	↖	↗
Traffic Volume (vph)	147	19	381	345	256	163
Future Volume (vph)	147	19	381	345	256	163
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.984			0.947		
Flt Protected				0.974	0.970	
Satd. Flow (prot)	1853	0	0	1834	1730	0
Flt Permitted				0.741	0.970	
Satd. Flow (perm)	1853	0	0	1396	1730	0
Right Turn on Red		Yes			Yes	
Satd. Flow (RTOR)	12				31	
Link Speed (k/h)	40			40	30	
Link Distance (m)	121.1			433.1	80.3	
Travel Time (s)	10.9			39.0	9.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	160	21	414	375	278	177
Shared Lane Traffic (%)						
Lane Group Flow (vph)	181	0	0	789	455	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)		97	97		97	97
Number of Detectors	2		1	2	1	
Detector Template	Thru		Left	Thru	Left	
Leading Detector (m)	10.0		2.0	10.0	2.0	
Trailing Detector (m)	0.0		0.0	0.0	0.0	
Detector 1 Position(m)	0.0		0.0	0.0	0.0	
Detector 1 Size(m)	0.6		2.0	0.6	2.0	
Detector 1 Type	CI+Ex		CI+Ex	CI+Ex	CI+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	CI+Ex			CI+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		Perm	NA	Prot	
Protected Phases	2			6	8	
Permitted Phases				6		
Detector Phase	2			6	8	
Switch Phase						
Minimum Initial (s)	20.0			20.0	8.0	

Lanes, Volumes, Timings
20: Street A & Walnut Lane

<2033 Future Total_Signal>PM
12-20-2024

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Minimum Split (s)	28.0		28.0	28.0	23.0	
Total Split (s)	67.0		67.0	67.0	33.0	
Total Split (%)	67.0%		67.0%	67.0%	33.0%	
Maximum Green (s)	61.2		61.2	61.2	26.3	
Yellow Time (s)	3.3		3.3	3.3	3.0	
All-Red Time (s)	2.5		2.5	2.5	3.7	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	5.8			5.8	6.7	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	Max		Max	Max	None	
Walk Time (s)	7.0		7.0	7.0	7.0	
Flash Dont Walk (s)	15.0		15.0	15.0	9.0	
Pedestrian Calls (#/hr)	0		0	0	0	
Act Effct Green (s)	61.2			61.2	26.0	
Actuated g/C Ratio	0.61			0.61	0.26	
v/c Ratio	0.16			0.92	0.96	
Control Delay	8.1			35.7	67.8	
Queue Delay	0.0			0.0	0.0	
Total Delay	8.1			35.7	67.8	
LOS	A			D	E	
Approach Delay	8.1			35.7	67.8	
Approach LOS	A			D	E	

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 99.7
 Natural Cycle: 90
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.96
 Intersection Signal Delay: 42.4
 Intersection Capacity Utilization 95.3%
 Analysis Period (min) 15
 Intersection LOS: D
 ICU Level of Service F

Splits and Phases: 20: Street A & Walnut Lane



Lanes, Volumes, Timings

6: Liverpool Road & Kingston Road

<2033 Future Total_PHF>PM

12-20-2024

	↖	→	↘	↙	←	↖	↙	↘	↙	↘	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↖	↖	↖	↖↖	↖	↖	↖↖	↖	↖	↖↖	↖
Traffic Volume (vph)	284	1001	546	274	413	67	155	787	232	95	568	159
Future Volume (vph)	284	1001	546	274	413	67	155	787	232	95	568	159
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.1	3.4	3.6	3.3	3.7	3.4	3.8	4.1	4.8	4.7	3.8	3.3
Storage Length (m)	188.8		97.9	170.7		117.0	185.5		52.0	49.0		60.5
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	31.6			22.7			20.8			25.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.98		0.95	0.99		0.96	0.99		0.90	0.98		0.96
Frt			0.850			0.850			0.850			0.850
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1688	3461	1599	1728	3579	1579	1791	3773	1732	2026	3654	1561
Fit Permitted	0.950			0.950			0.346			0.202		
Satd. Flow (perm)	1661	3461	1512	1709	3579	1517	645	3773	1564	424	3654	1499
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			93			160			174			159
Link Speed (kh)		60			60			50				50
Link Distance (m)		694.6			396.4			257.7				348.6
Travel Time (s)		41.7			23.8			18.6				25.1
Conf. Peds. (#/hr)	20		31	31		20	29		62	62		29
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	2%	1%	1%	2%	0%	3%	1%	4%	0%	1%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	4	0	0	0
Adj. Flow (vph)	284	1001	546	274	413	67	155	787	232	95	568	159
Shared Lane Traffic (%)												
Lane Group Flow (vph)	284	1001	546	274	413	67	155	787	232	95	568	159
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.3			3.3			4.7				4.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		1.6			1.6			1.6				1.6
Two way Left Turn Lane		Yes										Yes
Headway Factor	1.08	1.03	1.00	1.04	0.99	1.03	0.97	0.93	0.87	0.86	0.97	1.04
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4				9.4
Detector 2 Size(m)		0.6			0.6			0.6				0.6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex

Lanes, Volumes, Timings

6: Liverpool Road & Kingston Road

<2033 Future Total_PHF>PM

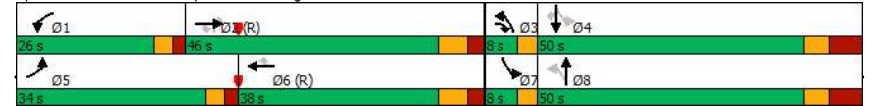
12-20-2024

	↖	→	↘	↙	←	↖	↙	↘	↙	↘	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)		0.0				0.0					0.0	
Turn Type	Prot	NA	pm+ov	Prot	NA	Perm	pm+pt	NA	custom	pm+pt	NA	Perm
Protected Phases	5	2	3	1	6					3	8	
Permitted Phases			2			6	8		2	4		4
Detector Phase	5	2	3	1	6	6	3	8	2	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	5.0	5.0	20.0	20.0	5.0	8.0	20.0	5.0	8.0	8.0
Minimum Split (s)	10.0	36.0	8.0	10.0	36.0	36.0	8.0	50.0	36.0	8.0	50.0	50.0
Total Split (s)	34.0	46.0	8.0	26.0	38.0	38.0	8.0	50.0	46.0	8.0	50.0	50.0
Total Split (%)	26.2%	35.4%	6.2%	20.0%	29.2%	29.2%	6.2%	38.5%	35.4%	6.2%	38.5%	38.5%
Maximum Green (s)	29.0	38.9	5.0	21.0	30.9	30.9	5.0	40.9	38.9	5.0	40.9	40.9
Yellow Time (s)	3.0	4.3	3.0	3.0	4.3	4.3	3.0	3.8	4.3	3.0	3.8	3.8
All-Red Time (s)	2.0	2.8	0.0	2.0	2.8	2.8	0.0	5.3	2.8	0.0	5.3	5.3
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	0.0
Total Lost Time (s)	5.0	7.1	3.0	5.0	7.1	7.1	3.0	9.1	7.1	3.0	9.1	9.1
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
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	3.0
Recall Mode	None	C-Max	None	None	C-Max	C-Max	None	Max	C-Max	None	Max	Max
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		21.0			21.0	21.0		33.0	21.0		33.0	33.0
Pedestrian Calls (#/hr)		15			20	20		28	15		15	15
Act Effct Green (s)	25.6	38.9	48.0	21.0	34.3	34.3	52.0	40.9	38.9	52.0	40.9	40.9
Actuated g/C Ratio	0.20	0.30	0.37	0.16	0.26	0.26	0.40	0.31	0.30	0.40	0.31	0.31
v/c Ratio	0.86	0.97	0.88	0.98	0.44	0.13	0.51	0.66	0.39	0.41	0.49	0.27
Control Delay	51.5	67.0	52.6	103.8	42.4	0.5	32.4	41.8	12.1	28.7	38.0	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.5	67.0	52.6	103.8	42.4	0.5	32.4	41.8	12.1	28.7	38.0	6.0
LOS	D	E	D	F	D	A	C	D	B	C	D	A
Approach Delay		60.3			61.0			34.7				30.7
Approach LOS		E			E			C				C

Intersection Summary

Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	78 (60%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle:	135
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.98
Intersection Signal Delay:	48.5
Intersection Capacity Utilization:	105.8%
Intersection LOS:	D
ICU Level of Service:	G
Analysis Period (min):	15

Splits and Phases: 6: Liverpool Road & Kingston Road



Lanes, Volumes, Timings

<2033 Future Total_PHF>PM

9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	454	278	500	293	204	1084	0	0	1167	166
Future Volume (vph)	0	0	454	278	500	293	204	1084	0	0	1167	166
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.5	3.7	3.7	3.4	3.7
Storage Length (m)	0.0	0.0	0.0	0.0	125.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0
Storage Lanes	0		1	1		1	1		0	0		1
Taper Length (m)	2.5			2.5		30.0			2.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	1.00	0.91	1.00
Ped Bike Factor												0.92
Frt			0.865			0.850						0.850
Fit Protected				0.950	0.997		0.950					
Satd. Flow (prot)	0	0	1662	1734	1820	1581	1825	5079	0	0	4972	1633
Fit Permitted				0.950	0.997		0.136					
Satd. Flow (perm)	0	0	1662	1734	1820	1581	261	5079	0	0	4972	1508
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)						85						166
Link Speed (kh)		50			50			50			50	
Link Distance (m)		433.1			226.7			372.2			162.3	
Travel Time (s)		31.2			16.3			26.8			11.7	
Conf. Peds. (#/hr)							17		15	15		17
Conf. Bikes (#/hr)								6				7
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	2%	0%	0%	0%	1%	0%	1%	6%	2%	2%	0%
Adj. Flow (vph)	0	0	454	278	500	293	204	1084	0	0	1167	166
Shared Lane Traffic (%)				10%								
Lane Group Flow (vph)	0	0	454	250	528	293	204	1084	0	0	1167	166
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	1.01	0.99	1.01	0.99	0.99	1.03	0.99
Turning Speed (k/h)	97		97	24		14	97		14	24		97
Number of Detectors			1	1	2	1	1	2			2	1
Detector Template			Right	Left	Thru	Right	Left	Thru			Thru	Right
Leading Detector (m)			2.0	2.0	10.0	2.0	2.0	10.0			10.0	2.0
Trailing Detector (m)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Position(m)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Size(m)			2.0	2.0	0.6	2.0	2.0	0.6			0.6	2.0
Detector 1 Type			Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 2 Position(m)					9.4			9.4			9.4	
Detector 2 Size(m)					0.6			0.6			0.6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	

Lanes, Volumes, Timings

<2033 Future Total_PHF>PM

9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)						0.0					0.0	0.0
Turn Type			Over	Split	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases			5	8	8		5	2			6	
Permitted Phases						8	2					6
Detector Phase			5	8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)			5.0	8.0	8.0	8.0	5.0	15.0			15.0	15.0
Minimum Split (s)			9.5	25.0	25.0	25.0	9.5	24.3			24.3	24.3
Total Split (s)			33.0	36.0	36.0	36.0	33.0	64.0			31.0	31.0
Total Split (%)			33.0%	36.0%	36.0%	36.0%	33.0%	64.0%			31.0%	31.0%
Maximum Green (s)			28.5	30.0	30.0	30.0	28.5	57.7			24.7	24.7
Yellow Time (s)			3.5	3.3	3.3	3.3	3.5	3.3			3.3	3.3
All-Red Time (s)			1.0	2.7	2.7	2.7	1.0	3.0			3.0	3.0
Lost Time Adjust (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Lost Time (s)			4.5	6.0	6.0	6.0	4.5	6.3			6.3	6.3
Lead/Lag			Lead				Lead				Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)			3.0	3.0	3.0	3.0	3.0	3.0			3.0	3.0
Recall Mode			None	None	None	None	None	C-Max			C-Max	C-Max
Walk Time (s)				14.0	14.0	14.0		13.0			13.0	13.0
Flash Dont Walk (s)				5.0	5.0	5.0		5.0			5.0	5.0
Pedestrian Calls (#/hr)				0	0	0		14			7	7
Act Effct Green (s)			28.3	30.0	30.0	30.0	59.5	57.7			24.9	24.9
Actuated g/C Ratio			0.28	0.30	0.30	0.30	0.60	0.58			0.25	0.25
v/c Ratio			0.97	0.48	0.97	0.55	0.34	0.37			0.94	0.33
Control Delay			70.4	32.4	67.2	25.0	12.0	11.8			48.8	14.0
Queue Delay			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay			70.4	32.4	67.2	25.0	12.0	11.8			48.8	14.0
LOS			E	C	E	C	B	B			D	B
Approach Delay			70.4			47.5		11.8			44.5	
Approach LOS			E			D		B			D	

Intersection Summary

Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	100
Offset:	8 (8%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle:	90
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.97
Intersection Signal Delay:	38.0
Intersection LOS:	D
Intersection Capacity Utilization:	91.0%
ICU Level of Service:	E
Analysis Period (min):	15

Splits and Phases: 9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp



Lanes, Volumes, Timings

<2033 Future Total_PHF>PM

11: Hwy 401 WB Ramps & Kingston Road

12-20-2024

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↕↕		↕	↕↕	↕↕	↕
Traffic Volume (vph)	1696	23	184	804	662	346
Future Volume (vph)	1696	23	184	804	662	346
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.0	3.7	2.7	3.8	3.8	3.7
Grade (%)	6%			0%	0%	
Storage Length (m)		0.0	47.5		0.0	52.0
Storage Lanes		0	1		2	1
Taper Length (m)			22.3		2.5	
Lane Util. Factor	0.95	0.95	1.00	0.95	0.97	1.00
Ped Bike Factor					1.00	0.98
Frt	0.998					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3577	0	1577	3618	3544	1617
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3577	0	1577	3618	3537	1591
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	1					226
Link Speed (k/h)	60			60	50	
Link Distance (m)	268.7			424.0	216.6	
Travel Time (s)	16.1			25.4	15.6	
Confl. Peds. (#/hr)					1	3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	5%	3%	2%	1%	1%
Adj. Flow (vph)	1696	23	184	804	662	346
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1719	0	184	804	662	346
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.1			3.1	7.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	0.98	1.03	1.14	0.97	0.97	0.99
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	10.0		2.0	10.0	2.0	2.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Size(m)	0.6		2.0	0.6	2.0	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		

Lanes, Volumes, Timings

<2033 Future Total_PHF>PM

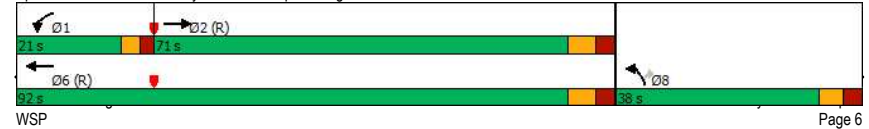
11: Hwy 401 WB Ramps & Kingston Road

12-20-2024

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		Prot	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases						8
Detector Phase	2		1	6	8	8
Switch Phase						
Minimum Initial (s)	20.0		5.0	20.0	8.0	8.0
Minimum Split (s)	50.0		10.0	50.0	38.0	38.0
Total Split (s)	71.0		21.0	92.0	38.0	38.0
Total Split (%)	54.6%		16.2%	70.8%	29.2%	29.2%
Maximum Green (s)	63.8		16.0	84.8	31.3	31.3
Yellow Time (s)	4.2		3.0	4.2	3.7	3.7
All-Red Time (s)	3.0		2.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	7.2		5.0	7.2	6.7	6.7
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?						
Vehicle Extension (s)	0.2		3.0	0.2	3.0	3.0
Recall Mode	C-Max		None	C-Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	35.0			35.0	24.0	24.0
Pedestrian Calls (#/hr)	0			0	14	14
Act Effct Green (s)	66.4		16.0	87.4	28.7	28.7
Actuated g/C Ratio	0.51		0.12	0.67	0.22	0.22
v/c Ratio	0.94		0.95	0.33	0.85	0.66
Control Delay	46.6		110.9	1.5	59.4	21.6
Queue Delay	0.4		0.0	0.0	0.0	0.0
Total Delay	46.9		110.9	1.5	59.4	21.6
LOS	D		F	A	E	C
Approach Delay	46.9			21.9	46.4	
Approach LOS	D			C	D	

Intersection Summary	
Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	69 (53%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle:	120
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.95
Intersection Signal Delay:	40.1
Intersection LOS:	D
Intersection Capacity Utilization:	93.1%
ICU Level of Service:	F
Analysis Period (min):	15

Splits and Phases: 11: Hwy 401 WB Ramps & Kingston Road



Lanes, Volumes, Timings
13: Whites Road & Kingston Road

<2033 Future Total_PHF>PM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	155	857	358	331	753	496	228	684	737	196	617	186
Future Volume (vph)	155	857	358	331	753	496	228	684	737	196	617	186
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.6	4.2	3.5	3.7	4.0	3.5	3.9	3.7	3.5	3.9	4.0
Grade (%)	6%		0%		0%		0%		0%		0%	
Storage Length (m)	127.0		123.0	87.1		35.0	72.0		35.0	88.5		47.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	64.0			39.6			66.8			32.6		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Ped Bike Factor	0.97		0.96	0.99		0.91	0.99		0.93	0.98		0.95
Frt	0.850		0.850		0.850		0.850		0.850		0.850	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1681	3400	1622	1733	3579	1654	1767	5255	1588	1750	5105	1627
Flt Permitted	0.950			0.950			0.363			0.323		
Satd. Flow (perm)	1633	3400	1549	1715	3579	1502	666	5255	1470	582	5105	1550
Right Turn on Red			Yes		Yes		Yes		Yes		Yes	
Satd. Flow (RTOR)			154		147				59			186
Link Speed (kh)	60		60		60		60		60		60	
Link Distance (m)	297.5		222.7		158.6		385.2					
Travel Time (s)	17.9		13.4		9.5		23.1					
Confl. Peds. (#/hr)	75		31	31		75	37		65	65		37
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	3%	3%	3%	2%	2%	1%	2%	2%	2%	5%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	2	0	0	4
Adj. Flow (vph)	155	857	358	331	753	496	228	684	737	196	617	186
Shared Lane Traffic (%)												
Lane Group Flow (vph)	155	857	358	331	753	496	228	684	737	196	617	186
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width(m)	3.5		3.5		3.5		3.5		3.5		3.5	
Link Offset(m)	0.0		0.0		0.0		0.0		0.0		0.0	
Crosswalk Width(m)	1.6		1.6		1.6		1.6		1.6		1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.04	0.96	1.01	0.99	0.94	1.01	0.96	1.00	1.01	0.96	0.96
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4		9.4		9.4		9.4		9.4		9.4	
Detector 2 Size(m)	0.6		0.6		0.6		0.6		0.6		0.6	

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WSP

Synchro 11 Report
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Lanes, Volumes, Timings
13: Whites Road & Kingston Road

<2033 Future Total_PHF>PM
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type	Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0		0.0		0.0		0.0		0.0		0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8	1	7	4	
Permitted Phases			2			6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	1	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	5.0	8.0	5.0	5.0	8.0	8.0
Minimum Split (s)	10.0	43.0	43.0	10.0	43.0	43.0	8.0	49.0	10.0	8.0	49.0	49.0
Total Split (s)	18.0	43.0	43.0	30.0	55.0	55.0	8.0	49.0	30.0	8.0	49.0	49.0
Total Split (%)	13.8%	33.1%	33.1%	23.1%	42.3%	42.3%	6.2%	37.7%	23.1%	6.2%	37.7%	37.7%
Maximum Green (s)	13.0	36.0	36.0	25.0	48.0	48.0	5.0	40.6	25.0	5.0	40.6	40.6
Yellow Time (s)	3.0	4.2	4.2	3.0	4.2	4.2	3.0	4.3	3.0	3.0	4.3	4.3
All-Red Time (s)	2.0	2.8	2.8	2.0	2.8	2.8	0.0	4.1	2.0	0.0	4.1	4.1
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	0.0
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	3.0	8.4	5.0	3.0	8.4	8.4
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	0.2	0.2	3.0	0.2	0.2	3.0	0.2	3.0	3.0	0.2	0.2
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	None	None	Max	Max
Walk Time (s)	7.0		7.0		7.0		7.0		7.0		7.0	
Flash Dont Walk (s)	29.0		29.0		29.0		29.0		33.0		33.0	
Pedestrian Calls (#/hr)	13		13		38		38		20		20	
Act Effect Green (s)	13.0	36.0	36.0	25.0	48.0	48.0	51.0	40.6	69.0	51.0	40.6	40.6
Actuated g/C Ratio	0.10	0.28	0.28	0.19	0.37	0.37	0.39	0.31	0.53	0.39	0.31	0.31
v/c Ratio	0.92	0.91	0.66	0.99	0.57	0.77	0.75	0.42	0.89	0.72	0.39	0.30
Control Delay	109.5	60.1	29.8	103.1	25.5	21.6	47.4	36.3	36.8	45.5	35.8	5.8
Queue Delay	0.0	3.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	109.5	63.5	29.8	103.1	25.5	21.6	47.4	36.3	36.8	45.5	35.8	5.8
LOS	F	E	C	F	C	C	D	D	D	D	D	A
Approach Delay	59.9		40.6		38.1		32.2					
Approach LOS	E		D		D		C					

Intersection Summary

Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	32 (25%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle:	120
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.99
Intersection Signal Delay:	43.1
Intersection Capacity Utilization:	114.6%
Analysis Period (min):	15
Intersection LOS:	D
ICU Level of Service:	H

Splits and Phases: 13: Whites Road & Kingston Road



APPENDIX

H-3 2038 FUTURE TOTAL CONDITIONS

Lanes, Volumes, Timings
1: Walnut Lane & Kingston Road

<2038 Future Total>AM
12-20-2024

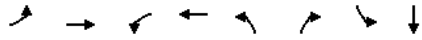
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Traffic Volume (vph)	20	872	56	102	443	30	224	0	344	14	6	29
Future Volume (vph)	20	872	56	102	443	30	224	0	344	14	6	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.0	3.6	3.5	3.0	3.6	3.7	3.3	3.5	3.7	3.2	3.7	3.7
Storage Length (m)	26.0		25.8	37.0		0.0	63.2		0.0	18.5		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	24.0			26.0			24.4			18.1		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	1.00		0.99		0.99	1.00	0.98	
Frt		0.991			0.990				0.850		0.877	
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1685	3428	0	1652	3379	0	1745	0	1585	1725	1601	0
Fit Permitted	0.950			0.950			0.732			0.950		
Satd. Flow (perm)	1677	3428	0	1644	3379	0	1330	0	1563	1720	1601	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			8				210			32
Link Speed (k/h)		60			60				40			40
Link Distance (m)		129.3			694.6				114.0			179.7
Travel Time (s)		7.8			41.7				10.3			16.2
Conf. Peds. (#/hr)	4		8	8		4	9		2	2		9
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%	4%	6%	2%	5%	14%	0%	0%	3%	0%	0%	4%
Bus Blockages (#/hr)	0	0	6	0	0	0	0	0	0	0	0	0
Adj. Flow (vph)	22	948	61	111	482	33	243	0	374	15	7	32
Shared Lane Traffic (%)												
Lane Group Flow (vph)	22	1009	0	111	515	0	243	0	374	15	39	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.1			3.1				3.3			3.3
Link Offset(m)		0.0			0.0				0.0			0.0
Crosswalk Width(m)		4.9			1.6				4.9			4.9
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.09	1.00	1.01	1.09	1.00	0.99	1.04	1.01	0.99	1.06	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	0	0		0	0		1		1	0		0
Detector Template									Right			
Leading Detector (m)	0.0	0.0		0.0	0.0		7.5		6.1	0.0		0.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		-1.5		0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		-1.5		0.0	0.0		0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8		9.0		6.1	6.1		1.8
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Turn Type	Prot	NA		Prot	NA		Perm		Perm	Perm		NA
Protected Phases	5	2		1	6							4
Permitted Phases							8		8			4

Lanes, Volumes, Timings
1: Walnut Lane & Kingston Road

<2038 Future Total>AM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Detector Phase	5	2			1	6			8		8	4	4
Switch Phase													
Minimum Initial (s)	5.0	20.0			5.0	20.0			8.0		8.0	8.0	
Minimum Split (s)	10.0	33.0			10.0	33.0			39.0		39.0	39.0	
Total Split (s)	10.0	52.0			19.0	61.0			49.0		49.0	49.0	
Total Split (%)	8.3%	43.3%			15.8%	50.8%			40.8%		40.8%	40.8%	
Maximum Green (s)	5.0	45.4			14.0	54.4			41.0		41.0	41.0	
Yellow Time (s)	3.0	4.4			3.0	4.4			3.3		3.3	3.3	
All-Red Time (s)	2.0	2.2			2.0	2.2			4.7		4.7	4.7	
Lost Time Adjust (s)	0.0	0.0			0.0	0.0			0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.6			5.0	6.6			8.0		8.0	8.0	
Lead/Lag	Lead	Lag			Lead	Lag							
Lead-Lag Optimize?													
Vehicle Extension (s)	3.0	3.0			3.0	3.0			3.0		3.0	3.0	
Recall Mode	None	C-Max			None	C-Max			None		None	None	
Walk Time (s)		7.0				7.0			7.0		7.0	7.0	
Flash Dont Walk (s)		19.0				19.0			22.0		22.0	22.0	
Pedestrian Calls (#/hr)		7				5			5		14	14	
Act Effect Green (s)	7.0	59.6			13.1	70.0			27.8		27.8	27.8	
Actuated g/C Ratio	0.06	0.50			0.11	0.58			0.23		0.23	0.23	
v/c Ratio	0.23	0.59			0.62	0.26			0.79		0.72	0.10	
Control Delay	74.5	20.6			55.6	17.8			60.8		25.1	31.8	
Queue Delay	0.0	0.0			0.0	0.0			0.0		0.0	0.0	
Total Delay	74.5	20.6			55.6	17.8			60.8		25.1	31.8	
LOS	E	C			E	B			E		C	C	
Approach Delay		21.7				24.5			39.2			18.4	
Approach LOS		C				C			D			B	
Intersection Summary													
Area Type:	Other												
Cycle Length:	120												
Actuated Cycle Length:	120												
Offset:	1 (1%), Referenced to phase 2:EBT and 6:WBT, Start of Green												
Natural Cycle:	85												
Control Type:	Actuated-Coordinated												
Maximum v/c Ratio:	0.79												
Intersection Signal Delay:	27.0						Intersection LOS: C						
Intersection Capacity Utilization:	73.1%						ICU Level of Service D						
Analysis Period (min):	15												
Splits and Phases:	1: Walnut Lane & Kingston Road												

Queues <2038 Future Total>AM
1: Walnut Lane & Kingston Road 12-20-2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBR	SBL	SBT
Lane Group Flow (vph)	22	1009	111	515	243	374	15	39
w/c Ratio	0.23	0.59	0.62	0.26	0.79	0.72	0.04	0.10
Control Delay	74.5	20.6	55.6	17.8	60.8	25.1	31.8	13.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	74.5	20.6	55.6	17.8	60.8	25.1	31.8	13.2
Queue Length 50th (m)	5.4	96.1	26.3	44.0	54.3	35.8	2.8	1.3
Queue Length 95th (m)	m12.5	139.1	m42.5	67.9	75.1	62.8	7.5	9.0
Internal Link Dist (m)		105.3		670.6				155.7
Turn Bay Length (m)	26.0		37.0		63.2		18.5	
Base Capacity (vph)	97	1704	205	1974	454	672	587	568
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced w/c Ratio	0.23	0.59	0.54	0.26	0.54	0.56	0.03	0.07

Intersection Summary
m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings <2038 Future Total>AM
2: Street B & Kingston Road 12-20-2024



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑		↑↑		↑
Traffic Volume (vph)	818	98	0	752	0	131
Future Volume (vph)	818	98	0	752	0	131
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.3	3.7	3.5	3.7	4.5
Storage Length (m)		45.0	0.0		0.0	0.0
Storage Lanes		1	0		0	1
Taper Length (m)			2.5		2.5	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Ped Bike Factor						
Frt		0.850				0.865
Fit Protected						
Satd. Flow (prot)	3433	1516	0	3400	0	1808
Fit Permitted						
Satd. Flow (perm)	3433	1516	0	3400	0	1808
Link Speed (k/h)	60			60	30	
Link Distance (m)	191.2			129.3	96.9	
Travel Time (s)	11.5			7.8	11.6	
Confl. Peds. (#/hr)		4				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	3%	2%	5%	2%	0%
Adj. Flow (vph)	889	107	0	817	0	142
Shared Lane Traffic (%)						
Lane Group Flow (vph)	889	107	0	817	0	142
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.0			3.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	1.01	1.04	0.99	1.01	0.99	0.88
Turning Speed (k/h)		14	24		24	14
Sign Control	Free			Free	Stop	

Intersection Summary
Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 37.4% ICU Level of Service A
Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
2: Street B & Kingston Road

<2038 Future Total>AM
12-20-2024

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑		↑↑		↑
Traffic Volume (veh/h)	818	98	0	752	0	131
Future Volume (Veh/h)	818	98	0	752	0	131
Sign Control	Free		Free		Stop	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	889	107	0	817	0	142
Pedestrians	4					
Lane Width (m)	4.5					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type	TWLTL		TWLTL			
Median storage (veh)	2		2			
Upstream signal (m)	191		129			
pX, platoon unblocked			0.88	0.91	0.88	
vC, conflicting volume			893	1302	448	
vC1, stage 1 conf vol			893			
vC2, stage 2 conf vol			408			
vCu, unblocked vol			601	801	95	
tC, single (s)			4.1	6.8	6.9	
tC, 2 stage (s)			5.8			
tF (s)			2.2	3.5	3.3	
p0 queue free %			100	100	83	
cM capacity (veh/h)			850	423	830	
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	444	444	107	408	408	142
Volume Left	0	0	0	0	0	0
Volume Right	0	0	107	0	0	142
cSH	1700	1700	1700	1700	1700	830
Volume to Capacity	0.26	0.26	0.06	0.24	0.24	0.17
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	4.7
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	10.2
Lane LOS	B					
Approach Delay (s)	0.0		0.0		10.2	
Approach LOS	B					
Intersection Summary						
Average Delay	0.7					
Intersection Capacity Utilization	37.4%		ICU Level of Service		A	
Analysis Period (min)	15					

Lanes, Volumes, Timings
3: Dixie Road & Kingston Road

<2038 Future Total>AM
12-20-2024

	↖	→	↘	↙	←	↖	↗	↘	↙	↖	↗	↘	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations	↖	↖↗	↘	↖	↖↗	↘	↖	↖↗	↘	↖	↖↗	↘	↖
Traffic Volume (vph)	80	738	139	78	579	94	67	15	29	155	35	144	
Future Volume (vph)	80	738	139	78	579	94	67	15	29	155	35	144	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	2.8	3.6	3.4	2.8	3.5	3.1	3.6	4.0	3.7	3.8	4.2	3.7	
Grade (%)	6%		0%		0%		0%		0%		0%		
Storage Length (m)	145.4		64.5	51.0		79.5	13.0		0.0	16.0		0.0	
Storage Lanes	1		0	1		0	1		0	1		0	
Taper Length (m)	66.4			48.0			18.0			25.0			
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		1.00	0.99		1.00	0.99		1.00	0.99		0.99
Frt	0.976		0.979		0.900		0.879						
Fit Protected	0.950			0.950			0.950			0.950			
Satd. Flow (prot)	1564	3280	0	1645	3298	0	1752	1769	0	1827	1759	0	
Fit Permitted	0.950			0.950			0.554			0.726			
Satd. Flow (perm)	1554	3280	0	1640	3298	0	1019	1769	0	1393	1759	0	
Right Turn on Red			Yes		Yes			Yes			Yes		Yes
Satd. Flow (RTOR)	23		18		32		157						
Link Speed (k/h)	60		60		40		60						
Link Distance (m)	896.3		191.2		44.0		236.2						
Travel Time (s)	53.8		11.5		4.0		14.2						
Confl. Peds. (#/hr)	6		4	4		6	3		2	2		3	
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	0.92
Heavy Vehicles (%)	2%	4%	2%	0%	6%	2%	3%	0%	0%	1%	0%	0%	0%
Bus Blockages (#/hr)	0	0	6	0	0	6	0	0	0	0	0	0	0
Adj. Flow (vph)	87	802	151	85	629	102	73	16	32	168	38	157	
Shared Lane Traffic (%)													
Lane Group Flow (vph)	87	953	0	85	731	0	73	48	0	168	195	0	
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right	
Median Width(m)	2.8		3.8		3.8		4.9						
Link Offset(m)	0.0		0.0		0.0		4.9						
Crosswalk Width(m)	4.9		4.9		4.9		4.9						
Two way Left Turn Lane	Yes												
Headway Factor	1.17	1.04	1.07	1.13	1.01	1.08	1.00	0.94	0.99	0.97	0.92	0.99	
Turning Speed (k/h)	24		14	24		14	24		14	24		14	
Number of Detectors	0	0		0	0		0	0		1	1		
Detector Template													
Leading Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		7.5	7.5		
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		-1.5	-1.5		
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		-1.5	-1.5		
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		9.0	9.0		
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		
Detector 1 Channel													
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0		
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0		
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0		
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA		
Protected Phases	5	2		1	6		8			4			

Lanes, Volumes, Timings
3: Dixie Road & Kingston Road

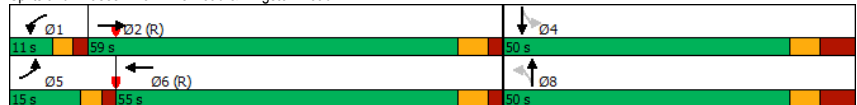
<2038 Future Total>AM
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases							8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	10.0	28.0		10.0	28.0		43.0	43.0		41.0	41.0	
Total Split (s)	15.0	59.0		11.0	55.0		50.0	50.0		50.0	50.0	
Total Split (%)	12.5%	49.2%		9.2%	45.8%		41.7%	41.7%		41.7%	41.7%	
Maximum Green (s)	10.0	52.4		6.0	48.4		40.5	40.5		40.5	40.5	
Yellow Time (s)	3.0	4.2		3.0	4.2		4.4	4.4		4.4	4.4	
All-Red Time (s)	2.0	2.4		2.0	2.4		5.1	5.1		5.1	5.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.6		5.0	6.6		9.5	9.5		9.5	9.5	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes			Yes								
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		14.0			14.0		23.0	23.0		23.0	23.0	
Pedestrian Calls (#/hr)		6			1		7	7		4	4	
Act Effect Green (s)	9.5	72.5		6.0	69.0		20.4	20.4		20.4	20.4	
Actuated g/C Ratio	0.08	0.60		0.05	0.58		0.17	0.17		0.17	0.17	
v/c Ratio	0.71	0.48		1.04	0.38		0.42	0.15		0.71	0.45	
Control Delay	83.0	14.8		169.8	8.3		50.1	19.1		62.4	13.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	83.0	14.8		169.8	8.3		50.1	19.1		62.4	13.5	
LOS	F	B		F	A		D	B		E	B	
Approach Delay		20.5			25.1			37.8			36.2	
Approach LOS		C			C			D			D	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 107.8 (90%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 85
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.04
 Intersection Signal Delay: 25.4 Intersection LOS: C
 Intersection Capacity Utilization 73.7% ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 3: Dixie Road & Kingston Road



Queues
3: Dixie Road & Kingston Road

<2038 Future Total>AM
12-20-2024

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	87	953	85	731	73	48	168	195
v/c Ratio	0.71	0.48	1.04	0.38	0.42	0.15	0.71	0.45
Control Delay	83.0	14.8	169.8	8.3	50.1	19.1	62.4	13.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	83.0	14.8	169.8	8.3	50.1	19.1	62.4	13.5
Queue Length 50th (m)	20.2	59.7	~21.1	36.7	15.6	3.2	37.9	7.7
Queue Length 95th (m)	#43.5	92.8	#54.0	50.6	27.6	12.4	55.9	25.6
Internal Link Dist (m)		872.3		167.2		20.0		212.2
Turn Bay Length (m)	145.4		51.0		13.0		16.0	
Base Capacity (vph)	130	1991	82	1904	343	618	470	697
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.67	0.48	1.04	0.38	0.21	0.08	0.36	0.28

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.

Lanes, Volumes, Timings
4: Street B & Shopping Plaza Entrance

<2038 Future Total>AM
12-20-2024

	↖	↗	↙	↘	↕	↔
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖			↘	↔	↔
Traffic Volume (vph)	13	85	22	102	66	51
Future Volume (vph)	13	85	22	102	66	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.883			0.942		
Fit Protected	0.993			0.991		
Satd. Flow (prot)	1628	0	0	1904	1770	0
Fit Permitted	0.993			0.991		
Satd. Flow (perm)	1628	0	0	1904	1770	0
Link Speed (k/h)	30			30	30	
Link Distance (m)	193.0			49.0	49.9	
Travel Time (s)	23.2			5.9	6.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	4%	0%	0%	4%	0%
Adj. Flow (vph)	14	92	24	111	72	55
Shared Lane Traffic (%)						
Lane Group Flow (vph)	106	0	0	135	127	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24	14	24			14
Sign Control	Stop			Stop	Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	25.9% ICU Level of Service A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
4: Street B & Shopping Plaza Entrance

<2038 Future Total>AM
12-20-2024

	↖	↗	↙	↘	↕	↔
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖			↘	↔	↔
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	13	85	22	102	66	51
Future Volume (vph)	13	85	22	102	66	51
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	14	92	24	111	72	55
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total (vph)	106	135	127			
Volume Left (vph)	14	24	0			
Volume Right (vph)	92	0	55			
Hadj (s)	-0.44	0.04	-0.22			
Departure Headway (s)	4.0	4.3	4.1			
Degree Utilization, x	0.12	0.16	0.14			
Capacity (veh/h)	840	809	860			
Control Delay (s)	7.6	8.1	7.7			
Approach Delay (s)	7.6	8.1	7.7			
Approach LOS	A	A	A			

Intersection Summary	
Delay	7.8
Level of Service	A
Intersection Capacity Utilization	25.9% ICU Level of Service A
Analysis Period (min)	15

Lanes, Volumes, Timings
5: Street B & Street A

<2038 Future Total>AM
12-20-2024

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	121	0	0	137	1
Future Volume (vph)	0	121	0	0	137	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.865					
Fit Protected						0.953
Satd. Flow (prot)	1662	0	1883	0	0	1778
Fit Permitted						0.953
Satd. Flow (perm)	1662	0	1883	0	0	1778
Link Speed (k/h)	30		30			30
Link Distance (m)	193.3		78.3			49.0
Travel Time (s)	23.2		9.4			5.9
Confl. Peds. (#/hr)	1	4				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	100%	0%	2%	0%	3%	0%
Adj. Flow (vph)	0	132	0	0	149	1
Shared Lane Traffic (%)						
Lane Group Flow (vph)	132	0	0	0	0	150
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Stop			Stop
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	22.9%		ICU Level of Service		A	
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
5: Street B & Street A

<2038 Future Total>AM
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Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	0	121	0	0	137	1
Future Volume (vph)	0	121	0	0	137	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	132	0	0	149	1
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total (vph)	132	0	150			
Volume Left (vph)	0	0	149			
Volume Right (vph)	132	0	0			
Hadj (s)	-0.60	0.00	0.25			
Departure Headway (s)	3.7	4.3	4.4			
Degree Utilization, x	0.13	0.00	0.18			
Capacity (veh/h)	945	807	793			
Control Delay (s)	7.2	7.3	8.4			
Approach Delay (s)	7.2	0.0	8.4			
Approach LOS	A	A	A			
Intersection Summary						
Delay			7.8			
Level of Service			A			
Intersection Capacity Utilization			22.9%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings

6: Liverpool Road & Kingston Road

<2038 Future Total>AM

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔↔	↔	↔	↔↔	↔	↔	↔↔	↔	↔	↔↔	↔
Traffic Volume (vph)	253	492	482	185	351	50	134	398	146	84	747	230
Future Volume (vph)	253	492	482	185	351	50	134	398	146	84	747	230
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.1	3.4	3.6	3.3	3.7	3.4	3.8	4.1	4.8	4.7	3.8	3.3
Storage Length (m)	188.8	97.9	170.7		117.0	185.5		52.0	49.0		60.5	
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	31.6			22.7			20.8			25.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.98		0.97	0.99		0.96	0.99		0.93	0.98		0.96
Frt			0.850			0.850			0.850			0.850
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1671	3299	1538	1694	3510	1579	1774	3700	1647	2026	3618	1516
Fit Permitted	0.950			0.950			0.220			0.474		
Satd. Flow (perm)	1645	3299	1487	1676	3510	1517	408	3700	1536	989	3618	1452
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			140			174			159			242
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		694.6			396.4			257.7			348.6	
Travel Time (s)		41.7			23.8			18.6			25.1	
Confl. Peds. (#/hr)	21		17	17		21	34		44	44		34
Confl. Bikes (#/hr)						1						
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 (%)	2%	7%	5%	3%	4%	0%	4%	3%	8%	0%	2%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	7	0	0	0
Adj. Flow (vph)	275	535	524	201	382	54	146	433	159	91	812	250
Shared Lane Traffic (%)												
Lane Group Flow (vph)	275	535	524	201	382	54	146	433	159	91	812	250
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.3			3.3			4.7			4.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane		Yes									Yes	
Headway Factor	1.08	1.03	1.00	1.04	0.99	1.03	0.97	0.93	0.88	0.86	0.97	1.04
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	

Lanes, Volumes, Timings

6: Liverpool Road & Kingston Road

<2038 Future Total>AM

12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type	CI+Ex			CI+Ex			CI+Ex			CI+Ex		
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	custom	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6	8		2	4		4
Detector Phase	5	2	2	1	6	6	3	8	2	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	5.0	8.0	20.0	5.0	8.0	8.0
Minimum Split (s)	10.0	36.0	36.0	10.0	36.0	36.0	8.0	51.0	36.0	8.0	51.0	51.0
Total Split (s)	25.0	42.0	42.0	19.0	36.0	36.0	8.0	51.0	42.0	8.0	51.0	51.0
Total Split (%)	20.8%	35.0%	35.0%	15.8%	30.0%	30.0%	6.7%	42.5%	35.0%	6.7%	42.5%	42.5%
Maximum Green (s)	20.0	34.9	34.9	14.0	28.9	28.9	5.0	41.9	34.9	5.0	41.9	41.9
Yellow Time (s)	3.0	4.3	4.3	3.0	4.3	4.3	3.0	3.8	4.3	3.0	3.8	3.8
All-Red Time (s)	2.0	2.8	2.8	2.0	2.8	2.8	0.0	5.3	2.8	0.0	5.3	5.3
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	0.0
Total Lost Time (s)	5.0	7.1	7.1	5.0	7.1	7.1	3.0	9.1	7.1	3.0	9.1	9.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
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	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	C-Max	None	Max	Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		21.0	21.0		21.0	21.0		33.0	21.0		33.0	33.0
Pedestrian Calls (#/hr)		44	44		31	31		61	44		40	40
Act Effect Green (s)	20.0	34.9	34.9	14.0	28.9	28.9	53.0	41.9	34.9	53.0	41.9	41.9
Actuated g/C Ratio	0.17	0.29	0.29	0.12	0.24	0.24	0.44	0.35	0.29	0.44	0.35	0.35
v/c Ratio	0.99	0.56	0.99	1.02	0.45	0.11	0.62	0.34	0.28	0.19	0.64	0.38
Control Delay	110.4	34.5	58.6	121.9	40.9	0.4	33.0	29.7	6.3	19.1	35.6	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	110.4	34.5	58.6	121.9	40.9	0.4	33.0	29.7	6.3	19.1	35.6	5.6
LOS	F	C	E	F	D	A	C	A	B	A	B	A
Approach Delay		59.6			63.0			25.3			27.8	
Approach LOS		E			E			C			C	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 29.4 (25%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 115

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.02

Intersection Signal Delay: 44.1

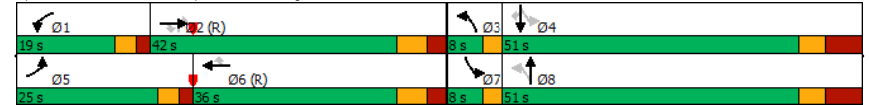
Intersection LOS: D

Intersection Capacity Utilization 99.1%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 6: Liverpool Road & Kingston Road



Queues <2038 Future Total>AM
6: Liverpool Road & Kingston Road 12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	275	535	524	201	382	54	146	433	159	91	812	250
w/c Ratio	0.99	0.56	0.99	1.02	0.45	0.11	0.62	0.34	0.28	0.19	0.64	0.38
Control Delay	110.4	34.5	58.6	121.9	40.9	0.4	33.0	29.7	6.3	19.1	35.6	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	110.4	34.5	58.6	121.9	40.9	0.4	33.0	29.7	6.3	19.1	35.6	5.6
Queue Length 50th (m)	69.0	28.4	30.8	-49.1	40.5	0.0	19.5	39.2	0.0	11.7	83.9	1.2
Queue Length 95th (m)	#122.6	64.2	#136.7	#96.6	55.4	0.0	32.4	52.6	15.4	21.1	104.8	18.3
Internal Link Dist (m)	670.6		372.4			233.7		324.6				
Turn Bay Length (m)	188.8	97.9	170.7	117.0	185.5	52.0	49.0	60.5				
Base Capacity (vph)	278	959	531	197	845	497	237	1291	559	480	1263	664
Starvation Cap Reductn	0	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced w/c Ratio	0.99	0.56	0.99	1.02	0.45	0.11	0.62	0.34	0.28	0.19	0.64	0.38

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.

