



Transportation Impact Assessment Addendum #2

New Campus Development for The Ottawa Hospital Hospital and Central Utility Plant



New Campus Development for The Ottawa Hospital

Hospital and Central Utility Plant

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478340 - 03000



TIA Plan Reports

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Individuals submitting TIA reports will be responsible for all aspects of development-related transportation assessment and reporting, and undertaking such work, in accordance and compliance with the City of Ottawa's Official Plan, the Transportation Master Plan and the Transportation Impact Assessment (2017) Guidelines.

By submitting the attached TIA report (and any associated documents) and signing this document, the individual acknowledges that s/he meets the four criteria listed below.

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1. I have reviewed and have a sound understanding of the objectives, needs and requirements of the City of Ottawa's Official Plan, Transportation Master Plan and the Transportation Impact Assessment (2017) Guidelines;
2. I have a sound knowledge of industry standard practice with respect to the preparation of transportation impact assessment reports, including multi modal level of service review;
3. I have substantial experience (more than 5 years) in undertaking and delivering transportation impact studies (analysis, reporting and geometric design) with strong background knowledge in transportation planning, engineering or traffic operations; and
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1,2 License of registration body that oversees the profession is required to have a code of conduct and ethics guidelines that will ensure appropriate conduct and representation for transportation planning and/or transportation engineering works.

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The following *TIA Addendum #2* has been prepared in support of the Site Plan Control Application (SPC) for the main Hospital building at the New Campus Development (NCD) of The Ottawa Hospital (TOH). In July 2021, a *TIA and Mobility Study* was prepared in support a Zoning By-law Amendment (ZBLA) for the Master Site Plan of the NCD and to lift the holding provision were approved by City Council in October 2021. Following the Master Site Plan approval, a *TIA Addendum #1* supporting the SPC for *Phase 2: Parking Garage and Green Roof*, was submitted in October 2021 and was approved by City Council in February 2022. A draft version of this report was circulated to stakeholders, including City of Ottawa and NCC staff on November 29th, 2022. This report represents the final version that incorporates City of Ottawa and NCC technical comments.

INTRODUCTION

The Ottawa Hospital (TOH) has initiated the development approval process with the City of Ottawa and the federal government to establish a New Campus Development (NCD) to replace the existing Civic Hospital Campus and become the major referral centre for Eastern Ontario, Western Quebec, and parts of Nunavut. It will be the home of the Eastern Ontario Trauma Centre with a range of specialized services, research, and education facilities, along with related ancillary uses such as resident care stay facilities, and retail service uses. The existing Civic Hospital Campus is located at 1053 Carling Avenue and the NCD will be located approximately 1km to the east on lands leased to The Ottawa Hospital from Public Services and Procurement Canada (PSPC) adjacent to the Dow's Lake Pavilion and Central Experimental Farm (CEF).

The new campus will be generally bound by Carling Avenue to the north, Preston Street and Prince of Wales Drive to the east, the Birch Drive to the south, and Maple Drive to the west. The overall Master Site Plan proposal, the existing transportation conditions, and the planned network conditions were described in detail within the *TIA and Mobility Study (July 2021)*.

Since the Master Site Plan approval, TOH submitted a site plan control application for phase 2, the proposed parking garage, including a *TIA Addendum #1* that was approved in 2022.

TOH is now proceeding with the site plan control application in support of Phases 3 and 4, the main hospital building and the central utility plant, which will be covered in this *TIA Addendum #2*.

The *TIA Addendum #2* will incorporate the latest information available, including the most recent development statistics for the NCD at Opening Day (2028) and Full Buildout (2048) have been provided in **Section 2.1**. The following list identifies the sections within this Addendum that have been refreshed from the original *TIA and Mobility Study (July 2021)* and the *TIA Addendum #1 (Oct 2021)*.