Lanes, Volumes, Timings <2038 Future Total>AM
8: Liverpool Road & Private Access/Pickering Parkway 12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔↔	↔	↔↔	↔	↔	↔↔↔	↔↔↔	↔	↔↔	↔↔↔	↔
Traffic Volume (vph)	10	17	36	194	19	59	53	554	272	146	1201	24
Future Volume (vph)	10	17	36	194	19	59	53	554	272	146	1201	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.1	3.1	3.7	3.0	3.4	3.2	2.8	3.6	3.5	3.2	3.5	3.5
Storage Length (m)	0.0	0.0	57.0	62.1	54.4	75.7	132.5	35.5				
Storage Lanes	1	0	1	1	1	1	1	1				
Taper Length (m)	2.5	12.0		29.5		28.9						
Lane Util. Factor	1.00	0.95	0.95	0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Ped Bike Factor	0.99	0.897		0.850		0.850		0.97		0.99		0.96
Frt	0.897		0.850		0.850		0.850		0.850		0.850	
Fit Protected	0.950	0.950		0.950		0.950		0.950		0.950		0.950
Satd. Flow (prot)	1705	3058	0	3113	1858	1204	1645	5036	1523	1675	5029	1521
Fit Permitted	0.000	0.000		0.172		0.386						
Satd. Flow (perm)	0	3058	0	0	1858	1181	297	5036	1483	677	5029	1458
Right Turn on Red	Yes		Yes		Yes		Yes		Yes		Yes	
Satd. Flow (RTOR)	39		141		296		144					
Link Speed (k/h)	30		50		50		50					
Link Distance (m)	82.8		328.5		162.3		257.7					
Travel Time (s)	9.9		23.7		11.7		18.6					
Confl. Peds. (#/hr)	7		7		10		11		11		10	
Confl. Bikes (#/hr)	1		1		1		1					
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%	5%	0%	23%	0%	3%	4%	3%	2%	5%
Bus Blockages (#/hr)	0	0	0	0	0	10	0	2	0	0	0	0
Adj. Flow (vph)	11	18	39	211	21	64	58	602	296	159	1305	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	11	57	0	211	21	64	58	602	296	159	1305	26
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	6.0		6.0		3.8		3.8					
Link Offset(m)	0.0		0.0		0.0		0.0					
Crosswalk Width(m)	1.6		1.6		1.6		1.6					
Two way Left Turn Lane												
Headway Factor	1.08	1.08	0.99	1.09	1.03	1.12	1.13	1.00	1.03	1.06	1.01	1.01
Turning Speed (k/h)	24	24	14	24	14	24	14	24	14	24	14	14
Number of Detectors	1	2	1	2	1	2	1	2	1	1	2	1
Detector Template	Left	Thru	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Right
Leading Detector (m)	2.0	10.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4		9.4		9.4		9.4					
Detector 2 Size(m)	0.6		0.6		0.6		0.6					

Lanes, Volumes, Timings

<2038 Future Total>AM

8: Liverpool Road & Private Access/Pickering Parkway

12-20-2024

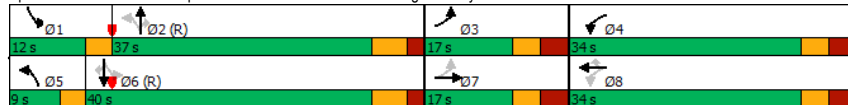


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type	CI+Ex		CI+Ex		CI+Ex		CI+Ex					
Detector 2 Channel												
Detector 2 Extend (s)	0.0		0.0		0.0		0.0		0.0		0.0	
Turn Type	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm
Protected Phases	3	7	4	8	8	5	2	2	6	1	6	6
Permitted Phases	7	8	8	8	8	2	2	2	6	1	6	6
Detector Phase	3	7	4	8	8	5	2	2	1	6	6	6
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	5.0	20.0	20.0	5.0	20.0	20.0	20.0
Minimum Split (s)	15.0	15.0	15.0	34.0	34.0	34.0	8.0	30.0	30.0	8.0	30.0	30.0
Total Split (s)	17.0	17.0	34.0	34.0	34.0	9.0	37.0	37.0	12.0	40.0	40.0	40.0
Total Split (%)	17.0%	17.0%	34.0%	34.0%	34.0%	9.0%	37.0%	37.0%	12.0%	40.0%	40.0%	40.0%
Maximum Green (s)	10.4	10.4	27.4	27.4	27.4	6.0	30.7	30.7	9.0	33.7	33.7	33.7
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.0	4.2	4.2	3.0	4.2	4.2	4.2
All-Red Time (s)	3.3	3.3	3.3	3.3	3.3	0.0	2.1	2.1	0.0	2.1	2.1	2.1
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	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.6	3.0	6.3	6.3	3.0	6.3	6.3	6.3
Lead/Lag					Lead		Lag	Lag	Lead	Lag	Lag	Lag
Lead-Lag Optimize?												
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	3.0
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max	C-Max
Walk Time (s)			19.0		19.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0
Flash Dont Walk (s)			8.0		8.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Pedestrian Calls (#/hr)			0		0	21	21	21	21	21	21	21
Act Effect Green (s)	8.0	8.0	12.1	12.1	12.1	61.3	52.1	52.1	66.4	56.1	56.1	56.1
Actuated g/C Ratio	0.08	0.08	0.12	0.12	0.12	0.61	0.52	0.52	0.66	0.56	0.56	0.56
v/c Ratio	0.08	0.20	0.56	0.09	0.24	0.22	0.23	0.32	0.30	0.46	0.03	0.03
Control Delay	44.1	22.1	46.9	38.5	2.1	7.8	13.1	4.0	9.0	15.5	0.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.1	22.1	46.9	38.5	2.1	7.8	13.1	4.0	9.0	15.5	0.0	0.0
LOS	D	C	D	D	A	A	B	A	A	B	B	A
Approach Delay	25.7		36.6		10.0		14.5					
Approach LOS	C		D		A		B					

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 34 (34%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.56
 Intersection Signal Delay: 15.6 Intersection LOS: B
 Intersection Capacity Utilization 55.8% ICU Level of Service B
 Analysis Period (min) 15

Splits and Phases: 8: Liverpool Road & Private Access/Pickering Parkway



Queues

<2038 Future Total>AM

8: Liverpool Road & Private Access/Pickering Parkway

12-20-2024



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Group Flow (vph)	11	57	211	21	64	58	602	296	159	1305	26	
v/c Ratio	0.08	0.20	0.56	0.09	0.24	0.22	0.23	0.32	0.30	0.46	0.03	
Control Delay	44.1	22.1	46.9	38.5	2.1	7.8	13.1	4.0	9.0	15.5	0.0	
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	44.1	22.1	46.9	38.5	2.1	7.8	13.1	4.0	9.0	15.5	0.0	
Queue Length 50th (m)	2.0	1.7	20.2	3.7	0.0	2.4	24.0	9.7	11.3	58.0	0.0	
Queue Length 95th (m)	7.4	7.8	30.3	10.1	0.0	m5.5	37.0	19.9	21.5	76.1	0.0	
Internal Link Dist (m)	58.8		304.5		138.3		233.7					
Turn Bay Length (m)	57.0		62.1		54.4	75.7		132.5	35.5			
Base Capacity (vph)	177	352	852	509	425	263	2621	913	540	2821	881	
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	0.06	0.16	0.25	0.04	0.15	0.22	0.23	0.32	0.29	0.46	0.03	

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings

<2038 Future Total>AM

9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp

12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	424	188	69	310	203	536	0	0	964	220
Future Volume (vph)	0	0	424	188	69	310	203	536	0	0	964	220
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.5	3.7	3.7	3.4	3.7
Storage Length (m)	0.0	0.0	0.0	0.0		125.0	50.0		0.0	0.0		0.0
Storage Lanes	0		1	1		1	1		0	0		1
Taper Length (m)	2.5			2.5			30.0			2.5		
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	1.00	0.91	1.00
Ped Bike Factor												0.96
Frt			0.865			0.850						0.850
Fit Protected				0.950	0.977		0.950					
Satd. Flow (prot)	0	0	1108	1700	1767	1551	1460	4932	0	0	4877	1601
Fit Permitted				0.950	0.977		0.141					
Satd. Flow (perm)	0	0	1108	1700	1767	1551	217	4932	0	0	4877	1538
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)						337						239
Link Speed (kh)		50			50			50				50
Link Distance (m)		433.1			226.7			372.2				162.3
Travel Time (s)		31.2			16.3			26.8				11.7
Confl. Peds. (#/hr)							7		14	14		7
Confl. Bikes (#/hr)								4				
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%	2%	50%	2%	0%	3%	25%	4%	4%	2%	4%	2%
Adj. Flow (vph)	0	0	461	204	75	337	221	583	0	0	1048	239
Shared Lane Traffic (%)				32%								
Lane Group Flow (vph)	0	0	461	139	140	337	221	583	0	0	1048	239
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	1.01	0.99	1.01	0.99	0.99	1.03	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors			1	1	2	1	1	2			2	1
Detector Template			Right	Left	Thru	Right	Left	Thru			Thru	Right
Leading Detector (m)			2.0	2.0	10.0	2.0	2.0	10.0			10.0	2.0
Trailing Detector (m)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Position(m)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Size(m)			2.0	2.0	0.6	2.0	2.0	0.6			0.6	2.0
Detector 1 Type			Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 2 Position(m)						9.4		9.4			9.4	
Detector 2 Size(m)						0.6		0.6			0.6	
Detector 2 Type						Cl+Ex		Cl+Ex			Cl+Ex	

Lanes, Volumes, Timings

<2038 Future Total>AM

9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp

12-20-2024

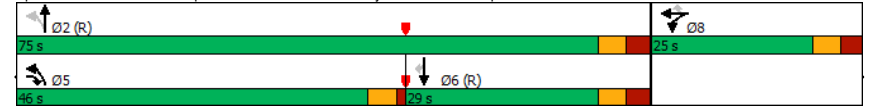


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)						0.0					0.0	0.0
Turn Type			Over	Split	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases			5	8	8		5	2			6	
Permitted Phases						8	2					6
Detector Phase			5	8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)			5.0	8.0	8.0	8.0	5.0	15.0			15.0	15.0
Minimum Split (s)			9.5	25.0	25.0	25.0	9.5	24.3			24.3	24.3
Total Split (s)			46.0	25.0	25.0	25.0	46.0	75.0			29.0	29.0
Total Split (%)			46.0%	25.0%	25.0%	25.0%	46.0%	75.0%			29.0%	29.0%
Maximum Green (s)			41.5	19.0	19.0	19.0	41.5	68.7			22.7	22.7
Yellow Time (s)			3.5	3.3	3.3	3.3	3.5	3.3			3.3	3.3
All-Red Time (s)			1.0	2.7	2.7	2.7	1.0	3.0			3.0	3.0
Lost Time Adjust (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Lost Time (s)			4.5	6.0	6.0	6.0	4.5	6.3			6.3	6.3
Lead/Lag			Lead				Lead				Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)			3.0	3.0	3.0	3.0	3.0	3.0			3.0	3.0
Recall Mode			None	None	None	None	None	C-Max			C-Max	C-Max
Walk Time (s)				14.0	14.0	14.0		13.0			13.0	13.0
Flash Dont Walk (s)				5.0	5.0	5.0		5.0			5.0	5.0
Pedestrian Calls (#/hr)				0	0	0		15			17	17
Act Effct Green (s)			45.6	13.7	13.7	13.7	75.8	74.0			23.9	23.9
Actuated g/C Ratio			0.46	0.14	0.14	0.14	0.76	0.74			0.24	0.24
v/c Ratio			0.91	0.60	0.58	0.67	0.30	0.16			0.90	0.44
Control Delay			51.2	50.7	49.5	11.3	7.5	4.3			38.2	5.4
Queue Delay			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay			51.2	50.7	49.5	11.3	7.5	4.3			38.2	5.4
LOS			D	D	D	B	A	A			D	A
Approach Delay			51.2			28.9		5.2			32.1	
Approach LOS			D			C		A			C	

Intersection Summary

Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	100
Offset:	38 (38%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle:	100
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.91
Intersection Signal Delay:	27.4
Intersection LOS:	C
Intersection Capacity Utilization:	65.9%
ICU Level of Service:	C
Analysis Period (min):	15

Splits and Phases: 9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp



Queues

<2038 Future Total>AM

9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp

12-20-2024



Lane Group	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	461	139	140	337	221	583	1048	239
w/c Ratio	0.91	0.60	0.58	0.67	0.30	0.16	0.90	0.44
Control Delay	51.2	50.7	49.5	11.3	7.5	4.3	38.2	5.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.2	50.7	49.5	11.3	7.5	4.3	38.2	5.4
Queue Length 50th (m)	78.2	27.1	27.2	0.0	10.1	10.0	74.9	12.3
Queue Length 95th (m)	#152.5	44.3	44.3	23.2	30.3	16.9	#101.6	9.5
Internal Link Dist (m)			202.7			348.2	138.3	
Turn Bay Length (m)				125.0	50.0			
Base Capacity (vph)	505	323	335	567	731	3651	1165	549
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced w/c Ratio	0.91	0.43	0.42	0.59	0.30	0.16	0.90	0.44

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

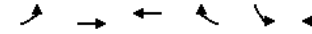
Queue shown is maximum after two cycles.

Lanes, Volumes, Timings

<2038 Future Total>AM

10: Kingston Road & Fairport Road

12-20-2024



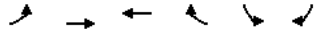
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø1
Lane Configurations	↔	↕↕	↕↕		↔	↕	
Traffic Volume (vph)	96	749	703	99	182	229	
Future Volume (vph)	96	749	703	99	182	229	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (m)	3.0	3.6	3.5	3.7	3.6	4.5	
Grade (%)		6%	0%			0%	
Storage Length (m)	75.0			18.5	15.5	0.0	
Storage Lanes	1			0	1	1	
Taper Length (m)	2.5				31.3		
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00	
Frnt			0.981			0.850	
Fit Protected	0.950				0.950		
Satd. Flow (prot)	1602	3335	3384	0	1736	1708	
Fit Permitted	0.950				0.950		
Satd. Flow (perm)	1602	3335	3384	0	1736	1708	
Right Turn on Red				Yes		Yes	
Satd. Flow (RTOR)			16			249	
Link Speed (k/h)		60	60		40		
Link Distance (m)		424.0	896.3		280.0		
Travel Time (s)		25.4	53.8		25.2		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Heavy Vehicles (%)	2%	5%	3%	7%	4%	4%	
Bus Blockages (#/hr)	0	0	0	9	0	0	
Adj. Flow (vph)	104	814	764	108	198	249	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	104	814	872	0	198	249	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Left	Left	Right	Left	Right	
Median Width(m)		3.0	3.0		3.6		
Link Offset(m)		0.0	0.0		0.0		
Crosswalk Width(m)		1.6	1.6		1.6		
Two way Left Turn Lane		Yes					
Headway Factor	1.14	1.04	1.01	0.99	1.00	0.88	
Turning Speed (k/h)		24		14	24	14	
Number of Detectors	1	2	2		1	1	
Detector Template	Left	Thru	Thru		Left	Right	
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0	
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	0.6		2.0	2.0	
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4	9.4				
Detector 2 Size(m)		0.6	0.6				
Detector 2 Type		CI+Ex	CI+Ex				
Detector 2 Channel							

Lanes, Volumes, Timings

<2038 Future Total>AM

10: Kingston Road & Fairport Road

12-20-2024



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø1
Detector 2 Extend (s)		0.0	0.0				
Turn Type	Prot	NA	NA		Prot	Perm	
Protected Phases	5	2	6		4		1
Permitted Phases						4	
Detector Phase	5	2	6		4	4	
Switch Phase							
Minimum Initial (s)	5.0	20.0	20.0		8.0	8.0	5.0
Minimum Split (s)	10.0	32.3	32.3		38.1	38.1	8.0
Total Split (s)	22.0	79.0	65.0		43.0	43.0	8.0
Total Split (%)	16.9%	60.8%	50.0%		33.1%	33.1%	6%
Maximum Green (s)	17.0	72.7	58.7		35.7	35.7	5.0
Yellow Time (s)	3.0	4.3	4.3		3.3	3.3	3.0
All-Red Time (s)	2.0	2.0	2.0		4.0	4.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.3	6.3		7.3	7.3	
Lead/Lag	Lead	Lag	Lag				Lead
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	0.2	0.2		3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max		None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0	5.0
Flash Dont Walk (s)		19.0	19.0		23.0	23.0	0.0
Pedestrian Calls (#/hr)		0	1		2	2	20
Act Effect Green (s)	13.3	90.9	77.4		20.7	20.7	
Actuated g/C Ratio	0.10	0.70	0.60		0.16	0.16	
v/c Ratio	0.64	0.35	0.43		0.72	0.52	
Control Delay	104.2	0.8	16.2		65.5	9.1	
Queue Delay	0.0	0.0	0.0		0.0	0.0	
Total Delay	104.2	0.8	16.2		65.5	9.1	
LOS	F	A	B		E	A	
Approach Delay		12.5	16.2		34.1		
Approach LOS		B	B		C		

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 105 (81%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 85
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.72
 Intersection Signal Delay: 18.3
 Intersection LOS: B
 Intersection Capacity Utilization 53.5%
 ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 10: Kingston Road & Fairport Road



Queues

<2038 Future Total>AM

10: Kingston Road & Fairport Road

12-20-2024



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	104	814	872	198	249
v/c Ratio	0.64	0.35	0.43	0.72	0.52
Control Delay	104.2	0.8	16.2	65.5	9.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	104.2	0.8	16.2	65.5	9.1
Queue Length 50th (m)	26.4	2.6	59.3	49.0	0.0
Queue Length 95th (m)	42.6	2.5	94.4	68.5	20.6
Internal Link Dist (m)		400.0	872.3	256.0	
Turn Bay Length (m)	75.0			15.5	
Base Capacity (vph)	209	2331	2021	476	649
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.50	0.35	0.43	0.42	0.38

Intersection Summary

Lanes, Volumes, Timings

<2038 Future Total>AM

11: Hwy 401 WB Ramps & Kingston Road

12-20-2024

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↕↕		↕	↕↕	↕↕	↕
Traffic Volume (vph)	783	12	284	667	461	65
Future Volume (vph)	783	12	284	667	461	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.0	3.7	2.7	3.8	3.8	3.7
Grade (%)	6%			0%	0%	
Storage Length (m)		0.0	47.5		0.0	52.0
Storage Lanes		0	1		2	1
Taper Length (m)			22.3		2.5	
Lane Util. Factor	0.95	0.95	1.00	0.95	0.97	1.00
Frt	0.998					0.850
Fit Protected			0.950		0.950	
Satd. Flow (prot)	3479	0	1593	3548	3442	1633
Fit Permitted			0.950		0.950	
Satd. Flow (perm)	3479	0	1593	3548	3442	1633
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	1					71
Link Speed (k/h)	60			60	50	
Link Distance (m)	268.7			424.0	216.6	
Travel Time (s)	16.1			25.4	15.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	0%	2%	4%	4%	0%
Adj. Flow (vph)	851	13	309	725	501	71
Shared Lane Traffic (%)						
Lane Group Flow (vph)	864	0	309	725	501	71
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.1			3.1	7.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	0.98	1.03	1.14	0.97	0.97	0.99
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	10.0		2.0	10.0	2.0	2.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Size(m)	0.6		2.0	0.6	2.0	2.0
Detector 1 Type	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	CI+Ex			CI+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		

Lanes, Volumes, Timings

<2038 Future Total>AM

11: Hwy 401 WB Ramps & Kingston Road

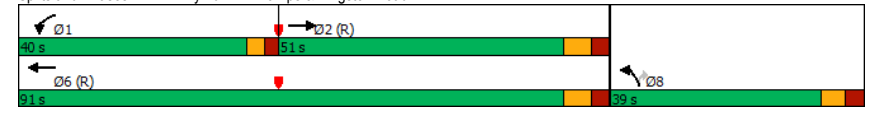
12-20-2024

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Turn Type	NA		Prot	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases						8
Detector Phase	2		1	6	8	8
Switch Phase						
Minimum Initial (s)	20.0		5.0	20.0	8.0	8.0
Minimum Split (s)	50.0		10.0	50.0	39.0	39.0
Total Split (s)	51.0		40.0	91.0	39.0	39.0
Total Split (%)	39.2%		30.8%	70.0%	30.0%	30.0%
Maximum Green (s)	43.8		35.0	83.8	32.3	32.3
Yellow Time (s)	4.2		3.0	4.2	3.7	3.7
All-Red Time (s)	3.0		2.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	7.2		5.0	7.2	6.7	6.7
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?						
Vehicle Extension (s)	0.2		3.0	0.2	3.0	3.0
Recall Mode	C-Max		None	C-Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	35.0			35.0	24.0	24.0
Pedestrian Calls (#/hr)	0			3	3	3
Act Effect Green (s)	57.3		29.4	91.7	24.4	24.4
Actuated g/C Ratio	0.44		0.23	0.71	0.19	0.19
v/c Ratio	0.56		0.86	0.29	0.78	0.20
Control Delay	12.9		58.9	15.7	58.6	10.2
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	12.9		58.9	15.7	58.6	10.2
LOS	B		E	B	E	B
Approach Delay	12.9			28.6	52.6	
Approach LOS	B			C	D	


Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 66 (51%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.86
 Intersection Signal Delay: 28.7
 Intersection Capacity Utilization 66.7%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service C

Splits and Phases: 11: Hwy 401 WB Ramps & Kingston Road




Queues <2038 Future Total>AM
11: Hwy 401 WB Ramps & Kingston Road 12-20-2024



Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	864	309	725	501	71
w/c Ratio	0.56	0.86	0.29	0.78	0.20
Control Delay	12.9	58.9	15.7	58.6	10.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	12.9	58.9	15.7	58.6	10.2
Queue Length 50th (m)	20.8	75.6	69.7	63.7	0.0
Queue Length 95th (m)	58.3	106.7	90.3	77.4	12.0
Internal Link Dist (m)	244.7		400.0	192.6	
Turn Bay Length (m)		47.5			52.0
Base Capacity (vph)	1534	428	2502	855	459
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.56	0.72	0.29	0.59	0.15

Intersection Summary

Lanes, Volumes, Timings <2038 Future Total>AM
12: Plaza Entrance/Delta Blvd & Kingston Road 12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑		↑	↑↑		↑	↑		↑	↑	↑
Traffic Volume (vph)	76	1010	37	96	1035	74	140	6	92	42	13	124
Future Volume (vph)	76	1010	37	96	1035	74	140	6	92	42	13	124
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.2	3.4	3.5	3.1	3.4	3.4	3.6	4.6	3.7	3.2	2.8	3.7
Grade (%)		6%			0%			0%				0%
Storage Length (m)	51.8		148.5	100.0		18.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	35.3			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99				1.00		0.99	0.98		1.00		0.98
Frt		0.995			0.990			0.860				0.864
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1673	3280	0	1671	3381	0	1805	1755	0	1643	1468	0
Fit Permitted	0.950			0.950			0.662			0.688		
Satd. Flow (perm)	1662	3280	0	1671	3381	0	1249	1755	0	1185	1468	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			8			100				135
Link Speed (k/h)		60			60			30				40
Link Distance (m)		222.7			268.7			130.9				169.9
Travel Time (s)		13.4			16.1			15.7				15.3
Confl. Peds. (#/hr)	13					13	6		3	3		6
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%	4%	0%	2%	3%	3%	0%	0%	2%	5%	0%	0%
Adj. Flow (vph)	83	1098	40	104	1125	80	152	7	100	46	14	135
Shared Lane Traffic (%)												
Lane Group Flow (vph)	83	1138	0	104	1205	0	152	107	0	46	149	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.6				3.6
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		1.6			1.6			1.6				1.6
Two way Left Turn Lane					Yes							
Headway Factor	1.10	1.07	1.06	1.08	1.03	1.03	1.00	0.87	0.99	1.06	1.13	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	

Lanes, Volumes, Timings

<2038 Future Total>AM

12: Plaza Entrance/Delta Blvd & Kingston Road

12-20-2024

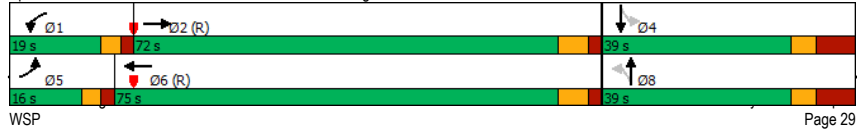


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	10.0	31.9		10.0	31.9		37.6	37.6		37.6	37.6	
Total Split (s)	16.0	72.0		19.0	75.0		39.0	39.0		39.0	39.0	
Total Split (%)	12.3%	55.4%		14.6%	57.7%		30.0%	30.0%		30.0%	30.0%	
Maximum Green (s)	11.0	65.1		14.0	68.1		29.0	29.0		29.0	29.0	
Yellow Time (s)	3.0	4.7		3.0	4.7		3.8	3.8		3.8	3.8	
All-Red Time (s)	2.0	2.2		2.0	2.2		6.2	6.2		6.2	6.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.9		5.0	6.9		10.0	10.0		10.0	10.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	0.2		3.0	0.2		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		18.0			18.0		20.0	20.0		20.0	20.0	
Pedestrian Calls (#/hr)		1			16		0	0		1	1	
Act Effct Green (s)	10.0	75.0		12.1	77.1		20.9	20.9		20.9	20.9	
Actuated g/C Ratio	0.08	0.58		0.09	0.59		0.16	0.16		0.16	0.16	
v/c Ratio	0.65	0.60		0.67	0.60		0.76	0.29		0.24	0.43	
Control Delay	86.0	27.4		80.4	28.5		74.1	11.5		48.1	12.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	86.0	27.4		80.4	28.5		74.1	11.5		48.1	12.9	
LOS	F	C		F	C		E	B		D	B	
Approach Delay		31.4			32.7			48.2			21.2	
Approach LOS		C			C			D			C	

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 49 (38%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.76
 Intersection Signal Delay: 32.7 Intersection LOS: C
 Intersection Capacity Utilization 81.0% ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 12: Plaza Entrance/Delta Blvd & Kingston Road

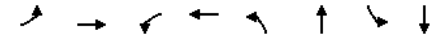


Queues

<2038 Future Total>AM

12: Plaza Entrance/Delta Blvd & Kingston Road

12-20-2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	83	1138	104	1205	152	107	46	149
v/c Ratio	0.65	0.60	0.67	0.60	0.76	0.29	0.24	0.43
Control Delay	86.0	27.4	80.4	28.5	74.1	11.5	48.1	12.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	86.0	27.4	80.4	28.5	74.1	11.5	48.1	12.9
Queue Length 50th (m)	21.9	127.4	27.4	162.3	37.6	1.5	10.4	3.1
Queue Length 95th (m)	#40.7	162.8	44.7	187.7	57.4	16.2	20.7	20.6
Internal Link Dist (m)		198.7		244.7		106.9		145.9
Turn Bay Length (m)	51.8		100.0					
Base Capacity (vph)	141	1894	179	2009	278	469	264	432
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.60	0.58	0.60	0.55	0.23	0.17	0.34

Intersection Summary

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

Lanes, Volumes, Timings
13: Whites Road & Kingston Road

<2038 Future Total>AM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	78	283	294	286	557	290	146	390	462	180	796	175
Future Volume (vph)	78	283	294	286	557	290	146	390	462	180	796	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.6	4.2	3.5	3.7	4.0	3.5	3.9	3.7	3.5	3.9	4.0
Grade (%)	6%			0%			0%			0%		
Storage Length (m)	127.0			123.0			87.1			47.0		
Storage Lanes	1			1			1			1		
Taper Length (m)	64.0			39.6			66.8			32.6		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Ped Bike Factor	0.98			0.97			0.99			0.97		
Frt	0.850			0.850			0.850			0.850		
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1633	3335	1607	1767	3510	1606	1700	5057	1558	1750	5057	1625
Flt Permitted	0.950			0.950			0.232			0.495		
Satd. Flow (perm)	1604	3335	1565	1751	3510	1522	413	5057	1509	902	5057	1574
Right Turn on Red	Yes			Yes			Yes			Yes		
Satd. Flow (RTOR)	154			250			240			173		
Link Speed (k/h)	60			60			60			60		
Link Distance (m)	297.5			222.7			158.6			385.2		
Travel Time (s)	17.9			13.4			9.5			23.1		
Confl. Peds. (#/hr)	38	13	13	38	20	20	20	20	20	20	20	20
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 (%)	6%	5%	4%	1%	4%	5%	5%	6%	4%	2%	6%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	2	0	0	0	2
Adj. Flow (vph)	85	308	320	311	605	315	159	424	502	196	865	190
Shared Lane Traffic (%)												
Lane Group Flow (vph)	85	308	320	311	605	315	159	424	502	196	865	190
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width(m)	3.5			3.5			3.5			3.5		
Link Offset(m)	0.0			0.0			0.0			0.0		
Crosswalk Width(m)	1.6			1.6			1.6			1.6		
Two way Left Turn Lane												
Headway Factor	1.06	1.04	0.96	1.01	0.99	0.94	1.01	0.96	1.00	1.01	0.96	0.95
Turning Speed (k/h)	24	14	14	24	14	24	14	24	14	24	14	24
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4			9.4			9.4		
Detector 2 Size(m)	0.6			0.6			0.6			0.6		

Lanes, Volumes, Timings
13: Whites Road & Kingston Road

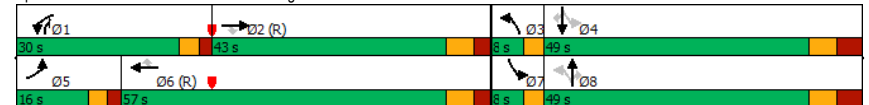
<2038 Future Total>AM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type	Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8	1	7	4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2	2	1	6	6	3	8	1	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	5.0	8.0	5.0	5.0	8.0	8.0
Minimum Split (s)	10.0	43.0	43.0	10.0	43.0	43.0	8.0	49.0	10.0	8.0	49.0	49.0
Total Split (s)	16.0	43.0	43.0	30.0	57.0	57.0	8.0	49.0	30.0	8.0	49.0	49.0
Total Split (%)	12.3%	33.1%	33.1%	23.1%	43.8%	43.8%	6.2%	37.7%	23.1%	6.2%	37.7%	37.7%
Maximum Green (s)	11.0	36.0	36.0	25.0	50.0	50.0	5.0	40.6	25.0	5.0	40.6	40.6
Yellow Time (s)	3.0	4.2	4.2	3.0	4.2	4.2	3.0	4.3	3.0	3.0	4.3	4.3
All-Red Time (s)	2.0	2.8	2.8	2.0	2.8	2.8	0.0	4.1	2.0	0.0	4.1	4.1
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	0.0
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	3.0	8.4	5.0	3.0	8.4	8.4
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	0.2	0.2	3.0	0.2	0.2	3.0	0.2	3.0	3.0	0.2	0.2
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	None	None	Max	Max
Walk Time (s)	7.0			7.0			7.0			7.0		
Flash Dont Walk (s)	29.0			29.0			33.0			33.0		
Pedestrian Calls (#/hr)	31			31			75			65		
Act Effect Green (s)	10.1	36.5	36.5	24.5	50.9	50.9	51.0	40.6	68.5	51.0	40.6	40.6
Actuated g/C Ratio	0.08	0.28	0.28	0.19	0.39	0.39	0.39	0.31	0.53	0.39	0.31	0.31
v/c Ratio	0.67	0.33	0.58	0.94	0.44	0.42	0.75	0.27	0.55	0.51	0.55	0.31
Control Delay	83.0	38.4	25.1	65.9	28.9	14.3	52.0	34.1	10.8	32.7	38.7	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	83.0	38.4	25.1	65.9	28.9	14.3	52.0	34.1	10.8	32.7	38.7	7.6
LOS	F	D	C	E	C	B	D	C	B	C	D	A
Approach Delay	37.8			34.5			26.0			33.0		
Approach LOS	D			C			C			C		

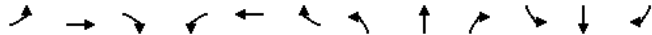
Intersection Summary

Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	107 (82%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle:	120
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.94
Intersection Signal Delay:	32.4
Intersection Capacity Utilization:	109.5%
Analysis Period (min):	15
Intersection LOS:	C
ICU Level of Service:	H

Splits and Phases: 13: Whites Road & Kingston Road



Queues <2038 Future Total>AM
13: Whites Road & Kingston Road 12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	85	308	320	311	605	315	159	424	502	196	865	190
w/c Ratio	0.67	0.33	0.58	0.94	0.44	0.42	0.75	0.27	0.55	0.51	0.55	0.31
Control Delay	83.0	38.4	25.1	65.9	28.9	14.3	52.0	34.1	10.8	32.7	38.7	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	83.0	38.4	25.1	65.9	28.9	14.3	52.0	34.1	10.8	32.7	38.7	7.6
Queue Length 50th (m)	21.4	33.2	36.4	80.3	77.0	46.7	25.9	29.8	36.3	32.6	67.3	3.0
Queue Length 95th (m)	#42.5	46.2	67.4	#129.4	90.5	63.5	#50.2	39.1	63.0	50.3	81.1	19.8
Internal Link Dist (m)		273.5			198.7			134.6			361.2	
Turn Bay Length (m)	127.0		123.0	87.1		35.0	72.0		35.0	88.5		47.0
Base Capacity (vph)	138	936	550	339	1373	747	211	1579	922	386	1579	610
Starvation Cap Reductn	0	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced w/c Ratio	0.62	0.33	0.58	0.92	0.44	0.42	0.75	0.27	0.54	0.51	0.55	0.31

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

Lanes, Volumes, Timings <2038 Future Total>AM
14: Whites Road & Highway 401 EB Off Ramp 12-20-2024



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↑↑↑	↑		↑↑	↑↑	
Traffic Volume (vph)	653	268	0	698	447	0
Future Volume (vph)	653	268	0	698	447	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.7	3.6	3.8	3.7
Storage Length (m)	0.0	225.0	0.0			0.0
Storage Lanes	2	1	0			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	0.97	0.91	1.00	0.95	0.95	1.00
Ped Bike Factor						
Frt	0.994	0.850				
Flt Protected	0.954					
Satd. Flow (prot)	3391	1400	0	3374	3481	0
Flt Permitted	0.954					
Satd. Flow (perm)	3391	1400	0	3374	3481	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	4	262				
Link Speed (k/h)	50		60	60		
Link Distance (m)	295.9		185.9	316.9		
Travel Time (s)	21.3		11.2	19.0		
Confl. Peds. (#/hr)			7			7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	5%	2%	7%	6%	2%
Adj. Flow (vph)	710	291	0	759	486	0
Shared Lane Traffic (%)		10%				
Lane Group Flow (vph)	739	262	0	759	486	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.2		0.0	0.0		
Link Offset(m)	0.0		0.0	0.0		
Crosswalk Width(m)	1.6		1.6	1.6		
Two way Left Turn Lane						
Headway Factor	1.00	1.00	0.99	1.00	0.97	0.99
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	2.0	2.0		10.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	2.0		0.6	0.6	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				CI+Ex	CI+Ex	
Detector 2 Channel						

Lanes, Volumes, Timings

<2038 Future Total>AM

14: Whites Road & Highway 401 EB Off Ramp

12-20-2024

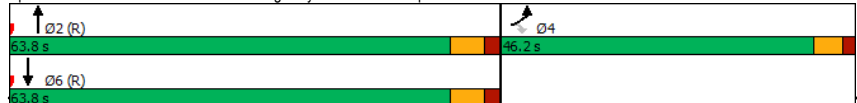


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	8.0	8.0		20.0	20.0	
Minimum Split (s)	28.5	28.5		27.7	27.7	
Total Split (s)	46.2	46.2		63.8	63.8	
Total Split (%)	42.0%	42.0%		58.0%	58.0%	
Maximum Green (s)	40.7	40.7		57.1	57.1	
Yellow Time (s)	3.7	3.7		4.5	4.5	
All-Red Time (s)	1.8	1.8		2.2	2.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.5	5.5		6.7	6.7	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		0.2	0.2	
Recall Mode	None	None		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	16.0	16.0		14.0	14.0	
Pedestrian Calls (#/hr)	3	3		0	0	
Act Effect Green (s)	30.3	30.3		67.5	67.5	
Actuated g/C Ratio	0.28	0.28		0.61	0.61	
v/c Ratio	0.79	0.46		0.37	0.23	
Control Delay	42.9	6.1		11.9	10.6	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	42.9	6.1		11.9	10.6	
LOS	D	A		B	B	
Approach Delay	33.2			11.9	10.6	
Approach LOS	C			B	B	

Intersection Summary

Area Type: Other
 Cycle Length: 110
 Actuated Cycle Length: 110
 Offset: 79.2 (72%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.79
 Intersection Signal Delay: 21.1 Intersection LOS: C
 Intersection Capacity Utilization 50.9% ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 14: Whites Road & Highway 401 EB Off Ramp



Queues

<2038 Future Total>AM

14: Whites Road & Highway 401 EB Off Ramp

12-20-2024



Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	739	262	759	486
v/c Ratio	0.79	0.46	0.37	0.23
Control Delay	42.9	6.1	11.9	10.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	42.9	6.1	11.9	10.6
Queue Length 50th (m)	75.3	0.0	39.7	22.8
Queue Length 95th (m)	88.3	18.7	60.4	36.5
Internal Link Dist (m)	271.9		161.9	292.9
Turn Bay Length (m)		225.0		
Base Capacity (vph)	1257	683	2069	2135
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.59	0.38	0.37	0.23

Intersection Summary

Lanes, Volumes, Timings

<2038 Future Total>AM

15: Dixie Road & Shopping Plaza Entrance

12-20-2024

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	111	0	0	252	0
Future Volume (vph)	0	111	0	0	252	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.1	3.7	4.0	3.7	3.7	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.865					
Fit Protected						0.950
Satd. Flow (prot)	1701	0	1946	0	0	1867
Fit Permitted						0.950
Satd. Flow (perm)	1701	0	1946	0	0	1867
Link Speed (k/h)	30	40			40	
Link Distance (m)	193.0	106.6			44.0	
Travel Time (s)	23.2	9.6			4.0	
Confl. Peds. (#/hr)	5			8		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	1%	2%
Adj. Flow (vph)	0	121	0	0	274	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	121	0	0	0	0	274
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	4.1	3.6			3.6	
Link Offset(m)	0.0	0.0			0.0	
Crosswalk Width(m)	1.6	1.6			1.6	
Two way Left Turn Lane						
Headway Factor	0.93	0.99	0.94	0.99	0.99	0.94
Turning Speed (k/h)	24	14	14		24	
Sign Control	Stop	Free			Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	28.9%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis

<2038 Future Total>AM

15: Dixie Road & Shopping Plaza Entrance

12-20-2024

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	111	0	0	252	0
Future Volume (Veh/h)	0	111	0	0	252	0
Sign Control	Stop	Free			Free	
Grade	0%	0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	121	0	0	274	0
Pedestrians	8					5
Lane Width (m)	4.1	3.7			4.0	
Walking Speed (m/s)	1.1	1.1			1.1	
Percent Blockage	1	1			1	
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						44
pX, platoon unblocked						
vC, conflicting volume	556	13				8
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	556	13				8
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	89				83
cM capacity (veh/h)	405	1053				1605

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	121	0	274
Volume Left	0	0	274
Volume Right	121	0	0
cSH	1053	1700	1605
Volume to Capacity	0.11	0.00	0.17
Queue Length 95th (m)	3.0	0.0	4.7
Control Delay (s)	8.9	0.0	7.7
Lane LOS	A		A
Approach Delay (s)	8.9	0.0	7.7
Approach LOS	A		

Intersection Summary

Average Delay	8.1		
Intersection Capacity Utilization	28.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings
17: Street B

<2038 Future Total>AM
12-20-2024

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	43	70	76	24	75	52
Future Volume (vph)	43	70	76	24	75	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.917		0.968			
Fit Protected	0.981					0.971
Satd. Flow (prot)	1694	0	1823	0	0	1829
Fit Permitted	0.981					0.971
Satd. Flow (perm)	1694	0	1823	0	0	1829
Link Speed (k/h)	30		30			30
Link Distance (m)	112.2		49.9			96.9
Travel Time (s)	13.5		6.0			11.6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	47	76	83	26	82	57
Shared Lane Traffic (%)						
Lane Group Flow (vph)	123	0	109	0	0	139
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Stop			Stop

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	26.9%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
17: Street B

<2038 Future Total>AM
12-20-2024

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	43	70	76	24	75	52
Future Volume (vph)	43	70	76	24	75	52
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	47	76	83	26	82	57
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total (vph)	123	109	139			
Volume Left (vph)	47	0	82			
Volume Right (vph)	76	26	0			
Hadj (s)	-0.26	-0.11	0.15			
Departure Headway (s)	4.2	4.2	4.4			
Degree Utilization, x	0.14	0.13	0.17			
Capacity (veh/h)	812	818	775			
Control Delay (s)	7.9	7.8	8.4			
Approach Delay (s)	7.9	7.8	8.4			
Approach LOS	A	A	A			

Intersection Summary

Delay	8.1
Level of Service	A
Intersection Capacity Utilization	26.9%
ICU Level of Service	A
Analysis Period (min)	15

Lanes, Volumes, Timings
19: Walnut Lane & Street B

<2038 Future Total>AM
12-20-2024

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	32	67	42	507	211	71
Future Volume (vph)	32	67	42	507	211	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.909					
Fit Protected	0.984			0.996		
Satd. Flow (prot)	1685		0	0	1876	1819
Fit Permitted	0.984			0.996		
Satd. Flow (perm)	1685		0	0	1876	1819
Link Speed (k/h)	30			40		40
Link Distance (m)	112.2			121.1		114.0
Travel Time (s)	13.5			10.9		10.3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	35	73	46	551	229	77
Shared Lane Traffic (%)						
Lane Group Flow (vph)	108	0	0	597	306	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7		3.3		3.3	
Link Offset(m)	0.0			0.0		0.0
Crosswalk Width(m)	1.6			1.6		1.6
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24	14	24	14		
Sign Control	Stop			Free		

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	60.3%
Analysis Period (min)	15
	ICU Level of Service B

HCM Unsignalized Intersection Capacity Analysis
19: Walnut Lane & Street B

<2038 Future Total>AM
12-20-2024

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	32	67	42	507	211	71
Future Volume (Veh/h)	32	67	42	507	211	71
Sign Control	Stop			Free		
Grade	0%			0%		0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	35	73	46	551	229	77
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)	114					
pX, platoon unblocked						
vC, conflicting volume	910	268	306			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	910	268	306			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	88	91	96			
cM capacity (veh/h)	293	771	1255			

Direction, Lane #

	EB 1	NB 1	SB 1
Volume Total	108	597	306
Volume Left	35	46	0
Volume Right	73	0	77
cSH	505	1255	1700
Volume to Capacity	0.21	0.04	0.18
Queue Length 95th (m)	6.1	0.9	0.0
Control Delay (s)	14.1	1.0	0.0
Lane LOS	B	A	
Approach Delay (s)	14.1	1.0	0.0
Approach LOS	B		

Intersection Summary

Average Delay	2.1		
Intersection Capacity Utilization	60.3%	ICU Level of Service	B
Analysis Period (min)	15		

Lanes, Volumes, Timings
21: Building Driveways & Street A

<2038 Future Total>AM
12-20-2024

	↖	→	↘	↙	←	↖	↙	↘	↙	↘	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	30	241	38	46	83	36	0	0	132	104	0	0
Future Volume (vph)	30	241	38	46	83	36	0	0	132	104	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.984			0.971			0.865				
Flt Protected		0.995			0.986						0.950	
Satd. Flow (prot)	0	1844	0	0	1803	0	0	1629	0	0	1789	0
Flt Permitted		0.995			0.986						0.950	
Satd. Flow (perm)	0	1844	0	0	1803	0	0	1629	0	0	1789	0
Link Speed (k/h)		30			30			30			30	
Link Distance (m)		193.3			80.3			63.7			34.1	
Travel Time (s)		23.2			9.6			7.6			4.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	262	41	50	90	39	0	0	143	113	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	336	0	0	179	0	0	143	0	0	113	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary
 Area Type: Other
 Control Type: Unsignalized
 Intersection Capacity Utilization 43.2% ICU Level of Service A
 Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
21: Building Driveways & Street A

<2038 Future Total>AM
12-20-2024

	↖	→	↘	↙	←	↖	↙	↘	↙	↘	↙	↘
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	30	241	38	46	83	36	0	0	132	104	0	0
Future Volume (vph)	30	241	38	46	83	36	0	0	132	104	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)	33	262	41	50	90	39	0	0	143	113	0	0
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	336	179	143	113								
Volume Left (vph)	33	50	0	113								
Volume Right (vph)	41	39	143	0								
Hadj (s)	-0.02	-0.04	-0.57	0.23								
Departure Headway (s)	4.8	5.0	4.8	5.6								
Degree Utilization, x	0.45	0.25	0.19	0.18								
Capacity (veh/h)	709	668	660	572								
Control Delay (s)	11.7	9.6	8.9	9.8								
Approach Delay (s)	11.7	9.6	8.9	9.8								
Approach LOS	B	A	A	A								

Intersection Summary
 Delay 10.4
 Level of Service B
 Intersection Capacity Utilization 43.2% ICU Level of Service A
 Analysis Period (min) 15

Lanes, Volumes, Timings
20: Street A & Walnut Lane

<2038 Future Total_Signal>AM
12-20-2024

	→	↖	↙	←	↘	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	↔
Traffic Volume (vph)	79	42	123	231	279	197
Future Volume (vph)	79	42	123	231	279	197
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.953			0.944		
Flt Protected				0.983	0.972	
Satd. Flow (prot)	1795	0	0	1851	1728	0
Flt Permitted				0.839	0.972	
Satd. Flow (perm)	1795	0	0	1580	1728	0
Right Turn on Red		Yes			Yes	
Satd. Flow (RTOR)	46				61	
Link Speed (k/h)	40			40	30	
Link Distance (m)	121.1			433.1	80.3	
Travel Time (s)	10.9			39.0	9.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	86	46	134	251	303	214
Shared Lane Traffic (%)						
Lane Group Flow (vph)	132	0	0	385	517	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2		1	2	1	
Detector Template	Thru		Left	Thru	Left	
Leading Detector (m)	10.0		2.0	10.0	2.0	
Trailing Detector (m)	0.0		0.0	0.0	0.0	
Detector 1 Position(m)	0.0		0.0	0.0	0.0	
Detector 1 Size(m)	0.6		2.0	0.6	2.0	
Detector 1 Type	CI+Ex		CI+Ex	CI+Ex	CI+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	CI+Ex			CI+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		Perm	NA	Prot	
Protected Phases	2			6	8	
Permitted Phases			6			
Detector Phase	2		6	6	8	
Switch Phase						
Minimum Initial (s)	20.0		20.0	20.0	8.0	

Lanes, Volumes, Timings
20: Street A & Walnut Lane

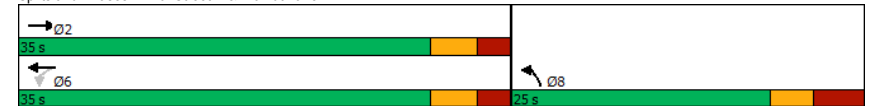
<2038 Future Total_Signal>AM
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	→	↖	↙	←	↘	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Minimum Split (s)	28.0		28.0	28.0	23.0	
Total Split (s)	35.0		35.0	35.0	25.0	
Total Split (%)	58.3%		58.3%	58.3%	41.7%	
Maximum Green (s)	29.2		29.2	29.2	18.3	
Yellow Time (s)	3.3		3.3	3.3	3.0	
All-Red Time (s)	2.5		2.5	2.5	3.7	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	5.8			5.8	6.7	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	Max		Max	Max	None	
Walk Time (s)	7.0		7.0	7.0	7.0	
Flash Dont Walk (s)	15.0		15.0	15.0	9.0	
Pedestrian Calls (#/hr)	0		0	0	0	
Act Effct Green (s)	29.2			29.2	17.8	
Actuated g/C Ratio	0.49			0.49	0.30	
v/c Ratio	0.15			0.50	0.92	
Control Delay	6.3			13.2	44.1	
Queue Delay	0.0			0.0	0.0	
Total Delay	6.3			13.2	44.1	
LOS	A			B	D	
Approach Delay	6.3			13.2	44.1	
Approach LOS	A			B	D	

Intersection Summary

Area Type:	Other
Cycle Length: 60	
Actuated Cycle Length: 59.5	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.92	
Intersection Signal Delay: 27.8	Intersection LOS: C
Intersection Capacity Utilization 78.4%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 20: Street A & Walnut Lane



Lanes, Volumes, Timings
3: Dixie Road & Kingston Road

<2038 Future Total_PHF>AM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	80	738	139	78	579	94	67	15	29	155	35	144
Future Volume (vph)	80	738	139	78	579	94	67	15	29	155	35	144
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	2.8	3.6	3.4	2.8	3.5	3.1	3.6	4.0	3.7	3.8	4.2	3.7
Grade (%)	6%		0%		0%		0%		0%		0%	
Storage Length (m)	145.4		64.5	51.0		79.5	13.0		0.0	16.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	66.4		48.0			18.0			25.0			
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00	1.00		0.99	1.00		0.99	1.00		0.99	
Frt	0.976		0.979		0.901		0.879					
Flt Protected	0.950		0.950			0.950			0.950			
Satd. Flow (prot)	1564	3280	0	1645	3298	0	1752	1771	0	1827	1759	0
Flt Permitted	0.950		0.950			0.592			0.728			
Satd. Flow (perm)	1553	3280	0	1639	3298	0	1089	1771	0	1397	1759	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		23			18			29			144	
Link Speed (kh)	60		60		40		60					
Link Distance (m)	896.3		191.2		44.0		236.2					
Travel Time (s)	53.8		11.5		4.0		14.2					
Confl. Peds. (#/hr)	6		4	4		6	3		2	2		3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	4%	2%	0%	6%	2%	3%	0%	0%	1%	0%	0%
Bus Blockages (#/hr)	0	0	6	0	0	6	0	0	0	0	0	0
Adj. Flow (vph)	80	738	139	78	579	94	67	15	29	155	35	144
Shared Lane Traffic (%)												
Lane Group Flow (vph)	80	877	0	78	673	0	67	44	0	155	179	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	2.8		2.8		3.8		4.9					
Link Offset(m)	0.0		0.0		0.0		0.0					
Crosswalk Width(m)	4.9		4.9		4.9		4.9					
Two way Left Turn Lane			Yes									
Headway Factor	1.17	1.04	1.07	1.13	1.01	1.08	1.00	0.94	0.99	0.97	0.92	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	0	0		0	0		0	0		1	1	
Detector Template												
Leading Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		7.5	7.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		-1.5	-1.5	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		-1.5	-1.5	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		9.0	9.0	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	

Lanes, Volumes, Timings
3: Dixie Road & Kingston Road

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	8		4		8		8		4		4	
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	10.0	28.0		10.0	28.0		43.0	43.0		41.0	41.0	
Total Split (s)	15.0	59.0		11.0	55.0		50.0	50.0		50.0	50.0	
Total Split (%)	12.5%	49.2%		9.2%	45.8%		41.7%	41.7%		41.7%	41.7%	
Maximum Green (s)	10.0	52.4		6.0	48.4		40.5	40.5		40.5	40.5	
Yellow Time (s)	3.0	4.2		3.0	4.2		4.4	4.4		4.4	4.4	
All-Red Time (s)	2.0	2.4		2.0	2.4		5.1	5.1		5.1	5.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.6		5.0	6.6		9.5	9.5		9.5	9.5	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes			Yes								
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		14.0			14.0		23.0	23.0		23.0	23.0	
Pedestrian Calls (#/hr)		6			1		7	7		4	4	
Act Effect Green (s)	9.3	73.4		6.0	72.5		19.5	19.5		19.5	19.5	
Actuated g/C Ratio	0.08	0.61		0.05	0.60		0.16	0.16		0.16	0.16	
v/c Ratio	0.66	0.44		0.95	0.34		0.38	0.14		0.69	0.44	
Control Delay	78.8	13.8		149.3	7.1		48.7	19.8		61.5	13.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	78.8	13.8		149.3	7.1		48.7	19.8		61.5	13.9	
LOS	E	B		F	A		D	B		E	B	
Approach Delay		19.2			21.9			37.3			36.0	
Approach LOS		B			C			D			D	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 107.8 (90%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 85
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.95
 Intersection Signal Delay: 23.7
 Intersection Capacity Utilization 73.7%
 Analysis Period (min) 15
 Intersection LOS: C
 ICU Level of Service D

Splits and Phases: 3: Dixie Road & Kingston Road



Lanes, Volumes, Timings

6: Liverpool Road & Kingston Road

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	253	492	482	185	351	50	134	398	146	84	747	230
Future Volume (vph)	253	492	482	185	351	50	134	398	146	84	747	230
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.1	3.4	3.6	3.3	3.7	3.4	3.8	4.1	4.8	4.7	3.8	3.3
Storage Length (m)	188.8	97.9	170.7		117.0	185.5		52.0	49.0		60.5	
Storage Lanes	1	1	1		1	1		1	1		1	
Taper Length (m)	31.6		22.7			20.8			25.0			
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.98		0.97	0.99		0.96	0.99		0.93	0.98		0.96
Frt			0.850			0.850			0.850			0.850
Fit Protected	0.950		0.950			0.950			0.950			0.950
Satd. Flow (prot)	1671	3299	1538	1694	3510	1579	1774	3700	1647	2026	3618	1516
Fit Permitted	0.950		0.950			0.253			0.517			
Satd. Flow (perm)	1644	3299	1487	1675	3510	1517	1468	3700	1536	1078	3618	1452
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			153			174			146			230
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		694.6			396.4			257.7			348.6	
Travel Time (s)		41.7			23.8			18.6			25.1	
Confl. Peds. (#/hr)	21		17	17		21	34		44	44		34
Confl. Bikes (#/hr)						1						
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	7%	5%	3%	4%	0%	4%	3%	8%	0%	2%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	7	0	0	0
Adj. Flow (vph)	253	492	482	185	351	50	134	398	146	84	747	230
Shared Lane Traffic (%)												
Lane Group Flow (vph)	253	492	482	185	351	50	134	398	146	84	747	230
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width(m)		3.3			3.3			4.7			4.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane		Yes									Yes	
Headway Factor	1.08	1.03	1.00	1.04	0.99	1.03	0.97	0.93	0.88	0.86	0.97	1.04
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	

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WSP

Synchro 11 Report
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Lanes, Volumes, Timings

6: Liverpool Road & Kingston Road

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type	Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	custom	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			2		
Detector Phase	5	2	2	1	6	6	3	8	2	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	5.0	8.0	20.0	5.0	8.0	8.0
Minimum Split (s)	10.0	36.0	36.0	10.0	36.0	36.0	8.0	51.0	36.0	8.0	51.0	51.0
Total Split (s)	25.0	42.0	42.0	19.0	36.0	36.0	8.0	51.0	42.0	8.0	51.0	51.0
Total Split (%)	20.8%	35.0%	35.0%	15.8%	30.0%	30.0%	6.7%	42.5%	35.0%	6.7%	42.5%	42.5%
Maximum Green (s)	20.0	34.9	34.9	14.0	28.9	28.9	5.0	41.9	34.9	5.0	41.9	41.9
Yellow Time (s)	3.0	4.3	4.3	3.0	4.3	4.3	3.0	3.8	4.3	3.0	3.8	3.8
All-Red Time (s)	2.0	2.8	2.8	2.0	2.8	2.8	0.0	5.3	2.8	0.0	5.3	5.3
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	0.0
Total Lost Time (s)	5.0	7.1	7.1	5.0	7.1	7.1	3.0	9.1	7.1	3.0	9.1	9.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
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	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	C-Max	None	Max	Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		21.0	21.0		21.0	21.0		33.0	21.0		33.0	33.0
Pedestrian Calls (#/hr)		44	44		31	31		61	44		49	49
Act Effect Green (s)	19.7	34.9	34.9	14.0	29.2	29.2	53.6	43.5	34.9	53.0	41.9	41.9
Actuated g/C Ratio	0.16	0.29	0.29	0.12	0.24	0.24	0.45	0.36	0.29	0.44	0.35	0.35
v/c Ratio	0.93	0.51	0.89	0.94	0.41	0.10	0.51	0.30	0.27	0.16	0.59	0.35
Control Delay	98.2	34.0	40.1	103.0	40.0	0.4	27.1	28.6	6.4	18.7	34.4	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	98.2	34.0	40.1	103.0	40.0	0.4	27.1	28.6	6.4	18.7	34.4	5.0
LOS	F	C	D	F	D	A	C	C	A	B	C	A
Approach Delay	49.6			56.5			23.5			26.8		
Approach LOS	D			E			C			C		

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 29.4 (25%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 115

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.94

Intersection Signal Delay: 39.0

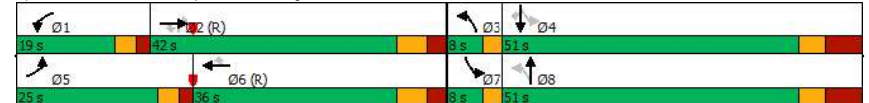
Intersection LOS: D

Intersection Capacity Utilization 99.1%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 6: Liverpool Road & Kingston Road



Lanes, Volumes, Timings
1: Walnut Lane & Kingston Road

<2038 Future Total>PM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	38	1592	225	37	646	43	223	0	323	24	16	26
Future Volume (vph)	38	1592	225	37	646	43	223	0	323	24	16	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.0	3.6	3.5	3.0	3.6	3.7	3.3	3.5	3.7	3.2	3.7	3.7
Storage Length (m)	26.0		25.8	37.0		0.0	63.2		0.0	18.5		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	24.0			26.0			24.4			18.1		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	1.00		0.98		0.98	0.99	0.98	
Frt		0.981			0.991			0.850			0.907	
Flt Protected	0.950			0.950			0.950		0.950		0.950	
Satd. Flow (prot)	1685	3464	0	1685	3505	0	1745	0	1633	1725	1709	0
Flt Permitted	0.950			0.950			0.728		0.950			
Satd. Flow (perm)	1677	3464	0	1683	3505	0	1313	0	1603	1713	1709	0
Right Turn on Red			Yes			Yes		Yes				Yes
Satd. Flow (RTOR)		18			9				85			28
Link Speed (k/h)		60			60			40				40
Link Distance (m)		129.3			694.6			114.0				179.7
Travel Time (s)		7.8			41.7			10.3				16.2
Conf. Peds. (#/hr)	5		7	7		5	14		5	5		14
Conf. Bikes (#/hr)			1									
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%	2%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	3	0	0	0	0	0	0	0	0	0
Adj. Flow (vph)	41	1730	245	40	702	47	242	0	351	26	17	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	41	1975	0	40	749	0	242	0	351	26	45	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width(m)		3.1			3.1			3.3				3.3
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			1.6			4.9				4.9
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.09	1.00	1.01	1.09	1.00	0.99	1.04	1.01	0.99	1.06	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	0	0		0	0		1		1	0		0
Detector Template								Right				
Leading Detector (m)	0.0	0.0		0.0	0.0		7.5		6.1	0.0		0.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		-1.5		0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		-1.5		0.0	0.0		0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8		9.0		6.1	6.1		1.8
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Turn Type	Prot	NA		Prot	NA		Perm		Perm	Perm		NA
Protected Phases	5	2		1	6							4

Lanes, Volumes, Timings
1: Walnut Lane & Kingston Road

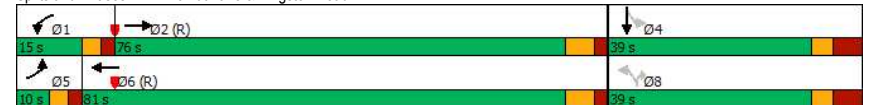
<2038 Future Total>PM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases										8	8	4
Detector Phase	5	2		1	6		8		8	4	4	
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0		8.0		8.0	8.0	8.0	
Minimum Split (s)	10.0	33.0		10.0	33.0		38.0		38.0	38.0	38.0	
Total Split (s)	10.0	76.0		15.0	81.0		39.0		39.0	39.0	39.0	
Total Split (%)	7.7%	58.5%		11.5%	62.3%		30.0%		30.0%	30.0%	30.0%	
Maximum Green (s)	5.0	69.4		10.0	74.4		31.0		31.0	31.0	31.0	
Yellow Time (s)	3.0	4.4		3.0	4.4		3.3		3.3	3.3	3.3	
All-Red Time (s)	2.0	2.2		2.0	2.2		4.7		4.7	4.7	4.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	
Total Lost Time (s)	5.0	6.6		5.0	6.6		8.0		8.0	8.0	8.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0		3.0	3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None		None	None	None	
Walk Time (s)		7.0			7.0		7.0		7.0	7.0	7.0	
Flash Dont Walk (s)		19.0			19.0		22.0		22.0	22.0	22.0	
Pedestrian Calls (#/hr)		8			4		2		2	9	9	
Act Effect Green (s)	5.0	76.8		8.2	79.9		27.5		27.5	27.5	27.5	
Actuated g/C Ratio	0.04	0.59		0.06	0.61		0.21		0.21	0.21	0.21	
v/c Ratio	0.64	0.96		0.38	0.35		0.87		0.86	0.07	0.12	
Control Delay	80.2	37.1		63.8	10.6		78.7		58.1	39.5	20.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	
Total Delay	80.2	37.1		63.8	10.6		78.7		58.1	39.5	20.5	
LOS	F	D		E	B		E		E	D	C	
Approach Delay		38.0			13.3		66.5				27.5	
Approach LOS		D			B		E				C	

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 77 (59%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 115
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.96
 Intersection Signal Delay: 37.0
 Intersection LOS: D
 Intersection Capacity Utilization 97.9%
 ICU Level of Service F
 Analysis Period (min) 15

Splits and Phases: 1: Walnut Lane & Kingston Road

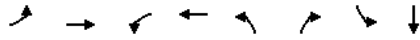


Queues

<2038 Future Total>PM

1: Walnut Lane & Kingston Road

12-20-2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBR	SBL	SBT
Lane Group Flow (vph)	41	1975	40	749	242	351	26	45
w/c Ratio	0.64	0.96	0.38	0.35	0.87	0.86	0.07	0.12
Control Delay	80.2	37.1	63.8	10.6	78.7	58.1	39.5	20.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	80.2	37.1	63.8	10.6	78.7	58.1	39.5	20.5
Queue Length 50th (m)	10.9	~279.5	10.7	33.3	59.0	66.3	5.3	3.4
Queue Length 95th (m)	m14.2	m#316.7	m20.4	46.5	#97.1	#109.3	12.9	13.3
Internal Link Dist (m)		105.3		670.6				155.7
Turn Bay Length (m)	26.0		37.0		63.2		18.5	
Base Capacity (vph)	64	2054	129	2157	313	446	408	428
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced w/c Ratio	0.64	0.96	0.31	0.35	0.77	0.79	0.06	0.11

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.
- m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings

<2038 Future Total>PM

2: Street B & Kingston Road

12-20-2024



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑		↑↑		↑
Traffic Volume (vph)	1602	78	0	1023	0	250
Future Volume (vph)	1602	78	0	1023	0	250
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.3	3.7	3.5	3.7	4.5
Storage Length (m)		45.0	0.0		0.0	0.0
Storage Lanes		1	0		0	1
Taper Length (m)			2.5		2.5	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Ped Bike Factor						
Frt		0.850				0.865
Flt Protected						
Satd. Flow (prot)	3500	1561	0	3500	0	1808
Flt Permitted						
Satd. Flow (perm)	3500	1561	0	3500	0	1808
Link Speed (k/h)	60			60		30
Link Distance (m)	191.2			129.3		96.9
Travel Time (s)	11.5			7.8		11.6
Confl. Peds. (#/hr)		3		3		
Confl. Bikes (#/hr)		1				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	2%	2%	2%	0%
Adj. Flow (vph)	1741	85	0	1112	0	272
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1741	85	0	1112	0	272
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.0			3.0		0.0
Link Offset(m)	0.0			0.0		0.0
Crosswalk Width(m)	1.6			1.6		1.6
Two way Left Turn Lane	Yes			Yes		
Headway Factor	1.01	1.04	0.99	1.01	0.99	0.88
Turning Speed (k/h)		14	24		24	14
Sign Control	Free			Free		Stop

Intersection Summary

- Area Type: Other
- Control Type: Unsignalized
- Intersection Capacity Utilization 66.4%
- ICU Level of Service C
- Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
2: Street B & Kingston Road

<2038 Future Total>PM
12-20-2024

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑		↑↑		↑
Traffic Volume (veh/h)	1602	78	0	1023	0	250
Future Volume (Veh/h)	1602	78	0	1023	0	250
Sign Control	Free		Free		Stop	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1741	85	0	1112	0	272
Pedestrians	3					
Lane Width (m)	4.5					
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type	TWLTL		TWLTL			
Median storage (veh)	2		2			
Upstream signal (m)	191		129			
pX, platoon unblocked			0.43	0.48	0.43	
vC, conflicting volume			1744	2300	874	
vC1, stage 1 conf vol			1744			
vC2, stage 2 conf vol			556			
vCu, unblocked vol			103	609	0	
tC, single (s)			4.1	6.8	6.9	
tC, 2 stage (s)			5.8			
tF (s)			2.2	3.5	3.3	
p0 queue free %			100	100	42	
cM capacity (veh/h)			642	365	471	
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	870	870	85	556	556	272
Volume Left	0	0	0	0	0	0
Volume Right	0	0	85	0	0	272
cSH	1700	1700	1700	1700	1700	471
Volume to Capacity	0.51	0.51	0.05	0.33	0.33	0.58
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	27.2
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	22.5
Lane LOS	C					
Approach Delay (s)	0.0		0.0		22.5	
Approach LOS	C					
Intersection Summary						
Average Delay	1.9					
Intersection Capacity Utilization	66.4%		ICU Level of Service		C	
Analysis Period (min)	15					

Lanes, Volumes, Timings
3: Dixie Road & Kingston Road

<2038 Future Total>PM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑		↑	↑↑		↑	↑		↑	↑	
Traffic Volume (vph)	204	1461	398	40	813	169	164	54	63	148	28	92
Future Volume (vph)	204	1461	398	40	813	169	164	54	63	148	28	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	2.8	3.6	3.4	2.8	3.5	3.1	3.6	4.0	3.7	3.8	4.2	3.7
Grade (%)	6%						0%		0%			
Storage Length (m)	145.4		64.5	51.0		79.5	13.0		0.0	16.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	66.4			48.0			18.0			25.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.99		1.00	1.00		1.00	0.99		0.99	0.99	
Frt	0.968				0.974		0.920		0.885			
Fit Protected	0.950				0.950		0.950		0.950			
Satd. Flow (prot)	1579	3296	0	1597	3407	0	1770	1786	0	1827	1730	0
Fit Permitted	0.950				0.950		0.674		0.676			
Satd. Flow (perm)	1578	3296	0	1595	3407	0	1250	1786	0	1290	1730	0
Right Turn on Red			Yes				Yes		Yes		Yes	
Satd. Flow (RTOR)	43				24		42		100			
Link Speed (k/h)	60				60		40		60			
Link Distance (m)	896.3				191.2		44.0		236.2			
Travel Time (s)	53.8				11.5		4.0		14.2			
Confl. Peds. (#/hr)	1		6	6		1	4		7	7		4
Confl. Bikes (#/hr)	1											
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 (%)	1%	2%	2%	3%	2%	0%	2%	0%	2%	1%	0%	3%
Bus Blockages (#/hr)	0	0	5	0	0	5	0	0	0	0	0	0
Adj. Flow (vph)	222	1588	433	43	884	184	178	59	68	161	30	100
Shared Lane Traffic (%)												
Lane Group Flow (vph)	222	2021	0	43	1068	0	178	127	0	161	130	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	2.8				2.8		3.8		3.8			
Link Offset(m)	0.0				0.0		0.0		0.0			
Crosswalk Width(m)	4.9				4.9		4.9		4.9			
Two way Left Turn Lane	Yes											
Headway Factor	1.17	1.04	1.07	1.13	1.01	1.08	1.00	0.94	0.99	0.97	0.92	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	0	0		0	0		0	0		1	1	
Detector Template												
Leading Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		7.5	7.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		-1.5	-1.5	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		-1.5	-1.5	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		9.0	9.0	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	

Lanes, Volumes, Timings
3: Dixie Road & Kingston Road

<2038 Future Total>PM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	5	2		1	6			8			4	4
Permitted Phases							8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	10.0	28.0		10.0	28.0		41.0	41.0		41.0	41.0	
Total Split (s)	26.0	79.0		10.0	63.0		41.0	41.0		41.0	41.0	
Total Split (%)	20.0%	60.8%		7.7%	48.5%		31.5%	31.5%		31.5%	31.5%	
Maximum Green (s)	21.0	72.4		5.0	56.4		31.5	31.5		31.5	31.5	
Yellow Time (s)	3.0	4.2		3.0	4.2		4.4	4.4		4.4	4.4	
All-Red Time (s)	2.0	2.4		2.0	2.4		5.1	5.1		5.1	5.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.6		5.0	6.6		9.5	9.5		9.5	9.5	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		14.0			14.0		23.0	23.0		23.0	23.0	
Pedestrian Calls (#/hr)		4			6		2	2		3	3	
Act Effect Green (s)	20.3	82.4		5.0	65.2		23.5	23.5		23.5	23.5	
Actuated g/C Ratio	0.16	0.63		0.04	0.50		0.18	0.18		0.18	0.18	
v/c Ratio	0.90	0.96		0.70	0.62		0.79	0.36		0.69	0.33	
Control Delay	71.8	35.4		117.4	25.6		74.1	32.0		64.5	14.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	71.8	35.4		117.4	25.6		74.1	32.0		64.5	14.8	
LOS	E	D		F	C		E	C		E	B	
Approach Delay		39.0			29.2			56.6			42.3	
Approach LOS		D			C			E			D	

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 115 (88%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 140
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.96
 Intersection Signal Delay: 37.8 Intersection LOS: D
 Intersection Capacity Utilization 92.7% ICU Level of Service F
 Analysis Period (min) 15

Splits and Phases: 3: Dixie Road & Kingston Road



Queues
3: Dixie Road & Kingston Road

<2038 Future Total>PM
12-20-2024

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	222	2021	43	1068	178	127	161	130
v/c Ratio	0.90	0.96	0.70	0.62	0.79	0.36	0.69	0.33
Control Delay	71.8	35.4	117.4	25.6	74.1	32.0	64.5	14.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.8	35.4	117.4	25.6	74.1	32.0	64.5	14.8
Queue Length 50th (m)	53.2	275.4	11.7	84.0	43.9	18.9	38.9	6.5
Queue Length 95th (m)	m#68.0	#350.7	m#26.9	102.8	65.4	34.9	58.8	22.1
Internal Link Dist (m)		872.3		167.2		20.0		212.2
Turn Bay Length (m)	145.4		51.0		13.0		16.0	
Base Capacity (vph)	255	2105	61	1720	302	464	312	494
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.87	0.96	0.70	0.62	0.59	0.27	0.52	0.26

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings
4: Street B & Shopping Plaza Entrance

<2038 Future Total>PM
12-20-2024

	↖	↗	↙	↘	↑	↓
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖			↘	↖	↗
Traffic Volume (vph)	56	324	47	148	26	78
Future Volume (vph)	56	324	47	148	26	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.885				0.898	
Fit Protected	0.993			0.988		
Satd. Flow (prot)	1633	0	0	1898	1725	0
Fit Permitted	0.993			0.988		
Satd. Flow (perm)	1633	0	0	1898	1725	0
Link Speed (k/h)	30			30	30	
Link Distance (m)	193.0			49.0	49.9	
Travel Time (s)	23.2			5.9	6.0	
Confl. Peds. (#/hr)		1				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	4%	0%	0%	0%	0%
Adj. Flow (vph)	61	352	51	161	28	85
Shared Lane Traffic (%)						
Lane Group Flow (vph)	413	0	0	212	113	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	97	97	97			97
Sign Control	Stop			Stop	Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	46.9%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
4: Street B & Shopping Plaza Entrance

<2038 Future Total>PM
12-20-2024

	↖	↗	↙	↘	↑	↓
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖			↘	↖	↗
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	56	324	47	148	26	78
Future Volume (vph)	56	324	47	148	26	78
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	61	352	51	161	28	85
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total (vph)	413	212	113			
Volume Left (vph)	61	51	0			
Volume Right (vph)	352	0	85			
Hadj (s)	-0.42	0.05	-0.45			
Departure Headway (s)	4.3	5.1	4.7			
Degree Utilization, x	0.49	0.30	0.15			
Capacity (veh/h)	796	664	693			
Control Delay (s)	11.4	10.2	8.5			
Approach Delay (s)	11.4	10.2	8.5			
Approach LOS	B	B	A			
Intersection Summary						
Delay				10.6		
Level of Service				B		
Intersection Capacity Utilization	46.9%			ICU Level of Service A		
Analysis Period (min)				15		

Lanes, Volumes, Timings
5: Street B & Street A

<2038 Future Total>PM
12-20-2024

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	171	0	0	342	3
Future Volume (vph)	0	171	0	0	342	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.865					
Fit Protected						0.953
Satd. Flow (prot)	1662	0	1921	0	0	1778
Fit Permitted						0.953
Satd. Flow (perm)	1662	0	1921	0	0	1778
Link Speed (k/h)	30		30		30	
Link Distance (m)	193.3		78.3		49.0	
Travel Time (s)	23.2		9.4		5.9	
Confl. Peds. (#/hr)	5	5				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	3%	0%
Adj. Flow (vph)	0	186	0	0	372	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	186	0	0	0	0	375
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0		0.0	
Link Offset(m)	0.0		0.0		0.0	
Crosswalk Width(m)	1.6		1.6		1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	97		97		97	
Sign Control	Stop		Stop		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	37.2%		ICU Level of Service		A	
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
5: Street B & Street A

<2038 Future Total>PM
12-20-2024

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop		Stop	
Traffic Volume (vph)	0	171	0	0	342	3
Future Volume (vph)	0	171	0	0	342	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	186	0	0	372	3
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total (vph)	186	0	375			
Volume Left (vph)	0	0	372			
Volume Right (vph)	186	0	0			
Hadj (s)	-0.60	0.00	0.25			
Departure Headway (s)	4.2	4.8	4.6			
Degree Utilization, x	0.22	0.00	0.48			
Capacity (veh/h)	788	713	761			
Control Delay (s)	8.4	7.8	11.7			
Approach Delay (s)	8.4	0.0	11.7			
Approach LOS	A	A	B			
Intersection Summary						
Delay			10.6			
Level of Service			B			
Intersection Capacity Utilization			37.2%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings

6: Liverpool Road & Kingston Road

<2038 Future Total>PM

12-20-2024

	↖	→	↘	↙	←	↖	↙	↘	↙	↘	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↖	↖	↖	↖↖	↖	↖	↖↖	↖	↖	↖↖	↖
Traffic Volume (vph)	284	1001	546	274	413	67	155	806	232	95	580	159
Future Volume (vph)	284	1001	546	274	413	67	155	806	232	95	580	159
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.1	3.4	3.6	3.3	3.7	3.4	3.8	4.1	4.8	4.7	3.8	3.3
Storage Length (m)	188.8		97.9	170.7		117.0	185.5		52.0	49.0		60.5
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	31.6			22.7			20.8			25.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.95	0.99		0.96	0.99		0.90	0.99		0.96
Frt			0.850			0.850			0.850			0.850
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1688	3461	1599	1728	3579	1579	1791	3773	1732	2026	3654	1561
Fit Permitted	0.950			0.950			0.302			0.153		
Satd. Flow (perm)	1663	3461	1512	1711	3579	1517	1711	3573	1564	322	3654	1499
Right Turn on Red			Yes			Yes			Yes		Yes	
Satd. Flow (RTOR)			93			160			169			173
Link Speed (k/h)		60			60			50				50
Link Distance (m)		694.6			396.4			257.7				348.6
Travel Time (s)		41.7			23.8			18.6				25.1
Conf. Peds. (#/hr)	20		31	31		20	29		62	62		29
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 (%)	1%	2%	1%	1%	2%	0%	3%	1%	4%	0%	1%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	4	0	0	0
Adj. Flow (vph)	309	1088	593	298	449	73	168	876	252	103	630	173
Shared Lane Traffic (%)												
Lane Group Flow (vph)	309	1088	593	298	449	73	168	876	252	103	630	173
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.3			3.3			4.7				4.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		1.6			1.6			1.6				1.6
Two way Left Turn Lane		Yes										Yes
Headway Factor	1.08	1.03	1.00	1.04	0.99	1.03	0.97	0.93	0.87	0.86	0.97	1.04
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4				9.4
Detector 2 Size(m)		0.6			0.6			0.6				0.6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex

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WSP

Synchro 11 Report
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Lanes, Volumes, Timings

6: Liverpool Road & Kingston Road

<2038 Future Total>PM

12-20-2024

	↖	→	↘	↙	←	↖	↙	↘	↙	↘	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)		0.0				0.0					0.0	
Turn Type	Prot	NA	pm+ov	Prot	NA	Perm	pm+pt	NA	custom	pm+pt	NA	Perm
Protected Phases	5	2	3	1	6						7	4
Permitted Phases			2			6	8		2	4		4
Detector Phase	5	2	3	1	6	6	3	8	2	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	5.0	5.0	20.0	20.0	5.0	8.0	20.0	5.0	8.0	8.0
Minimum Split (s)	10.0	36.0	8.0	10.0	36.0	36.0	8.0	50.0	36.0	8.0	50.0	50.0
Total Split (s)	34.0	46.0	8.0	26.0	38.0	38.0	8.0	50.0	46.0	8.0	50.0	50.0
Total Split (%)	26.2%	35.4%	6.2%	20.0%	29.2%	29.2%	6.2%	38.5%	35.4%	6.2%	38.5%	38.5%
Maximum Green (s)	29.0	38.9	5.0	21.0	30.9	30.9	5.0	40.9	38.9	5.0	40.9	40.9
Yellow Time (s)	3.0	4.3	3.0	3.0	4.3	4.3	3.0	3.8	4.3	3.0	3.8	3.8
All-Red Time (s)	2.0	2.8	0.0	2.0	2.8	2.8	0.0	5.3	2.8	0.0	5.3	5.3
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	0.0
Total Lost Time (s)	5.0	7.1	3.0	5.0	7.1	7.1	3.0	9.1	7.1	3.0	9.1	9.1
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
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	3.0
Recall Mode	None	C-Max	None	None	C-Max	C-Max	None	Max	C-Max	None	Max	Max
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		21.0			21.0	21.0		33.0	21.0		33.0	33.0
Pedestrian Calls (#/hr)		15			20	20		28	15		15	15
Act Effct Green (s)	26.8	38.9	48.0	21.0	33.1	33.1	52.0	40.9	38.9	52.0	40.9	40.9
actuated g/C Ratio	0.21	0.30	0.37	0.16	0.25	0.25	0.40	0.31	0.30	0.40	0.31	0.31
v/c Ratio	0.89	1.05	0.96	1.07	0.49	0.14	0.62	0.74	0.43	0.53	0.55	0.29
Control Delay	54.0	86.5	60.7	124.3	44.1	0.6	37.8	44.3	14.7	34.1	39.1	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	0.0
Total Delay	54.0	86.5	60.7	124.3	44.1	0.6	37.8	44.3	14.7	34.1	39.1	5.9
LOS	D	F	E	F	D	A	D	D	B	C	D	A
Approach Delay		73.7			69.4			37.7				32.2
Approach LOS		E			E			D				C

Intersection Summary

Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	78 (60%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle:	145
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.07
Intersection Signal Delay:	56.2
Intersection Capacity Utilization:	105.8%
Intersection LOS:	E
ICU Level of Service:	G
Analysis Period (min):	15

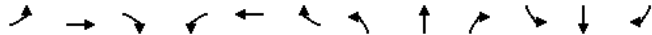
Splits and Phases: 6: Liverpool Road & Kingston Road



WSP

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Queues <2038 Future Total>PM
6: Liverpool Road & Kingston Road 12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	309	1088	593	298	449	73	168	876	252	103	630	173
w/c Ratio	0.89	1.05	0.96	1.07	0.49	0.14	0.62	0.74	0.43	0.53	0.55	0.29
Control Delay	54.0	86.5	60.7	124.3	44.1	0.6	37.8	44.3	14.7	34.1	39.1	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	0.0
Total Delay	54.0	86.5	60.7	124.3	44.1	0.6	37.8	44.3	14.7	34.1	39.1	5.9
Queue Length 50th (m)	79.7	~164.6	138.8	~84.3	53.1	0.0	27.0	105.3	15.8	15.8	70.3	0.0
Queue Length 95th (m)	m87.5	m#182.6	m#159.9	#139.7	70.0	0.0	42.7	128.8	39.1	27.4	88.8	15.8
Internal Link Dist (m)	670.6			372.4			233.7			324.6		
Turn Bay Length (m)	188.8	97.9	170.7	117.0			185.5	52.0	49.0	60.5		
Base Capacity (vph)	376	1035	620	279	911	505	272	1187	586	194	1149	590
Starvation Cap Reductn	0	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced w/c Ratio	0.82	1.05	0.96	1.07	0.49	0.14	0.62	0.74	0.43	0.53	0.55	0.29

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.

m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings <2038 Future Total>PM
8: Liverpool Road & Private Access/Pickering Parkway 12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔↔		↔↔	↔	↔	↔↔↔	↔↔↔	↔	↔↔	↔↔↔	↔
Traffic Volume (vph)	87	69	130	412	58	174	116	873	401	196	1339	46
Future Volume (vph)	87	69	130	412	58	174	116	873	401	196	1339	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.1	3.1	3.7	3.0	3.4	3.2	2.8	3.6	3.5	3.2	3.5	3.5
Storage Length (m)	0.0	0.0	57.0	62.1	54.4	75.7	132.5	35.5	1	1	1	1
Storage Lanes	1	0	1	1	1	1	1	1	1	1	1	1
Taper Length (m)	2.5	12.0			29.5			28.9				
Lane Util. Factor	1.00	0.95	0.95	0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Ped Bike Factor	0.96		0.98		0.850		0.850		0.96	0.99	0.93	
Frt	0.902				0.850				0.850	0.850		
Flt Protected	0.950	0.950			0.950			0.950				
Satd. Flow (prot)	1705	2959	0	3204	1858	1399	1645	5085	1569	1708	5079	1597
Flt Permitted	0.000	0.000			0.101			0.230				
Satd. Flow (perm)	0	2959	0	0	1858	1399	175	5085	1502	411	5079	1482
Right Turn on Red	Yes			Yes			Yes			Yes		
Satd. Flow (RTOR)	141			189			436			144		
Link Speed (k/h)	30			50			50			50		
Link Distance (m)	82.8			328.5			162.3			257.7		
Travel Time (s)	9.9			23.7			11.7			18.6		
Confl. Peds. (#/hr)	21		21		21		21		21		21	
Confl. Bikes (#/hr)	2		5		6							
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%	2%	0%	5%	0%	2%	1%	1%	1%	0%
Bus Blockages (#/hr)	0	0	0	0	12	0	0	2	0	0	0	0
Adj. Flow (vph)	95	75	141	448	63	189	126	949	436	213	1455	50
Shared Lane Traffic (%)	95	216	0	448	63	189	126	949	436	213	1455	50
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	6.0			6.0			3.8			3.8		
Link Offset(m)	0.0			0.0			0.0			0.0		
Crosswalk Width(m)	1.6			1.6			1.6			1.6		
Two way Left Turn Lane												
Headway Factor	1.08	1.08	0.99	1.09	1.03	1.13	1.13	1.00	1.03	1.06	1.01	1.01
Turning Speed (k/h)	24	24	14	24	14	24	24	14	24	14	24	14
Number of Detectors	1	2	1	2	1	2	1	2	1	1	2	1
Detector Template	Left	Thru	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left
Leading Detector (m)	2.0	10.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4			9.4			9.4		
Detector 2 Size(m)	0.6			0.6			0.6			0.6		

Lanes, Volumes, Timings

<2038 Future Total>PM

8: Liverpool Road & Private Access/Pickering Parkway

12-20-2024

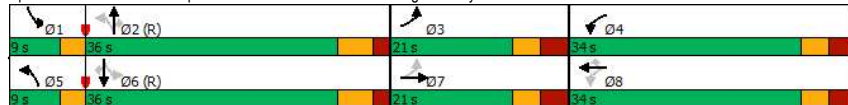


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type	CI+Ex		CI+Ex		CI+Ex		CI+Ex		CI+Ex		CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0		0.0		0.0		0.0		0.0		0.0	
Turn Type	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm
Protected Phases	3	7	4	8	8	5	2	2	6	1	6	6
Permitted Phases	7		8		8	2		2	6		6	6
Detector Phase	3	7	4	8	8	5	2	2	1	6	6	6
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	5.0	20.0	20.0	5.0	8.0	8.0	8.0
Minimum Split (s)	15.0	15.0	34.0	34.0	34.0	8.0	30.0	30.0	8.0	30.0	30.0	30.0
Total Split (s)	21.0	21.0	34.0	34.0	34.0	9.0	36.0	36.0	9.0	36.0	36.0	36.0
Total Split (%)	21.0%	21.0%	34.0%	34.0%	34.0%	9.0%	36.0%	36.0%	9.0%	36.0%	36.0%	36.0%
Maximum Green (s)	14.4	14.4	27.4	27.4	27.4	6.0	29.7	29.7	6.0	29.7	29.7	29.7
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.0	4.2	4.2	3.0	4.2	4.2	4.2
All-Red Time (s)	3.3	3.3	3.3	3.3	3.3	0.0	2.1	2.1	0.0	2.1	2.1	2.1
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	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.6	3.0	6.3	6.3	3.0	6.3	6.3	6.3
Lead/Lag					Lead		Lag	Lag	Lead	Lag	Lag	Lag
Lead-Lag Optimize?												
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	3.0
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max	C-Max
Walk Time (s)			19.0		19.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0
Flash Dont Walk (s)			8.0		8.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Pedestrian Calls (#/hr)			20		20	28	28	28	28	15	15	15
Act Effect Green (s)	11.0	11.0	20.9	20.9	20.9	48.9	39.6	39.6	48.9	39.6	39.6	39.6
Actuated g/C Ratio	0.11	0.11	0.21	0.21	0.21	0.49	0.40	0.40	0.49	0.40	0.40	0.40
v/c Ratio	0.51	0.48	0.67	0.16	0.43	0.73	0.47	0.51	0.77	0.72	0.07	0.07
Control Delay	51.0	18.9	40.8	31.2	7.5	38.4	20.3	8.7	38.9	29.9	0.2	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.0	18.9	40.8	31.2	7.5	38.4	20.3	8.7	38.9	29.9	0.2	0.2
LOS	D	B	D	C	A	D	C	A	D	C	A	A
Approach Delay	28.7		31.0		18.5		30.2					
Approach LOS	C		C		B		C					

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 15 (15%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.77
 Intersection Signal Delay: 26.0 Intersection LOS: C
 Intersection Capacity Utilization 71.0% ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 8: Liverpool Road & Private Access/Pickering Parkway



Queues

<2038 Future Total>PM

8: Liverpool Road & Private Access/Pickering Parkway

12-20-2024



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Group Flow (vph)	95	216	448	63	189	126	949	436	213	1455	50	
v/c Ratio	0.51	0.48	0.67	0.16	0.43	0.73	0.47	0.51	0.77	0.72	0.07	
Control Delay	51.0	18.9	40.8	31.2	7.5	38.4	20.3	8.7	38.9	29.9	0.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	51.0	18.9	40.8	31.2	7.5	38.4	20.3	8.7	38.9	29.9	0.2	
Queue Length 50th (m)	17.7	7.1	42.3	10.3	0.0	8.3	52.3	32.2	20.8	83.0	0.0	
Queue Length 95th (m)	32.2	17.3	52.8	19.3	15.9	m#42.9	75.2	55.0	#62.0	#131.2	0.0	
Internal Link Dist (m)	58.8		304.5		138.3		233.7					
Turn Bay Length (m)			57.0		62.1		54.4	75.7		132.5	35.5	
Base Capacity (vph)	245	546	877	509	520	173	2012	857	278	2010	673	
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	0.39	0.40	0.51	0.12	0.36	0.73	0.47	0.51	0.77	0.72	0.07	

Intersection Summary

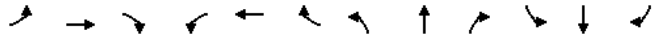
95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings

<2038 Future Total>PM

9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp

12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	454	278	500	293	204	1110	0	0	1189	166
Future Volume (vph)	0	0	454	278	500	293	204	1110	0	0	1189	166
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.5	3.7	3.7	3.4	3.7
Storage Length (m)	0.0	0.0	0.0	0.0	125.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0
Storage Lanes	0		1	1		1	1		0	0		1
Taper Length (m)	2.5			2.5		30.0			2.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	1.00	0.91	1.00
Ped Bike Factor												0.92
Frt			0.865			0.850						0.850
Fit Protected				0.950	0.997		0.950					
Satd. Flow (prot)	0	0	1662	1734	1820	1581	1825	5079	0	0	4972	1633
Fit Permitted				0.950	0.997		0.137					
Satd. Flow (perm)	0	0	1662	1734	1820	1581	263	5079	0	0	4972	1508
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)						85						180
Link Speed (kh)		50			50			50				50
Link Distance (m)		433.1			226.7			372.2				162.3
Travel Time (s)		31.2			16.3			26.8				11.7
Confl. Peds. (#/hr)							17		15	15		17
Confl. Bikes (#/hr)								6				7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	0%	0%	0%	1%	0%	1%	6%	2%	2%	0%
Adj. Flow (vph)	0	0	493	302	543	318	222	1207	0	0	1292	180
Shared Lane Traffic (%)				10%								
Lane Group Flow (vph)	0	0	493	272	573	318	222	1207	0	0	1292	180
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	1.01	0.99	1.01	0.99	0.99	1.03	0.99
Turning Speed (k/h)	97		97	24		14	97		14	24		97
Number of Detectors			1	1	2	1	1	2			2	1
Detector Template			Right	Left	Thru	Right	Left	Thru			Thru	Right
Leading Detector (m)			2.0	2.0	10.0	2.0	2.0	10.0			10.0	2.0
Trailing Detector (m)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Position(m)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Size(m)			2.0	2.0	0.6	2.0	2.0	0.6			0.6	2.0
Detector 1 Type			Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 2 Position(m)					9.4			9.4			9.4	
Detector 2 Size(m)					0.6			0.6			0.6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	

Lanes, Volumes, Timings

<2038 Future Total>PM

9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp

12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)						0.0					0.0	0.0
Turn Type			Over	Split	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases			5	8	8		5	2			6	
Permitted Phases						8	2					6
Detector Phase			5	8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)			5.0	8.0	8.0	8.0	5.0	15.0			15.0	15.0
Minimum Split (s)			9.5	25.0	25.0	25.0	9.5	24.3			24.3	24.3
Total Split (s)			33.0	36.0	36.0	36.0	33.0	64.0			31.0	31.0
Total Split (%)			33.0%	36.0%	36.0%	36.0%	33.0%	64.0%			31.0%	31.0%
Maximum Green (s)			28.5	30.0	30.0	30.0	28.5	57.7			24.7	24.7
Yellow Time (s)			3.5	3.3	3.3	3.3	3.5	3.3			3.3	3.3
All-Red Time (s)			1.0	2.7	2.7	2.7	1.0	3.0			3.0	3.0
Lost Time Adjust (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Lost Time (s)			4.5	6.0	6.0	6.0	4.5	6.3			6.3	6.3
Lead/Lag			Lead				Lead				Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)			3.0	3.0	3.0	3.0	3.0	3.0			3.0	3.0
Recall Mode			None	None	None	None	None	C-Max			C-Max	C-Max
Walk Time (s)				14.0	14.0	14.0		13.0			13.0	13.0
Flash Dont Walk (s)				5.0	5.0	5.0		5.0			5.0	5.0
Pedestrian Calls (#/hr)				0	0	0		14			7	7
Act Effct Green (s)			28.5	30.0	30.0	30.0	59.5	57.7			24.7	24.7
Actuated g/C Ratio			0.28	0.30	0.30	0.30	0.60	0.58			0.25	0.25
v/c Ratio			1.04	0.52	1.05	0.60	0.37	0.41			1.05	0.35
Control Delay			89.2	33.4	87.6	26.9	12.7	12.3			73.2	14.0
Queue Delay			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay			89.2	33.4	87.6	26.9	12.7	12.3			73.2	14.0
LOS			F	C	F	C	B	B			E	B
Approach Delay			89.2			58.3		12.3			66.0	
Approach LOS			F			E		B			E	

Intersection Summary

Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	100
Offset:	8 (8%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle:	100
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.05
Intersection Signal Delay:	49.7
Intersection LOS:	D
Intersection Capacity Utilization:	91.4%
ICU Level of Service:	F
Analysis Period (min):	15

Splits and Phases: 9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp



Queues

<2038 Future Total>PM

9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp

12-20-2024



Lane Group	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	493	272	573	318	222	1207	1292	180
w/c Ratio	1.04	0.52	1.05	0.60	0.37	0.41	1.05	0.35
Control Delay	89.2	33.4	87.6	26.9	12.7	12.3	73.2	14.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	89.2	33.4	87.6	26.9	12.7	12.3	73.2	14.0
Queue Length 50th (m)	~103.9	45.8	~128.1	38.1	18.5	44.4	~79.6	1.8
Queue Length 95th (m)	#163.9	72.1	#194.2	66.2	35.1	54.1	#123.5	m21.9
Internal Link Dist (m)			202.7			348.2	138.3	
Turn Bay Length (m)				125.0	50.0			
Base Capacity (vph)	473	520	546	533	601	2930	1228	508
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced w/c Ratio	1.04	0.52	1.05	0.60	0.37	0.41	1.05	0.35

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.