- Overall, the NCD site statistics are generally similar to what was assumed in the *TIA and Mobility Study (July 2021)*. The overall footprint of the hospital remains comparable, with some redistribution of gross floor area for hospital uses, while the number of employees has decreased.
- A detailed breakdown of anticipated employee shift schedules and patient registrations at the NCD was provided by TOH. This data was used to update the trip generation forecast for the NCD based on first principles, using anticipated arrival and departure times by staff and different types of visitors. Existing Civic Campus staff and visitor parking activity/patterns were used to calibrate these projections. This methodology replaced the trip generation forecast based on the existing Civic Campus, completed within the original July 30th, 2021, submission. The comprehensive breakdown of future employee schedules at the NCD enabled more precise trip generation forecasts for the morning and afternoon “peak hour of the generator” (i.e., during shift changes at the hospital), in addition to the “peak hour of the adjacent street traffic” (i.e. typical commuter peak hours).
- Shift schedules were broken down for different programs at the future campus, which have been incorporated into this analysis. For example, the University of Ottawa Heart Institute will only transfer to the NCD in 2048 and the rehab program is now expected to remain at the existing Civic Campus location.

- Adjustments were made to the forecasted peak hour traffic volumes in background conditions from the *TIA and Mobility Study (July 2021)*. Specifically, a big data platform ‘Streetlight’ was used to provide a better understanding of baseline traffic volumes to/from the existing Civic Campus, which helped inform the process of removing some of these trips from the background network. Additionally, known development applications that were initiated since the Master Site Plan submission have been included in the analysis under “other area developments”.
- Minor re-distribution of on-site trips based on the latest site plan (that has a more refined parking layout) and anticipated activities and vehicle destinations within the campus. Overall, an increase in forecasted vehicular traffic to the Prince of Wales/Road E intersection from the *TIA and Mobility Study (July 2021)* was forecasted.
- The proposed Road E/Prince of Wales Drive intersection design has evolved from the all movement unsignalized intersection in the Master Site Plan in 2021. A signalized protected intersection was briefly considered in response to refinements to the site plan and updated site generated traffic forecasts, however challenges with drainage, the required footprint that would have had significant impact to existing trees and greenspace on both sides of Prince of Wales Drive, and the associated costs steered the design to a modified unsignalized intersection that restricts the critical outbound left-turn movement from Road E to maintain adequate long-term intersection performance.
- The proposed Road B/Prince of Wales Drive intersection design has also evolved to no longer permit the through movement from the southbound curb-side lane, making it a right-turn lane only, which enables the proposed receiving lane to be removed. Providing two southbound through movements was not expected to notably improve anticipated queues since the limited storage and receiving lane length would hinder driver utilization. A sensitivity analysis and risk assessment was shared with the city traffic signals department, and they agreed with this conclusion. They confirmed they could manage the southbound queues through signal timing optimizations without the additional through movement and receiving lane, which also helps preserve trees at the southwest corner of the intersection.
- The Active Transportation Plan has been refined based on public and stakeholder feedback. As a result, this triggered refinements to the design of internal roadways (e.g., Road A and Road B) and adjacent intersections that balance mobility, capacity, and active transportation opportunities.

1.0 SCREENING FORM

Although the site statistics have changed, the screening form still meets the same criteria as outlined in the original *TIA and Mobility Study (July 2021)*.

2.0 SCOPING REPORT

2.1 Existing and Planned Conditions

2.1.1 Proposed Development

The TIA Addendum #2 will focus on Phase 3 and 4 of the NCD, which represents the main hospital building as shown in **Figure 1**. This report will also update the long-term analysis at the anticipated full buildout horizon of 2048 using the latest information on ensuing development phases, which have been summarized in **Table 1**. The statistics assumed for future phases of the NCD may change over time and will only be confirmed at the time of their respective Site Plan Control application.