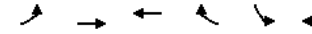
m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings

<2038 Future Total>PM

10: Kingston Road & Fairport Road

12-20-2024



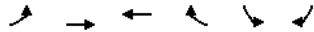
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø1
Lane Configurations	↔	↕↕	↕↕	↔	↔	↕	↕
Traffic Volume (vph)	205	1839	852	223	271	137	
Future Volume (vph)	205	1839	852	223	271	137	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (m)	3.0	3.6	3.5	3.7	3.6	4.5	
Grade (%)		6%	0%			0%	
Storage Length (m)	75.0			18.5	15.5	0.0	
Storage Lanes	1			0	1	1	
Taper Length (m)	2.5				31.3		
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00	
Ped Bike Factor	1.00		1.00			0.99	
Frt			0.969			0.850	
Fit Protected	0.950				0.950		
Satd. Flow (prot)	1618	3433	3356	0	1805	1777	
Fit Permitted	0.950				0.950		
Satd. Flow (perm)	1617	3433	3356	0	1805	1751	
Right Turn on Red				Yes		Yes	
Satd. Flow (RTOR)			34			149	
Link Speed (k/h)		60	60		40		
Link Distance (m)		424.0	896.3		280.0		
Travel Time (s)		25.4	53.8		25.2		
Confl. Peds. (#/hr)	1			1		2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Heavy Vehicles (%)	1%	2%	3%	1%	0%	0%	
Bus Blockages (#/hr)	0	0	0	9	0	0	
Adj. Flow (vph)	223	1999	926	242	295	149	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	223	1999	1168	0	295	149	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Left	Left	Right	Left	Right	
Median Width(m)		3.0	3.0		3.6		
Link Offset(m)		0.0	0.0		0.0		
Crosswalk Width(m)		1.6	1.6		1.6		
Two way Left Turn Lane		Yes					
Headway Factor	1.14	1.04	1.01	0.99	1.00	0.88	
Turning Speed (k/h)		24		14	24	14	
Number of Detectors	1	2	2		1	1	
Detector Template	Left	Thru	Thru		Left	Right	
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0	
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	0.6		2.0	2.0	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4	9.4				
Detector 2 Size(m)		0.6	0.6				

Lanes, Volumes, Timings

<2038 Future Total>PM

10: Kingston Road & Fairport Road

12-20-2024

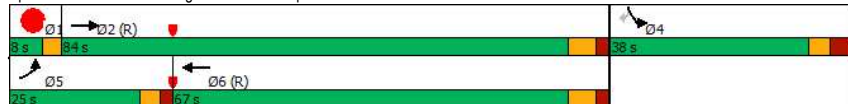


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø1
Detector 2 Type	CI+Ex		CI+Ex				
Detector 2 Channel							
Detector 2 Extend (s)		0.0	0.0				
Turn Type	Prot	NA	NA		Prot	Perm	
Protected Phases	5	2	6		4		1
Permitted Phases						4	
Detector Phase	5	2	6		4	4	
Switch Phase							
Minimum Initial (s)	5.0	20.0	20.0		8.0	8.0	5.0
Minimum Split (s)	10.0	33.0	33.0		38.0	38.0	8.0
Total Split (s)	25.0	84.0	67.0		38.0	38.0	8.0
Total Split (%)	19.2%	64.6%	51.5%		29.2%	29.2%	6%
Maximum Green (s)	20.0	77.7	60.7		30.7	30.7	5.0
Yellow Time (s)	3.0	4.3	4.3		3.3	3.3	3.0
All-Red Time (s)	2.0	2.0	2.0		4.0	4.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.3	6.3		7.3	7.3	
Lead/Lag	Lead	Lag	Lag				Lead
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	0.2	0.2		3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max		None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0	5.0
Flash Dont Walk (s)		19.0	19.0		23.0	23.0	0.0
Pedestrian Calls (#/hr)		0	0		0	0	20
Act Effect Green (s)	19.5	86.0	66.3		25.6	25.6	
Actuated g/C Ratio	0.15	0.66	0.51		0.20	0.20	
v/c Ratio	0.92	0.88	0.68		0.83	0.32	
Control Delay	54.5	40.9	11.8		69.5	8.0	
Queue Delay	0.0	0.0	0.0		0.0	0.0	
Total Delay	54.5	40.9	11.8		69.5	8.0	
LOS	D	D	B		E	A	
Approach Delay		42.2	11.8		48.9		
Approach LOS		D	B		D		

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 27 (21%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 115
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.92
 Intersection Signal Delay: 33.7 Intersection LOS: C
 Intersection Capacity Utilization 77.8% ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 10: Kingston Road & Fairport Road



Queues

<2038 Future Total>PM

10: Kingston Road & Fairport Road

12-20-2024



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	223	1999	1168	295	149
v/c Ratio	0.92	0.88	0.68	0.83	0.32
Control Delay	54.5	40.9	11.8	69.5	8.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	54.5	40.9	11.8	69.5	8.0
Queue Length 50th (m)	52.2	285.8	36.3	72.7	0.0
Queue Length 95th (m)	m55.0	m281.6	43.5	101.2	16.7
Internal Link Dist (m)		400.0	872.3	256.0	
Turn Bay Length (m)	75.0			15.5	
Base Capacity (vph)	248	2270	1727	426	527
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.90	0.88	0.68	0.69	0.28

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings

<2038 Future Total>PM

11: Hwy 401 WB Ramps & Kingston Road

12-20-2024

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↕↕		↕	↕↕	↕↕	↕
Traffic Volume (vph)	1696	23	184	804	662	346
Future Volume (vph)	1696	23	184	804	662	346
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.0	3.7	2.7	3.8	3.8	3.7
Grade (%)	6%			0%	0%	
Storage Length (m)		0.0	47.5		0.0	52.0
Storage Lanes		0	1		2	1
Taper Length (m)			22.3		2.5	
Lane Util. Factor	0.95	0.95	1.00	0.95	0.97	1.00
Ped Bike Factor					1.00	0.98
Frt	0.998					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3577	0	1577	3618	3544	1617
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3577	0	1577	3618	3537	1591
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	1					224
Link Speed (k/h)	60			60	50	
Link Distance (m)	268.7			424.0	216.6	
Travel Time (s)	16.1			25.4	15.6	
Confl. Peds. (#/hr)					1	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	5%	3%	2%	1%	1%
Adj. Flow (vph)	1843	25	200	874	720	376
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1868	0	200	874	720	376
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.1			3.1	7.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	0.98	1.03	1.14	0.97	0.97	0.99
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	10.0		2.0	10.0	2.0	2.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Size(m)	0.6		2.0	0.6	2.0	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		

Lanes, Volumes, Timings

<2038 Future Total>PM

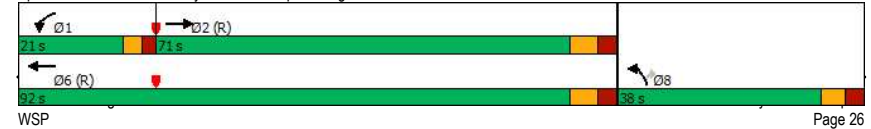
11: Hwy 401 WB Ramps & Kingston Road

12-20-2024

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		Prot	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases						8
Detector Phase	2		1	6	8	8
Switch Phase						
Minimum Initial (s)	20.0		5.0	20.0	8.0	8.0
Minimum Split (s)	50.0		10.0	50.0	38.0	38.0
Total Split (s)	71.0		21.0	92.0	38.0	38.0
Total Split (%)	54.6%		16.2%	70.8%	29.2%	29.2%
Maximum Green (s)	63.8		16.0	84.8	31.3	31.3
Yellow Time (s)	4.2		3.0	4.2	3.7	3.7
All-Red Time (s)	3.0		2.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	7.2		5.0	7.2	6.7	6.7
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?						
Vehicle Extension (s)	0.2		3.0	0.2	3.0	3.0
Recall Mode	C-Max		None	C-Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	35.0			35.0	24.0	24.0
Pedestrian Calls (#/hr)	0			0	14	14
Act Effct Green (s)	65.3		16.0	86.3	29.8	29.8
Actuated g/C Ratio	0.50		0.12	0.66	0.23	0.23
v/c Ratio	1.04		1.03	0.36	0.89	0.70
Control Delay	68.3		127.0	1.8	62.0	25.4
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	68.3		127.0	1.8	62.0	25.4
LOS	E		F	A	E	C
Approach Delay	68.3			25.1	49.4	
Approach LOS	E			C	D	

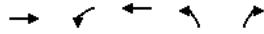
Intersection Summary	
Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	69 (53%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle:	130
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.04
Intersection Signal Delay:	51.7
Intersection Capacity Utilization:	93.1%
Analysis Period (min):	15
Intersection LOS:	D
ICU Level of Service:	F

Splits and Phases: 11: Hwy 401 WB Ramps & Kingston Road



Queues
11: Hwy 401 WB Ramps & Kingston Road

<2038 Future Total>PM
12-20-2024



Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1868	200	874	720	376
w/c Ratio	1.04	1.03	0.36	0.89	0.70
Control Delay	68.3	127.0	1.8	62.0	25.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	68.3	127.0	1.8	62.0	25.4
Queue Length 50th (m)	-285.7	-48.6	6.4	91.1	35.3
Queue Length 95th (m)	#329.1	#100.6	6.0	#114.7	71.2
Internal Link Dist (m)	244.7		400.0	192.6	
Turn Bay Length (m)		47.5			52.0
Base Capacity (vph)	1795	194	2401	853	553
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced w/c Ratio	1.04	1.03	0.36	0.84	0.68

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

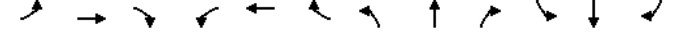
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Lanes, Volumes, Timings
12: Plaza Entrance/Delta Blvd & Kingston Road

<2038 Future Total>PM
12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	130	1567	38	89	1263	121	198	15	138	82	13	143
Future Volume (vph)	130	1567	38	89	1263	121	198	15	138	82	13	143
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.2	3.4	3.5	3.1	3.4	3.4	3.6	4.6	3.7	3.2	2.8	3.7
Grade (%)		6%			0%			0%				0%
Storage Length (m)	51.8		148.5	100.0		18.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	35.3			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		1.00	0.99		1.00					0.99
Frt		0.996			0.987			0.864				0.862
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1656	3343	0	1705	3403	0	1770	1824	0	1725	1474	0
Fit Permitted	0.950			0.950			0.630			0.637		
Satd. Flow (perm)	1648	3343	0	1704	3403	0	1172	1824	0	1157	1474	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			12			129				141
Link Speed (k/h)		60			60			30				40
Link Distance (m)		222.7			268.7			130.9				169.9
Travel Time (s)		13.4			16.1			15.7				15.3
Confl. Peds. (#/hr)	16		1	1		16	1					1
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 (%)	1%	2%	0%	0%	2%	0%	2%	0%	0%	0%	0%	0%
Adj. Flow (vph)	141	1703	41	97	1373	132	215	16	150	89	14	155
Shared Lane Traffic (%)												
Lane Group Flow (vph)	141	1744	0	97	1505	0	215	166	0	89	169	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.6				3.6
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		1.6			1.6			1.6				1.6
Two way Left Turn Lane					Yes							
Headway Factor	1.10	1.07	1.06	1.08	1.03	1.03	1.00	0.87	0.99	1.06	1.13	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	

Lanes, Volumes, Timings

<2038 Future Total>PM

12: Plaza Entrance/Delta Blvd & Kingston Road

12-20-2024

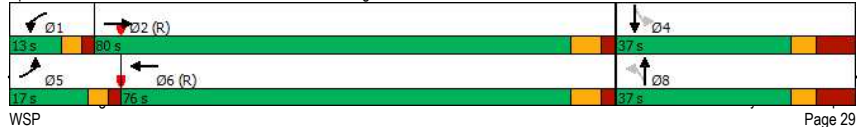


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	10.0	32.0		10.0	32.0		37.0	37.0		37.0	37.0	
Total Split (s)	17.0	80.0		13.0	76.0		37.0	37.0		37.0	37.0	
Total Split (%)	13.1%	61.5%		10.0%	58.5%		28.5%	28.5%		28.5%	28.5%	
Maximum Green (s)	12.0	73.1		8.0	69.1		27.0	27.0		27.0	27.0	
Yellow Time (s)	3.0	4.7		3.0	4.7		3.8	3.8		3.8	3.8	
All-Red Time (s)	2.0	2.2		2.0	2.2		6.2	6.2		6.2	6.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.9		5.0	6.9		10.0	10.0		10.0	10.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	0.2		3.0	0.2		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		18.0			18.0		20.0	20.0		20.0	20.0	
Pedestrian Calls (#/hr)		0			13		3	3		6	6	
Act Effct Green (s)	12.0	74.3		8.0	70.3		25.8	25.8		25.8	25.8	
Actuated g/C Ratio	0.09	0.57		0.06	0.54		0.20	0.20		0.20	0.20	
v/c Ratio	0.93	0.91		0.93	0.82		0.93	0.36		0.39	0.42	
Control Delay	81.9	21.0		122.1	23.9		93.7	14.4		50.3	13.9	
Queue Delay	0.0	1.2		0.0	0.0		0.0	75.1		148.6	0.0	
Total Delay	81.9	22.2		122.1	24.0		93.7	89.5		198.9	13.9	
LOS	F	C		F	C		F	F		F	B	
Approach Delay		26.7			29.9			91.9			77.7	
Approach LOS		C			C			F			E	

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 6 (5%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.93
 Intersection Signal Delay: 37.2 Intersection LOS: D
 Intersection Capacity Utilization 97.1% ICU Level of Service F
 Analysis Period (min) 15

Splits and Phases: 12: Plaza Entrance/Delta Blvd & Kingston Road

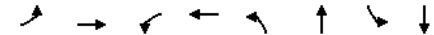


Queues

<2038 Future Total>PM

12: Plaza Entrance/Delta Blvd & Kingston Road

12-20-2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	141	1744	97	1505	215	166	89	169
v/c Ratio	0.93	0.91	0.93	0.82	0.93	0.36	0.39	0.42
Control Delay	81.9	21.0	122.1	23.9	93.7	14.4	50.3	13.9
Queue Delay	0.0	1.2	0.0	0.0	0.0	75.1	148.6	0.0
Total Delay	81.9	22.2	122.1	24.0	93.7	89.5	198.9	13.9
Queue Length 50th (m)	36.7	144.1	26.0	85.8	54.0	7.7	19.7	5.9
Queue Length 95th (m)	m38.0	m147.6	m#48.1	218.0	#99.2	26.9	36.4	25.8
Internal Link Dist (m)		198.7		244.7		106.9		145.9
Turn Bay Length (m)	51.8		100.0					
Base Capacity (vph)	152	1912	104	1845	243	481	240	417
Starvation Cap Reductn	0	38	0	10	0	0	0	0
Spillback Cap Reductn	0	57	0	0	0	366	223	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.94	0.93	0.82	0.88	1.44	5.24	0.41

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings

13: Whites Road & Kingston Road

<2038 Future Total>PM

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	155	857	358	331	753	496	228	684	737	196	617	186
Future Volume (vph)	155	857	358	331	753	496	228	684	737	196	617	186
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.6	4.2	3.5	3.7	4.0	3.5	3.9	3.7	3.5	3.9	4.0
Grade (%)	6%		0%		0%		0%		0%		0%	
Storage Length (m)	127.0		123.0	87.1		35.0	72.0		35.0	88.5		47.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	64.0		39.6			66.8			32.6			
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Ped Bike Factor	0.97		0.96	0.99		0.91	0.99		0.93	0.98		0.95
Frt	0.850		0.850		0.850		0.850		0.850		0.850	
Fit Protected	0.950		0.950		0.950		0.950		0.950		0.950	
Satd. Flow (prot)	1681	3400	1622	1733	3579	1654	1767	5255	1588	1750	5105	1627
Fit Permitted	0.950		0.950		0.950		0.331		0.292		0.292	
Satd. Flow (perm)	1637	3400	1549	1717	3579	1502	608	5255	1470	527	5105	1550
Right Turn on Red			Yes		Yes		Yes		Yes		Yes	
Satd. Flow (RTOR)			154		136		59					202
Link Speed (k/h)	60		60		60		60		60		60	
Link Distance (m)	297.5		222.7		158.6		385.2		385.2		385.2	
Travel Time (s)	17.9		13.4		9.5		23.1		23.1		23.1	
Confl. Peds. (#/hr)	75		31	31		75	37		65	65		37
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 (%)	3%	3%	3%	3%	2%	2%	1%	2%	2%	2%	5%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	2	0	0	4
Adj. Flow (vph)	168	932	389	360	818	539	248	743	801	213	671	202
Shared Lane Traffic (%)												
Lane Group Flow (vph)	168	932	389	360	818	539	248	743	801	213	671	202
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width(m)	3.5		3.5		3.5		3.5		3.5		3.5	
Link Offset(m)	0.0		0.0		0.0		0.0		0.0		0.0	
Crosswalk Width(m)	1.6		1.6		1.6		1.6		1.6		1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.04	0.96	1.01	0.99	0.94	1.01	0.96	1.00	1.01	0.96	0.96
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4		9.4		9.4		9.4		9.4		9.4	
Detector 2 Size(m)	0.6		0.6		0.6		0.6		0.6		0.6	

Lanes, Volumes, Timings

13: Whites Road & Kingston Road

<2038 Future Total>PM

12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type	CI+Ex		CI+Ex		CI+Ex		CI+Ex		CI+Ex		CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0		0.0		0.0		0.0		0.0		0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8	1	7	4	
Permitted Phases			2			6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	1	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	5.0	8.0	5.0	5.0	8.0	8.0
Minimum Split (s)	10.0	43.0	43.0	10.0	43.0	43.0	8.0	49.0	10.0	8.0	49.0	49.0
Total Split (s)	18.0	43.0	43.0	30.0	55.0	55.0	8.0	49.0	30.0	8.0	49.0	49.0
Total Split (%)	13.8%	33.1%	33.1%	23.1%	42.3%	42.3%	6.2%	37.7%	23.1%	6.2%	37.7%	37.7%
Maximum Green (s)	13.0	36.0	36.0	25.0	48.0	48.0	5.0	40.6	25.0	5.0	40.6	40.6
Yellow Time (s)	3.0	4.2	4.2	3.0	4.2	4.2	3.0	4.3	3.0	3.0	4.3	4.3
All-Red Time (s)	2.0	2.8	2.8	2.0	2.8	2.8	0.0	4.1	2.0	0.0	4.1	4.1
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	0.0
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	3.0	8.4	5.0	3.0	8.4	8.4
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	0.2	0.2	3.0	0.2	0.2	3.0	0.2	3.0	3.0	0.2	0.2
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	None	None	Max	Max
Walk Time (s)	7.0		7.0		7.0		7.0		7.0		7.0	
Flash Dont Walk (s)	29.0		29.0		29.0		29.0		33.0		33.0	
Pedestrian Calls (#/hr)	13		13		38		38		20		20	
Act Effect Green (s)	13.0	36.0	36.0	25.0	48.0	48.0	51.0	40.6	25.0	51.0	40.6	40.6
Actuated g/C Ratio	0.10	0.28	0.28	0.19	0.37	0.37	0.39	0.31	0.53	0.39	0.31	0.31
v/c Ratio	1.00	0.99	0.72	1.08	0.62	0.84	0.88	0.45	0.97	0.84	0.42	0.32
Control Delay	127.6	73.9	33.7	123.1	26.4	27.2	63.3	36.9	49.3	60.0	36.4	5.8
Queue Delay	0.0	11.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	127.6	85.0	33.7	123.1	26.4	27.2	63.3	36.9	49.3	60.0	36.4	5.8
LOS	F	F	C	F	C	C	E	D	D	E	D	A
Approach Delay	76.4		46.9		46.1		35.3		35.3		35.3	
Approach LOS	E		D		D		D		D		D	
Intersection Summary												
Area Type:	Other											
Cycle Length:	130											
Actuated Cycle Length:	130											
Offset:	32 (25%), Referenced to phase 2:EBT and 6:WBT, Start of Green											
Natural Cycle:	130											
Control Type:	Actuated-Coordinated											
Maximum v/c Ratio:	1.08											
Intersection Signal Delay:	51.8						Intersection LOS: D					
Intersection Capacity Utilization:	114.6%						ICU Level of Service H					
Analysis Period (min):	15											
Splits and Phases: 13: Whites Road & Kingston Road												



Queues <2038 Future Total>PM
13: Whites Road & Kingston Road 12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	168	932	389	360	818	539	248	743	801	213	671	202
w/c Ratio	1.00	0.99	0.72	1.08	0.62	0.84	0.88	0.45	0.97	0.84	0.42	0.32
Control Delay	127.6	73.9	33.7	123.1	26.4	27.2	63.3	36.9	49.3	60.0	36.4	5.8
Queue Delay	0.0	11.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	127.6	85.0	33.7	123.1	26.4	27.2	63.3	36.9	49.3	60.0	36.4	5.8
Queue Length 50th (m)	43.7	125.5	55.7	~100.9	48.8	37.1	42.7	55.8	156.8	35.9	49.8	0.0
Queue Length 95th (m)	#89.4	#169.5	93.4 m	#144.4	m83.0 m	#138.2	#83.4	68.3	#189.3	#70.3	61.7	17.0
Internal Link Dist (m)		273.5			198.7			134.6			361.2	
Turn Bay Length (m)	127.0		123.0	87.1		35.0	72.0		35.0	88.5		47.0
Base Capacity (vph)	168	941	540	333	1321	640	283	1641	830	253	1594	622
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	37	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced w/c Ratio	1.00	1.03	0.72	1.08	0.62	0.84	0.88	0.45	0.97	0.84	0.42	0.32

- 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.
 - m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings <2038 Future Total>PM
14: Whites Road & Highway 401 EB Off Ramp 12-20-2024



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↑↑	↑		↑↑	↑↑	
Traffic Volume (vph)	1244	589	0	862	610	0
Future Volume (vph)	1244	589	0	862	610	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.7	3.6	3.8	3.7
Storage Length (m)	0.0	225.0	0.0	0.0	0.0	0.0
Storage Lanes	2	1	0			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	0.97	0.91	1.00	0.95	0.95	1.00
Ped Bike Factor	1.00	0.98				
Frt	0.993	0.850				
Flt Protected	0.954					
Satd. Flow (prot)	3450	1427	0	3539	3618	0
Flt Permitted	0.954					
Satd. Flow (perm)	3450	1404	0	3539	3618	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	7	100				
Link Speed (k/h)	50			60	60	
Link Distance (m)	295.9			185.9	316.9	
Travel Time (s)	21.3			11.2	19.0	
Confl. Peds. (#/hr)		3	4			4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	3%	2%	2%	2%	2%
Adj. Flow (vph)	1352	640	0	937	663	0
Shared Lane Traffic (%)		10%				
Lane Group Flow (vph)	1416	576	0	937	663	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.2			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	0.99	1.00	0.97	0.99
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	2.0	2.0		10.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	2.0		0.6	0.6	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				CI+Ex	CI+Ex	
Detector 2 Channel						

Lanes, Volumes, Timings

<2038 Future Total>PM

14: Whites Road & Highway 401 EB Off Ramp

12-20-2024

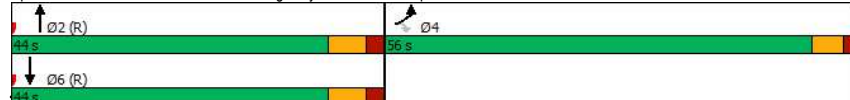


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	8.0	8.0		20.0	20.0	
Minimum Split (s)	28.5	28.5		27.7	27.7	
Total Split (s)	56.0	56.0		44.0	44.0	
Total Split (%)	56.0%	56.0%		44.0%	44.0%	
Maximum Green (s)	50.5	50.5		37.3	37.3	
Yellow Time (s)	3.7	3.7		4.5	4.5	
All-Red Time (s)	1.8	1.8		2.2	2.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.5	5.5		6.7	6.7	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		0.2	0.2	
Recall Mode	None	None		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	16.0	16.0		14.0	14.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effect Green (s)	47.7	47.7		40.1	40.1	
Actuated g/C Ratio	0.48	0.48		0.40	0.40	
v/c Ratio	0.86	0.80		0.66	0.46	
Control Delay	29.0	27.1		27.8	23.9	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	29.0	27.1		27.8	23.9	
LOS	C	C		C	C	
Approach Delay	28.5			27.8	23.9	
Approach LOS	C			C	C	

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 8 (8%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.86
 Intersection Signal Delay: 27.5 Intersection LOS: C
 Intersection Capacity Utilization 75.7% ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 14: Whites Road & Highway 401 EB Off Ramp



Queues

<2038 Future Total>PM

14: Whites Road & Highway 401 EB Off Ramp

12-20-2024



Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	1416	576	937	663
v/c Ratio	0.86	0.80	0.66	0.46
Control Delay	29.0	27.1	27.8	23.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	29.0	27.1	27.8	23.9
Queue Length 50th (m)	115.7	81.0	78.9	50.2
Queue Length 95th (m)	141.9	130.5	102.6	67.3
Internal Link Dist (m)	271.9		161.9	292.9
Turn Bay Length (m)		225.0		
Base Capacity (vph)	1745	758	1417	1449
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.81	0.76	0.66	0.46

Intersection Summary

Lanes, Volumes, Timings
15: Dixie Road & Shopping Plaza Entrance

<2038 Future Total>PM
12-20-2024

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	281	0	0	466	0
Future Volume (vph)	0	281	0	0	466	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.1	3.7	4.0	3.7	3.7	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.865					
Fit Protected				0.950		
Satd. Flow (prot)	1701	0	1946	0	0	1848
Fit Permitted				0.950		
Satd. Flow (perm)	1701	0	1946	0	0	1848
Link Speed (k/h)	30	40		40		
Link Distance (m)	193.0	106.6		44.0		
Travel Time (s)	23.2	9.6		4.0		
Confl. Peds. (#/hr)	11				12	
Confl. Bikes (#/hr)					1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	305	0	0	507	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	305	0	0	0	0	507
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	4.1	3.6		3.6		
Link Offset(m)	0.0	0.0		0.0		
Crosswalk Width(m)	1.6	1.6		1.6		
Two way Left Turn Lane						
Headway Factor	0.93	0.99	0.94	0.99	0.99	0.94
Turning Speed (k/h)	97	97	97		97	
Sign Control	Stop	Free		Free		

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

HCM Unsignalized Intersection Capacity Analysis
15: Dixie Road & Shopping Plaza Entrance

<2038 Future Total>PM
12-20-2024

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	281	0	0	466	0
Future Volume (Veh/h)	0	281	0	0	466	0
Sign Control	Stop	Free		Free		
Grade	0%	0%		0%		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	305	0	0	507	0
Pedestrians	12					11
Lane Width (m)	4.1					4.0
Walking Speed (m/s)	1.1					1.1
Percent Blockage	1					1
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						44
pX, platoon unblocked						
vC, conflicting volume	1026	23			12	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1026	23			12	
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	70			68	
cM capacity (veh/h)	175	1029			1587	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	305	0	507
Volume Left	0	0	507
Volume Right	305	0	0
cSH	1029	1700	1587
Volume to Capacity	0.30	0.00	0.32
Queue Length 95th (m)	9.5	0.0	10.6
Control Delay (s)	10.0	0.0	8.3
Lane LOS	A		A
Approach Delay (s)	10.0	0.0	8.3
Approach LOS	A		

Intersection Summary			
Average Delay	8.9		
Intersection Capacity Utilization	51.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings
17: Street B

<2038 Future Total>PM
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Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	19	142	112	22	63	50
Future Volume (vph)	19	142	112	22	63	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.881		0.978			
Fit Protected	0.994					0.973
Satd. Flow (prot)	1649	0	1842	0	0	1833
Fit Permitted	0.994					0.973
Satd. Flow (perm)	1649	0	1842	0	0	1833
Link Speed (k/h)	30		30			30
Link Distance (m)	112.2		49.9			96.9
Travel Time (s)	13.5		6.0			11.6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	21	154	122	24	68	54
Shared Lane Traffic (%)						
Lane Group Flow (vph)	175	0	146	0	0	122
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	97	97		97	97	
Sign Control	Stop		Stop			Stop

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	33.2%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
17: Street B

<2038 Future Total>PM
12-20-2024

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	19	142	112	22	63	50
Future Volume (vph)	19	142	112	22	63	50
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	21	154	122	24	68	54
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total (vph)	175	146	122			
Volume Left (vph)	21	0	68			
Volume Right (vph)	154	24	0			
Hadj (s)	-0.47	-0.06	0.15			
Departure Headway (s)	4.0	4.4	4.6			
Degree Utilization, x	0.20	0.18	0.16			
Capacity (veh/h)	830	787	742			
Control Delay (s)	8.0	8.3	8.4			
Approach Delay (s)	8.0	8.3	8.4			
Approach LOS	A	A	A			

Intersection Summary

Delay	8.2
Level of Service	A
Intersection Capacity Utilization	33.2%
ICU Level of Service	A
Analysis Period (min)	15

Lanes, Volumes, Timings
19: Walnut Lane & Street B

<2038 Future Total>PM
12-20-2024

	↖		↗		↘	
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖		↗		↘	
Traffic Volume (vph)	29	55	129	706	275	32
Future Volume (vph)	29	55	129	706	275	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.912		0.986			
Flt Protected	0.983		0.992			
Satd. Flow (prot)	1688		1868		1857	
Flt Permitted	0.983		0.992			
Satd. Flow (perm)	1688		1868		1857	
Link Speed (k/h)	30		40		40	
Link Distance (m)	112.2		121.1		114.0	
Travel Time (s)	13.5		10.9		10.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	32	60	140	767	299	35
Shared Lane Traffic (%)						
Lane Group Flow (vph)	92	0	0	907	334	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7		3.3		3.3	
Link Offset(m)	0.0		0.0		0.0	
Crosswalk Width(m)	1.6		1.6		1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	97	97	97	97		
Sign Control	Stop		Free		Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	75.7%
Analysis Period (min)	15
	ICU Level of Service D

HCM Unsignalized Intersection Capacity Analysis
19: Walnut Lane & Street B

<2038 Future Total>PM
12-20-2024

	↖		↗		↘	
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖		↗		↘	
Traffic Volume (veh/h)	29	55	129	706	275	32
Future Volume (Veh/h)	29	55	129	706	275	32
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	32	60	140	767	299	35
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None		None	
Median storage (veh)						
Upstream signal (m)	114					
pX, platoon unblocked						
vC, conflicting volume	1364	316	334			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1364	316	334			
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	92	89			
cM capacity (veh/h)	144	724	1225			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	92	907	334
Volume Left	32	140	0
Volume Right	60	0	35
cSH	302	1225	1700
Volume to Capacity	0.30	0.11	0.20
Queue Length 95th (m)	9.5	2.9	0.0
Control Delay (s)	22.1	2.7	0.0
Lane LOS	C	A	
Approach Delay (s)	22.1	2.7	0.0
Approach LOS	C		

Intersection Summary

Average Delay	3.4	
Intersection Capacity Utilization	75.7%	ICU Level of Service D
Analysis Period (min)	15	

Lanes, Volumes, Timings
21: Building Driveways & Street A

<2038 Future Total>PM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔			↔			↔		
Traffic Volume (vph)	75	212	95	111	202	87	0	0	116	91	0	0
Future Volume (vph)	75	212	95	111	202	87	0	0	116	91	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.966		0.971		0.865		0.950		0.950		0.950	
Fit Protected	0.990		0.986		0.950		0.950		0.950		0.950	
Satd. Flow (prot)	0	1801	0	0	1803	0	0	1629	0	0	1789	0
Fit Permitted	0.990		0.986		0.950		0.950		0.950		0.950	
Satd. Flow (perm)	0	1801	0	0	1803	0	0	1629	0	0	1789	0
Link Speed (k/h)	30		30		30		30		30		30	
Link Distance (m)	193.3		80.3		63.7		34.1		34.1		34.1	
Travel Time (s)	23.2		9.6		7.6		4.1		4.1		4.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	230	103	121	220	95	0	0	126	99	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	415	0	0	436	0	0	126	0	0	99	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	0.0		0.0		0.0		0.0		0.0		0.0	
Link Offset(m)	0.0		0.0		0.0		0.0		0.0		0.0	
Crosswalk Width(m)	1.6		1.6		1.6		1.6		1.6		1.6	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	97	97	97	97	97	97	97	97	97	97	97	97
Sign Control	Stop		Stop		Stop		Stop		Stop		Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	52.2%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
21: Building Driveways & Street A

<2038 Future Total>PM
12-20-2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔			↔			↔		
Sign Control	Stop			Stop			Stop			Stop		
Traffic Volume (vph)	75	212	95	111	202	87	0	0	116	91	0	0
Future Volume (vph)	75	212	95	111	202	87	0	0	116	91	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)	82	230	103	121	220	95	0	0	126	99	0	0
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	415	436	126	99								
Volume Left (vph)	82	121	0	99								
Volume Right (vph)	103	95	126	0								
Hadj (s)	-0.08	-0.04	-0.57	0.23								
Departure Headway (s)	5.2	5.2	5.7	6.6								
Degree Utilization, x	0.60	0.63	0.20	0.18								
Capacity (veh/h)	664	670	525	452								
Control Delay (s)	15.5	16.5	10.2	11.0								
Approach Delay (s)	15.5	16.5	10.2	11.0								
Approach LOS	C	C	B	B								

Intersection Summary	
Delay	14.9
Level of Service	B
Intersection Capacity Utilization	52.2%
ICU Level of Service	A
Analysis Period (min)	15

Lanes, Volumes, Timings
20: Street A & Walnut Lane

<2038 Future Total_Signal>PM
12-20-2024

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↖	↖	↖
Traffic Volume (vph)	147	19	381	345	256	163
Future Volume (vph)	147	19	381	345	256	163
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.984			0.947	0.947	
Flt Protected				0.974	0.970	
Satd. Flow (prot)	1853	0	0	1834	1730	0
Flt Permitted				0.741	0.970	
Satd. Flow (perm)	1853	0	0	1396	1730	0
Right Turn on Red		Yes			Yes	
Satd. Flow (RTOR)	12				31	
Link Speed (k/h)	40			40	30	
Link Distance (m)	121.1			433.1	80.3	
Travel Time (s)	10.9			39.0	9.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	160	21	414	375	278	177
Shared Lane Traffic (%)						
Lane Group Flow (vph)	181	0	0	789	455	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)		97	97		97	97
Number of Detectors	2		1	2	1	
Detector Template	Thru		Left	Thru	Left	
Leading Detector (m)	10.0		2.0	10.0	2.0	
Trailing Detector (m)	0.0		0.0	0.0	0.0	
Detector 1 Position(m)	0.0		0.0	0.0	0.0	
Detector 1 Size(m)	0.6		2.0	0.6	2.0	
Detector 1 Type	CI+Ex		CI+Ex	CI+Ex	CI+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	CI+Ex			CI+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		Perm	NA	Prot	
Protected Phases	2			6	8	
Permitted Phases			6			
Detector Phase	2		6	6	8	
Switch Phase						
Minimum Initial (s)	20.0		20.0	20.0	8.0	

Lanes, Volumes, Timings
20: Street A & Walnut Lane

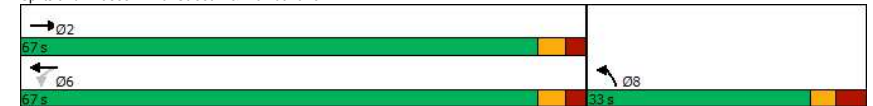
<2038 Future Total_Signal>PM
12-20-2024

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Minimum Split (s)	28.0		28.0	28.0	23.0	
Total Split (s)	67.0		67.0	67.0	33.0	
Total Split (%)	67.0%		67.0%	67.0%	33.0%	
Maximum Green (s)	61.2		61.2	61.2	26.3	
Yellow Time (s)	3.3		3.3	3.3	3.0	
All-Red Time (s)	2.5		2.5	2.5	3.7	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	5.8			5.8	6.7	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	Max		Max	Max	None	
Walk Time (s)	7.0		7.0	7.0	7.0	
Flash Dont Walk (s)	15.0		15.0	15.0	9.0	
Pedestrian Calls (#/hr)	0		0	0	0	
Act Effct Green (s)	61.2			61.2	26.0	
Actuated g/C Ratio	0.61			0.61	0.26	
v/c Ratio	0.16			0.92	0.96	
Control Delay	8.1			35.7	67.8	
Queue Delay	0.0			0.0	0.0	
Total Delay	8.1			35.7	67.8	
LOS	A			D	E	
Approach Delay	8.1			35.7	67.8	
Approach LOS	A			D	E	

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 99.7
 Natural Cycle: 90
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.96
 Intersection Signal Delay: 42.4
 Intersection Capacity Utilization 95.3%
 Analysis Period (min) 15
 Intersection LOS: D
 ICU Level of Service F

Splits and Phases: 20: Street A & Walnut Lane



Lanes, Volumes, Timings

6: Liverpool Road & Kingston Road

<2038 Future Total_PHF>PM

12-20-2024

	↖	→	↘	↙	←	↖	↙	↘	↙	↘	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗	↖	↖	↖↗	↖	↖	↖↗	↖	↖	↖↗	↖
Traffic Volume (vph)	284	1001	546	274	413	67	155	806	232	95	580	159
Future Volume (vph)	284	1001	546	274	413	67	155	806	232	95	580	159
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.1	3.4	3.6	3.3	3.7	3.4	3.8	4.1	4.8	4.7	3.8	3.3
Storage Length (m)	188.8		97.9	170.7		117.0	185.5		52.0	49.0		60.5
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	31.6			22.7			20.8			25.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.98		0.95	0.99		0.96	0.99		0.90	0.98		0.96
Frt			0.850			0.850			0.850			0.850
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1688	3461	1599	1728	3579	1579	1791	3773	1732	2026	3654	1561
Fit Permitted	0.950			0.950			0.337			0.191		
Satd. Flow (perm)	1661	3461	1512	1709	3579	1517	628	3773	1564	401	3654	1499
Right Turn on Red			Yes			Yes			Yes		Yes	
Satd. Flow (RTOR)			93			160			170			159
Link Speed (kh)		60			60			50				50
Link Distance (m)		694.6			396.4			257.7				348.6
Travel Time (s)		41.7			23.8			18.6				25.1
Conf. Peds. (#/hr)	20		31	31		20	29		62	62		29
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	2%	1%	1%	2%	0%	3%	1%	4%	0%	1%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	4	0	0	0
Adj. Flow (vph)	284	1001	546	274	413	67	155	806	232	95	580	159
Shared Lane Traffic (%)												
Lane Group Flow (vph)	284	1001	546	274	413	67	155	806	232	95	580	159
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.3			3.3			4.7				4.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		1.6			1.6			1.6				1.6
Two way Left Turn Lane		Yes										Yes
Headway Factor	1.08	1.03	1.00	1.04	0.99	1.03	0.97	0.93	0.87	0.86	0.97	1.04
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4				9.4
Detector 2 Size(m)		0.6			0.6			0.6				0.6
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex

Lanes, Volumes, Timings

6: Liverpool Road & Kingston Road

<2038 Future Total_PHF>PM

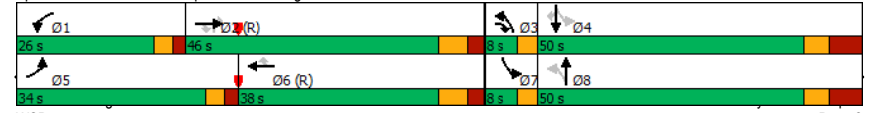
12-20-2024

	↖	→	↘	↙	←	↖	↙	↘	↙	↘	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)		0.0				0.0					0.0	
Turn Type	Prot	NA	pm+ov	Prot	NA	Perm	pm+pt	NA	custom	pm+pt	NA	Perm
Protected Phases	5	2	3	1	6		3	8		7	4	
Permitted Phases			2			6	8		2	4		4
Detector Phase	5	2	3	1	6	6	3	8	2	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	5.0	5.0	20.0	20.0	5.0	8.0	20.0	5.0	8.0	8.0
Minimum Split (s)	10.0	36.0	8.0	10.0	36.0	36.0	8.0	50.0	36.0	8.0	50.0	50.0
Total Split (s)	34.0	46.0	8.0	26.0	38.0	38.0	8.0	50.0	46.0	8.0	50.0	50.0
Total Split (%)	26.2%	35.4%	6.2%	20.0%	29.2%	29.2%	6.2%	38.5%	35.4%	6.2%	38.5%	38.5%
Maximum Green (s)	29.0	38.9	5.0	21.0	30.9	30.9	5.0	40.9	38.9	5.0	40.9	40.9
Yellow Time (s)	3.0	4.3	3.0	3.0	4.3	4.3	3.0	3.8	4.3	3.0	3.8	3.8
All-Red Time (s)	2.0	2.8	0.0	2.0	2.8	2.8	0.0	5.3	2.8	0.0	5.3	5.3
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	0.0
Total Lost Time (s)	5.0	7.1	3.0	5.0	7.1	7.1	3.0	9.1	7.1	3.0	9.1	9.1
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
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	3.0
Recall Mode	None	C-Max	None	None	C-Max	C-Max	None	Max	C-Max	None	Max	Max
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		21.0			21.0	21.0		33.0	21.0		33.0	33.0
Pedestrian Calls (#/hr)		15			20	20		28	15		15	15
Act Effct Green (s)	25.6	38.9	48.0	21.0	34.3	34.3	52.0	40.9	38.9	52.0	40.9	40.9
Actuated g/C Ratio	0.20	0.30	0.37	0.16	0.26	0.26	0.40	0.31	0.30	0.40	0.31	0.31
v/c Ratio	0.86	0.97	0.88	0.98	0.44	0.13	0.53	0.68	0.40	0.43	0.50	0.27
Control Delay	51.5	67.0	52.6	103.8	42.4	0.5	32.9	42.3	12.6	29.4	38.2	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.5	67.0	52.6	103.8	42.4	0.5	32.9	42.3	12.6	29.4	38.2	6.0
LOS	D	E	D	F	D	A	C	D	B	C	D	A
Approach Delay		60.3			61.0			35.3				31.0
Approach LOS		E			E			D				C

Intersection Summary

Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	78 (60%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle:	135
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.98
Intersection Signal Delay:	48.7
Intersection Capacity Utilization:	105.8%
ICU Level of Service:	G
Analysis Period (min):	15

Splits and Phases: 6: Liverpool Road & Kingston Road



Lanes, Volumes, Timings

<2038 Future Total_PHF>PM

9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	454	278	500	293	204	1110	0	0	1189	166
Future Volume (vph)	0	0	454	278	500	293	204	1110	0	0	1189	166
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.5	3.7	3.7	3.4	3.7
Storage Length (m)	0.0	0.0	0.0	0.0	125.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0
Storage Lanes	0		1	1		1	1		0	0		1
Taper Length (m)	2.5			2.5		30.0			2.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	1.00	0.91	1.00
Ped Bike Factor												0.92
Frt			0.865			0.850						0.850
Fit Protected				0.950	0.997		0.950					
Satd. Flow (prot)	0	0	1662	1734	1820	1581	1825	5079	0	0	4972	1633
Fit Permitted				0.950	0.997		0.136					
Satd. Flow (perm)	0	0	1662	1734	1820	1581	261	5079	0	0	4972	1508
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)						85						166
Link Speed (kh)		50			50			50			50	
Link Distance (m)		433.1			226.7			372.2			162.3	
Travel Time (s)		31.2			16.3			26.8			11.7	
Conf. Peds. (#/hr)							17		15	15		17
Conf. Bikes (#/hr)								6				7
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	2%	0%	0%	0%	1%	0%	1%	6%	2%	2%	0%
Adj. Flow (vph)	0	0	454	278	500	293	204	1110	0	0	1189	166
Shared Lane Traffic (%)				10%								
Lane Group Flow (vph)	0	0	454	250	528	293	204	1110	0	0	1189	166
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	1.01	0.99	1.01	0.99	0.99	1.03	0.99
Turning Speed (k/h)	97		97	24		14	97		14	24		97
Number of Detectors			1	1	2	1	1	2			2	1
Detector Template			Right	Left	Thru	Right	Left	Thru			Thru	Right
Leading Detector (m)			2.0	2.0	10.0	2.0	2.0	10.0			10.0	2.0
Trailing Detector (m)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Position(m)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Size(m)			2.0	2.0	0.6	2.0	2.0	0.6			0.6	2.0
Detector 1 Type			Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 2 Position(m)					9.4			9.4			9.4	
Detector 2 Size(m)					0.6			0.6			0.6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	

Lanes, Volumes, Timings

<2038 Future Total_PHF>PM

9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp

12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)						0.0					0.0	0.0
Turn Type			Over	Split	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases			5	8	8		5	2			6	
Permitted Phases						8	2					6
Detector Phase			5	8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)			5.0	8.0	8.0	8.0	5.0	15.0			15.0	15.0
Minimum Split (s)			9.5	25.0	25.0	25.0	9.5	24.3			24.3	24.3
Total Split (s)			33.0	36.0	36.0	36.0	33.0	64.0			31.0	31.0
Total Split (%)			33.0%	36.0%	36.0%	36.0%	33.0%	64.0%			31.0%	31.0%
Maximum Green (s)			28.5	30.0	30.0	30.0	28.5	57.7			24.7	24.7
Yellow Time (s)			3.5	3.3	3.3	3.3	3.5	3.3			3.3	3.3
All-Red Time (s)			1.0	2.7	2.7	2.7	1.0	3.0			3.0	3.0
Lost Time Adjust (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Lost Time (s)			4.5	6.0	6.0	6.0	4.5	6.3			6.3	6.3
Lead/Lag			Lead				Lead				Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)			3.0	3.0	3.0	3.0	3.0	3.0			3.0	3.0
Recall Mode			None	None	None	None	None	C-Max			C-Max	C-Max
Walk Time (s)				14.0	14.0	14.0		13.0			13.0	13.0
Flash Dont Walk (s)				5.0	5.0	5.0		5.0			5.0	5.0
Pedestrian Calls (#/hr)				0	0	0		14			7	7
Act Effct Green (s)			28.3	30.0	30.0	30.0	59.5	57.7			24.9	24.9
Actuated g/C Ratio			0.28	0.30	0.30	0.30	0.60	0.58			0.25	0.25
v/c Ratio			0.97	0.48	0.97	0.55	0.34	0.38			0.96	0.33
Control Delay			70.4	32.4	67.2	25.0	12.0	11.9			51.4	14.1
Queue Delay			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay			70.4	32.4	67.2	25.0	12.0	11.9			51.4	14.1
LOS			E	C	E	C	B	B			D	B
Approach Delay			70.4			47.5		11.9			46.8	
Approach LOS			E			D		B			D	

Intersection Summary

Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	100
Offset:	8 (8%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle:	90
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.97
Intersection Signal Delay:	38.6
Intersection LOS:	D
Intersection Capacity Utilization:	91.4%
ICU Level of Service:	F
Analysis Period (min):	15

Splits and Phases: 9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp



Lanes, Volumes, Timings

<2038 Future Total_PHF>PM

11: Hwy 401 WB Ramps & Kingston Road

12-20-2024

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↕↕		↕	↕↕	↕↕	↕
Traffic Volume (vph)	1696	23	184	804	662	346
Future Volume (vph)	1696	23	184	804	662	346
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.0	3.7	2.7	3.8	3.8	3.7
Grade (%)	6%			0%	0%	
Storage Length (m)		0.0	47.5		0.0	52.0
Storage Lanes		0	1		2	1
Taper Length (m)			22.3		2.5	
Lane Util. Factor	0.95	0.95	1.00	0.95	0.97	1.00
Ped Bike Factor					1.00	0.98
Frt	0.998					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3577	0	1577	3618	3544	1617
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3577	0	1577	3618	3537	1591
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	1					226
Link Speed (k/h)	60			60	50	
Link Distance (m)	268.7			424.0	216.6	
Travel Time (s)	16.1			25.4	15.6	
Confl. Peds. (#/hr)					1	3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	5%	3%	2%	1%	1%
Adj. Flow (vph)	1696	23	184	804	662	346
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1719	0	184	804	662	346
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.1			3.1	7.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	0.98	1.03	1.14	0.97	0.97	0.99
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	10.0		2.0	10.0	2.0	2.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Size(m)	0.6		2.0	0.6	2.0	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		

Lanes, Volumes, Timings

<2038 Future Total_PHF>PM

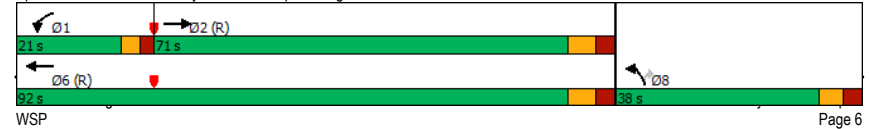
11: Hwy 401 WB Ramps & Kingston Road

12-20-2024

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		Prot	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases						8
Detector Phase	2		1	6	8	8
Switch Phase						
Minimum Initial (s)	20.0		5.0	20.0	8.0	8.0
Minimum Split (s)	50.0		10.0	50.0	38.0	38.0
Total Split (s)	71.0		21.0	92.0	38.0	38.0
Total Split (%)	54.6%		16.2%	70.8%	29.2%	29.2%
Maximum Green (s)	63.8		16.0	84.8	31.3	31.3
Yellow Time (s)	4.2		3.0	4.2	3.7	3.7
All-Red Time (s)	3.0		2.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	7.2		5.0	7.2	6.7	6.7
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?						
Vehicle Extension (s)	0.2		3.0	0.2	3.0	3.0
Recall Mode	C-Max		None	C-Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	35.0			35.0	24.0	24.0
Pedestrian Calls (#/hr)	0			0	14	14
Act Effct Green (s)	66.4		16.0	87.4	28.7	28.7
Actuated g/C Ratio	0.51		0.12	0.67	0.22	0.22
v/c Ratio	0.94		0.95	0.33	0.85	0.66
Control Delay	46.6		110.9	1.5	59.4	21.6
Queue Delay	0.4		0.0	0.0	0.0	0.0
Total Delay	46.9		110.9	1.5	59.4	21.6
LOS	D		F	A	E	C
Approach Delay	46.9			21.9	46.4	
Approach LOS	D			C	D	

Intersection Summary	
Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	69 (53%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle:	120
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.95
Intersection Signal Delay:	40.1
Intersection Capacity Utilization:	93.1%
Analysis Period (min):	15
Intersection LOS:	D
ICU Level of Service:	F

Splits and Phases: 11: Hwy 401 WB Ramps & Kingston Road



Lanes, Volumes, Timings
13: Whites Road & Kingston Road

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	155	857	358	331	753	496	228	684	737	196	617	186
Future Volume (vph)	155	857	358	331	753	496	228	684	737	196	617	186
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.6	4.2	3.5	3.7	4.0	3.5	3.9	3.7	3.5	3.9	4.0
Grade (%)	6%		0%		0%		0%		0%		0%	
Storage Length (m)	127.0		123.0	87.1		35.0	72.0		35.0	88.5		47.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	64.0			39.6			66.8			32.6		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Ped Bike Factor	0.97		0.96	0.99		0.91	0.99		0.93	0.98		0.95
Frt	0.850		0.850		0.850		0.850		0.850		0.850	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1681	3400	1622	1733	3579	1654	1767	5255	1588	1750	5105	1627
Flt Permitted	0.950			0.950			0.363			0.323		
Satd. Flow (perm)	1633	3400	1549	1715	3579	1502	666	5255	1470	582	5105	1550
Right Turn on Red			Yes		Yes		Yes		Yes		Yes	
Satd. Flow (RTOR)			154		147				59			186
Link Speed (kh)	60		60		60		60		60		60	
Link Distance (m)	297.5		222.7		158.6		385.2					
Travel Time (s)	17.9		13.4		9.5		23.1					
Confl. Peds. (#/hr)	75		31	31		75	37		65	65		37
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	3%	3%	3%	2%	2%	1%	2%	2%	2%	5%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	2	0	0	4
Adj. Flow (vph)	155	857	358	331	753	496	228	684	737	196	617	186
Shared Lane Traffic (%)												
Lane Group Flow (vph)	155	857	358	331	753	496	228	684	737	196	617	186
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width(m)	3.5		3.5		3.5		3.5		3.5		3.5	
Link Offset(m)	0.0		0.0		0.0		0.0		0.0		0.0	
Crosswalk Width(m)	1.6		1.6		1.6		1.6		1.6		1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.04	0.96	1.01	0.99	0.94	1.01	0.96	1.00	1.01	0.96	0.96
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4		9.4		9.4		9.4		9.4		9.4	
Detector 2 Size(m)	0.6		0.6		0.6		0.6		0.6		0.6	

1105-1163 Kingston Road
WSP

Synchro 11 Report
Page 7

Lanes, Volumes, Timings
13: Whites Road & Kingston Road

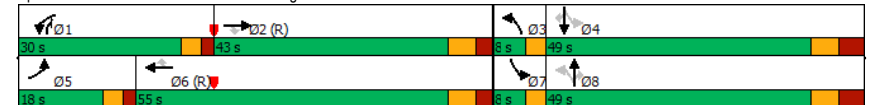
<2038 Future Total_PHF>PM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type	Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0		0.0		0.0		0.0		0.0		0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8	1	7	4	
Permitted Phases			2			6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	1	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	5.0	8.0	5.0	5.0	8.0	8.0
Minimum Split (s)	10.0	43.0	43.0	10.0	43.0	43.0	8.0	49.0	10.0	8.0	49.0	49.0
Total Split (s)	18.0	43.0	43.0	30.0	55.0	55.0	8.0	49.0	30.0	8.0	49.0	49.0
Total Split (%)	13.8%	33.1%	33.1%	23.1%	42.3%	42.3%	6.2%	37.7%	23.1%	6.2%	37.7%	37.7%
Maximum Green (s)	13.0	36.0	36.0	25.0	48.0	48.0	5.0	40.6	25.0	5.0	40.6	40.6
Yellow Time (s)	3.0	4.2	4.2	3.0	4.2	4.2	3.0	4.3	3.0	3.0	4.3	4.3
All-Red Time (s)	2.0	2.8	2.8	2.0	2.8	2.8	0.0	4.1	2.0	0.0	4.1	4.1
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	0.0
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	3.0	8.4	5.0	3.0	8.4	8.4
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	0.2	0.2	3.0	0.2	0.2	3.0	0.2	3.0	3.0	0.2	0.2
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	None	None	Max	Max
Walk Time (s)	7.0		7.0		7.0		7.0		7.0		7.0	
Flash Dont Walk (s)	29.0		29.0		29.0		29.0		33.0		33.0	
Pedestrian Calls (#/hr)	13		13		38		38		20		20	
Act Effect Green (s)	13.0	36.0	36.0	25.0	48.0	48.0	51.0	40.6	69.0	51.0	40.6	40.6
Actuated g/C Ratio	0.10	0.28	0.28	0.19	0.37	0.37	0.39	0.31	0.53	0.39	0.31	0.31
v/c Ratio	0.92	0.91	0.66	0.99	0.57	0.77	0.75	0.42	0.89	0.72	0.39	0.30
Control Delay	109.5	60.1	29.8	103.1	25.5	21.6	47.4	36.3	36.8	45.5	35.8	5.8
Queue Delay	0.0	3.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	109.5	63.5	29.8	103.1	25.5	21.6	47.4	36.3	36.8	45.5	35.8	5.8
LOS	F	E	C	F	C	C	D	D	D	D	D	A
Approach Delay	59.9		40.6		38.1		32.2					
Approach LOS	E		D		D		C					

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 32 (25%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 120
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.99
 Intersection Signal Delay: 43.1
 Intersection Capacity Utilization 114.6%
 Analysis Period (min) 15
 Intersection LOS: D
 ICU Level of Service H

Splits and Phases: 13: Whites Road & Kingston Road



APPENDIX

***H-4** 2043 FUTURE TOTAL CONDITIONS*

Lanes, Volumes, Timings
1: Walnut Lane & Kingston Road

<2043 Future Total>AM
12-20-2024

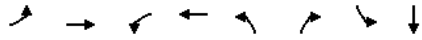
	↖	→	↘	↙	←	↖	↙	↘	↙	↘	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖		↖	↖		↖	↖	↖	↖	↖	↖
Traffic Volume (vph)	20	872	56	102	443	30	224	0	344	14	6	29
Future Volume (vph)	20	872	56	102	443	30	224	0	344	14	6	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.0	3.6	3.5	3.0	3.6	3.7	3.3	3.5	3.7	3.2	3.7	3.7
Storage Length (m)	26.0		25.8	37.0		0.0	63.2		0.0	18.5		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	24.0			26.0			24.4			18.1		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	1.00		0.99		0.99	1.00	0.98	
Frt		0.991			0.990				0.850		0.877	
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1685	3428	0	1652	3379	0	1745	0	1585	1725	1601	0
Fit Permitted	0.950			0.950			0.732			0.950		
Satd. Flow (perm)	1677	3428	0	1644	3379	0	1330	0	1563	1720	1601	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			8				210			32
Link Speed (k/h)		60			60				40			40
Link Distance (m)		129.3			694.6				114.0			179.7
Travel Time (s)		7.8			41.7				10.3			16.2
Conf. Peds. (#/hr)	4		8	8		4	9		2	2		9
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%	4%	6%	2%	5%	14%	0%	0%	3%	0%	0%	4%
Bus Blockages (#/hr)	0	0	6	0	0	0	0	0	0	0	0	0
Adj. Flow (vph)	22	948	61	111	482	33	243	0	374	15	7	32
Shared Lane Traffic (%)												
Lane Group Flow (vph)	22	1009	0	111	515	0	243	0	374	15	39	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.1			3.1				3.3			3.3
Link Offset(m)		0.0			0.0				0.0			0.0
Crosswalk Width(m)		4.9			1.6				4.9			4.9
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.09	1.00	1.01	1.09	1.00	0.99	1.04	1.01	0.99	1.06	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	0	0		0	0		1		1	0		0
Detector Template									Right			
Leading Detector (m)	0.0	0.0		0.0	0.0		7.5		6.1	0.0		0.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		-1.5		0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		-1.5		0.0	0.0		0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8		9.0		6.1	6.1		1.8
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Turn Type	Prot	NA		Prot	NA		Perm		Perm	Perm		NA
Protected Phases	5	2		1	6							4
Permitted Phases							8		8			4

Lanes, Volumes, Timings
1: Walnut Lane & Kingston Road

<2043 Future Total>AM
12-20-2024

	↖	→	↘	↙	←	↖	↙	↘	↙	↘	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2		1	6		8		8	4		4
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0		8.0		8.0	8.0		8.0
Minimum Split (s)	10.0	33.0		10.0	33.0		39.0		39.0	39.0		39.0
Total Split (s)	10.0	52.0		19.0	61.0		49.0		49.0	49.0		49.0
Total Split (%)	8.3%	43.3%		15.8%	50.8%		40.8%		40.8%	40.8%		40.8%
Maximum Green (s)	5.0	45.4		14.0	54.4		41.0		41.0	41.0		41.0
Yellow Time (s)	3.0	4.4		3.0	4.4		3.3		3.3	3.3		3.3
All-Red Time (s)	2.0	2.2		2.0	2.2		4.7		4.7	4.7		4.7
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Total Lost Time (s)	5.0	6.6		5.0	6.6		8.0		8.0	8.0		8.0
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0		3.0	3.0		3.0
Recall Mode	None	C-Max		None	C-Max		None		None	None		None
Walk Time (s)		7.0			7.0		7.0		7.0	7.0		7.0
Flash Dont Walk (s)		19.0			19.0		22.0		22.0	22.0		22.0
Pedestrian Calls (#/hr)		7			5		5		5	14		14
Act Effct Green (s)	7.0	59.6		13.1	70.0		27.8		27.8	27.8		27.8
Actuated g/C Ratio	0.06	0.50		0.11	0.58		0.23		0.23	0.23		0.23
v/c Ratio	0.23	0.59		0.62	0.26		0.79		0.72	0.04		0.10
Control Delay	74.5	20.6		55.6	17.7		60.8		25.1	31.8		13.2
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Total Delay	74.5	20.6		55.6	17.7		60.8		25.1	31.8		13.2
LOS	E	C		E	B		E		C	C		B
Approach Delay		21.7			24.4		39.2					18.4
Approach LOS		C			C		D					B
Intersection Summary												
Area Type:	Other											
Cycle Length:	120											
Actuated Cycle Length:	120											
Offset:	1 (1%), Referenced to phase 2:EBT and 6:WBT, Start of Green											
Natural Cycle:	85											
Control Type:	Actuated-Coordinated											
Maximum v/c Ratio:	0.79											
Intersection Signal Delay:	27.0						Intersection LOS: C					
Intersection Capacity Utilization:	73.1%						ICU Level of Service D					
Analysis Period (min):	15											
Splits and Phases:	1: Walnut Lane & Kingston Road											

Queues <2043 Future Total>AM
1: Walnut Lane & Kingston Road 12-20-2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBR	SBL	SBT
Lane Group Flow (vph)	22	1009	111	515	243	374	15	39
w/c Ratio	0.23	0.59	0.62	0.26	0.79	0.72	0.04	0.10
Control Delay	74.5	20.6	55.6	17.7	60.8	25.1	31.8	13.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	74.5	20.6	55.6	17.7	60.8	25.1	31.8	13.2
Queue Length 50th (m)	5.4	96.1	26.2	43.7	54.3	35.8	2.8	1.3
Queue Length 95th (m)	m12.5	139.1	m42.3	67.8	75.1	62.8	7.5	9.0
Internal Link Dist (m)		105.3		670.6				155.7
Turn Bay Length (m)	26.0		37.0		63.2		18.5	
Base Capacity (vph)	97	1704	205	1974	454	672	587	568
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced w/c Ratio	0.23	0.59	0.54	0.26	0.54	0.56	0.03	0.07

Intersection Summary
m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings <2043 Future Total>AM
2: Street B & Kingston Road 12-20-2024



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑		↑↑		↑
Traffic Volume (vph)	818	98	0	752	0	131
Future Volume (vph)	818	98	0	752	0	131
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.3	3.7	3.5	3.7	4.5
Storage Length (m)		45.0	0.0		0.0	0.0
Storage Lanes		1	0		0	1
Taper Length (m)			2.5		2.5	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Ped Bike Factor						
Frt		0.850				0.865
Fit Protected						
Satd. Flow (prot)	3433	1516	0	3400	0	1808
Fit Permitted						
Satd. Flow (perm)	3433	1516	0	3400	0	1808
Link Speed (k/h)	60			60	30	
Link Distance (m)	191.2			129.3	96.9	
Travel Time (s)	11.5			7.8	11.6	
Confl. Peds. (#/hr)		4				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	4%	3%	2%	5%	2%	0%
Adj. Flow (vph)	889	107	0	817	0	142
Shared Lane Traffic (%)						
Lane Group Flow (vph)	889	107	0	817	0	142
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.0			3.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	1.01	1.04	0.99	1.01	0.99	0.88
Turning Speed (k/h)		14	24		24	14
Sign Control	Free			Free	Stop	

Intersection Summary
Area Type: Other
Control Type: Unsignalized
Intersection Capacity Utilization 37.4% ICU Level of Service A
Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
2: Street B & Kingston Road

<2043 Future Total>AM
12-20-2024

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑		↑↑		↑
Traffic Volume (veh/h)	818	98	0	752	0	131
Future Volume (Veh/h)	818	98	0	752	0	131
Sign Control	Free		Free		Stop	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	889	107	0	817	0	142
Pedestrians	4					
Lane Width (m)					4.5	
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type	TWLTL		TWLTL			
Median storage (veh)	2		2			
Upstream signal (m)	191		129			
pX, platoon unblocked			0.88		0.91 0.88	
vC, conflicting volume			893		1302 448	
vC1, stage 1 conf vol			893			
vC2, stage 2 conf vol			408			
vCu, unblocked vol			601		801 95	
tC, single (s)			4.1		6.8 6.9	
tC, 2 stage (s)			5.8			
tF (s)			2.2		3.5 3.3	
p0 queue free %			100		100 83	
cM capacity (veh/h)			850		423 830	
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	444	444	107	408	408	142
Volume Left	0	0	0	0	0	0
Volume Right	0	0	107	0	0	142
cSH	1700	1700	1700	1700	1700	830
Volume to Capacity	0.26	0.26	0.06	0.24	0.24	0.17
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	4.7
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	10.2
Lane LOS	B					
Approach Delay (s)	0.0		0.0		10.2	
Approach LOS	B					
Intersection Summary						
Average Delay	0.7					
Intersection Capacity Utilization	37.4%		ICU Level of Service		A	
Analysis Period (min)	15					

Lanes, Volumes, Timings
3: Dixie Road & Kingston Road

<2043 Future Total>AM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑		↑	↑↑		↑	↑		↑	↑	↑
Traffic Volume (vph)	80	738	139	78	579	94	67	15	29	155	35	144
Future Volume (vph)	80	738	139	78	579	94	67	15	29	155	35	144
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	2.8	3.6	3.4	2.8	3.5	3.1	3.6	4.0	3.7	3.8	4.2	3.7
Grade (%)	6%		0%		0%		0%		0%		0%	
Storage Length (m)	145.4		64.5	51.0		79.5	13.0		0.0	16.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	66.4			48.0			18.0			25.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		1.00	0.99		1.00	0.99		1.00	0.99	
Fr _t	0.976		0.979		0.900		0.879					
Fit Protected	0.950		0.950		0.950		0.950					
Satd. Flow (prot)	1564	3280	0	1645	3298	0	1752	1769	0	1827	1759	0
Fit Permitted	0.950		0.950		0.554		0.726					
Satd. Flow (perm)	1554	3280	0	1640	3298	0	1019	1769	0	1393	1759	0
Right Turn on Red			Yes		Yes		Yes					
Satd. Flow (RTOR)	23		18		32		157					
Link Speed (k/h)	60		60		40		60					
Link Distance (m)	896.3		191.2		44.0		236.2					
Travel Time (s)	53.8		11.5		4.0		14.2					
Confl. Peds. (#/hr)	6	4	4	6	3	2	2	2	2	2	3	3
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 (%)	2%	4%	2%	0%	6%	2%	3%	0%	0%	1%	0%	0%
Bus Blockages (#/hr)	0	0	6	0	0	6	0	0	0	0	0	0
Adj. Flow (vph)	87	802	151	85	629	102	73	16	32	168	38	157
Shared Lane Traffic (%)												
Lane Group Flow (vph)	87	953	0	85	731	0	73	48	0	168	195	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	2.8		3.8		3.8		4.9					
Link Offset(m)	0.0		0.0		0.0		4.9					
Crosswalk Width(m)	4.9		4.9		4.9		4.9					
Two way Left Turn Lane	Yes											
Headway Factor	1.17	1.04	1.07	1.13	1.01	1.08	1.00	0.94	0.99	0.97	0.92	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	0	0		0	0		0	0		1	1	
Detector Template												
Leading Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		7.5	7.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		-1.5	-1.5	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		-1.5	-1.5	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		9.0	9.0	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6		8			4		

Lanes, Volumes, Timings
3: Dixie Road & Kingston Road

<2043 Future Total>AM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases							8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	10.0	28.0		10.0	28.0		43.0	43.0		41.0	41.0	
Total Split (s)	15.0	59.0		11.0	55.0		50.0	50.0		50.0	50.0	
Total Split (%)	12.5%	49.2%		9.2%	45.8%		41.7%	41.7%		41.7%	41.7%	
Maximum Green (s)	10.0	52.4		6.0	48.4		40.5	40.5		40.5	40.5	
Yellow Time (s)	3.0	4.2		3.0	4.2		4.4	4.4		4.4	4.4	
All-Red Time (s)	2.0	2.4		2.0	2.4		5.1	5.1		5.1	5.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.6		5.0	6.6		9.5	9.5		9.5	9.5	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes			Yes								
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		14.0			14.0		23.0	23.0		23.0	23.0	
Pedestrian Calls (#/hr)		6			1		7	7		4	4	
Act Effect Green (s)	9.5	72.5		6.0	69.0		20.4	20.4		20.4	20.4	
Actuated g/C Ratio	0.08	0.60		0.05	0.58		0.17	0.17		0.17	0.17	
v/c Ratio	0.71	0.48		1.04	0.38		0.42	0.15		0.71	0.45	
Control Delay	83.0	14.8		169.7	8.3		50.1	19.1		62.4	13.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	83.0	14.8		169.7	8.3		50.1	19.1		62.4	13.5	
LOS	F	B		F	A		D	B		E	B	
Approach Delay		20.5			25.1			37.8			36.2	
Approach LOS		C			C			D			D	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 107.8 (90%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 85
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.04
 Intersection Signal Delay: 25.4 Intersection LOS: C
 Intersection Capacity Utilization 73.7% ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 3: Dixie Road & Kingston Road



Queues
3: Dixie Road & Kingston Road

<2043 Future Total>AM
12-20-2024

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	87	953	85	731	73	48	168	195
v/c Ratio	0.71	0.48	1.04	0.38	0.42	0.15	0.71	0.45
Control Delay	83.0	14.8	169.7	8.3	50.1	19.1	62.4	13.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	83.0	14.8	169.7	8.3	50.1	19.1	62.4	13.5
Queue Length 50th (m)	20.2	59.7	~21.1	36.7	15.6	3.2	37.9	7.7
Queue Length 95th (m)	#43.5	92.8	#54.0	50.7	27.6	12.4	55.9	25.6
Internal Link Dist (m)		872.3		167.2		20.0		212.2
Turn Bay Length (m)	145.4		51.0		13.0		16.0	
Base Capacity (vph)	130	1991	82	1904	343	618	470	697
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.67	0.48	1.04	0.38	0.21	0.08	0.36	0.28

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.

Lanes, Volumes, Timings
4: Street B & Shopping Plaza Entrance

<2043 Future Total>AM
12-20-2024

	↖	↗	↙	↘	↑	↓
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖			↘	↖	↗
Traffic Volume (vph)	13	85	22	102	66	51
Future Volume (vph)	13	85	22	102	66	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.883			0.942		
Fit Protected	0.993			0.991		
Satd. Flow (prot)	1628	0	0	1904	1770	0
Fit Permitted	0.993			0.991		
Satd. Flow (perm)	1628	0	0	1904	1770	0
Link Speed (k/h)	30			30	30	
Link Distance (m)	193.0			49.0	49.9	
Travel Time (s)	23.2			5.9	6.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	4%	0%	0%	4%	0%
Adj. Flow (vph)	14	92	24	111	72	55
Shared Lane Traffic (%)						
Lane Group Flow (vph)	106	0	0	135	127	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24	14	24			14
Sign Control	Stop			Stop	Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	25.9% ICU Level of Service A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
4: Street B & Shopping Plaza Entrance

<2043 Future Total>AM
12-20-2024

	↖	↗	↙	↘	↑	↓
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖			↘	↖	↗
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	13	85	22	102	66	51
Future Volume (vph)	13	85	22	102	66	51
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	14	92	24	111	72	55
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total (vph)	106	135	127			
Volume Left (vph)	14	24	0			
Volume Right (vph)	92	0	55			
Hadj (s)	-0.44	0.04	-0.22			
Departure Headway (s)	4.0	4.3	4.1			
Degree Utilization, x	0.12	0.16	0.14			
Capacity (veh/h)	840	809	860			
Control Delay (s)	7.6	8.1	7.7			
Approach Delay (s)	7.6	8.1	7.7			
Approach LOS	A	A	A			

Intersection Summary	
Delay	7.8
Level of Service	A
Intersection Capacity Utilization	25.9% ICU Level of Service A
Analysis Period (min)	15

Lanes, Volumes, Timings
5: Street B & Street A

<2043 Future Total>AM
12-20-2024

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	121	0	0	137	1
Future Volume (vph)	0	121	0	0	137	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.865					
Fit Protected						0.953
Satd. Flow (prot)	1662	0	1883	0	0	1778
Fit Permitted						0.953
Satd. Flow (perm)	1662	0	1883	0	0	1778
Link Speed (k/h)	30		30		30	
Link Distance (m)	193.3		78.3		49.0	
Travel Time (s)	23.2		9.4		5.9	
Confl. Peds. (#/hr)	1	4				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	100%	0%	2%	0%	3%	0%
Adj. Flow (vph)	0	132	0	0	149	1
Shared Lane Traffic (%)						
Lane Group Flow (vph)	132	0	0	0	0	150
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0		0.0	
Link Offset(m)	0.0		0.0		0.0	
Crosswalk Width(m)	1.6		1.6		1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24	14	14	14	24	24
Sign Control	Stop		Stop		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	22.9%		ICU Level of Service A			
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
5: Street B & Street A

<2043 Future Total>AM
12-20-2024

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop		Stop	
Traffic Volume (vph)	0	121	0	0	137	1
Future Volume (vph)	0	121	0	0	137	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	132	0	0	149	1
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total (vph)	132	0	150			
Volume Left (vph)	0	0	149			
Volume Right (vph)	132	0	0			
Hadj (s)	-0.60	0.00	0.25			
Departure Headway (s)	3.7	4.3	4.4			
Degree Utilization, x	0.13	0.00	0.18			
Capacity (veh/h)	945	807	793			
Control Delay (s)	7.2	7.3	8.4			
Approach Delay (s)	7.2	0.0	8.4			
Approach LOS	A	A	A			
Intersection Summary						
Delay	7.8					
Level of Service	A					
Intersection Capacity Utilization	22.9%		ICU Level of Service		A	
Analysis Period (min)	15					

Lanes, Volumes, Timings

6: Liverpool Road & Kingston Road

<2043 Future Total>AM

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	253	492	482	185	351	50	134	408	146	84	761	230
Future Volume (vph)	253	492	482	185	351	50	134	408	146	84	761	230
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.1	3.4	3.6	3.3	3.7	3.4	3.8	4.1	4.8	4.7	3.8	3.3
Storage Length (m)	188.8	97.9	170.7		117.0	185.5		52.0	49.0		60.5	
Storage Lanes	1	1	1		1	1		1	1		1	
Taper Length (m)	31.6		22.7			20.8			25.0			
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.98		0.97	0.99		0.96	0.99		0.93	0.98		0.96
Frt		0.850				0.850			0.850			0.850
Fit Protected	0.950		0.950			0.950			0.950			0.950
Satd. Flow (prot)	1671	3299	1538	1694	3510	1579	1774	3700	1647	2026	3618	1516
Fit Permitted	0.950		0.950			0.212			0.466			
Satd. Flow (perm)	1645	3299	1487	1676	3510	1517	393	3700	1536	973	3618	1452
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			139			174			159			237
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		694.6			396.4			257.7			348.6	
Travel Time (s)		41.7			23.8			18.6			25.1	
Confl. Peds. (#/hr)	21		17	17		21	34		44	44		34
Confl. Bikes (#/hr)						1						
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 (%)	2%	7%	5%	3%	4%	0%	4%	3%	8%	0%	2%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	7	0	0	0
Adj. Flow (vph)	275	535	524	201	382	54	146	443	159	91	827	250
Shared Lane Traffic (%)												
Lane Group Flow (vph)	275	535	524	201	382	54	146	443	159	91	827	250
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.3			3.3			4.7			4.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane	Yes											
Headway Factor	1.08	1.03	1.00	1.04	0.99	1.03	0.97	0.93	0.88	0.86	0.97	1.04
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	

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WSP

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Lanes, Volumes, Timings

6: Liverpool Road & Kingston Road

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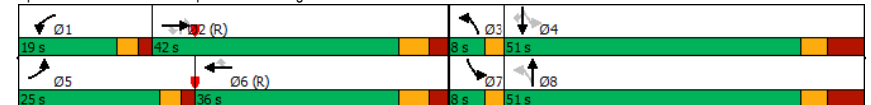
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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type	Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex		
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	custom	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6	8		2	4		4
Detector Phase	5	2	2	1	6	6	3	8	2	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	5.0	8.0	20.0	5.0	8.0	8.0
Minimum Split (s)	10.0	36.0	36.0	10.0	36.0	36.0	8.0	51.0	36.0	8.0	51.0	51.0
Total Split (s)	25.0	42.0	42.0	19.0	36.0	36.0	8.0	51.0	42.0	8.0	51.0	51.0
Total Split (%)	20.8%	35.0%	35.0%	15.8%	30.0%	30.0%	6.7%	42.5%	35.0%	6.7%	42.5%	42.5%
Maximum Green (s)	20.0	34.9	34.9	14.0	28.9	28.9	5.0	41.9	34.9	5.0	41.9	41.9
Yellow Time (s)	3.0	4.3	4.3	3.0	4.3	4.3	3.0	3.8	4.3	3.0	3.8	3.8
All-Red Time (s)	2.0	2.8	2.8	2.0	2.8	2.8	0.0	5.3	2.8	0.0	5.3	5.3
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	0.0
Total Lost Time (s)	5.0	7.1	7.1	5.0	7.1	7.1	3.0	9.1	7.1	3.0	9.1	9.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
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	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	C-Max	None	Max	Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		21.0	21.0		21.0	21.0		33.0	21.0		33.0	33.0
Pedestrian Calls (#/hr)		44	44		31	31		61	44		40	40
Act Effect Green (s)	20.0	34.9	34.9	14.0	28.9	28.9	53.0	41.9	34.9	53.0	41.9	41.9
Actuated g/C Ratio	0.17	0.29	0.29	0.12	0.24	0.24	0.44	0.35	0.29	0.44	0.35	0.35
v/c Ratio	0.99	0.56	0.99	1.02	0.45	0.11	0.63	0.34	0.28	0.19	0.65	0.38
Control Delay	110.4	34.5	58.7	121.9	40.9	0.4	34.2	29.8	6.3	19.1	35.9	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	110.4	34.5	58.7	121.9	40.9	0.4	34.2	29.8	6.3	19.1	35.9	6.0
LOS	F	C	E	F	D	A	C	C	A	B	D	A
Approach Delay		59.7			63.0			25.7			28.2	
Approach LOS		E			E			C			C	

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 29.4 (25%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 115
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.02
 Intersection Signal Delay: 44.2
 Intersection Capacity Utilization 99.1%
 Analysis Period (min) 15
 Intersection LOS: D
 ICU Level of Service F

Splits and Phases: 6: Liverpool Road & Kingston Road



Queues <2043 Future Total>AM
6: Liverpool Road & Kingston Road 12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	275	535	524	201	382	54	146	443	159	91	827	250
w/c Ratio	0.99	0.56	0.99	1.02	0.45	0.11	0.63	0.34	0.28	0.19	0.65	0.38
Control Delay	110.4	34.5	58.7	121.9	40.9	0.4	34.2	29.8	6.3	19.1	35.9	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	110.4	34.5	58.7	121.9	40.9	0.4	34.2	29.8	6.3	19.1	35.9	6.0
Queue Length 50th (m)	69.0	28.4	30.9	-49.1	40.5	0.0	19.5	40.3	0.0	11.7	85.8	2.0
Queue Length 95th (m)	#122.6	64.2	#136.9	#96.6	55.4	0.0	32.4	54.0	15.4	21.1	107.2	19.4
Internal Link Dist (m)	670.6		372.4			233.7		324.6				
Turn Bay Length (m)	188.8	97.9	170.7	117.0	185.5	52.0	49.0	60.5				
Base Capacity (vph)	278	959	531	197	845	497	231	1291	559	473	1263	661
Starvation Cap Reductn	0	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced w/c Ratio	0.99	0.56	0.99	1.02	0.45	0.11	0.63	0.34	0.28	0.19	0.65	0.38

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.

Lanes, Volumes, Timings <2043 Future Total>AM
8: Liverpool Road & Private Access/Pickering Parkway 12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔↔	↔	↔↔	↔	↔	↔↔↔	↔↔↔	↔	↔	↔↔↔	↔
Traffic Volume (vph)	10	17	36	194	19	59	53	568	272	146	1218	24
Future Volume (vph)	10	17	36	194	19	59	53	568	272	146	1218	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.1	3.1	3.7	3.0	3.4	3.2	2.8	3.6	3.5	3.2	3.5	3.5
Storage Length (m)	0.0	0.0	57.0	62.1	54.4	75.7	132.5	35.5				
Storage Lanes	1	0	1	1	1	1	1	1				
Taper Length (m)	2.5	12.0		29.5		28.9						
Lane Util. Factor	1.00	0.95	0.95	0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Ped Bike Factor	0.99	0.897		0.850		0.850		0.97		0.99		0.96
Frt	0.897		0.850		0.850		0.850		0.850		0.850	
Fit Protected	0.950	0.950		0.950		0.950		0.950		0.950		0.950
Satd. Flow (prot)	1705	3058	0	3113	1858	1204	1645	5036	1523	1675	5029	1521
Fit Permitted	0.000	0.000		0.168		0.379						
Satd. Flow (perm)	0	3058	0	0	1858	1181	290	5036	1483	665	5029	1458
Right Turn on Red	Yes		Yes		Yes		Yes		Yes		Yes	
Satd. Flow (RTOR)	39		141		296		144					
Link Speed (k/h)	30		50		50		50					
Link Distance (m)	82.8		328.5		162.3		257.7					
Travel Time (s)	9.9		23.7		11.7		18.6					
Confl. Peds. (#/hr)	7		7		10		11		11		10	
Confl. Bikes (#/hr)	1		1		1		1					
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%	5%	0%	23%	0%	3%	4%	3%	2%	5%
Bus Blockages (#/hr)	0	0	0	0	0	10	0	2	0	0	0	0
Adj. Flow (vph)	11	18	39	211	21	64	58	617	296	159	1324	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	11	57	0	211	21	64	58	617	296	159	1324	26
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	6.0		6.0		3.8		3.8					
Link Offset(m)	0.0		0.0		0.0		0.0					
Crosswalk Width(m)	1.6		1.6		1.6		1.6					
Two way Left Turn Lane												
Headway Factor	1.08	1.08	0.99	1.09	1.03	1.12	1.13	1.00	1.03	1.06	1.01	1.01
Turning Speed (k/h)	24	24	14	24	14	24	14	24	14	24	14	14
Number of Detectors	1	2	1	2	1	2	1	2	1	1	2	1
Detector Template	Left	Thru	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Right
Leading Detector (m)	2.0	10.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4		9.4		9.4		9.4					
Detector 2 Size(m)	0.6		0.6		0.6		0.6					

Lanes, Volumes, Timings

<2043 Future Total>AM

8: Liverpool Road & Private Access/Pickering Parkway

12-20-2024

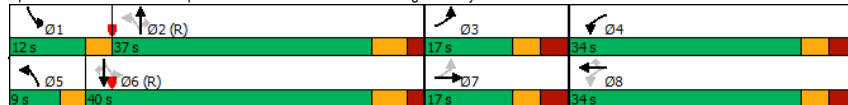


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type	CI+Ex		CI+Ex		CI+Ex		CI+Ex		CI+Ex		CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0		0.0		0.0		0.0		0.0		0.0	
Turn Type	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm
Protected Phases	3	7	4	8	8	5	2	2	6	1	6	6
Permitted Phases	7	8	8	8	8	2	2	2	6	1	6	6
Detector Phase	3	7	4	8	8	5	2	2	1	6	6	6
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	5.0	20.0	20.0	5.0	20.0	20.0	20.0
Minimum Split (s)	15.0	15.0	15.0	34.0	34.0	34.0	8.0	30.0	30.0	8.0	30.0	30.0
Total Split (s)	17.0	17.0	34.0	34.0	34.0	9.0	37.0	37.0	12.0	40.0	40.0	40.0
Total Split (%)	17.0%	17.0%	34.0%	34.0%	34.0%	9.0%	37.0%	37.0%	12.0%	40.0%	40.0%	40.0%
Maximum Green (s)	10.4	10.4	27.4	27.4	27.4	6.0	30.7	30.7	9.0	33.7	33.7	33.7
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.0	4.2	4.2	3.0	4.2	4.2	4.2
All-Red Time (s)	3.3	3.3	3.3	3.3	3.3	0.0	2.1	2.1	0.0	2.1	2.1	2.1
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	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.6	3.0	6.3	6.3	3.0	6.3	6.3	6.3
Lead/Lag												
Lead-Lag Optimize?												
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	3.0
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max	C-Max
Walk Time (s)			19.0	19.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0	17.0
Flash Dont Walk (s)			8.0	8.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Pedestrian Calls (#/hr)			0	0	21	21	21	21	21	21	21	21
Act Effect Green (s)	8.0	8.0	12.1	12.1	12.1	61.3	52.1	52.1	66.4	56.1	56.1	56.1
Actuated g/C Ratio	0.08	0.08	0.12	0.12	0.12	0.61	0.52	0.52	0.66	0.56	0.56	0.56
v/c Ratio	0.08	0.20	0.56	0.09	0.24	0.23	0.24	0.32	0.30	0.47	0.03	0.03
Control Delay	44.1	22.1	46.9	38.5	2.1	7.9	13.1	4.0	9.1	15.6	0.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.1	22.1	46.9	38.5	2.1	7.9	13.1	4.0	9.1	15.6	0.0	0.0
LOS	D	C	D	D	A	A	B	A	A	B	B	A
Approach Delay	25.7		36.6		10.0		14.6					
Approach LOS	C		D		B		B					

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 34 (34%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.56
 Intersection Signal Delay: 15.6
 Intersection Capacity Utilization 56.1%
 Analysis Period (min) 15

Splits and Phases: 8: Liverpool Road & Private Access/Pickering Parkway



Queues

<2043 Future Total>AM

8: Liverpool Road & Private Access/Pickering Parkway

12-20-2024



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Group Flow (vph)	11	57	211	21	64	58	617	296	159	1324	26	
v/c Ratio	0.08	0.20	0.56	0.09	0.24	0.23	0.24	0.32	0.30	0.47	0.03	
Control Delay	44.1	22.1	46.9	38.5	2.1	7.9	13.1	4.0	9.1	15.6	0.0	
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	44.1	22.1	46.9	38.5	2.1	7.9	13.1	4.0	9.1	15.6	0.0	
Queue Length 50th (m)	2.0	1.7	20.2	3.7	0.0	2.4	24.8	9.8	11.3	59.2	0.0	
Queue Length 95th (m)	7.4	7.8	30.3	10.1	0.0	m5.5	37.9	20.1	21.5	77.5	0.0	
Internal Link Dist (m)	58.8		304.5		138.3		233.7					
Turn Bay Length (m)			57.0		62.1		54.4		75.7		132.5	
Base Capacity (vph)	177	352	852	509	425	259	2621	913	533	2821	881	
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	0.06	0.16	0.25	0.04	0.15	0.22	0.24	0.32	0.30	0.47	0.03	

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings

<2043 Future Total>AM

9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp

12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	424	188	69	310	203	549	0	0	979	220
Future Volume (vph)	0	0	424	188	69	310	203	549	0	0	979	220
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.5	3.7	3.7	3.4	3.7
Storage Length (m)	0.0	0.0	0.0	0.0		125.0	50.0		0.0	0.0		0.0
Storage Lanes	0		1	1		1	1		0	0		1
Taper Length (m)	2.5			2.5			30.0			2.5		
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	1.00	0.91	1.00
Ped Bike Factor												0.96
Frt			0.865			0.850						0.850
Fit Protected				0.950	0.977		0.950					
Satd. Flow (prot)	0	0	1108	1700	1767	1551	1460	4932	0	0	4877	1601
Fit Permitted				0.950	0.977		0.141					
Satd. Flow (perm)	0	0	1108	1700	1767	1551	217	4932	0	0	4877	1538
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)						336						239
Link Speed (kh)		50			50			50				50
Link Distance (m)		433.1			226.7			372.2				162.3
Travel Time (s)		31.2			16.3			26.8				11.7
Confl. Peds. (#/hr)							7		14	14		7
Confl. Bikes (#/hr)								4				
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%	2%	50%	2%	0%	3%	25%	4%	4%	2%	4%	2%
Adj. Flow (vph)	0	0	461	204	75	337	221	597	0	0	1064	239
Shared Lane Traffic (%)				32%								
Lane Group Flow (vph)	0	0	461	139	140	337	221	597	0	0	1064	239
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	1.01	0.99	1.01	0.99	0.99	1.03	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors			1	1	2	1	1	2			2	1
Detector Template			Right	Left	Thru	Right	Left	Thru			Thru	Right
Leading Detector (m)			2.0	2.0	10.0	2.0	2.0	10.0			10.0	2.0
Trailing Detector (m)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Position(m)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Size(m)			2.0	2.0	0.6	2.0	2.0	0.6			0.6	2.0
Detector 1 Type			Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 2 Position(m)						9.4		9.4			9.4	
Detector 2 Size(m)						0.6		0.6			0.6	
Detector 2 Type						Cl+Ex		Cl+Ex			Cl+Ex	

Lanes, Volumes, Timings

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9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp

12-20-2024

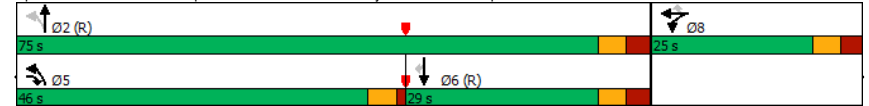


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)						0.0					0.0	0.0
Turn Type			Over	Split	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases			5	8	8		5	2			6	
Permitted Phases						8	2					6
Detector Phase			5	8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)			5.0	8.0	8.0	8.0	5.0	15.0			15.0	15.0
Minimum Split (s)			9.5	25.0	25.0	25.0	9.5	24.3			24.3	24.3
Total Split (s)			46.0	25.0	25.0	25.0	46.0	75.0			29.0	29.0
Total Split (%)			46.0%	25.0%	25.0%	25.0%	46.0%	75.0%			29.0%	29.0%
Maximum Green (s)			41.5	19.0	19.0	19.0	41.5	68.7			22.7	22.7
Yellow Time (s)			3.5	3.3	3.3	3.3	3.5	3.3			3.3	3.3
All-Red Time (s)			1.0	2.7	2.7	2.7	1.0	3.0			3.0	3.0
Lost Time Adjust (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Lost Time (s)			4.5	6.0	6.0	6.0	4.5	6.3			6.3	6.3
Lead/Lag			Lead				Lead				Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)			3.0	3.0	3.0	3.0	3.0	3.0			3.0	3.0
Recall Mode			None	None	None	None	None	C-Max			C-Max	C-Max
Walk Time (s)				14.0	14.0	14.0		13.0			13.0	13.0
Flash Dont Walk (s)				5.0	5.0	5.0		5.0			5.0	5.0
Pedestrian Calls (#/hr)				0	0	0		15			17	17
Act Effct Green (s)			45.6	13.7	13.7	13.7	75.8	74.0			23.9	23.9
Actuated g/C Ratio			0.46	0.14	0.14	0.14	0.76	0.74			0.24	0.24
v/c Ratio			0.91	0.60	0.58	0.67	0.30	0.16			0.91	0.44
Control Delay			51.2	50.7	49.5	11.5	7.5	4.3			39.5	5.3
Queue Delay			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay			51.2	50.7	49.5	11.5	7.5	4.3			39.5	5.3
LOS			D	D	D	B	A	A			D	A
Approach Delay			51.2			28.9		5.2			33.2	
Approach LOS			D			C		A			C	

Intersection Summary

Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	100
Offset:	38 (38%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle:	100
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.91
Intersection Signal Delay:	27.8
Intersection LOS:	C
Intersection Capacity Utilization:	66.2%
ICU Level of Service:	C
Analysis Period (min):	15

Splits and Phases: 9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp



Queues

<2043 Future Total>AM

9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp

12-20-2024



Lane Group	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	461	139	140	337	221	597	1064	239
w/c Ratio	0.91	0.60	0.58	0.67	0.30	0.16	0.91	0.44
Control Delay	51.2	50.7	49.5	11.5	7.5	4.3	39.5	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.2	50.7	49.5	11.5	7.5	4.3	39.5	5.3
Queue Length 50th (m)	78.2	27.1	27.2	0.2	10.1	10.3	76.3	12.0
Queue Length 95th (m)	#152.5	44.3	44.3	23.5	30.3	17.3	#104.1	9.2
Internal Link Dist (m)			202.7			348.2	138.3	
Turn Bay Length (m)				125.0	50.0			
Base Capacity (vph)	505	323	335	566	731	3651	1165	549
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced w/c Ratio	0.91	0.43	0.42	0.60	0.30	0.16	0.91	0.44

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

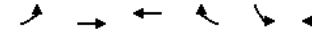
Queue shown is maximum after two cycles.

Lanes, Volumes, Timings

<2043 Future Total>AM

10: Kingston Road & Fairport Road

12-20-2024



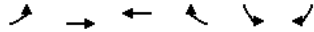
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø1
Lane Configurations	↔	↕	↕	↔	↔	↔	
Traffic Volume (vph)	96	749	703	99	182	229	
Future Volume (vph)	96	749	703	99	182	229	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (m)	3.0	3.6	3.5	3.7	3.6	4.5	
Grade (%)		6%	0%			0%	
Storage Length (m)	75.0			18.5	15.5	0.0	
Storage Lanes	1			0	1	1	
Taper Length (m)	2.5				31.3		
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00	
Frnt			0.981			0.850	
Fit Protected	0.950				0.950		
Satd. Flow (prot)	1602	3335	3384	0	1736	1708	
Fit Permitted	0.950				0.950		
Satd. Flow (perm)	1602	3335	3384	0	1736	1708	
Right Turn on Red				Yes		Yes	
Satd. Flow (RTOR)			16			249	
Link Speed (k/h)		60	60		40		
Link Distance (m)		424.0	896.3		280.0		
Travel Time (s)		25.4	53.8		25.2		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Heavy Vehicles (%)	2%	5%	3%	7%	4%	4%	
Bus Blockages (#/hr)	0	0	0	9	0	0	
Adj. Flow (vph)	104	814	764	108	198	249	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	104	814	872	0	198	249	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Left	Left	Right	Left	Right	
Median Width(m)		3.0	3.0		3.6		
Link Offset(m)		0.0	0.0		0.0		
Crosswalk Width(m)		1.6	1.6		1.6		
Two way Left Turn Lane		Yes					
Headway Factor	1.14	1.04	1.01	0.99	1.00	0.88	
Turning Speed (k/h)		24		14	24	14	
Number of Detectors	1	2	2		1	1	
Detector Template	Left	Thru	Thru		Left	Right	
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0	
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	0.6		2.0	2.0	
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4	9.4				
Detector 2 Size(m)		0.6	0.6				
Detector 2 Type		CI+Ex	CI+Ex				
Detector 2 Channel							

Lanes, Volumes, Timings

<2043 Future Total>AM

10: Kingston Road & Fairport Road

12-20-2024



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø1
Detector 2 Extend (s)		0.0	0.0				
Turn Type	Prot	NA	NA		Prot	Perm	
Protected Phases	5	2	6		4		1
Permitted Phases						4	
Detector Phase	5	2	6		4	4	
Switch Phase							
Minimum Initial (s)	5.0	20.0	20.0		8.0	8.0	5.0
Minimum Split (s)	10.0	32.3	32.3		38.1	38.1	8.0
Total Split (s)	22.0	79.0	65.0		43.0	43.0	8.0
Total Split (%)	16.9%	60.8%	50.0%		33.1%	33.1%	6%
Maximum Green (s)	17.0	72.7	58.7		35.7	35.7	5.0
Yellow Time (s)	3.0	4.3	4.3		3.3	3.3	3.0
All-Red Time (s)	2.0	2.0	2.0		4.0	4.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.3	6.3		7.3	7.3	
Lead/Lag	Lead	Lag	Lag				Lead
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	0.2	0.2		3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max		None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0	5.0
Flash Dont Walk (s)		19.0	19.0		23.0	23.0	0.0
Pedestrian Calls (#/hr)		0	1		2	2	20
Act Effect Green (s)	13.3	90.9	77.4		20.7	20.7	
Actuated g/C Ratio	0.10	0.70	0.60		0.16	0.16	
v/c Ratio	0.64	0.35	0.43		0.72	0.52	
Control Delay	104.2	0.8	16.2		65.5	9.1	
Queue Delay	0.0	0.0	0.0		0.0	0.0	
Total Delay	104.2	0.8	16.2		65.5	9.1	
LOS	F	A	B		E	A	
Approach Delay		12.5	16.2		34.1		
Approach LOS		B	B		C		

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 105 (81%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 85
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.72
 Intersection Signal Delay: 18.3 Intersection LOS: B
 Intersection Capacity Utilization 53.5% ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 10: Kingston Road & Fairport Road



Queues

<2043 Future Total>AM

10: Kingston Road & Fairport Road

12-20-2024



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	104	814	872	198	249
v/c Ratio	0.64	0.35	0.43	0.72	0.52
Control Delay	104.2	0.8	16.2	65.5	9.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	104.2	0.8	16.2	65.5	9.1
Queue Length 50th (m)	26.4	2.6	59.3	49.0	0.0
Queue Length 95th (m)	42.6	2.5	94.4	68.5	20.6
Internal Link Dist (m)		400.0	872.3	256.0	
Turn Bay Length (m)	75.0			15.5	
Base Capacity (vph)	209	2331	2021	476	649
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.50	0.35	0.43	0.42	0.38

Intersection Summary

Lanes, Volumes, Timings

<2043 Future Total>AM

11: Hwy 401 WB Ramps & Kingston Road

12-20-2024

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↖	↑↑	↖	↗
Traffic Volume (vph)	783	12	284	667	461	65
Future Volume (vph)	783	12	284	667	461	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.0	3.7	2.7	3.8	3.8	3.7
Grade (%)	6%			0%	0%	
Storage Length (m)		0.0	47.5		0.0	52.0
Storage Lanes		0	1		2	1
Taper Length (m)			22.3		2.5	
Lane Util. Factor	0.95	0.95	1.00	0.95	0.97	1.00
Frt	0.998					0.850
Fit Protected			0.950		0.950	
Satd. Flow (prot)	3479	0	1593	3548	3442	1633
Fit Permitted			0.950		0.950	
Satd. Flow (perm)	3479	0	1593	3548	3442	1633
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	1					71
Link Speed (k/h)	60			60	50	
Link Distance (m)	268.7			424.0	216.6	
Travel Time (s)	16.1			25.4	15.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	0%	2%	4%	4%	0%
Adj. Flow (vph)	851	13	309	725	501	71
Shared Lane Traffic (%)						
Lane Group Flow (vph)	864	0	309	725	501	71
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.1			3.1	7.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	0.98	1.03	1.14	0.97	0.97	0.99
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	10.0		2.0	10.0	2.0	2.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Size(m)	0.6		2.0	0.6	2.0	2.0
Detector 1 Type	CI+Ex		CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	CI+Ex			CI+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		

Lanes, Volumes, Timings

<2043 Future Total>AM

11: Hwy 401 WB Ramps & Kingston Road

12-20-2024

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Turn Type	NA		Prot	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases						8
Detector Phase	2		1	6	8	8
Switch Phase						
Minimum Initial (s)	20.0		5.0	20.0	8.0	8.0
Minimum Split (s)	50.0		10.0	50.0	39.0	39.0
Total Split (s)	51.0		40.0	91.0	39.0	39.0
Total Split (%)	39.2%		30.8%	70.0%	30.0%	30.0%
Maximum Green (s)	43.8		35.0	83.8	32.3	32.3
Yellow Time (s)	4.2		3.0	4.2	3.7	3.7
All-Red Time (s)	3.0		2.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	7.2		5.0	7.2	6.7	6.7
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?						
Vehicle Extension (s)	0.2		3.0	0.2	3.0	3.0
Recall Mode	C-Max		None	C-Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	35.0			35.0	24.0	24.0
Pedestrian Calls (#/hr)	0			3	3	3
Act Effct Green (s)	57.3		29.4	91.7	24.4	24.4
Actuated g/C Ratio	0.44		0.23	0.71	0.19	0.19
v/c Ratio	0.56		0.86	0.29	0.78	0.20
Control Delay	12.9		58.9	15.7	58.6	10.2
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	12.9		58.9	15.7	58.6	10.2
LOS	B		E	B	E	B
Approach Delay	12.9			28.6	52.6	
Approach LOS	B			C	D	

Intersection Summary

Area Type: Other

Cycle Length: 130

Actuated Cycle Length: 130

Offset: 66 (51%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 28.7

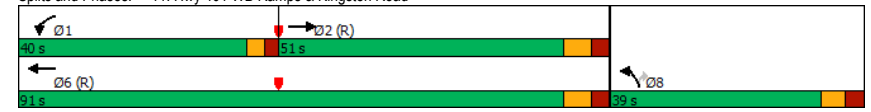
Intersection LOS: C

Intersection Capacity Utilization 66.7%

ICU Level of Service C

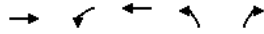
Analysis Period (min) 15

Splits and Phases: 11: Hwy 401 WB Ramps & Kingston Road



Queues
11: Hwy 401 WB Ramps & Kingston Road

<2043 Future Total>AM
12-20-2024



Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	864	309	725	501	71
w/c Ratio	0.56	0.86	0.29	0.78	0.20
Control Delay	12.9	58.9	15.7	58.6	10.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	12.9	58.9	15.7	58.6	10.2
Queue Length 50th (m)	20.8	75.6	69.7	63.7	0.0
Queue Length 95th (m)	58.3	106.7	90.3	77.4	12.0
Internal Link Dist (m)	244.7		400.0	192.6	
Turn Bay Length (m)		47.5			52.0
Base Capacity (vph)	1534	428	2502	855	459
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.56	0.72	0.29	0.59	0.15

Intersection Summary

Lanes, Volumes, Timings
12: Plaza Entrance/Delta Blvd & Kingston Road

<2043 Future Total>AM
12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	76	1010	37	96	1035	74	140	6	92	42	13	124
Future Volume (vph)	76	1010	37	96	1035	74	140	6	92	42	13	124
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.2	3.4	3.5	3.1	3.4	3.4	3.6	4.6	3.7	3.2	2.8	3.7
Grade (%)		6%			0%			0%				0%
Storage Length (m)	51.8		148.5	100.0		18.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	35.3			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99				1.00		0.99	0.98		1.00		0.98
Frt		0.995			0.990							0.864
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1673	3280	0	1671	3381	0	1805	1755	0	1643	1468	0
Fit Permitted	0.950			0.950			0.662			0.688		
Satd. Flow (perm)	1662	3280	0	1671	3381	0	1249	1755	0	1185	1468	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			8			100				135
Link Speed (k/h)		60			60			30				40
Link Distance (m)		222.7			268.7			130.9				169.9
Travel Time (s)		13.4			16.1			15.7				15.3
Confl. Peds. (#/hr)	13					13	6		3	3		6
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%	4%	0%	2%	3%	3%	0%	0%	2%	5%	0%	0%
Adj. Flow (vph)	83	1098	40	104	1125	80	152	7	100	46	14	135
Shared Lane Traffic (%)												
Lane Group Flow (vph)	83	1138	0	104	1205	0	152	107	0	46	149	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.6				3.6
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		1.6			1.6			1.6				1.6
Two way Left Turn Lane					Yes							
Headway Factor	1.10	1.07	1.06	1.08	1.03	1.03	1.00	0.87	0.99	1.06	1.13	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	

Lanes, Volumes, Timings

<2043 Future Total>AM

12: Plaza Entrance/Delta Blvd & Kingston Road

12-20-2024

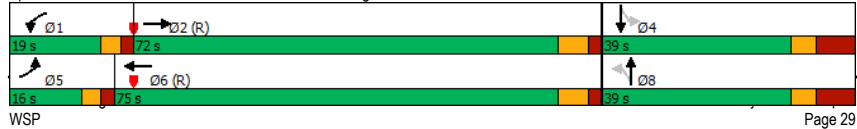


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	10.0	31.9		10.0	31.9		37.6	37.6		37.6	37.6	
Total Split (s)	16.0	72.0		19.0	75.0		39.0	39.0		39.0	39.0	
Total Split (%)	12.3%	55.4%		14.6%	57.7%		30.0%	30.0%		30.0%	30.0%	
Maximum Green (s)	11.0	65.1		14.0	68.1		29.0	29.0		29.0	29.0	
Yellow Time (s)	3.0	4.7		3.0	4.7		3.8	3.8		3.8	3.8	
All-Red Time (s)	2.0	2.2		2.0	2.2		6.2	6.2		6.2	6.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.9		5.0	6.9		10.0	10.0		10.0	10.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	0.2		3.0	0.2		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		18.0			18.0		20.0	20.0		20.0	20.0	
Pedestrian Calls (#/hr)		1			16		0	0		1	1	
Act Effct Green (s)	10.0	75.0		12.1	77.1		20.9	20.9		20.9	20.9	
Actuated g/C Ratio	0.08	0.58		0.09	0.59		0.16	0.16		0.16	0.16	
v/c Ratio	0.65	0.60		0.67	0.60		0.76	0.29		0.24	0.43	
Control Delay	86.0	27.4		80.4	28.5		74.1	11.5		48.1	12.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	86.0	27.4		80.4	28.5		74.1	11.5		48.1	12.9	
LOS	F	C		F	C		E	B		D	B	
Approach Delay		31.4			32.7			48.2			21.2	
Approach LOS		C			C			D			C	

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 49 (38%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.76
 Intersection Signal Delay: 32.7 Intersection LOS: C
 Intersection Capacity Utilization 81.0% ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 12: Plaza Entrance/Delta Blvd & Kingston Road

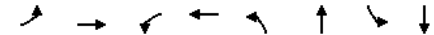


Queues

<2043 Future Total>AM

12: Plaza Entrance/Delta Blvd & Kingston Road

12-20-2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	83	1138	104	1205	152	107	46	149
v/c Ratio	0.65	0.60	0.67	0.60	0.76	0.29	0.24	0.43
Control Delay	86.0	27.4	80.4	28.5	74.1	11.5	48.1	12.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	86.0	27.4	80.4	28.5	74.1	11.5	48.1	12.9
Queue Length 50th (m)	21.9	127.4	27.4	162.3	37.6	1.5	10.4	3.1
Queue Length 95th (m)	#40.7	162.8	44.7	187.7	57.4	16.2	20.7	20.6
Internal Link Dist (m)		198.7		244.7		106.9		145.9
Turn Bay Length (m)	51.8		100.0					
Base Capacity (vph)	141	1894	179	2009	278	469	264	432
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.60	0.58	0.60	0.55	0.23	0.17	0.34

Intersection Summary

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

Lanes, Volumes, Timings
13: Whites Road & Kingston Road

<2043 Future Total>AM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	78	283	294	286	557	290	146	390	462	180	796	175
Future Volume (vph)	78	283	294	286	557	290	146	390	462	180	796	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.6	4.2	3.5	3.7	4.0	3.5	3.9	3.7	3.5	3.9	4.0
Grade (%)	6%		0%		0%		0%		0%		0%	
Storage Length (m)	127.0		123.0	87.1		35.0	72.0		35.0	88.5		47.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	64.0			39.6			66.8			32.6		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Ped Bike Factor	0.98		0.97	0.99		0.95	0.99		0.97	0.99		0.97
Frt		0.850			0.850			0.850			0.850	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1633	3335	1607	1767	3510	1606	1700	5057	1558	1750	5057	1625
Flt Permitted	0.950			0.950			0.232			0.495		
Satd. Flow (perm)	1604	3335	1565	1751	3510	1522	413	5057	1509	902	5057	1574
Right Turn on Red			Yes		Yes		Yes		Yes		Yes	
Satd. Flow (RTOR)			154		250			240				173
Link Speed (k/h)	60		60		60		60		60		60	
Link Distance (m)	297.5		222.7		158.6		385.2					
Travel Time (s)	17.9		13.4		9.5		23.1					
Confl. Peds. (#/hr)	38		13	13		38	20		20	20		20
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 (%)	6%	5%	4%	1%	4%	5%	5%	6%	4%	2%	6%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	2	0	0	2
Adj. Flow (vph)	85	308	320	311	605	315	159	424	502	196	865	190
Shared Lane Traffic (%)												
Lane Group Flow (vph)	85	308	320	311	605	315	159	424	502	196	865	190
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width(m)	3.5		3.5		3.5		3.5		3.5		3.5	
Link Offset(m)	0.0		0.0		0.0		0.0		0.0		0.0	
Crosswalk Width(m)	1.6		1.6		1.6		1.6		1.6		1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.04	0.96	1.01	0.99	0.94	1.01	0.96	1.00	1.01	0.96	0.95
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4		9.4		9.4		9.4		9.4		9.4	
Detector 2 Size(m)	0.6		0.6		0.6		0.6		0.6		0.6	

Lanes, Volumes, Timings
13: Whites Road & Kingston Road

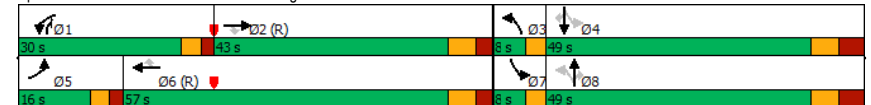
<2043 Future Total>AM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type	Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0		0.0		0.0		0.0		0.0		0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8	1	7	4	
Permitted Phases			2			6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	1	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	5.0	8.0	5.0	5.0	8.0	8.0
Minimum Split (s)	10.0	43.0	43.0	10.0	43.0	43.0	8.0	49.0	10.0	8.0	49.0	49.0
Total Split (s)	16.0	43.0	43.0	30.0	57.0	57.0	8.0	49.0	30.0	8.0	49.0	49.0
Total Split (%)	12.3%	33.1%	33.1%	23.1%	43.8%	43.8%	6.2%	37.7%	23.1%	6.2%	37.7%	37.7%
Maximum Green (s)	11.0	36.0	36.0	25.0	50.0	50.0	5.0	40.6	25.0	5.0	40.6	40.6
Yellow Time (s)	3.0	4.2	4.2	3.0	4.2	4.2	3.0	4.3	3.0	3.0	4.3	4.3
All-Red Time (s)	2.0	2.8	2.8	2.0	2.8	2.8	0.0	4.1	2.0	0.0	4.1	4.1
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	0.0
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	3.0	8.4	5.0	3.0	8.4	8.4
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	0.2	0.2	3.0	0.2	0.2	3.0	0.2	3.0	3.0	0.2	0.2
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	None	None	Max	Max
Walk Time (s)	7.0		7.0		7.0		7.0		7.0		7.0	
Flash Dont Walk (s)	29.0		29.0		29.0		29.0		33.0		33.0	
Pedestrian Calls (#/hr)	31		31		75		75		65		37	
Act Effect Green (s)	10.1	36.5	36.5	24.5	50.9	50.9	51.0	40.6	68.5	51.0	40.6	40.6
Actuated g/C Ratio	0.08	0.28	0.28	0.19	0.39	0.39	0.39	0.31	0.53	0.39	0.31	0.31
v/c Ratio	0.67	0.33	0.58	0.94	0.44	0.42	0.75	0.27	0.55	0.51	0.55	0.31
Control Delay	83.0	38.4	25.1	65.9	28.9	14.3	52.0	34.1	10.8	32.7	38.7	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	83.0	38.4	25.1	65.9	28.9	14.3	52.0	34.1	10.8	32.7	38.7	7.6
LOS	F	D	C	E	C	B	D	C	B	C	D	A
Approach Delay	37.8		34.5		26.0		33.0					
Approach LOS	D		C		C		C					

Intersection Summary

Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	107 (82%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle:	120
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.94
Intersection Signal Delay:	32.4
Intersection Capacity Utilization:	109.5%
Analysis Period (min):	15
Intersection LOS:	C
ICU Level of Service:	H

Splits and Phases: 13: Whites Road & Kingston Road



Queues <2043 Future Total>AM
13: Whites Road & Kingston Road 12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	85	308	320	311	605	315	159	424	502	196	865	190
w/c Ratio	0.67	0.33	0.58	0.94	0.44	0.42	0.75	0.27	0.55	0.51	0.55	0.31
Control Delay	83.0	38.4	25.1	65.9	28.9	14.3	52.0	34.1	10.8	32.7	38.7	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	83.0	38.4	25.1	65.9	28.9	14.3	52.0	34.1	10.8	32.7	38.7	7.6
Queue Length 50th (m)	21.4	33.2	36.4	80.3	77.0	46.7	25.9	29.8	36.3	32.6	67.3	3.0
Queue Length 95th (m)	#42.5	46.2	67.4	#129.4	90.5	63.5	#50.2	39.1	63.0	50.3	81.1	19.8
Internal Link Dist (m)		273.5			198.7			134.6			361.2	
Turn Bay Length (m)	127.0		123.0	87.1		35.0	72.0		35.0	88.5		47.0
Base Capacity (vph)	138	936	550	339	1373	747	211	1579	922	386	1579	610
Starvation Cap Reductn	0	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced w/c Ratio	0.62	0.33	0.58	0.92	0.44	0.42	0.75	0.27	0.54	0.51	0.55	0.31

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

Lanes, Volumes, Timings <2043 Future Total>AM
14: Whites Road & Highway 401 EB Off Ramp 12-20-2024



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↑↑↑	↑		↑↑	↑↑	
Traffic Volume (vph)	653	268	0	698	447	0
Future Volume (vph)	653	268	0	698	447	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.7	3.6	3.8	3.7
Storage Length (m)	0.0	225.0	0.0			0.0
Storage Lanes	2	1	0			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	0.97	0.91	1.00	0.95	0.95	1.00
Ped Bike Factor						
Frt	0.994	0.850				
Flt Protected	0.954					
Satd. Flow (prot)	3391	1400	0	3374	3481	0
Flt Permitted	0.954					
Satd. Flow (perm)	3391	1400	0	3374	3481	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	4	262				
Link Speed (k/h)	50			60	60	
Link Distance (m)	295.9			185.9	316.9	
Travel Time (s)	21.3			11.2	19.0	
Confl. Peds. (#/hr)			7			7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	3%	5%	2%	7%	6%	2%
Adj. Flow (vph)	710	291	0	759	486	0
Shared Lane Traffic (%)		10%				
Lane Group Flow (vph)	739	262	0	759	486	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.2			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	0.99	1.00	0.97	0.99
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	2.0	2.0		10.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	2.0		0.6	0.6	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				CI+Ex	CI+Ex	
Detector 2 Channel						

Lanes, Volumes, Timings

<2043 Future Total>AM

14: Whites Road & Highway 401 EB Off Ramp

12-20-2024

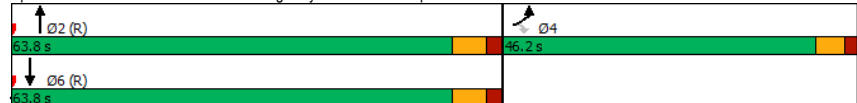


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	8.0	8.0		20.0	20.0	
Minimum Split (s)	28.5	28.5		27.7	27.7	
Total Split (s)	46.2	46.2		63.8	63.8	
Total Split (%)	42.0%	42.0%		58.0%	58.0%	
Maximum Green (s)	40.7	40.7		57.1	57.1	
Yellow Time (s)	3.7	3.7		4.5	4.5	
All-Red Time (s)	1.8	1.8		2.2	2.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.5	5.5		6.7	6.7	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		0.2	0.2	
Recall Mode	None	None		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	16.0	16.0		14.0	14.0	
Pedestrian Calls (#/hr)	3	3		0	0	
Act Effect Green (s)	30.3	30.3		67.5	67.5	
Actuated g/C Ratio	0.28	0.28		0.61	0.61	
v/c Ratio	0.79	0.46		0.37	0.23	
Control Delay	42.9	6.1		11.9	10.6	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	42.9	6.1		11.9	10.6	
LOS	D	A		B	B	
Approach Delay	33.2			11.9	10.6	
Approach LOS	C			B	B	

Intersection Summary

Area Type: Other
 Cycle Length: 110
 Actuated Cycle Length: 110
 Offset: 79.2 (72%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.79
 Intersection Signal Delay: 21.1 Intersection LOS: C
 Intersection Capacity Utilization 50.9% ICU Level of Service A
 Analysis Period (min) 15

Splits and Phases: 14: Whites Road & Highway 401 EB Off Ramp



Queues

<2043 Future Total>AM

14: Whites Road & Highway 401 EB Off Ramp

12-20-2024



Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	739	262	759	486
v/c Ratio	0.79	0.46	0.37	0.23
Control Delay	42.9	6.1	11.9	10.6
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	42.9	6.1	11.9	10.6
Queue Length 50th (m)	75.3	0.0	39.7	22.8
Queue Length 95th (m)	88.3	18.7	60.4	36.5
Internal Link Dist (m)	271.9		161.9	292.9
Turn Bay Length (m)		225.0		
Base Capacity (vph)	1257	683	2069	2135
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.59	0.38	0.37	0.23

Intersection Summary

Lanes, Volumes, Timings
15: Dixie Road & Shopping Plaza Entrance

<2043 Future Total>AM
12-20-2024

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	111	0	0	252	0
Future Volume (vph)	0	111	0	0	252	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.1	3.7	4.0	3.7	3.7	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.865					
Fit Protected						0.950
Satd. Flow (prot)	1701	0	1946	0	0	1867
Fit Permitted						0.950
Satd. Flow (perm)	1701	0	1946	0	0	1867
Link Speed (k/h)	30	40			40	
Link Distance (m)	193.0	106.6			44.0	
Travel Time (s)	23.2	9.6			4.0	
Confl. Peds. (#/hr)	5			8		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	2%	2%	1%	2%
Adj. Flow (vph)	0	121	0	0	274	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	121	0	0	0	0	274
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	4.1	3.6			3.6	
Link Offset(m)	0.0	0.0			0.0	
Crosswalk Width(m)	1.6	1.6			1.6	
Two way Left Turn Lane						
Headway Factor	0.93	0.99	0.94	0.99	0.99	0.94
Turning Speed (k/h)	24	14	14		24	
Sign Control	Stop	Free			Free	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	28.9%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
15: Dixie Road & Shopping Plaza Entrance

<2043 Future Total>AM
12-20-2024

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	111	0	0	252	0
Future Volume (Veh/h)	0	111	0	0	252	0
Sign Control	Stop	Free			Free	
Grade	0%	0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	121	0	0	274	0
Pedestrians	8					5
Lane Width (m)	4.1					4.0
Walking Speed (m/s)	1.1					1.1
Percent Blockage	1					1
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						44
pX, platoon unblocked						
vC, conflicting volume	556	13				8
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	556	13				8
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	89				83
cM capacity (veh/h)	405	1053				1605

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	121	0	274
Volume Left	0	0	274
Volume Right	121	0	0
cSH	1053	1700	1605
Volume to Capacity	0.11	0.00	0.17
Queue Length 95th (m)	3.0	0.0	4.7
Control Delay (s)	8.9	0.0	7.7
Lane LOS	A		A
Approach Delay (s)	8.9	0.0	7.7
Approach LOS	A		

Intersection Summary			
Average Delay	8.1		
Intersection Capacity Utilization	28.9%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings
17: Street B

<2043 Future Total>AM
12-20-2024

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	43	70	76	24	75	52
Future Volume (vph)	43	70	76	24	75	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.917		0.968			
Fit Protected	0.981					0.971
Satd. Flow (prot)	1694	0	1823	0	0	1829
Fit Permitted	0.981					0.971
Satd. Flow (perm)	1694	0	1823	0	0	1829
Link Speed (k/h)	30		30			30
Link Distance (m)	112.2		49.9			96.9
Travel Time (s)	13.5		6.0			11.6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	47	76	83	26	82	57
Shared Lane Traffic (%)						
Lane Group Flow (vph)	123	0	109	0	0	139
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Stop			Stop

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	26.9%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
17: Street B

<2043 Future Total>AM
12-20-2024

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	43	70	76	24	75	52
Future Volume (vph)	43	70	76	24	75	52
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	47	76	83	26	82	57
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total (vph)	123	109	139			
Volume Left (vph)	47	0	82			
Volume Right (vph)	76	26	0			
Hadj (s)	-0.26	-0.11	0.15			
Departure Headway (s)	4.2	4.2	4.4			
Degree Utilization, x	0.14	0.13	0.17			
Capacity (veh/h)	812	818	775			
Control Delay (s)	7.9	7.8	8.4			
Approach Delay (s)	7.9	7.8	8.4			
Approach LOS	A	A	A			

Intersection Summary

Delay	8.1
Level of Service	A
Intersection Capacity Utilization	26.9%
ICU Level of Service	A
Analysis Period (min)	15

Lanes, Volumes, Timings
19: Walnut Lane & Street B

<2043 Future Total>AM
12-20-2024

	↖	↗	↙	↘	↕	↔
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖			↘	↔	↔
Traffic Volume (vph)	32	67	42	507	211	71
Future Volume (vph)	32	67	42	507	211	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.909			0.966		
Flt Protected	0.984			0.996		
Satd. Flow (prot)	1685	0	0	1876	1819	0
Flt Permitted	0.984			0.996		
Satd. Flow (perm)	1685	0	0	1876	1819	0
Link Speed (k/h)	30			40	40	
Link Distance (m)	112.2			121.1	114.0	
Travel Time (s)	13.5			10.9	10.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	35	73	46	551	229	77
Shared Lane Traffic (%)						
Lane Group Flow (vph)	108	0	0	597	306	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.3	3.3	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24	14	24			14
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	60.3%
Analysis Period (min)	15
	ICU Level of Service B

HCM Unsignalized Intersection Capacity Analysis
19: Walnut Lane & Street B

<2043 Future Total>AM
12-20-2024

	↖	↗	↙	↘	↕	↔
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖			↘	↔	↔
Traffic Volume (veh/h)	32	67	42	507	211	71
Future Volume (Veh/h)	32	67	42	507	211	71
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	35	73	46	551	229	77
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)					114	
pX, platoon unblocked						
vC, conflicting volume	910	268	306			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	910	268	306			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	88	91	96			
cM capacity (veh/h)	293	771	1255			

Direction, Lane #

	EB 1	NB 1	SB 1
Volume Total	108	597	306
Volume Left	35	46	0
Volume Right	73	0	77
cSH	505	1255	1700
Volume to Capacity	0.21	0.04	0.18
Queue Length 95th (m)	6.1	0.9	0.0
Control Delay (s)	14.1	1.0	0.0
Lane LOS	B	A	
Approach Delay (s)	14.1	1.0	0.0
Approach LOS	B		

Intersection Summary

Average Delay	2.1
Intersection Capacity Utilization	60.3%
Analysis Period (min)	15
	ICU Level of Service B

Lanes, Volumes, Timings
21: Building Driveways & Street A

<2043 Future Total>AM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔			↔			↔		
Traffic Volume (vph)	30	241	38	46	83	36	0	0	132	104	0	0
Future Volume (vph)	30	241	38	46	83	36	0	0	132	104	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.984			0.971			0.865			0.950		
Fit Protected	0.995			0.986			0.950			0.950		
Satd. Flow (prot)	0	1844	0	0	1803	0	0	1629	0	0	1789	0
Fit Permitted	0.995			0.986			0.950			0.950		
Satd. Flow (perm)	0	1844	0	0	1803	0	0	1629	0	0	1789	0
Link Speed (k/h)	30			30			30			30		
Link Distance (m)	193.3			80.3			63.7			34.1		
Travel Time (s)	23.2			9.6			7.6			4.1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	262	41	50	90	39	0	0	143	113	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	336	0	0	179	0	0	143	0	0	113	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	0.0			0.0			0.0			0.0		
Link Offset(m)	0.0			0.0			0.0			0.0		
Crosswalk Width(m)	1.6			1.6			1.6			1.6		
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Sign Control	Stop			Stop			Stop			Stop		

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	43.2% ICU Level of Service A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
21: Building Driveways & Street A

<2043 Future Total>AM
12-20-2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔			↔			↔		
Sign Control	Stop			Stop			Stop			Stop		
Traffic Volume (vph)	30	241	38	46	83	36	0	0	132	104	0	0
Future Volume (vph)	30	241	38	46	83	36	0	0	132	104	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)	33	262	41	50	90	39	0	0	143	113	0	0
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	336	179	143	113								
Volume Left (vph)	33	50	0	113								
Volume Right (vph)	41	39	143	0								
Hadj (s)	-0.02	-0.04	-0.57	0.23								
Departure Headway (s)	4.8	5.0	4.8	5.6								
Degree Utilization, x	0.45	0.25	0.19	0.18								
Capacity (veh/h)	709	668	660	572								
Control Delay (s)	11.7	9.6	8.9	9.8								
Approach Delay (s)	11.7	9.6	8.9	9.8								
Approach LOS	B	A	A	A								

Intersection Summary	
Delay	10.4
Level of Service	B
Intersection Capacity Utilization	43.2% ICU Level of Service A
Analysis Period (min)	15

Lanes, Volumes, Timings
20: Street A & Walnut Lane

<2043 Future Total_Signal>AM
12-20-2024

	→	↖	↙	←	↘	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↔			↔	↔	↔
Traffic Volume (vph)	79	42	123	231	279	197
Future Volume (vph)	79	42	123	231	279	197
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.953			0.944		
Flt Protected				0.983	0.972	
Satd. Flow (prot)	1795	0	0	1851	1728	0
Flt Permitted				0.839	0.972	
Satd. Flow (perm)	1795	0	0	1580	1728	0
Right Turn on Red		Yes			Yes	
Satd. Flow (RTOR)	46				61	
Link Speed (k/h)	40			40	30	
Link Distance (m)	121.1			433.1	80.3	
Travel Time (s)	10.9			39.0	9.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	86	46	134	251	303	214
Shared Lane Traffic (%)						
Lane Group Flow (vph)	132	0	0	385	517	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2		1	2	1	
Detector Template	Thru		Left	Thru	Left	
Leading Detector (m)	10.0		2.0	10.0	2.0	
Trailing Detector (m)	0.0		0.0	0.0	0.0	
Detector 1 Position(m)	0.0		0.0	0.0	0.0	
Detector 1 Size(m)	0.6		2.0	0.6	2.0	
Detector 1 Type	CI+Ex		CI+Ex	CI+Ex	CI+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	CI+Ex			CI+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		Perm	NA	Prot	
Protected Phases	2			6	8	
Permitted Phases				6		
Detector Phase	2			6	8	
Switch Phase						
Minimum Initial (s)	20.0			20.0	8.0	

Lanes, Volumes, Timings
20: Street A & Walnut Lane

<2043 Future Total_Signal>AM
12-20-2024

	→	↖	↙	←	↘	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Minimum Split (s)	28.0			28.0	28.0	23.0
Total Split (s)	35.0			35.0	35.0	25.0
Total Split (%)	58.3%			58.3%	58.3%	41.7%
Maximum Green (s)	29.2			29.2	29.2	18.3
Yellow Time (s)	3.3			3.3	3.3	3.0
All-Red Time (s)	2.5			2.5	2.5	3.7
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	5.8			5.8	6.7	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	Max			Max	Max	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	15.0			15.0	15.0	9.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	29.2			29.2	17.8	
Actuated g/C Ratio	0.49			0.49	0.30	
v/c Ratio	0.15			0.50	0.92	
Control Delay	6.3			13.2	44.1	
Queue Delay	0.0			0.0	0.0	
Total Delay	6.3			13.2	44.1	
LOS	A			B	D	
Approach Delay	6.3			13.2	44.1	
Approach LOS	A			B	D	

Intersection Summary

Area Type:	Other
Cycle Length: 60	
Actuated Cycle Length: 59.5	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.92	
Intersection Signal Delay: 27.8	Intersection LOS: C
Intersection Capacity Utilization 78.4%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 20: Street A & Walnut Lane



Lanes, Volumes, Timings
3: Dixie Road & Kingston Road

<2043 Future Total_PHF>AM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↕	↔	↔	↕	↔	↔	↕	↔	↔	↕	↔
Traffic Volume (vph)	80	738	139	78	579	94	67	15	29	155	35	144
Future Volume (vph)	80	738	139	78	579	94	67	15	29	155	35	144
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	2.8	3.6	3.4	2.8	3.5	3.1	3.6	4.0	3.7	3.8	4.2	3.7
Grade (%)	6%		0%		0%		0%		0%		0%	
Storage Length (m)	145.4		64.5	51.0		79.5	13.0		0.0	16.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	66.4			48.0			18.0			25.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		1.00	0.99		1.00	0.99		1.00	0.99	
Frt	0.976		0.979		0.901		0.879					
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1564	3280	0	1645	3298	0	1752	1771	0	1827	1759	0
Flt Permitted	0.950			0.950			0.592			0.728		
Satd. Flow (perm)	1553	3280	0	1639	3298	0	1089	1771	0	1397	1759	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		23			18			29			144	
Link Speed (kh)	60		60		40		60					
Link Distance (m)	896.3		191.2		44.0		236.2					
Travel Time (s)	53.8		11.5		4.0		14.2					
Confl. Peds. (#/hr)	6		4	4		6	3		2	2		3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	4%	2%	0%	6%	2%	3%	0%	0%	1%	0%	0%
Bus Blockages (#/hr)	0	0	6	0	0	6	0	0	0	0	0	0
Adj. Flow (vph)	80	738	139	78	579	94	67	15	29	155	35	144
Shared Lane Traffic (%)												
Lane Group Flow (vph)	80	877	0	78	673	0	67	44	0	155	179	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	
Median Width(m)	2.8		2.8		3.8		4.9					
Link Offset(m)	0.0		0.0		0.0		4.9					
Crosswalk Width(m)	4.9		4.9		4.9		4.9					
Two way Left Turn Lane	Yes											
Headway Factor	1.17	1.04	1.07	1.13	1.01	1.08	1.00	0.94	0.99	0.97	0.92	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	0	0		0	0		0	0		1	1	
Detector Template												
Leading Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		7.5	7.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		-1.5	-1.5	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		-1.5	-1.5	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		9.0	9.0	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6		8			4		

Lanes, Volumes, Timings
3: Dixie Road & Kingston Road

<2043 Future Total_PHF>AM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	8		4		8		8		4		4	
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	10.0	28.0		10.0	28.0		43.0	43.0		41.0	41.0	
Total Split (s)	15.0	59.0		11.0	55.0		50.0	50.0		50.0	50.0	
Total Split (%)	12.5%	49.2%		9.2%	45.8%		41.7%	41.7%		41.7%	41.7%	
Maximum Green (s)	10.0	52.4		6.0	48.4		40.5	40.5		40.5	40.5	
Yellow Time (s)	3.0	4.2		3.0	4.2		4.4	4.4		4.4	4.4	
All-Red Time (s)	2.0	2.4		2.0	2.4		5.1	5.1		5.1	5.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.6		5.0	6.6		9.5	9.5		9.5	9.5	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes			Yes								
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)	7.0		7.0		7.0		7.0		7.0		7.0	
Flash Dont Walk (s)	14.0		14.0		23.0		23.0		23.0		23.0	
Pedestrian Calls (#/hr)	6		1		7		7		4		4	
Act Effect Green (s)	9.3	73.4		6.0	72.5		19.5	19.5		19.5	19.5	
Actuated g/C Ratio	0.08	0.61		0.05	0.60		0.16	0.16		0.16	0.16	
v/c Ratio	0.66	0.44		0.95	0.34		0.38	0.14		0.69	0.44	
Control Delay	78.8	13.8		149.3	7.2		48.7	19.8		61.5	13.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	78.8	13.8		149.3	7.2		48.7	19.8		61.5	13.9	
LOS	E	B		F	A		D	B		E	B	
Approach Delay	19.2		21.9		37.3		36.0					
Approach LOS	B		C		D		D					

Intersection Summary

Area Type: Other
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 107.8 (90%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 85
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.95
 Intersection Signal Delay: 23.7
 Intersection LOS: C
 Intersection Capacity Utilization 73.7%
 ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 3: Dixie Road & Kingston Road



Lanes, Volumes, Timings

6: Liverpool Road & Kingston Road

<2043 Future Total_PHF>AM

12-20-2024

	↖	→	↘	↙	←	↖	↙	↘	↙	↘	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗	↖	↖	↖↗	↖	↖	↖↗	↖	↖	↖↗	↖
Traffic Volume (vph)	253	492	482	185	351	50	134	408	146	84	761	230
Future Volume (vph)	253	492	482	185	351	50	134	408	146	84	761	230
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.1	3.4	3.6	3.3	3.7	3.4	3.8	4.1	4.8	4.7	3.8	3.3
Storage Length (m)	188.8		97.9	170.7		117.0	185.5		52.0	49.0		60.5
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	31.6			22.7			20.8			25.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.98		0.97	0.99		0.96	0.99		0.93	0.98		0.96
Frt			0.850			0.850			0.850			0.850
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1671	3299	1538	1694	3510	1579	1774	3700	1647	2026	3618	1516
Fit Permitted	0.950			0.950			0.246			0.509		
Satd. Flow (perm)	1644	3299	1487	1675	3510	1517	455	3700	1536	1061	3618	1452
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			151			174			146			230
Link Speed (k/h)		60			60			50				50
Link Distance (m)		694.6			396.4			257.7				348.6
Travel Time (s)		41.7			23.8			18.6				25.1
Confl. Peds. (#/hr)	21		17	17		21	34		44	44		34
Confl. Bikes (#/hr)						1						
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	7%	5%	3%	4%	0%	4%	3%	8%	0%	2%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	7	0	0	0
Adj. Flow (vph)	253	492	482	185	351	50	134	408	146	84	761	230
Shared Lane Traffic (%)												
Lane Group Flow (vph)	253	492	482	185	351	50	134	408	146	84	761	230
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.3			3.3			4.7				4.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		1.6			1.6			1.6				1.6
Two way Left Turn Lane		Yes										Yes
Headway Factor	1.08	1.03	1.00	1.04	0.99	1.03	0.97	0.93	0.88	0.86	0.97	1.04
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4				9.4
Detector 2 Size(m)		0.6			0.6			0.6				0.6

1105-1163 Kingston Road
WSP

Synchro 11 Report
Page 3

Lanes, Volumes, Timings

6: Liverpool Road & Kingston Road

<2043 Future Total_PHF>AM

12-20-2024

	↖	→	↘	↙	←	↖	↙	↘	↙	↘	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type	CI+Ex			CI+Ex			CI+Ex			CI+Ex		
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	custom	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6	8		2	4		4
Detector Phase	5	2	2	1	6	6	3	8	2	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	5.0	8.0	20.0	5.0	8.0	8.0
Minimum Split (s)	10.0	36.0	36.0	10.0	36.0	36.0	8.0	51.0	36.0	8.0	51.0	51.0
Total Split (s)	25.0	42.0	42.0	19.0	36.0	36.0	8.0	51.0	42.0	8.0	51.0	51.0
Total Split (%)	20.8%	35.0%	35.0%	15.8%	30.0%	30.0%	6.7%	42.5%	35.0%	6.7%	42.5%	42.5%
Maximum Green (s)	20.0	34.9	34.9	14.0	28.9	28.9	5.0	41.9	34.9	5.0	41.9	41.9
Yellow Time (s)	3.0	4.3	4.3	3.0	4.3	4.3	3.0	3.8	4.3	3.0	3.8	3.8
All-Red Time (s)	2.0	2.8	2.8	2.0	2.8	2.8	0.0	5.3	2.8	0.0	5.3	5.3
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	0.0
Total Lost Time (s)	5.0	7.1	7.1	5.0	7.1	7.1	3.0	9.1	7.1	3.0	9.1	9.1
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
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	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	C-Max	None	Max	Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		21.0	21.0		21.0	21.0		33.0	21.0		33.0	33.0
Pedestrian Calls (#/hr)		44	44		31	31		61	44		49	49
Act Effect Green (s)	19.7	34.9	34.9	14.0	29.2	29.2	53.6	43.5	34.9	53.0	41.9	41.9
Actuated g/C Ratio	0.16	0.29	0.29	0.12	0.24	0.24	0.45	0.36	0.29	0.44	0.35	0.35
v/c Ratio	0.93	0.51	0.89	0.94	0.41	0.10	0.52	0.30	0.27	0.17	0.60	0.35
Control Delay	98.2	34.0	40.5	103.0	40.0	0.4	27.6	28.7	6.4	18.8	34.6	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	98.2	34.0	40.5	103.0	40.0	0.4	27.6	28.7	6.4	18.8	34.6	5.0
LOS	F	C	D	F	D	A	C	C	A	B	C	A
Approach Delay		49.8			56.5			23.7				27.1
Approach LOS		D			E			C				C

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 29.4 (25%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 115

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.94

Intersection Signal Delay: 39.1

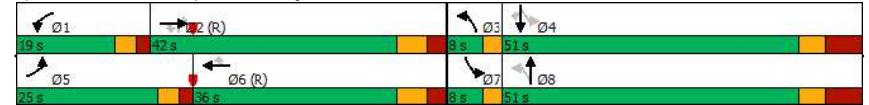
Intersection LOS: D

Intersection Capacity Utilization 99.1%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 6: Liverpool Road & Kingston Road



Lanes, Volumes, Timings
1: Walnut Lane & Kingston Road

<2043 Future Total>PM
12-20-2024

	↖	→	↘	↙	←	↖	↙	↘	↙	↘	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↗		↖	↖↗		↖		↖	↖	↖	↖
Traffic Volume (vph)	38	1592	225	37	646	43	223	0	323	24	16	26
Future Volume (vph)	38	1592	225	37	646	43	223	0	323	24	16	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.0	3.6	3.5	3.0	3.6	3.7	3.3	3.5	3.7	3.2	3.7	3.7
Storage Length (m)	26.0		25.8	37.0		0.0	63.2		0.0	18.5		0.0
Storage Lanes	1		0	1		0	1		1	1		0
Taper Length (m)	24.0			26.0			24.4			18.1		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	1.00		0.98		0.98	0.99	0.98	
Frt		0.981			0.991			0.850			0.907	
Flt Protected	0.950			0.950			0.950		0.950		0.950	
Satd. Flow (prot)	1685	3464	0	1685	3505	0	1745	0	1633	1725	1709	0
Flt Permitted	0.950			0.950			0.728		0.950		0.950	
Satd. Flow (perm)	1677	3464	0	1683	3505	0	1313	0	1603	1713	1709	0
Right Turn on Red			Yes			Yes		Yes			Yes	
Satd. Flow (RTOR)		18			9				85			28
Link Speed (k/h)		60			60			40				40
Link Distance (m)		129.3			694.6			114.0				179.7
Travel Time (s)		7.8			41.7			10.3				16.2
Confl. Peds. (#/hr)	5		7	7		5	14		5	5		14
Confl. Bikes (#/hr)			1									
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%	2%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	3	0	0	0	0	0	0	0	0	0
Adj. Flow (vph)	41	1730	245	40	702	47	242	0	351	26	17	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	41	1975	0	40	749	0	242	0	351	26	45	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	
Median Width(m)		3.1			3.1			3.3				3.3
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			1.6			4.9				4.9
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.09	1.00	1.01	1.09	1.00	0.99	1.04	1.01	0.99	1.06	0.99	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	0	0		0	0		1		1	0		0
Detector Template								Right				
Leading Detector (m)	0.0	0.0		0.0	0.0		7.5		6.1	0.0		0.0
Trailing Detector (m)	0.0	0.0		0.0	0.0		-1.5		0.0	0.0		0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		-1.5		0.0	0.0		0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8		9.0		6.1	6.1		1.8
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0		0.0
Turn Type	Prot	NA		Prot	NA		Perm		Perm	Perm		NA
Protected Phases	5	2		1	6							4

Lanes, Volumes, Timings
1: Walnut Lane & Kingston Road

<2043 Future Total>PM
12-20-2024

	↖	→	↘	↙	←	↖	↙	↘	↙	↘	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases									8		8	4
Detector Phase	5	2			1	6		8		8	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0		8.0		8.0	8.0	8.0	
Minimum Split (s)	10.0	33.0		10.0	33.0		38.0		38.0	38.0	38.0	
Total Split (s)	10.0	76.0		15.0	81.0		39.0		39.0	39.0	39.0	
Total Split (%)	7.7%	58.5%		11.5%	62.3%		30.0%		30.0%	30.0%	30.0%	
Maximum Green (s)	5.0	69.4		10.0	74.4		31.0		31.0	31.0	31.0	
Yellow Time (s)	3.0	4.4		3.0	4.4		3.3		3.3	3.3	3.3	
All-Red Time (s)	2.0	2.2		2.0	2.2		4.7		4.7	4.7	4.7	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	
Total Lost Time (s)	5.0	6.6		5.0	6.6		8.0		8.0	8.0	8.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0		3.0	3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None		None	None	None	
Walk Time (s)		7.0			7.0		7.0		7.0	7.0	7.0	
Flash Dont Walk (s)		19.0			19.0		22.0		22.0	22.0	22.0	
Pedestrian Calls (#/hr)		8			4		2		2	9	9	
Act Effect Green (s)	5.0	76.8		8.2	79.9		27.5		27.5	27.5	27.5	
Actuated g/C Ratio	0.04	0.59		0.06	0.61		0.21		0.21	0.21	0.21	
v/c Ratio	0.64	0.96		0.38	0.35		0.87		0.86	0.07	0.12	
Control Delay	80.2	37.1		63.6	10.5		78.7		58.1	39.5	20.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0		0.0	0.0	0.0	
Total Delay	80.2	37.1		63.6	10.5		78.7		58.1	39.5	20.5	
LOS	F	D		E	B		E		E	D	C	
Approach Delay		38.0			13.2		66.5				27.5	
Approach LOS		D			B		E				C	

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 77 (59%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 115
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.96
 Intersection Signal Delay: 37.0
 Intersection LOS: D
 Intersection Capacity Utilization 97.9%
 ICU Level of Service F
 Analysis Period (min) 15

Splits and Phases: 1: Walnut Lane & Kingston Road

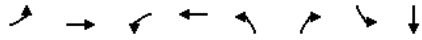


Queues

<2043 Future Total>PM

1: Walnut Lane & Kingston Road

12-20-2024



Lane Group	EBL	EBT	WBL	WBT	NBL	NBR	SBL	SBT
Lane Group Flow (vph)	41	1975	40	749	242	351	26	45
w/c Ratio	0.64	0.96	0.38	0.35	0.87	0.86	0.07	0.12
Control Delay	80.2	37.1	63.6	10.5	78.7	58.1	39.5	20.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	80.2	37.1	63.6	10.5	78.7	58.1	39.5	20.5
Queue Length 50th (m)	10.9	~279.5	10.7	33.3	59.0	66.3	5.3	3.4
Queue Length 95th (m)	m14.2	m#316.7	m20.4	46.5	#97.1	#109.3	12.9	13.3
Internal Link Dist (m)		105.3		670.6				155.7
Turn Bay Length (m)	26.0		37.0		63.2		18.5	
Base Capacity (vph)	64	2054	129	2157	313	446	408	428
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced w/c Ratio	0.64	0.96	0.31	0.35	0.77	0.79	0.06	0.11

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.

m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings

<2043 Future Total>PM

2: Street B & Kingston Road

12-20-2024



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑		↑↑		↑
Traffic Volume (vph)	1602	78	0	1023	0	250
Future Volume (vph)	1602	78	0	1023	0	250
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.3	3.7	3.5	3.7	4.5
Storage Length (m)		45.0	0.0		0.0	0.0
Storage Lanes		1	0		0	1
Taper Length (m)			2.5		2.5	
Lane Util. Factor	0.95	1.00	1.00	0.95	1.00	1.00
Ped Bike Factor						
Frt		0.850				0.865
Flt Protected						
Satd. Flow (prot)	3500	1561	0	3500	0	1808
Flt Permitted						
Satd. Flow (perm)	3500	1561	0	3500	0	1808
Link Speed (k/h)	60			60		30
Link Distance (m)	191.2			129.3		96.9
Travel Time (s)	11.5			7.8		11.6
Confl. Peds. (#/hr)		3		3		
Confl. Bikes (#/hr)		1				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	2%	2%	2%	0%
Adj. Flow (vph)	1741	85	0	1112	0	272
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1741	85	0	1112	0	272
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.0			3.0		0.0
Link Offset(m)	0.0			0.0		0.0
Crosswalk Width(m)	1.6			1.6		1.6
Two way Left Turn Lane	Yes			Yes		
Headway Factor	1.01	1.04	0.99	1.01	0.99	0.88
Turning Speed (k/h)		14	24		24	14
Sign Control	Free			Free		Stop

Intersection Summary

Area Type: Other

Control Type: Unsignalized

Intersection Capacity Utilization 66.4%

ICU Level of Service C

Analysis Period (min) 15

HCM Unsignalized Intersection Capacity Analysis
2: Street B & Kingston Road

<2043 Future Total>PM
12-20-2024

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑	↑		↑↑		↑
Traffic Volume (veh/h)	1602	78	0	1023	0	250
Future Volume (Veh/h)	1602	78	0	1023	0	250
Sign Control	Free		Free		Stop	
Grade	0%		0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	1741	85	0	1112	0	272
Pedestrians	3					
Lane Width (m)					4.5	
Walking Speed (m/s)	1.1					
Percent Blockage	0					
Right turn flare (veh)						
Median type	TWLTL		TWLTL			
Median storage (veh)	2		2			
Upstream signal (m)	191		129			
pX, platoon unblocked			0.43	0.48	0.43	
vC, conflicting volume			1744	2300	874	
vC1, stage 1 conf vol			1744			
vC2, stage 2 conf vol			556			
vCu, unblocked vol			103	609	0	
tC, single (s)			4.1	6.8	6.9	
tC, 2 stage (s)			5.8			
tF (s)			2.2	3.5	3.3	
p0 queue free %			100	100	42	
cM capacity (veh/h)			642	365	471	
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	NB 1
Volume Total	870	870	85	556	556	272
Volume Left	0	0	0	0	0	0
Volume Right	0	0	85	0	0	272
cSH	1700	1700	1700	1700	1700	471
Volume to Capacity	0.51	0.51	0.05	0.33	0.33	0.58
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	27.2
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	22.5
Lane LOS	C					
Approach Delay (s)	0.0		0.0		22.5	
Approach LOS	C					
Intersection Summary						
Average Delay	1.9					
Intersection Capacity Utilization	66.4%		ICU Level of Service		C	
Analysis Period (min)	15					

Lanes, Volumes, Timings
3: Dixie Road & Kingston Road

<2043 Future Total>PM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↑	↑↑		↑	↑↑		↑	↑		↑	↑	↑
Traffic Volume (vph)	204	1461	398	40	813	169	164	54	63	148	28	92
Future Volume (vph)	204	1461	398	40	813	169	164	54	63	148	28	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	2.8	3.6	3.4	2.8	3.5	3.1	3.6	4.0	3.7	3.8	4.2	3.7
Grade (%)	6%			0%			0%			0%		
Storage Length (m)	145.4		64.5	51.0		79.5	13.0		0.0	16.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	66.4			48.0			18.0			25.0		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.99		1.00	1.00		1.00	0.99		0.99	0.99	
Frt	0.968		0.974		0.920		0.885					
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1579	3296	0	1597	3407	0	1770	1786	0	1827	1730	0
Fit Permitted	0.950			0.950			0.674			0.676		
Satd. Flow (perm)	1578	3296	0	1595	3407	0	1250	1786	0	1290	1730	0
Right Turn on Red			Yes			Yes			Yes			
Satd. Flow (RTOR)	43		24		42		100			Yes		
Link Speed (k/h)	60		60		40		60					
Link Distance (m)	896.3		191.2		44.0		236.2					
Travel Time (s)	53.8		11.5		4.0		14.2					
Confl. Peds. (#/hr)	1		6	6		1	4		7	7		4
Confl. Bikes (#/hr)	1											
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 (%)	1%	2%	2%	3%	2%	0%	2%	0%	2%	1%	0%	3%
Bus Blockages (#/hr)	0	0	5	0	0	5	0	0	0	0	0	0
Adj. Flow (vph)	222	1588	433	43	884	184	178	59	68	161	30	100
Shared Lane Traffic (%)												
Lane Group Flow (vph)	222	2021	0	43	1068	0	178	127	0	161	130	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	2.8		2.8		3.8			3.8				
Link Offset(m)	0.0		0.0		0.0			0.0				
Crosswalk Width(m)	4.9		4.9		4.9			4.9				
Two way Left Turn Lane	Yes											
Headway Factor	1.17	1.04	1.07	1.13	1.01	1.08	1.00	0.94	0.99	0.97	0.92	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	0	0		0	0		0	0		1	1	
Detector Template												
Leading Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		7.5	7.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		-1.5	-1.5	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		-1.5	-1.5	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		9.0	9.0	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	

Lanes, Volumes, Timings
3: Dixie Road & Kingston Road

<2043 Future Total>PM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases	5	2		1	6			8			4	4
Permitted Phases							8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	10.0	28.0		10.0	28.0		41.0	41.0		41.0	41.0	
Total Split (s)	26.0	79.0		10.0	63.0		41.0	41.0		41.0	41.0	
Total Split (%)	20.0%	60.8%		7.7%	48.5%		31.5%	31.5%		31.5%	31.5%	
Maximum Green (s)	21.0	72.4		5.0	56.4		31.5	31.5		31.5	31.5	
Yellow Time (s)	3.0	4.2		3.0	4.2		4.4	4.4		4.4	4.4	
All-Red Time (s)	2.0	2.4		2.0	2.4		5.1	5.1		5.1	5.1	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.6		5.0	6.6		9.5	9.5		9.5	9.5	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		14.0			14.0		23.0	23.0		23.0	23.0	
Pedestrian Calls (#/hr)		4			6		2	2		3	3	
Act Effect Green (s)	20.3	82.4		5.0	65.2		23.5	23.5		23.5	23.5	
Actuated g/C Ratio	0.16	0.63		0.04	0.50		0.18	0.18		0.18	0.18	
v/c Ratio	0.90	0.96		0.70	0.62		0.79	0.36		0.69	0.33	
Control Delay	71.8	35.4		117.4	25.6		74.1	32.0		64.5	14.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	71.8	35.4		117.4	25.6		74.1	32.0		64.5	14.8	
LOS	E	D		F	C		E	C		E	B	
Approach Delay		39.0			29.2			56.6			42.3	
Approach LOS		D			C			E			D	

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 115 (88%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 140
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.96
 Intersection Signal Delay: 37.8 Intersection LOS: D
 Intersection Capacity Utilization 92.7% ICU Level of Service F
 Analysis Period (min) 15

Splits and Phases: 3: Dixie Road & Kingston Road



Queues
3: Dixie Road & Kingston Road

<2043 Future Total>PM
12-20-2024

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	222	2021	43	1068	178	127	161	130
v/c Ratio	0.90	0.96	0.70	0.62	0.79	0.36	0.69	0.33
Control Delay	71.8	35.4	117.4	25.6	74.1	32.0	64.5	14.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.8	35.4	117.4	25.6	74.1	32.0	64.5	14.8
Queue Length 50th (m)	53.2	275.4	11.7	84.0	43.9	18.9	38.9	6.5
Queue Length 95th (m)	m#68.0	#350.7	m#26.9	102.8	65.4	34.9	58.8	22.1
Internal Link Dist (m)		872.3		167.2		20.0		212.2
Turn Bay Length (m)	145.4		51.0		13.0		16.0	
Base Capacity (vph)	255	2105	61	1720	302	464	312	494
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.87	0.96	0.70	0.62	0.59	0.27	0.52	0.26

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings
4: Street B & Shopping Plaza Entrance

<2043 Future Total>PM
12-20-2024

	↖	↗	↙	↘	↑	↓
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖			↘	↖	↗
Traffic Volume (vph)	56	324	47	148	26	78
Future Volume (vph)	56	324	47	148	26	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.885					0.898
Fit Protected	0.993					0.988
Satd. Flow (prot)	1633	0	0	1898	1725	0
Fit Permitted	0.993					0.988
Satd. Flow (perm)	1633	0	0	1898	1725	0
Link Speed (k/h)	30					30
Link Distance (m)	193.0			49.0	49.9	
Travel Time (s)	23.2			5.9	6.0	
Confl. Peds. (#/hr)	1					
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	4%	0%	0%	0%	0%
Adj. Flow (vph)	61	352	51	161	28	85
Shared Lane Traffic (%)						
Lane Group Flow (vph)	413	0	0	212	113	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7					0.0
Link Offset(m)	0.0					0.0
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	97	97	97			
Sign Control	Stop			Stop		
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	46.9%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
4: Street B & Shopping Plaza Entrance

<2043 Future Total>PM
12-20-2024

	↖	↗	↙	↘	↑	↓
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖			↘	↖	↗
Sign Control	Stop			Stop		
Traffic Volume (vph)	56	324	47	148	26	78
Future Volume (vph)	56	324	47	148	26	78
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	61	352	51	161	28	85
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total (vph)	413	212	113			
Volume Left (vph)	61	51	0			
Volume Right (vph)	352	0	85			
Hadj (s)	-0.42	0.05	-0.45			
Departure Headway (s)	4.3	5.1	4.7			
Degree Utilization, x	0.49	0.30	0.15			
Capacity (veh/h)	796	664	693			
Control Delay (s)	11.4	10.2	8.5			
Approach Delay (s)	11.4	10.2	8.5			
Approach LOS	B	B	A			
Intersection Summary						
Delay			10.6			
Level of Service	B					
Intersection Capacity Utilization	46.9%		ICU Level of Service		A	
Analysis Period (min)	15					

Lanes, Volumes, Timings
5: Street B & Street A

<2043 Future Total>PM
12-20-2024

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	171	0	0	342	3
Future Volume (vph)	0	171	0	0	342	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.865					
Fit Protected						0.953
Satd. Flow (prot)	1662	0	1921	0	0	1778
Fit Permitted						0.953
Satd. Flow (perm)	1662	0	1921	0	0	1778
Link Speed (k/h)	30		30		30	
Link Distance (m)	193.3		78.3		49.0	
Travel Time (s)	23.2		9.4		5.9	
Confl. Peds. (#/hr)	5	5				
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	0%	0%	0%	3%	0%
Adj. Flow (vph)	0	186	0	0	372	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	186	0	0	0	0	375
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0		0.0	
Link Offset(m)	0.0		0.0		0.0	
Crosswalk Width(m)	1.6		1.6		1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	97		97		97	
Sign Control	Stop		Stop		Stop	
Intersection Summary						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	37.2%		ICU Level of Service		A	
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis
5: Street B & Street A

<2043 Future Total>PM
12-20-2024

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop		Stop	
Traffic Volume (vph)	0	171	0	0	342	3
Future Volume (vph)	0	171	0	0	342	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	186	0	0	372	3
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total (vph)	186	0	375			
Volume Left (vph)	0	0	372			
Volume Right (vph)	186	0	0			
Hadj (s)	-0.60	0.00	0.25			
Departure Headway (s)	4.2	4.8	4.6			
Degree Utilization, x	0.22	0.00	0.48			
Capacity (veh/h)	788	713	761			
Control Delay (s)	8.4	7.8	11.7			
Approach Delay (s)	8.4	0.0	11.7			
Approach LOS	A	A	B			
Intersection Summary						
Delay			10.6			
Level of Service			B			
Intersection Capacity Utilization			37.2%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings

<2043 Future Total>PM

6: Liverpool Road & Kingston Road

12-20-2024

	↖	→	↘	↙	←	↖	↙	↘	↙	↘	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖↖	↖	↖	↖↖	↖	↖	↖↖	↖	↖	↖↖	↖
Traffic Volume (vph)	284	1001	546	274	413	67	155	826	232	95	591	159
Future Volume (vph)	284	1001	546	274	413	67	155	826	232	95	591	159
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.1	3.4	3.6	3.3	3.7	3.4	3.8	4.1	4.8	4.7	3.8	3.3
Storage Length (m)	188.8		97.9	170.7		117.0	185.5		52.0	49.0		60.5
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	31.6			22.7			20.8			25.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.95	0.99		0.96	0.99		0.90	0.99		0.96
Frt			0.850			0.850			0.850			0.850
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1688	3461	1599	1728	3579	1579	1791	3773	1732	2026	3654	1561
Fit Permitted	0.950			0.950			0.293			0.142		
Satd. Flow (perm)	1663	3461	1512	1711	3579	1517	1711	3773	1564	299	3654	1499
Right Turn on Red			Yes			Yes			Yes		Yes	
Satd. Flow (RTOR)			93			160			165			173
Link Speed (k/h)		60			60			50			50	
Link Distance (m)		694.6			396.4			257.7			348.6	
Travel Time (s)		41.7			23.8			18.6			25.1	
Conf. Peds. (#/hr)	20		31	31		20	29		62	62		29
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 (%)	1%	2%	1%	1%	2%	0%	3%	1%	4%	0%	1%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	4	0	0	0
Adj. Flow (vph)	309	1088	593	298	449	73	168	898	252	103	642	173
Shared Lane Traffic (%)												
Lane Group Flow (vph)	309	1088	593	298	449	73	168	898	252	103	642	173
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.3			3.3			4.7			4.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane		Yes									Yes	
Headway Factor	1.08	1.03	1.00	1.04	0.99	1.03	0.97	0.93	0.87	0.86	0.97	1.04
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	

Lanes, Volumes, Timings

<2043 Future Total>PM

6: Liverpool Road & Kingston Road

12-20-2024

	↖	→	↘	↙	←	↖	↙	↘	↙	↘	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0						0.0	
Turn Type	Prot	NA	pm+ov	Prot	NA	Perm	pm+pt	NA	custom	pm+pt	NA	Perm
Protected Phases	5	2	3	1	6					3	8	7
Permitted Phases			2			6	8		2	4		4
Detector Phase	5	2	3	1	6	6	3	8	2	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	5.0	5.0	20.0	20.0	5.0	8.0	20.0	5.0	8.0	8.0
Minimum Split (s)	10.0	36.0	8.0	10.0	36.0	36.0	8.0	50.0	36.0	8.0	50.0	50.0
Total Split (s)	34.0	46.0	8.0	26.0	38.0	38.0	8.0	50.0	46.0	8.0	50.0	50.0
Total Split (%)	26.2%	35.4%	6.2%	20.0%	29.2%	29.2%	6.2%	38.5%	35.4%	6.2%	38.5%	38.5%
Maximum Green (s)	29.0	38.9	5.0	21.0	30.9	30.9	5.0	40.9	38.9	5.0	40.9	40.9
Yellow Time (s)	3.0	4.3	3.0	3.0	4.3	4.3	3.0	3.8	4.3	3.0	3.8	3.8
All-Red Time (s)	2.0	2.8	0.0	2.0	2.8	2.8	0.0	5.3	2.8	0.0	5.3	5.3
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	0.0
Total Lost Time (s)	5.0	7.1	3.0	5.0	7.1	7.1	3.0	9.1	7.1	3.0	9.1	9.1
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
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	3.0
Recall Mode	None	C-Max	None	None	C-Max	C-Max	None	Max	C-Max	None	Max	Max
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		21.0			21.0	21.0		33.0	21.0		33.0	33.0
Pedestrian Calls (#/hr)		15			20	20		28	15		15	15
Act Effct Green (s)	26.8	38.9	48.0	21.0	33.1	33.1	52.0	40.9	38.9	52.0	40.9	40.9
actuated g/C Ratio	0.21	0.30	0.37	0.16	0.25	0.25	0.40	0.31	0.30	0.40	0.31	0.31
v/c Ratio	0.89	1.05	0.96	1.07	0.49	0.14	0.63	0.76	0.43	0.55	0.56	0.29
Control Delay	54.0	86.5	60.7	124.3	44.1	0.6	38.7	45.0	15.2	35.6	39.3	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	0.0
Total Delay	54.0	86.5	60.7	124.3	44.1	0.6	38.7	45.0	15.2	35.6	39.3	5.9
LOS	D	F	E	F	D	A	D	D	B	D	D	A
Approach Delay		73.7			69.4			38.5				32.6
Approach LOS		E			E			D				C

Intersection Summary

Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	130
Offset: 78 (60%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Natural Cycle:	145
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.07
Intersection Signal Delay:	56.3
Intersection LOS:	E
Intersection Capacity Utilization:	105.8%
ICU Level of Service:	G
Analysis Period (min):	15

Splits and Phases: 6: Liverpool Road & Kingston Road



Queues

<2043 Future Total>PM

6: Liverpool Road & Kingston Road

12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	309	1088	593	298	449	73	168	898	252	103	642	173
w/c Ratio	0.89	1.05	0.96	1.07	0.49	0.14	0.63	0.76	0.43	0.55	0.56	0.29
Control Delay	54.0	86.5	60.7	124.3	44.1	0.6	38.7	45.0	15.2	35.6	39.3	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	0.0
Total Delay	54.0	86.5	60.7	124.3	44.1	0.6	38.7	45.0	15.2	35.6	39.3	5.9
Queue Length 50th (m)	79.7	~164.6	138.8	~84.3	53.1	0.0	27.0	108.8	16.6	15.8	71.8	0.0
Queue Length 95th (m)	m87.5	m#182.6	m#159.9	#139.7	70.0	0.0	42.7	132.7	40.1	27.4	90.7	15.8
Internal Link Dist (m)		670.6			372.4			233.7			324.6	
Turn Bay Length (m)	188.8		97.9	170.7		117.0	185.5		52.0	49.0		60.5
Base Capacity (vph)	376	1035	620	279	911	505	266	1187	583	186	1149	590
Starvation Cap Reductn	0	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced w/c Ratio	0.82	1.05	0.96	1.07	0.49	0.14	0.63	0.76	0.43	0.55	0.56	0.29

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.

m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings

<2043 Future Total>PM

8: Liverpool Road & Private Access/Pickering Parkway

12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔↔		↔↔	↔	↔	↔↔	↔↔↔	↔	↔	↔↔↔	↔
Traffic Volume (vph)	87	69	130	412	58	174	116	894	401	196	1360	46
Future Volume (vph)	87	69	130	412	58	174	116	894	401	196	1360	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.1	3.1	3.7	3.0	3.4	3.2	2.8	3.6	3.5	3.2	3.5	3.5
Storage Length (m)	0.0	0.0	57.0		62.1	54.4		75.7	132.5		35.5	
Storage Lanes	1		0	1		1		1	1		1	
Taper Length (m)	2.5			12.0				29.5			28.9	
Lane Util. Factor	1.00	0.95	0.95	0.97	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Ped Bike Factor		0.96		0.98					0.96	0.99		0.93
Frt		0.902				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1705	2959	0	3204	1858	1399	1645	5085	1569	1708	5079	1597
Flt Permitted	0.000			0.000			0.101			0.221		
Satd. Flow (perm)	0	2959	0	0	1858	1399	175	5085	1502	395	5079	1482
Right Turn on Red			Yes			Yes		Yes		Yes		Yes
Satd. Flow (RTOR)		141				189		436				144
Link Speed (k/h)	30				50			50				50
Link Distance (m)	82.8				328.5			162.3				257.7
Travel Time (s)	9.9				23.7			11.7				18.6
Confl. Peds. (#/hr)			21	21			21		21	21		21
Confl. Bikes (#/hr)			2				5					6
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%	2%	0%	5%	0%	2%	1%	1%	1%	0%
Bus Blockages (#/hr)	0	0	0	0	0	12	0	0	2	0	0	0
Adj. Flow (vph)	95	75	141	448	63	189	126	972	436	213	1478	50
Shared Lane Traffic (%)												
Lane Group Flow (vph)	95	216	0	448	63	189	126	972	436	213	1478	50
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		6.0			6.0			3.8				3.8
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		1.6			1.6			1.6				1.6
Two way Left Turn Lane												
Headway Factor	1.08	1.08	0.99	1.09	1.03	1.13	1.13	1.00	1.03	1.06	1.01	1.01
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4				9.4
Detector 2 Size(m)		0.6			0.6			0.6				0.6

Lanes, Volumes, Timings

<2043 Future Total>PM

8: Liverpool Road & Private Access/Pickering Parkway

12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type	CI+Ex		CI+Ex		CI+Ex		CI+Ex		CI+Ex		CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0		0.0		0.0		0.0		0.0		0.0	
Turn Type	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm
Protected Phases	3	7	4	8	8	5	2	2	6	1	6	6
Permitted Phases	7		8		8	2		2	6	1	6	6
Detector Phase	3	7	4	8	8	5	2	2	1	6	6	6
Switch Phase												
Minimum Initial (s)	8.0	8.0	8.0	8.0	8.0	5.0	20.0	20.0	5.0	8.0	8.0	8.0
Minimum Split (s)	15.0	15.0	34.0	34.0	34.0	8.0	30.0	30.0	8.0	30.0	30.0	30.0
Total Split (s)	21.0	21.0	34.0	34.0	34.0	9.0	36.0	36.0	9.0	36.0	36.0	36.0
Total Split (%)	21.0%	21.0%	34.0%	34.0%	34.0%	9.0%	36.0%	36.0%	9.0%	36.0%	36.0%	36.0%
Maximum Green (s)	14.4	14.4	27.4	27.4	27.4	6.0	29.7	29.7	6.0	29.7	29.7	29.7
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.0	4.2	4.2	3.0	4.2	4.2	4.2
All-Red Time (s)	3.3	3.3	3.3	3.3	3.3	0.0	2.1	2.1	0.0	2.1	2.1	2.1
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	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.6	3.0	6.3	6.3	3.0	6.3	6.3	6.3
Lead/Lag					Lead		Lag	Lag	Lead	Lag	Lag	Lag
Lead-Lag Optimize?												
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	3.0
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	None	C-Max	C-Max	C-Max
Walk Time (s)			19.0	19.0		17.0	17.0		17.0	17.0		17.0
Flash Dont Walk (s)			8.0	8.0		6.0	6.0		6.0	6.0		6.0
Pedestrian Calls (#/hr)			20	20		28	28		15	15		15
Act Effect Green (s)	11.0	11.0	20.9	20.9	20.9	48.9	39.6	39.6	48.9	39.6	39.6	39.6
Actuated g/C Ratio	0.11	0.11	0.21	0.21	0.21	0.49	0.40	0.40	0.49	0.40	0.40	0.40
v/c Ratio	0.51	0.48	0.67	0.16	0.43	0.73	0.48	0.51	0.78	0.74	0.07	0.07
Control Delay	51.0	18.9	40.8	31.2	7.5	38.1	20.3	8.7	41.2	30.2	0.2	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.0	18.9	40.8	31.2	7.5	38.1	20.3	8.7	41.2	30.2	0.2	0.2
LOS	D	B	D	C	A	D	C	A	D	C	C	A
Approach Delay	28.7		31.0		18.5		30.7					
Approach LOS	C		C		B		C					

Intersection Summary

Area Type: Other

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 15 (15%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 26.2

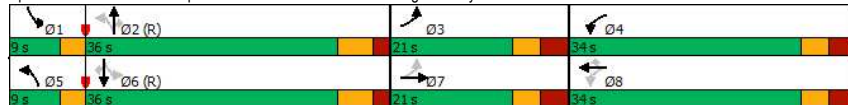
Intersection Capacity Utilization 71.5%

Analysis Period (min) 15

Intersection LOS: C

ICU Level of Service C

Splits and Phases: 8: Liverpool Road & Private Access/Pickering Parkway



Queues

<2043 Future Total>PM

8: Liverpool Road & Private Access/Pickering Parkway

12-20-2024



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Group Flow (vph)	95	216	448	63	189	126	972	436	213	1478	50	
v/c Ratio	0.51	0.48	0.67	0.16	0.43	0.73	0.48	0.51	0.78	0.74	0.07	
Control Delay	51.0	18.9	40.8	31.2	7.5	38.1	20.3	8.7	41.2	30.2	0.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	51.0	18.9	40.8	31.2	7.5	38.1	20.3	8.7	41.2	30.2	0.2	
Queue Length 50th (m)	17.7	7.1	42.3	10.3	0.0	8.1	53.8	32.4	20.8	84.8	0.0	
Queue Length 95th (m)	32.2	17.3	52.8	19.3	15.9	m#42.6	77.1	55.5	#63.3	#134.6	0.0	
Internal Link Dist (m)	58.8		304.5		138.3		233.7					
Turn Bay Length (m)			57.0		62.1		54.4	75.7		132.5	35.5	
Base Capacity (vph)	245	546	877	509	520	173	2012	857	272	2010	673	
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	0.39	0.40	0.51	0.12	0.36	0.73	0.48	0.51	0.78	0.74	0.07	

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings

<2043 Future Total>PM

9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp

12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	454	278	500	293	204	1137	0	0	1211	166
Future Volume (vph)	0	0	454	278	500	293	204	1137	0	0	1211	166
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.5	3.7	3.7	3.4	3.7
Storage Length (m)	0.0	0.0	0.0	0.0	125.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0
Storage Lanes	0		1	1		1	1		0	0		1
Taper Length (m)	2.5			2.5		30.0			2.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	1.00	0.91	1.00
Ped Bike Factor												0.92
Frt			0.865			0.850						0.850
Fit Protected				0.950	0.997		0.950					
Satd. Flow (prot)	0	0	1662	1734	1820	1581	1825	5079	0	0	4972	1633
Fit Permitted				0.950	0.997		0.137					
Satd. Flow (perm)	0	0	1662	1734	1820	1581	263	5079	0	0	4972	1508
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)						85						180
Link Speed (kh)		50			50			50			50	
Link Distance (m)		433.1			226.7			372.2			162.3	
Travel Time (s)		31.2			16.3			26.8			11.7	
Confl. Peds. (#/hr)							17		15	15		17
Confl. Bikes (#/hr)								6				7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	0%	0%	0%	1%	0%	1%	6%	2%	2%	0%
Adj. Flow (vph)	0	0	493	302	543	318	222	1236	0	0	1316	180
Shared Lane Traffic (%)				10%								
Lane Group Flow (vph)	0	0	493	272	573	318	222	1236	0	0	1316	180
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	1.01	0.99	1.01	0.99	0.99	1.03	0.99
Turning Speed (k/h)	97		97	24		14	97		14	24		97
Number of Detectors			1	1	2	1	1	2			2	1
Detector Template			Right	Left	Thru	Right	Left	Thru			Thru	Right
Leading Detector (m)			2.0	2.0	10.0	2.0	2.0	10.0			10.0	2.0
Trailing Detector (m)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Position(m)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Size(m)			2.0	2.0	0.6	2.0	2.0	0.6			0.6	2.0
Detector 1 Type			Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 2 Position(m)					9.4			9.4			9.4	
Detector 2 Size(m)					0.6			0.6			0.6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	

Lanes, Volumes, Timings

<2043 Future Total>PM

9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp

12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)						0.0					0.0	0.0
Turn Type			Over	Split	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases			5	8	8		5	2			6	
Permitted Phases						8	2					6
Detector Phase			5	8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)			5.0	8.0	8.0	8.0	5.0	15.0			15.0	15.0
Minimum Split (s)			9.5	25.0	25.0	25.0	9.5	24.3			24.3	24.3
Total Split (s)			33.0	36.0	36.0	36.0	33.0	64.0			31.0	31.0
Total Split (%)			33.0%	36.0%	36.0%	36.0%	33.0%	64.0%			31.0%	31.0%
Maximum Green (s)			28.5	30.0	30.0	30.0	28.5	57.7			24.7	24.7
Yellow Time (s)			3.5	3.3	3.3	3.3	3.5	3.3			3.3	3.3
All-Red Time (s)			1.0	2.7	2.7	2.7	1.0	3.0			3.0	3.0
Lost Time Adjust (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Lost Time (s)			4.5	6.0	6.0	6.0	4.5	6.3			6.3	6.3
Lead/Lag			Lead				Lead				Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)			3.0	3.0	3.0	3.0	3.0	3.0			3.0	3.0
Recall Mode			None	None	None	None	None	C-Max			C-Max	C-Max
Walk Time (s)				14.0	14.0	14.0		13.0			13.0	13.0
Flash Dont Walk (s)				5.0	5.0	5.0		5.0			5.0	5.0
Pedestrian Calls (#/hr)				0	0	0		14			7	7
Act Effct Green (s)			28.5	30.0	30.0	30.0	59.5	57.7			24.7	24.7
Actuated g/C Ratio			0.28	0.30	0.30	0.30	0.60	0.58			0.25	0.25
v/c Ratio			1.04	0.52	1.05	0.60	0.37	0.42			1.07	0.35
Control Delay			89.2	33.4	87.6	26.9	12.7	12.4			79.6	14.0
Queue Delay			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay			89.2	33.4	87.6	26.9	12.7	12.4			79.6	14.0
LOS			F	C	F	C	B	B			E	B
Approach Delay			89.2			58.3		12.4			71.7	
Approach LOS			F			E		B			E	

Intersection Summary	
Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	100
Offset:	8 (8%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle:	110
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.07
Intersection Signal Delay:	51.5
Intersection LOS:	D
Intersection Capacity Utilization:	91.8%
ICU Level of Service:	F
Analysis Period (min):	15

Splits and Phases: 9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp



Queues

<2043 Future Total>PM

9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp

12-20-2024



Lane Group	EBR	WBL	WBT	WBR	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	493	272	573	318	222	1236	1316	180
w/c Ratio	1.04	0.52	1.05	0.60	0.37	0.42	1.07	0.35
Control Delay	89.2	33.4	87.6	26.9	12.7	12.4	79.6	14.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	89.2	33.4	87.6	26.9	12.7	12.4	79.6	14.0
Queue Length 50th (m)	~103.9	45.8	~128.1	38.1	18.5	45.9	~98.4	1.7
Queue Length 95th (m)	#163.9	72.1	#194.2	66.2	35.1	55.6	#127.2	m21.7
Internal Link Dist (m)			202.7			348.2	138.3	
Turn Bay Length (m)				125.0	50.0			
Base Capacity (vph)	473	520	546	533	601	2930	1228	508
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced w/c Ratio	1.04	0.52	1.05	0.60	0.37	0.42	1.07	0.35

Intersection Summary

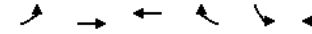
- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings

<2043 Future Total>PM

10: Kingston Road & Fairport Road

12-20-2024



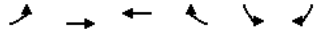
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø1
Lane Configurations	↘	↗	↗	↘	↘	↗	
Traffic Volume (vph)	205	1839	852	223	271	137	
Future Volume (vph)	205	1839	852	223	271	137	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (m)	3.0	3.6	3.5	3.7	3.6	4.5	
Grade (%)		6%	0%			0%	
Storage Length (m)	75.0			18.5	15.5	0.0	
Storage Lanes	1			0	1	1	
Taper Length (m)	2.5				31.3		
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00	
Ped Bike Factor	1.00		1.00			0.99	
Frt			0.969			0.850	
Fit Protected	0.950				0.950		
Satd. Flow (prot)	1618	3433	3356	0	1805	1777	
Fit Permitted	0.950				0.950		
Satd. Flow (perm)	1617	3433	3356	0	1805	1751	
Right Turn on Red				Yes		Yes	
Satd. Flow (RTOR)			34			149	
Link Speed (k/h)		60	60		40		
Link Distance (m)		424.0	896.3		280.0		
Travel Time (s)		25.4	53.8		25.2		
Confl. Peds. (#/hr)	1			1		2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Heavy Vehicles (%)	1%	2%	3%	1%	0%	0%	
Bus Blockages (#/hr)	0	0	0	9	0	0	
Adj. Flow (vph)	223	1999	926	242	295	149	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	223	1999	1168	0	295	149	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Left	Left	Right	Left	Right	
Median Width(m)		3.0	3.0		3.6		
Link Offset(m)		0.0	0.0		0.0		
Crosswalk Width(m)		1.6	1.6		1.6		
Two way Left Turn Lane		Yes					
Headway Factor	1.14	1.04	1.01	0.99	1.00	0.88	
Turning Speed (k/h)		24		14	24	14	
Number of Detectors	1	2	2		1	1	
Detector Template	Left	Thru	Thru		Left	Right	
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0	
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	0.6		2.0	2.0	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4	9.4				
Detector 2 Size(m)		0.6	0.6				

Lanes, Volumes, Timings

<2043 Future Total>PM

10: Kingston Road & Fairport Road

12-20-2024



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø1
Detector 2 Type	CI+Ex		CI+Ex				
Detector 2 Channel							
Detector 2 Extend (s)	0.0		0.0				
Turn Type	Prot	NA	NA		Prot	Perm	
Protected Phases	5	2	6		4		1
Permitted Phases						4	
Detector Phase	5	2	6		4	4	
Switch Phase							
Minimum Initial (s)	5.0	20.0	20.0		8.0	8.0	5.0
Minimum Split (s)	10.0	33.0	33.0		38.0	38.0	8.0
Total Split (s)	25.0	84.0	67.0		38.0	38.0	8.0
Total Split (%)	19.2%	64.6%	51.5%		29.2%	29.2%	6%
Maximum Green (s)	20.0	77.7	60.7		30.7	30.7	5.0
Yellow Time (s)	3.0	4.3	4.3		3.3	3.3	3.0
All-Red Time (s)	2.0	2.0	2.0		4.0	4.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.3	6.3		7.3	7.3	
Lead/Lag	Lead	Lag	Lag				Lead
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	0.2	0.2		3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max		None	None	None
Walk Time (s)	7.0		7.0		7.0	7.0	5.0
Flash Dont Walk (s)	19.0		19.0		23.0	23.0	0.0
Pedestrian Calls (#/hr)	0		0		0	0	20
Act Effect Green (s)	19.5	86.0	66.3		25.6	25.6	
Actuated g/C Ratio	0.15	0.66	0.51		0.20	0.20	
v/c Ratio	0.92	0.88	0.68		0.83	0.32	
Control Delay	54.5	40.9	11.8		69.5	8.0	
Queue Delay	0.0	0.0	0.0		0.0	0.0	
Total Delay	54.5	40.9	11.8		69.5	8.0	
LOS	D	D	B		E	A	
Approach Delay	42.2		11.8		48.9		
Approach LOS	D		B		D		

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 27 (21%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 115
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.92
 Intersection Signal Delay: 33.7
 Intersection Capacity Utilization 77.8%
 Analysis Period (min) 15

Splits and Phases: 10: Kingston Road & Fairport Road



Queues

<2043 Future Total>PM

10: Kingston Road & Fairport Road

12-20-2024



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	223	1999	1168	295	149
v/c Ratio	0.92	0.88	0.68	0.83	0.32
Control Delay	54.5	40.9	11.8	69.5	8.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	54.5	40.9	11.8	69.5	8.0
Queue Length 50th (m)	52.2	285.8	36.3	72.7	0.0
Queue Length 95th (m)	m55.0	m281.6	43.5	101.2	16.7
Internal Link Dist (m)	400.0		872.3	256.0	
Turn Bay Length (m)	75.0		15.5		
Base Capacity (vph)	248	2270	1727	426	527
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.90	0.88	0.68	0.69	0.28

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings

<2043 Future Total>PM

11: Hwy 401 WB Ramps & Kingston Road

12-20-2024

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↕↕		↕	↕↕	↕↕	↕
Traffic Volume (vph)	1696	23	184	804	662	346
Future Volume (vph)	1696	23	184	804	662	346
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.0	3.7	2.7	3.8	3.8	3.7
Grade (%)	6%			0%	0%	
Storage Length (m)		0.0	47.5		0.0	52.0
Storage Lanes		0	1		2	1
Taper Length (m)			22.3		2.5	
Lane Util. Factor	0.95	0.95	1.00	0.95	0.97	1.00
Ped Bike Factor					1.00	0.98
Frt	0.998					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3577	0	1577	3618	3544	1617
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3577	0	1577	3618	3537	1591
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	1					224
Link Speed (k/h)	60			60	50	
Link Distance (m)	268.7			424.0	216.6	
Travel Time (s)	16.1			25.4	15.6	
Confl. Peds. (#/hr)					1	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	5%	3%	2%	1%	1%
Adj. Flow (vph)	1843	25	200	874	720	376
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1868	0	200	874	720	376
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.1			3.1	7.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	0.98	1.03	1.14	0.97	0.97	0.99
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	10.0		2.0	10.0	2.0	2.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Size(m)	0.6		2.0	0.6	2.0	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		

Lanes, Volumes, Timings

<2043 Future Total>PM

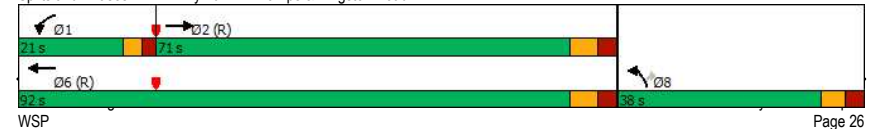
11: Hwy 401 WB Ramps & Kingston Road

12-20-2024

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		Prot	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases						8
Detector Phase	2		1	6	8	8
Switch Phase						
Minimum Initial (s)	20.0		5.0	20.0	8.0	8.0
Minimum Split (s)	50.0		10.0	50.0	38.0	38.0
Total Split (s)	71.0		21.0	92.0	38.0	38.0
Total Split (%)	54.6%		16.2%	70.8%	29.2%	29.2%
Maximum Green (s)	63.8		16.0	84.8	31.3	31.3
Yellow Time (s)	4.2		3.0	4.2	3.7	3.7
All-Red Time (s)	3.0		2.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	7.2		5.0	7.2	6.7	6.7
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?						
Vehicle Extension (s)	0.2		3.0	0.2	3.0	3.0
Recall Mode	C-Max		None	C-Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	35.0			35.0	24.0	24.0
Pedestrian Calls (#/hr)	0			0	14	14
Act Effct Green (s)	65.3		16.0	86.3	29.8	29.8
Actuated g/C Ratio	0.50		0.12	0.66	0.23	0.23
v/c Ratio	1.04		1.03	0.36	0.89	0.70
Control Delay	68.3		127.0	1.8	62.0	25.4
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	68.3		127.0	1.8	62.0	25.4
LOS	E		F	A	E	C
Approach Delay	68.3			25.1	49.4	
Approach LOS	E			C	D	

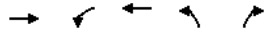
Intersection Summary	
Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	69 (53%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle:	130
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.04
Intersection Signal Delay:	51.7
Intersection Capacity Utilization:	93.1%
Analysis Period (min):	15
Intersection LOS:	D
ICU Level of Service:	F

Splits and Phases: 11: Hwy 401 WB Ramps & Kingston Road



Queues
11: Hwy 401 WB Ramps & Kingston Road

<2043 Future Total>PM
12-20-2024



Lane Group	EBT	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1868	200	874	720	376
w/c Ratio	1.04	1.03	0.36	0.89	0.70
Control Delay	68.3	127.0	1.8	62.0	25.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay	68.3	127.0	1.8	62.0	25.4
Queue Length 50th (m)	-285.7	-48.6	6.4	91.1	35.3
Queue Length 95th (m)	#329.1	#100.6	6.0	#114.7	71.2
Internal Link Dist (m)	244.7		400.0	192.6	
Turn Bay Length (m)		47.5			52.0
Base Capacity (vph)	1795	194	2401	853	553
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced w/c Ratio	1.04	1.03	0.36	0.84	0.68

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.

Lanes, Volumes, Timings
12: Plaza Entrance/Delta Blvd & Kingston Road

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	130	1567	38	89	1263	121	198	15	138	82	13	143
Future Volume (vph)	130	1567	38	89	1263	121	198	15	138	82	13	143
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.2	3.4	3.5	3.1	3.4	3.4	3.6	4.6	3.7	3.2	2.8	3.7
Grade (%)		6%			0%			0%				0%
Storage Length (m)	51.8		148.5	100.0		18.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	35.3			2.5			2.5			2.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		1.00	0.99		1.00					0.99
Frt		0.996			0.987			0.864				0.862
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1656	3343	0	1705	3403	0	1770	1824	0	1725	1474	0
Fit Permitted	0.950			0.950			0.630			0.637		
Satd. Flow (perm)	1648	3343	0	1704	3403	0	1172	1824	0	1157	1474	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			12			129				141
Link Speed (k/h)		60			60			30				40
Link Distance (m)		222.7			268.7			130.9				169.9
Travel Time (s)		13.4			16.1			15.7				15.3
Confl. Peds. (#/hr)	16		1	1		16	1					1
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 (%)	1%	2%	0%	0%	2%	0%	2%	0%	0%	0%	0%	0%
Adj. Flow (vph)	141	1703	41	97	1373	132	215	16	150	89	14	155
Shared Lane Traffic (%)												
Lane Group Flow (vph)	141	1744	0	97	1505	0	215	166	0	89	169	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.5			3.5			3.6				3.6
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		1.6			1.6			1.6				1.6
Two way Left Turn Lane					Yes							
Headway Factor	1.10	1.07	1.06	1.08	1.03	1.03	1.00	0.87	0.99	1.06	1.13	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	

Lanes, Volumes, Timings

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12: Plaza Entrance/Delta Blvd & Kingston Road

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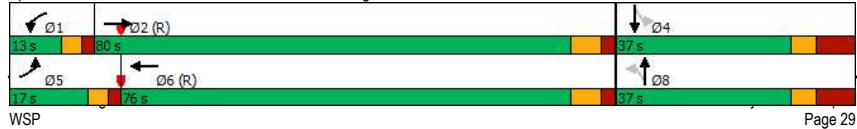


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	20.0		5.0	20.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	10.0	32.0		10.0	32.0		37.0	37.0		37.0	37.0	
Total Split (s)	17.0	80.0		13.0	76.0		37.0	37.0		37.0	37.0	
Total Split (%)	13.1%	61.5%		10.0%	58.5%		28.5%	28.5%		28.5%	28.5%	
Maximum Green (s)	12.0	73.1		8.0	69.1		27.0	27.0		27.0	27.0	
Yellow Time (s)	3.0	4.7		3.0	4.7		3.8	3.8		3.8	3.8	
All-Red Time (s)	2.0	2.2		2.0	2.2		6.2	6.2		6.2	6.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	6.9		5.0	6.9		10.0	10.0		10.0	10.0	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	0.2		3.0	0.2		3.0	3.0		3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		18.0			18.0		20.0	20.0		20.0	20.0	
Pedestrian Calls (#/hr)		0			13		3	3		6	6	
Act Effct Green (s)	12.0	74.3		8.0	70.3		25.8	25.8		25.8	25.8	
Actuated g/C Ratio	0.09	0.57		0.06	0.54		0.20	0.20		0.20	0.20	
v/c Ratio	0.93	0.91		0.93	0.82		0.93	0.36		0.39	0.42	
Control Delay	81.9	21.0		122.1	23.9		93.7	14.4		50.3	13.9	
Queue Delay	0.0	1.2		0.0	0.0		0.0	75.1		148.6	0.0	
Total Delay	81.9	22.2		122.1	24.0		93.7	89.5		198.9	13.9	
LOS	F	C		F	C		F	F		F	B	
Approach Delay		26.7			29.9			91.9			77.7	
Approach LOS		C			C			F			E	

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 6 (5%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.93
 Intersection Signal Delay: 37.2 Intersection LOS: D
 Intersection Capacity Utilization 97.1% ICU Level of Service F
 Analysis Period (min) 15

Splits and Phases: 12: Plaza Entrance/Delta Blvd & Kingston Road

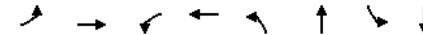


Queues

<2043 Future Total>PM

12: Plaza Entrance/Delta Blvd & Kingston Road

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Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	141	1744	97	1505	215	166	89	169
v/c Ratio	0.93	0.91	0.93	0.82	0.93	0.36	0.39	0.42
Control Delay	81.9	21.0	122.1	23.9	93.7	14.4	50.3	13.9
Queue Delay	0.0	1.2	0.0	0.0	0.0	75.1	148.6	0.0
Total Delay	81.9	22.2	122.1	24.0	93.7	89.5	198.9	13.9
Queue Length 50th (m)	36.7	144.1	26.0	85.8	54.0	7.7	19.7	5.9
Queue Length 95th (m)	m38.0	m147.6	m#48.1	218.0	#99.2	26.9	36.4	25.8
Internal Link Dist (m)		198.7		244.7		106.9		145.9
Turn Bay Length (m)	51.8		100.0					
Base Capacity (vph)	152	1912	104	1845	243	481	240	417
Starvation Cap Reductn	0	38	0	10	0	0	0	0
Spillback Cap Reductn	0	57	0	0	0	366	223	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.94	0.93	0.82	0.88	1.44	5.24	0.41

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings

13: Whites Road & Kingston Road

<2043 Future Total>PM

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	155	857	358	331	753	496	228	684	737	196	617	186
Future Volume (vph)	155	857	358	331	753	496	228	684	737	196	617	186
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.6	4.2	3.5	3.7	4.0	3.5	3.9	3.7	3.5	3.9	4.0
Grade (%)	6%			0%			0%			0%		
Storage Length (m)	127.0		123.0	87.1		35.0	72.0		35.0	88.5		47.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	64.0			39.6			66.8			32.6		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Ped Bike Factor	0.97		0.96	0.99		0.91	0.99		0.93	0.98		0.95
Frt	0.850			0.850			0.850			0.850		
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1681	3400	1622	1733	3579	1654	1767	5255	1588	1750	5105	1627
Flt Permitted	0.950			0.950			0.331			0.292		
Satd. Flow (perm)	1637	3400	1549	1717	3579	1502	608	5255	1470	527	5105	1550
Right Turn on Red	Yes			Yes			Yes			Yes		
Satd. Flow (RTOR)	154			136			59			202		
Link Speed (kh)	60			60			60			60		
Link Distance (m)	297.5			222.7			158.6			385.2		
Travel Time (s)	17.9			13.4			9.5			23.1		
Confl. Peds. (#/hr)	75		31	31		75	37		65	65		37
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 (%)	3%	3%	3%	3%	2%	2%	1%	2%	2%	2%	5%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	2	0	0	4
Adj. Flow (vph)	168	932	389	360	818	539	248	743	801	213	671	202
Shared Lane Traffic (%)												
Lane Group Flow (vph)	168	932	389	360	818	539	248	743	801	213	671	202
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	3.5			3.5			3.5			3.5		
Link Offset(m)	0.0			0.0			0.0			0.0		
Crosswalk Width(m)	1.6			1.6			1.6			1.6		
Two way Left Turn Lane												
Headway Factor	1.06	1.04	0.96	1.01	0.99	0.94	1.01	0.96	1.00	1.01	0.96	0.96
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex	CI+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4			9.4			9.4		
Detector 2 Size(m)	0.6			0.6			0.6			0.6		

Lanes, Volumes, Timings

13: Whites Road & Kingston Road

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type	CI+Ex			CI+Ex			CI+Ex			CI+Ex		
Detector 2 Channel												
Detector 2 Extend (s)	0.0			0.0			0.0			0.0		
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8	1	7	4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2	2	1	6	6	3	8	1	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	5.0	8.0	5.0	5.0	8.0	8.0
Minimum Split (s)	10.0	43.0	43.0	10.0	43.0	43.0	8.0	49.0	10.0	8.0	49.0	49.0
Total Split (s)	18.0	43.0	43.0	30.0	55.0	55.0	8.0	49.0	30.0	8.0	49.0	49.0
Total Split (%)	13.8%	33.1%	33.1%	23.1%	42.3%	42.3%	6.2%	37.7%	23.1%	6.2%	37.7%	37.7%
Maximum Green (s)	13.0	36.0	36.0	25.0	48.0	48.0	5.0	40.6	25.0	5.0	40.6	40.6
Yellow Time (s)	3.0	4.2	4.2	3.0	4.2	4.2	3.0	4.3	3.0	3.0	4.3	4.3
All-Red Time (s)	2.0	2.8	2.8	2.0	2.8	2.8	0.0	4.1	2.0	0.0	4.1	4.1
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	0.0
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	3.0	8.4	5.0	3.0	8.4	8.4
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	0.2	0.2	3.0	0.2	0.2	3.0	0.2	3.0	3.0	0.2	0.2
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	None	None	Max	Max
Walk Time (s)	7.0			7.0			7.0			7.0		
Flash Dont Walk (s)	29.0			29.0			33.0			33.0		
Pedestrian Calls (#/hr)	13			38			20			20		
Act Effect Green (s)	13.0	36.0	36.0	25.0	48.0	48.0	51.0	40.6	69.0	51.0	40.6	40.6
Actuated g/C Ratio	0.10	0.28	0.28	0.19	0.37	0.37	0.39	0.31	0.53	0.39	0.31	0.31
v/c Ratio	1.00	0.99	0.72	1.08	0.62	0.84	0.88	0.45	0.97	0.84	0.42	0.32
Control Delay	127.6	73.9	33.7	123.1	26.4	27.2	63.3	36.9	49.3	60.0	36.4	5.8
Queue Delay	0.0	11.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	127.6	85.0	33.7	123.1	26.4	27.2	63.3	36.9	49.3	60.0	36.4	5.8
LOS	F	F	C	F	C	C	E	D	D	E	D	A
Approach Delay	76.4			46.9			46.1			35.3		
Approach LOS	E			D			D			D		
Intersection Summary												
Area Type:	Other											
Cycle Length:	130											
Actuated Cycle Length:	130											
Offset:	32 (25%), Referenced to phase 2:EBT and 6:WBT, Start of Green											
Natural Cycle:	130											
Control Type:	Actuated-Coordinated											
Maximum v/c Ratio:	1.08											
Intersection Signal Delay:	51.8						Intersection LOS: D					
Intersection Capacity Utilization:	114.6%						ICU Level of Service H					
Analysis Period (min):	15											
Splits and Phases: 13: Whites Road & Kingston Road												

Queues <2043 Future Total>PM
13: Whites Road & Kingston Road 12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	168	932	389	360	818	539	248	743	801	213	671	202
w/c Ratio	1.00	0.99	0.72	1.08	0.62	0.84	0.88	0.45	0.97	0.84	0.42	0.32
Control Delay	127.6	73.9	33.7	123.1	26.4	27.2	63.3	36.9	49.3	60.0	36.4	5.8
Queue Delay	0.0	11.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	127.6	85.0	33.7	123.1	26.4	27.2	63.3	36.9	49.3	60.0	36.4	5.8
Queue Length 50th (m)	43.7	125.5	55.7	~100.9	48.8	37.1	42.7	55.8	156.8	35.9	49.8	0.0
Queue Length 95th (m)	#89.4	#169.5	93.4 m	#144.4	m83.0 m	#138.2	#83.4	68.3	#189.3	#70.3	61.7	17.0
Internal Link Dist (m)		273.5			198.7			134.6			361.2	
Turn Bay Length (m)	127.0		123.0	87.1		35.0	72.0		35.0	88.5		47.0
Base Capacity (vph)	168	941	540	333	1321	640	283	1641	830	253	1594	622
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	37	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced w/c Ratio	1.00	1.03	0.72	1.08	0.62	0.84	0.88	0.45	0.97	0.84	0.42	0.32

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.

m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings <2043 Future Total>PM
14: Whites Road & Highway 401 EB Off Ramp 12-20-2024

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↑↑↑	↑		↑↑	↑↑	
Traffic Volume (vph)	1244	589	0	862	610	0
Future Volume (vph)	1244	589	0	862	610	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.6	3.6	3.7	3.6	3.8	3.7
Storage Length (m)	0.0	225.0	0.0	0.0	0.0	0.0
Storage Lanes	2	1	0			0
Taper Length (m)	2.5		2.5			
Lane Util. Factor	0.97	0.91	1.00	0.95	0.95	1.00
Ped Bike Factor	1.00	0.98				
Frt	0.993	0.850				
Flt Protected	0.954					
Satd. Flow (prot)	3450	1427	0	3539	3618	0
Flt Permitted	0.954					
Satd. Flow (perm)	3450	1404	0	3539	3618	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	7	100				
Link Speed (k/h)	50			60	60	
Link Distance (m)	295.9			185.9	316.9	
Travel Time (s)	21.3			11.2	19.0	
Confl. Peds. (#/hr)		3	4			4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	3%	2%	2%	2%	2%
Adj. Flow (vph)	1352	640	0	937	663	0
Shared Lane Traffic (%)		10%				
Lane Group Flow (vph)	1416	576	0	937	663	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.2			0.0	0.0	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	0.99	1.00	0.97	0.99
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1		2	2	
Detector Template	Left	Right		Thru	Thru	
Leading Detector (m)	2.0	2.0		10.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	2.0		0.6	0.6	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				CI+Ex	CI+Ex	
Detector 2 Channel						

Lanes, Volumes, Timings

<2043 Future Total>PM

14: Whites Road & Highway 401 EB Off Ramp

12-20-2024

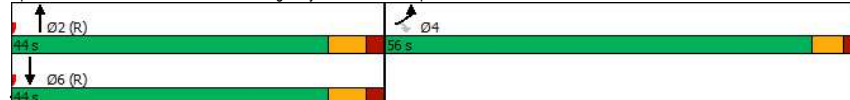


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Perm		NA	NA	
Protected Phases	4			2	6	
Permitted Phases		4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	8.0	8.0		20.0	20.0	
Minimum Split (s)	28.5	28.5		27.7	27.7	
Total Split (s)	56.0	56.0		44.0	44.0	
Total Split (%)	56.0%	56.0%		44.0%	44.0%	
Maximum Green (s)	50.5	50.5		37.3	37.3	
Yellow Time (s)	3.7	3.7		4.5	4.5	
All-Red Time (s)	1.8	1.8		2.2	2.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.5	5.5		6.7	6.7	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0		0.2	0.2	
Recall Mode	None	None		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	16.0	16.0		14.0	14.0	
Pedestrian Calls (#/hr)	0	0		0	0	
Act Effect Green (s)	47.7	47.7		40.1	40.1	
Actuated g/C Ratio	0.48	0.48		0.40	0.40	
v/c Ratio	0.86	0.80		0.66	0.46	
Control Delay	29.0	27.1		27.8	23.9	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	29.0	27.1		27.8	23.9	
LOS	C	C		C	C	
Approach Delay	28.5			27.8	23.9	
Approach LOS	C			C	C	

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 8 (8%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.86
 Intersection Signal Delay: 27.5
 Intersection LOS: C
 Intersection Capacity Utilization 75.7%
 ICU Level of Service D
 Analysis Period (min) 15

Splits and Phases: 14: Whites Road & Highway 401 EB Off Ramp



Queues

<2043 Future Total>PM

14: Whites Road & Highway 401 EB Off Ramp

12-20-2024



Lane Group	EBL	EBR	NBT	SBT
Lane Group Flow (vph)	1416	576	937	663
v/c Ratio	0.86	0.80	0.66	0.46
Control Delay	29.0	27.1	27.8	23.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	29.0	27.1	27.8	23.9
Queue Length 50th (m)	115.7	81.0	78.9	50.2
Queue Length 95th (m)	141.9	130.5	102.6	67.3
Internal Link Dist (m)	271.9		161.9	292.9
Turn Bay Length (m)		225.0		
Base Capacity (vph)	1745	758	1417	1449
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.81	0.76	0.66	0.46

Intersection Summary

Lanes, Volumes, Timings

<2043 Future Total>PM

15: Dixie Road & Shopping Plaza Entrance

12-20-2024

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	0	281	0	0	466	0
Future Volume (vph)	0	281	0	0	466	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.1	3.7	4.0	3.7	3.7	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.865					
Flt Protected						0.950
Satd. Flow (prot)	1701	0	1946	0	0	1848
Flt Permitted						0.950
Satd. Flow (perm)	1701	0	1946	0	0	1848
Link Speed (k/h)	30	40			40	
Link Distance (m)	193.0	106.6			44.0	
Travel Time (s)	23.2	9.6			4.0	
Confl. Peds. (#/hr)	11		12			
Confl. Bikes (#/hr)						1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	305	0	0	507	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	305	0	0	0	0	507
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	4.1	3.6			3.6	
Link Offset(m)	0.0	0.0			0.0	
Crosswalk Width(m)	1.6	1.6			1.6	
Two way Left Turn Lane						
Headway Factor	0.93	0.99	0.94	0.99	0.99	0.94
Turning Speed (k/h)	97	97	97		97	
Sign Control	Stop	Free			Free	

Intersection Summary

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

HCM Unsignalized Intersection Capacity Analysis

<2043 Future Total>PM

15: Dixie Road & Shopping Plaza Entrance

12-20-2024

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔	↔	↔	↔	↔	↔
Traffic Volume (veh/h)	0	281	0	0	466	0
Future Volume (Veh/h)	0	281	0	0	466	0
Sign Control	Stop	Free			Free	
Grade	0%	0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	305	0	0	507	0
Pedestrians	12					11
Lane Width (m)	4.1	4.0			4.0	
Walking Speed (m/s)	1.1	1.1			1.1	
Percent Blockage	1	1			1	
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)						44
pX, platoon unblocked						
vC, conflicting volume	1026	23				12
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1026	23				12
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	70				68
cM capacity (veh/h)	175	1029				1587

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	305	0	507
Volume Left	0	0	507
Volume Right	305	0	0
cSH	1029	1700	1587
Volume to Capacity	0.30	0.00	0.32
Queue Length 95th (m)	9.5	0.0	10.6
Control Delay (s)	10.0	0.0	8.3
Lane LOS	A		A
Approach Delay (s)	10.0	0.0	8.3
Approach LOS	A		

Intersection Summary

Average Delay	8.9		
Intersection Capacity Utilization	51.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lanes, Volumes, Timings
17: Street B

<2043 Future Total>PM
12-20-2024

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	19	142	112	22	63	50
Future Volume (vph)	19	142	112	22	63	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.881	0.978				
Fit Protected	0.994					0.973
Satd. Flow (prot)	1649	0	1842	0	0	1833
Fit Permitted	0.994					0.973
Satd. Flow (perm)	1649	0	1842	0	0	1833
Link Speed (k/h)	30		30			30
Link Distance (m)	112.2		49.9			96.9
Travel Time (s)	13.5		6.0			11.6
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	21	154	122	24	68	54
Shared Lane Traffic (%)						
Lane Group Flow (vph)	175	0	146	0	0	122
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	97	97		97	97	
Sign Control	Stop		Stop			Stop

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	33.2%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
17: Street B

<2043 Future Total>PM
12-20-2024

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	19	142	112	22	63	50
Future Volume (vph)	19	142	112	22	63	50
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	21	154	122	24	68	54
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total (vph)	175	146	122			
Volume Left (vph)	21	0	68			
Volume Right (vph)	154	24	0			
Hadj (s)	-0.47	-0.06	0.15			
Departure Headway (s)	4.0	4.4	4.6			
Degree Utilization, x	0.20	0.18	0.16			
Capacity (veh/h)	830	787	742			
Control Delay (s)	8.0	8.3	8.4			
Approach Delay (s)	8.0	8.3	8.4			
Approach LOS	A	A	A			

Intersection Summary

Delay	8.2
Level of Service	A
Intersection Capacity Utilization	33.2%
ICU Level of Service	A
Analysis Period (min)	15

Lanes, Volumes, Timings
19: Walnut Lane & Street B

<2043 Future Total>PM
12-20-2024

	↖	↘	↙	↗	↘	↙
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖			↗	↘	↙
Traffic Volume (vph)	29	55	129	706	275	32
Future Volume (vph)	29	55	129	706	275	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.912			0.986		
Flt Protected	0.983			0.992		
Satd. Flow (prot)	1688	0	0	1868	1857	0
Flt Permitted	0.983			0.992		
Satd. Flow (perm)	1688	0	0	1868	1857	0
Link Speed (k/h)	30			40	40	
Link Distance (m)	112.2			121.1	114.0	
Travel Time (s)	13.5			10.9	10.3	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	32	60	140	767	299	35
Shared Lane Traffic (%)						
Lane Group Flow (vph)	92	0	0	907	334	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.3	3.3	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	97	97	97			97
Sign Control	Stop			Free	Free	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	75.7%
Analysis Period (min)	15
	ICU Level of Service D

HCM Unsignalized Intersection Capacity Analysis
19: Walnut Lane & Street B

<2043 Future Total>PM
12-20-2024

	↖	↘	↙	↗	↘	↙
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↖			↗	↘	↙
Traffic Volume (veh/h)	29	55	129	706	275	32
Future Volume (Veh/h)	29	55	129	706	275	32
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	32	60	140	767	299	35
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)					114	
pX, platoon unblocked						
vC, conflicting volume	1364	316	334			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1364	316	334			
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	92	89			
cM capacity (veh/h)	144	724	1225			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	92	907	334
Volume Left	32	140	0
Volume Right	60	0	35
cSH	302	1225	1700
Volume to Capacity	0.30	0.11	0.20
Queue Length 95th (m)	9.5	2.9	0.0
Control Delay (s)	22.1	2.7	0.0
Lane LOS	C	A	
Approach Delay (s)	22.1	2.7	0.0
Approach LOS	C		

Intersection Summary

Average Delay	3.4
Intersection Capacity Utilization	75.7%
Analysis Period (min)	15
	ICU Level of Service D

Lanes, Volumes, Timings
21: Building Driveways & Street A

<2043 Future Total>PM
12-20-2024

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔			↔			↔		
Traffic Volume (vph)	75	212	95	111	202	87	0	0	116	91	0	0
Future Volume (vph)	75	212	95	111	202	87	0	0	116	91	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.966		0.971		0.865		0.950		0.950		0.950	
Fit Protected	0.990		0.986		0.950		0.950		0.950		0.950	
Satd. Flow (prot)	0	1801	0	0	1803	0	0	1629	0	0	1789	0
Fit Permitted	0.990		0.986		0.950		0.950		0.950		0.950	
Satd. Flow (perm)	0	1801	0	0	1803	0	0	1629	0	0	1789	0
Link Speed (k/h)	30		30		30		30		30		30	
Link Distance (m)	193.3		80.3		63.7		34.1		34.1		34.1	
Travel Time (s)	23.2		9.6		7.6		4.1		4.1		4.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	82	230	103	121	220	95	0	0	126	99	0	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	415	0	0	436	0	0	126	0	0	99	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)	0.0		0.0		0.0		0.0		0.0		0.0	
Link Offset(m)	0.0		0.0		0.0		0.0		0.0		0.0	
Crosswalk Width(m)	1.6		1.6		1.6		1.6		1.6		1.6	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)	97	97	97	97	97	97	97	97	97	97	97	97
Sign Control	Stop		Stop		Stop		Stop		Stop		Stop	

Intersection Summary	
Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	52.2% ICU Level of Service A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis
21: Building Driveways & Street A

<2043 Future Total>PM
12-20-2024

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔			↔			↔			↔		
Sign Control	Stop			Stop			Stop			Stop		
Traffic Volume (vph)	75	212	95	111	202	87	0	0	116	91	0	0
Future Volume (vph)	75	212	95	111	202	87	0	0	116	91	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)	82	230	103	121	220	95	0	0	126	99	0	0
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total (vph)	415	436	126	99								
Volume Left (vph)	82	121	0	99								
Volume Right (vph)	103	95	126	0								
Hadj (s)	-0.08	-0.04	-0.57	0.23								
Departure Headway (s)	5.2	5.2	5.7	6.6								
Degree Utilization, x	0.60	0.63	0.20	0.18								
Capacity (veh/h)	664	670	525	452								
Control Delay (s)	15.5	16.5	10.2	11.0								
Approach Delay (s)	15.5	16.5	10.2	11.0								
Approach LOS	C	C	B	B								

Intersection Summary	
Delay	14.9
Level of Service	B
Intersection Capacity Utilization	52.2% ICU Level of Service A
Analysis Period (min)	15

Lanes, Volumes, Timings
20: Street A & Walnut Lane

<2043 Future Total_Signal>PM
12-20-2024

	→	↖	↙	←	↘	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↖			↗	↘	↗
Traffic Volume (vph)	147	19	381	345	256	163
Future Volume (vph)	147	19	381	345	256	163
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.984			0.947	0.947	
Flt Protected				0.974	0.970	
Satd. Flow (prot)	1853	0	0	1834	1730	0
Flt Permitted				0.741	0.970	
Satd. Flow (perm)	1853	0	0	1396	1730	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	12				31	
Link Speed (k/h)	40			40	30	
Link Distance (m)	121.1			433.1	80.3	
Travel Time (s)	10.9			39.0	9.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	160	21	414	375	278	177
Shared Lane Traffic (%)						
Lane Group Flow (vph)	181	0	0	789	455	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99
Turning Speed (k/h)		97	97		97	97
Number of Detectors	2		1	2	1	
Detector Template	Thru		Left	Thru	Left	
Leading Detector (m)	10.0		2.0	10.0	2.0	
Trailing Detector (m)	0.0		0.0	0.0	0.0	
Detector 1 Position(m)	0.0		0.0	0.0	0.0	
Detector 1 Size(m)	0.6		2.0	0.6	2.0	
Detector 1 Type	CI+Ex		CI+Ex	CI+Ex	CI+Ex	
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	CI+Ex			CI+Ex		
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		Perm	NA	Prot	
Protected Phases	2			6	8	
Permitted Phases				6		
Detector Phase	2			6	8	
Switch Phase						
Minimum Initial (s)	20.0			20.0	8.0	

Lanes, Volumes, Timings
20: Street A & Walnut Lane

<2043 Future Total_Signal>PM
12-20-2024

	→	↖	↙	←	↘	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Minimum Split (s)	28.0			28.0	28.0	23.0
Total Split (s)	67.0			67.0	67.0	33.0
Total Split (%)	67.0%			67.0%	67.0%	33.0%
Maximum Green (s)	61.2			61.2	61.2	26.3
Yellow Time (s)	3.3			3.3	3.3	3.0
All-Red Time (s)	2.5			2.5	2.5	3.7
Lost Time Adjust (s)	0.0			0.0	0.0	0.0
Total Lost Time (s)	5.8			5.8	6.7	
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0	3.0	3.0
Recall Mode	Max			Max	Max	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	15.0			15.0	15.0	9.0
Pedestrian Calls (#/hr)	0			0	0	0
Act Effct Green (s)	61.2			61.2	26.0	
Actuated g/C Ratio	0.61			0.61	0.26	
v/c Ratio	0.16			0.92	0.96	
Control Delay	8.1			35.7	67.8	
Queue Delay	0.0			0.0	0.0	
Total Delay	8.1			35.7	67.8	
LOS	A			D	E	
Approach Delay	8.1			35.7	67.8	
Approach LOS	A			D	E	

Intersection Summary

Area Type: Other
 Cycle Length: 100
 Actuated Cycle Length: 99.7
 Natural Cycle: 90
 Control Type: Semi Act-Uncoord
 Maximum v/c Ratio: 0.96
 Intersection Signal Delay: 42.4
 Intersection Capacity Utilization 95.3%
 Analysis Period (min) 15
 Intersection LOS: D
 ICU Level of Service F

Splits and Phases: 20: Street A & Walnut Lane



Lanes, Volumes, Timings

6: Liverpool Road & Kingston Road

<2043 Future Total_PHF>PM

12-20-2024

	↖	→	↘	↙	←	↖	↙	↘	↙	↘	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖	↖
Traffic Volume (vph)	284	1001	546	274	413	67	155	826	232	95	591	159
Future Volume (vph)	284	1001	546	274	413	67	155	826	232	95	591	159
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.1	3.4	3.6	3.3	3.7	3.4	3.8	4.1	4.8	4.7	3.8	3.3
Storage Length (m)	188.8		97.9	170.7		117.0	185.5		52.0	49.0		60.5
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	31.6			22.7			20.8			25.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.98		0.95	0.99		0.96	0.99		0.90	0.99		0.96
Frt			0.850			0.850			0.850			0.850
Fit Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1688	3461	1599	1728	3579	1579	1791	3773	1732	2026	3654	1561
Fit Permitted	0.950			0.950			0.329			0.180		
Satd. Flow (perm)	1661	3461	1512	1709	3579	1517	614	3773	1564	378	3654	1499
Right Turn on Red			Yes			Yes			Yes		Yes	
Satd. Flow (RTOR)			93			160			165			159
Link Speed (kh)		60			60			50			50	
Link Distance (m)		694.6			396.4			257.7			348.6	
Travel Time (s)		41.7			23.8			18.6			25.1	
Conf. Peds. (#/hr)	20		31	31		20	29		62	62		29
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	2%	1%	1%	2%	0%	3%	1%	4%	0%	1%	0%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	4	0	0	0
Adj. Flow (vph)	284	1001	546	274	413	67	155	826	232	95	591	159
Shared Lane Traffic (%)												
Lane Group Flow (vph)	284	1001	546	274	413	67	155	826	232	95	591	159
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.3			3.3			4.7			4.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane		Yes									Yes	
Headway Factor	1.08	1.03	1.00	1.04	0.99	1.03	0.97	0.93	0.87	0.86	0.97	1.04
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	

Lanes, Volumes, Timings

6: Liverpool Road & Kingston Road

<2043 Future Total_PHF>PM

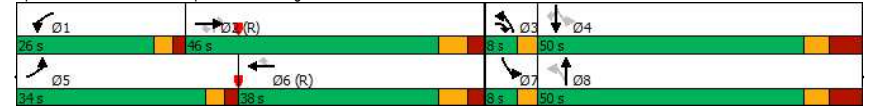
12-20-2024

	↖	→	↘	↙	←	↖	↙	↘	↙	↘	↙	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)		0.0				0.0					0.0	
Turn Type	Prot	NA	pm+ov	Prot	NA	Perm	pm+pt	NA	custom	pm+pt	NA	Perm
Protected Phases	5	2	3	1	6		3	8		7	4	
Permitted Phases			2			6	8		2	4		4
Detector Phase	5	2	3	1	6	6	3	8	2	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	5.0	5.0	20.0	20.0	5.0	8.0	20.0	5.0	8.0	8.0
Minimum Split (s)	10.0	36.0	8.0	10.0	36.0	36.0	8.0	50.0	36.0	8.0	50.0	50.0
Total Split (s)	34.0	46.0	8.0	26.0	38.0	38.0	8.0	50.0	46.0	8.0	50.0	50.0
Total Split (%)	26.2%	35.4%	6.2%	20.0%	29.2%	29.2%	6.2%	38.5%	35.4%	6.2%	38.5%	38.5%
Maximum Green (s)	29.0	38.9	5.0	21.0	30.9	30.9	5.0	40.9	38.9	5.0	40.9	40.9
Yellow Time (s)	3.0	4.3	3.0	3.0	4.3	4.3	3.0	3.8	4.3	3.0	3.8	3.8
All-Red Time (s)	2.0	2.8	0.0	2.0	2.8	2.8	0.0	5.3	2.8	0.0	5.3	5.3
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	0.0
Total Lost Time (s)	5.0	7.1	3.0	5.0	7.1	7.1	3.0	9.1	7.1	3.0	9.1	9.1
Lead/Lag	Lead	Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
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	3.0
Recall Mode	None	C-Max	None	None	C-Max	C-Max	None	Max	C-Max	None	Max	Max
Walk Time (s)		7.0			7.0	7.0		7.0	7.0		7.0	7.0
Flash Dont Walk (s)		21.0			21.0	21.0		33.0	21.0		33.0	33.0
Pedestrian Calls (#/hr)		15			20	20		28	15		15	15
Act Effct Green (s)	25.6	38.9	48.0	21.0	34.3	34.3	52.0	40.9	38.9	52.0	40.9	40.9
actuated g/C Ratio	0.20	0.30	0.37	0.16	0.26	0.26	0.40	0.31	0.30	0.40	0.31	0.31
v/c Ratio	0.86	0.97	0.88	0.98	0.44	0.13	0.53	0.70	0.40	0.44	0.51	0.27
Control Delay	51.5	67.0	52.6	103.8	42.4	0.5	33.3	42.8	13.2	30.0	38.4	6.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.5	67.0	52.6	103.8	42.4	0.5	33.3	42.8	13.2	30.0	38.4	6.0
LOS	D	E	D	F	D	A	C	D	B	C	D	A
Approach Delay		60.3			61.0			36.0			31.3	
Approach LOS		E			E			D			C	

Intersection Summary

Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	130
Offset: 78 (60%), Referenced to phase 2:EBT and 6:WBT, Start of Green	
Natural Cycle:	135
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.98
Intersection Signal Delay:	48.8
Intersection Capacity Utilization:	105.8%
Intersection LOS:	D
ICU Level of Service:	G
Analysis Period (min):	15

Splits and Phases: 6: Liverpool Road & Kingston Road



Lanes, Volumes, Timings

<2043 Future Total_PHF>PM

9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp

12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	454	278	500	293	204	1137	0	0	1211	166
Future Volume (vph)	0	0	454	278	500	293	204	1137	0	0	1211	166
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.7	3.5	3.7	3.5	3.7	3.7	3.4	3.7
Storage Length (m)	0.0	0.0	0.0	0.0	125.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0
Storage Lanes	0		1	1		1	1		0	0		1
Taper Length (m)	2.5			2.5		30.0			2.5			
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	1.00	0.91	1.00
Ped Bike Factor												0.92
Frt			0.865			0.850						0.850
Fit Protected				0.950	0.997		0.950					
Satd. Flow (prot)	0	0	1662	1734	1820	1581	1825	5079	0	0	4972	1633
Fit Permitted				0.950	0.997		0.136					
Satd. Flow (perm)	0	0	1662	1734	1820	1581	261	5079	0	0	4972	1508
Right Turn on Red			No			Yes			Yes			Yes
Satd. Flow (RTOR)						85						166
Link Speed (kh)		50			50			50			50	
Link Distance (m)		433.1			226.7			372.2			162.3	
Travel Time (s)		31.2			16.3			26.8			11.7	
Conf. Peds. (#/hr)							17		15	15		17
Conf. Bikes (#/hr)								6				7
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	2%	0%	0%	0%	1%	0%	1%	6%	2%	2%	0%
Adj. Flow (vph)	0	0	454	278	500	293	204	1137	0	0	1211	166
Shared Lane Traffic (%)				10%								
Lane Group Flow (vph)	0	0	454	250	528	293	204	1137	0	0	1211	166
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	1.01	0.99	1.01	0.99	0.99	1.03	0.99
Turning Speed (k/h)	97		97	24		14	97		14	24		97
Number of Detectors			1	1	2	1	1	2			2	1
Detector Template			Right	Left	Thru	Right	Left	Thru			Thru	Right
Leading Detector (m)			2.0	2.0	10.0	2.0	2.0	10.0			10.0	2.0
Trailing Detector (m)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Position(m)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Size(m)			2.0	2.0	0.6	2.0	2.0	0.6			0.6	2.0
Detector 1 Type			Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Detector 2 Position(m)					9.4			9.4			9.4	
Detector 2 Size(m)					0.6			0.6			0.6	
Detector 2 Type					Cl+Ex			Cl+Ex			Cl+Ex	

Lanes, Volumes, Timings

<2043 Future Total_PHF>PM

9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp

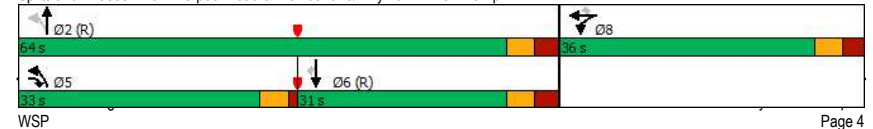
12-20-2024



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Channel												
Detector 2 Extend (s)						0.0					0.0	0.0
Turn Type			Over	Split	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases			5	8	8		5	2			6	
Permitted Phases						8	2					6
Detector Phase			5	8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)			5.0	8.0	8.0	8.0	5.0	15.0			15.0	15.0
Minimum Split (s)			9.5	25.0	25.0	25.0	9.5	24.3			24.3	24.3
Total Split (s)			33.0	36.0	36.0	36.0	33.0	64.0			31.0	31.0
Total Split (%)			33.0%	36.0%	36.0%	36.0%	33.0%	64.0%			31.0%	31.0%
Maximum Green (s)			28.5	30.0	30.0	30.0	28.5	57.7			24.7	24.7
Yellow Time (s)			3.5	3.3	3.3	3.3	3.5	3.3			3.3	3.3
All-Red Time (s)			1.0	2.7	2.7	2.7	1.0	3.0			3.0	3.0
Lost Time Adjust (s)			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Lost Time (s)			4.5	6.0	6.0	6.0	4.5	6.3			6.3	6.3
Lead/Lag			Lead				Lead				Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)			3.0	3.0	3.0	3.0	3.0	3.0			3.0	3.0
Recall Mode			None	None	None	None	None	C-Max			C-Max	C-Max
Walk Time (s)				14.0	14.0	14.0		13.0			13.0	13.0
Flash Dont Walk (s)				5.0	5.0	5.0		5.0			5.0	5.0
Pedestrian Calls (#/hr)				0	0	0		14			7	7
Act Effct Green (s)			28.3	30.0	30.0	30.0	59.5	57.7			24.9	24.9
Actuated g/C Ratio			0.28	0.30	0.30	0.30	0.60	0.58			0.25	0.25
v/c Ratio			0.97	0.48	0.97	0.55	0.34	0.39			0.98	0.33
Control Delay			70.4	32.4	67.2	25.0	12.0	12.0			54.6	14.2
Queue Delay			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Total Delay			70.4	32.4	67.2	25.0	12.0	12.0			54.6	14.2
LOS			E	C	E	C	B	B			D	B
Approach Delay		70.4			47.5			12.0			49.7	
Approach LOS		E			D			B			D	

Intersection Summary	
Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	100
Offset:	8 (8%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle:	90
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.98
Intersection Signal Delay:	39.5
Intersection LOS:	D
Intersection Capacity Utilization:	91.8%
ICU Level of Service:	F
Analysis Period (min):	15

Splits and Phases: 9: Liverpool Road & Walnut Lane/Hwy 401 WB Off-Ramp



Lanes, Volumes, Timings

<2043 Future Total_PHF>PM

11: Hwy 401 WB Ramps & Kingston Road

12-20-2024

	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↕↕		↕	↕↕	↕↕	↕
Traffic Volume (vph)	1696	23	184	804	662	346
Future Volume (vph)	1696	23	184	804	662	346
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (m)	4.0	3.7	2.7	3.8	3.8	3.7
Grade (%)	6%			0%	0%	
Storage Length (m)		0.0	47.5		0.0	52.0
Storage Lanes		0	1		2	1
Taper Length (m)			22.3		2.5	
Lane Util. Factor	0.95	0.95	1.00	0.95	0.97	1.00
Ped Bike Factor					1.00	0.98
Frt	0.998					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	3577	0	1577	3618	3544	1617
Flt Permitted			0.950		0.950	
Satd. Flow (perm)	3577	0	1577	3618	3537	1591
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	1					226
Link Speed (k/h)	60			60	50	
Link Distance (m)	268.7			424.0	216.6	
Travel Time (s)	16.1			25.4	15.6	
Confl. Peds. (#/hr)					1	3
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	5%	3%	2%	1%	1%
Adj. Flow (vph)	1696	23	184	804	662	346
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1719	0	184	804	662	346
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.1			3.1	7.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane	Yes			Yes		
Headway Factor	0.98	1.03	1.14	0.97	0.97	0.99
Turning Speed (k/h)		14	24		24	14
Number of Detectors	2		1	2	1	1
Detector Template	Thru		Left	Thru	Left	Right
Leading Detector (m)	10.0		2.0	10.0	2.0	2.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Size(m)	0.6		2.0	0.6	2.0	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4			9.4		
Detector 2 Size(m)	0.6			0.6		
Detector 2 Type	Cl+Ex			Cl+Ex		

Lanes, Volumes, Timings

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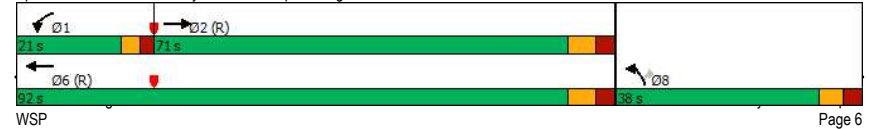
11: Hwy 401 WB Ramps & Kingston Road

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	→	↖	↗	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Detector 2 Channel						
Detector 2 Extend (s)	0.0			0.0		
Turn Type	NA		Prot	NA	Prot	Perm
Protected Phases	2		1	6	8	
Permitted Phases						8
Detector Phase	2		1	6	8	8
Switch Phase						
Minimum Initial (s)	20.0		5.0	20.0	8.0	8.0
Minimum Split (s)	50.0		10.0	50.0	38.0	38.0
Total Split (s)	71.0		21.0	92.0	38.0	38.0
Total Split (%)	54.6%		16.2%	70.8%	29.2%	29.2%
Maximum Green (s)	63.8		16.0	84.8	31.3	31.3
Yellow Time (s)	4.2		3.0	4.2	3.7	3.7
All-Red Time (s)	3.0		2.0	3.0	3.0	3.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	7.2		5.0	7.2	6.7	6.7
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?						
Vehicle Extension (s)	0.2		3.0	0.2	3.0	3.0
Recall Mode	C-Max		None	C-Max	None	None
Walk Time (s)	7.0			7.0	7.0	7.0
Flash Dont Walk (s)	35.0			35.0	24.0	24.0
Pedestrian Calls (#/hr)	0			0	14	14
Act Effct Green (s)	66.4		16.0	87.4	28.7	28.7
Actuated g/C Ratio	0.51		0.12	0.67	0.22	0.22
v/c Ratio	0.94		0.95	0.33	0.85	0.66
Control Delay	46.6		110.9	1.5	59.4	21.6
Queue Delay	0.4		0.0	0.0	0.0	0.0
Total Delay	46.9		110.9	1.5	59.4	21.6
LOS	D		F	A	E	C
Approach Delay	46.9			21.9	46.4	
Approach LOS	D			C	D	

Intersection Summary	
Area Type:	Other
Cycle Length:	130
Actuated Cycle Length:	130
Offset:	69 (53%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle:	120
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.95
Intersection Signal Delay:	40.1
Intersection LOS:	D
Intersection Capacity Utilization:	93.1%
ICU Level of Service:	F
Analysis Period (min):	15

Splits and Phases: 11: Hwy 401 WB Ramps & Kingston Road



Lanes, Volumes, Timings

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔	↔
Traffic Volume (vph)	155	857	358	331	753	496	228	684	737	196	617	186
Future Volume (vph)	155	857	358	331	753	496	228	684	737	196	617	186
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.5	3.6	4.2	3.5	3.7	4.0	3.5	3.9	3.7	3.5	3.9	4.0
Grade (%)	6%		0%		0%		0%		0%		0%	
Storage Length (m)	127.0		123.0		87.1		35.0		72.0		47.0	
Storage Lanes	1		1		1		1		1		1	
Taper Length (m)	64.0		39.6		66.8		32.6					
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Ped Bike Factor	0.97		0.96		0.99		0.91		0.99		0.95	
Frt	0.850		0.850		0.850		0.850		0.850		0.850	
Flt Protected	0.950		0.950		0.950		0.950		0.950		0.950	
Satd. Flow (prot)	1681	3400	1622	1733	3579	1654	1767	5255	1588	1750	5105	1627
Flt Permitted	0.950		0.950		0.363		0.292					
Satd. Flow (perm)	1633	3400	1549	1715	3579	1502	666	5255	1470	527	5105	1550
Right Turn on Red	Yes		Yes		Yes		Yes		Yes		Yes	
Satd. Flow (RTOR)	154		141		59		186					
Link Speed (kh)	60		60		60		60		60		60	
Link Distance (m)	297.5		222.7		158.6		385.2					
Travel Time (s)	17.9		13.4		9.5		23.1					
Confl. Peds. (#/hr)	75	31	31	31	75	37	65	65	37	65	37	37
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.92	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	3%	3%	3%	3%	2%	2%	1%	2%	2%	2%	5%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	2	0	0	4
Adj. Flow (vph)	155	857	358	331	753	496	228	743	737	196	617	186
Shared Lane Traffic (%)												
Lane Group Flow (vph)	155	857	358	331	753	496	228	743	737	196	617	186
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Right	Left	Left	Right	Left	Left	Right	Right
Median Width(m)	3.5		3.5		3.5		3.5		3.5		3.5	
Link Offset(m)	0.0		0.0		0.0		0.0		0.0		0.0	
Crosswalk Width(m)	1.6		1.6		1.6		1.6		1.6		1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.04	0.96	1.01	0.99	0.94	1.01	0.96	1.00	1.01	0.96	0.96
Turning Speed (k/h)	24	14	24	24	14	24	24	14	24	14	24	14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)	9.4		9.4		9.4		9.4		9.4		9.4	
Detector 2 Size(m)	0.6		0.6		0.6		0.6		0.6		0.6	

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Type	Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex		Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)	0.0		0.0		0.0		0.0		0.0		0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA	pm+ov	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8	1	7	4	
Permitted Phases	2		6		8		8		4		4	
Detector Phase	5	2	2	1	6	6	3	8	1	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	20.0	20.0	5.0	20.0	20.0	5.0	8.0	5.0	5.0	8.0	8.0
Minimum Split (s)	10.0	43.0	43.0	10.0	43.0	43.0	8.0	49.0	10.0	8.0	49.0	49.0
Total Split (s)	18.0	43.0	43.0	30.0	55.0	55.0	8.0	49.0	30.0	8.0	49.0	49.0
Total Split (%)	13.8%	33.1%	33.1%	23.1%	42.3%	42.3%	6.2%	37.7%	23.1%	6.2%	37.7%	37.7%
Maximum Green (s)	13.0	36.0	36.0	25.0	48.0	48.0	5.0	40.6	25.0	5.0	40.6	40.6
Yellow Time (s)	3.0	4.2	4.2	3.0	4.2	4.2	3.0	4.3	3.0	3.0	4.3	4.3
All-Red Time (s)	2.0	2.8	2.8	2.0	2.8	2.8	0.0	4.1	2.0	0.0	4.1	4.1
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	0.0
Total Lost Time (s)	5.0	7.0	7.0	5.0	7.0	7.0	3.0	8.4	5.0	3.0	8.4	8.4
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	0.2	0.2	3.0	0.2	0.2	3.0	0.2	3.0	3.0	0.2	0.2
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	Max	None	None	Max	Max
Walk Time (s)	7.0		7.0		7.0		7.0		7.0		7.0	
Flash Dont Walk (s)	29.0		29.0		29.0		29.0		33.0		33.0	
Pedestrian Calls (#/hr)	13		13		38		38		20		20	
Act Effect Green (s)	13.0	36.0	36.0	25.0	48.0	48.0	51.0	40.6	69.0	51.0	40.6	40.6
Actuated g/C Ratio	0.10	0.28	0.28	0.19	0.37	0.37	0.39	0.31	0.53	0.39	0.31	0.31
v/c Ratio	0.92	0.91	0.66	0.99	0.57	0.77	0.75	0.45	0.89	0.77	0.39	0.30
Control Delay	109.5	60.1	29.8	103.1	25.5	22.2	47.4	36.9	36.8	51.6	35.8	5.8
Queue Delay	0.0	3.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	109.5	63.5	29.8	103.1	25.5	22.2	47.4	36.9	36.8	51.6	35.8	5.8
LOS	F	E	C	F	C	C	D	D	D	D	D	A
Approach Delay	59.9		40.8		38.3		33.4					
Approach LOS	E		D		D		C					

Intersection Summary

Area Type: Other
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 32 (25%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 120
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.99
 Intersection Signal Delay: 43.3
 Intersection Capacity Utilization 114.6%
 Analysis Period (min) 15
 Intersection LOS: D
 ICU Level of Service H

Splits and Phases: 13: Whites Road & Kingston Road