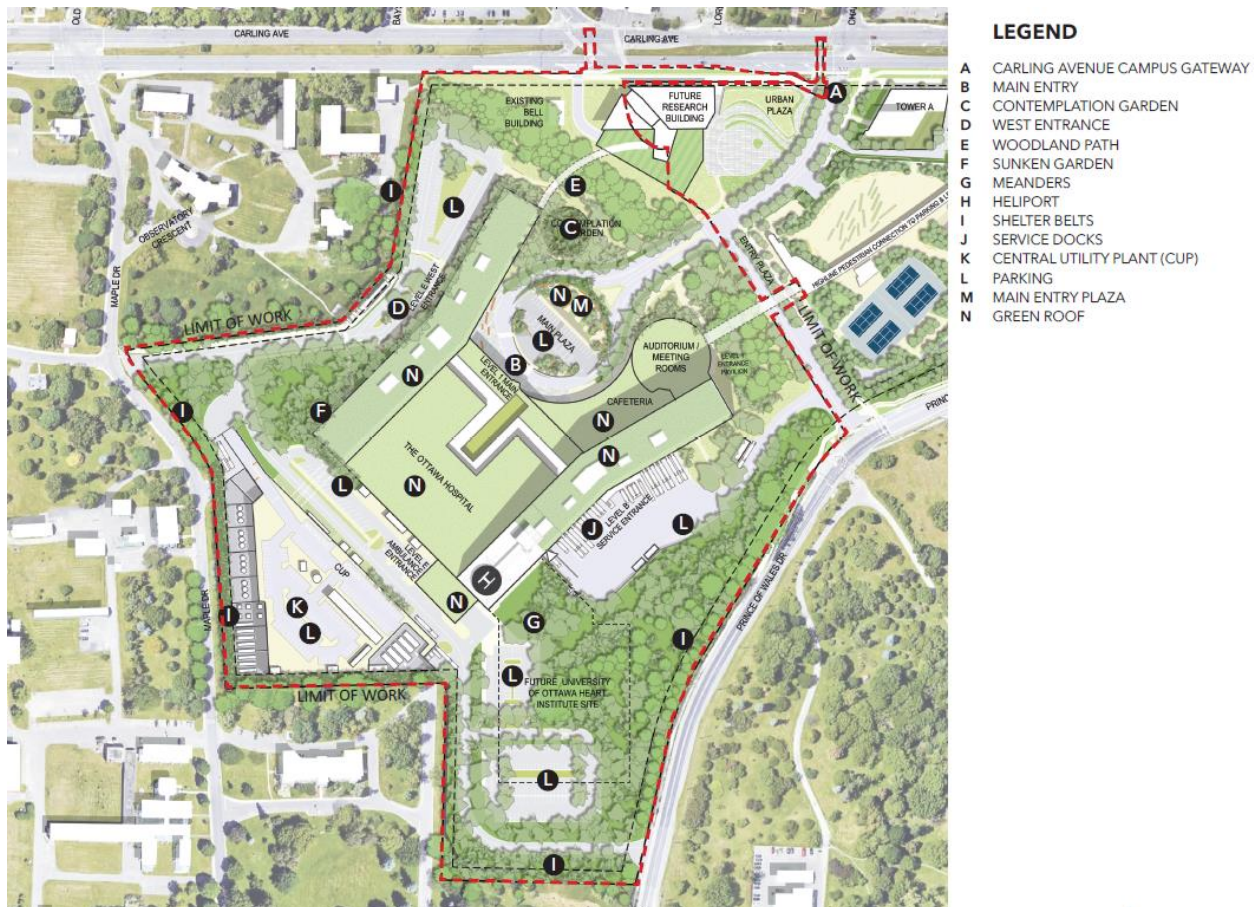
The conceptual Site Plan is shown in **Figure 1**. It is important to The proposed Site Plan will continue to be refined as it proceeds to Developed Design.

Table 1: Current and Anticipated Land Use Statistics for the NCD

Independent Variable	Existing Civic Campus	NCD 2028 Opening Day	NCD 2048 Full Buildout
General Statistics			
Total Number of Beds	559	641	1,136
Number of Employees	3,473	5,000	9,956
Number of Parking Spaces	2,500	3,097	3,097
Development Gross Floor Area (GFA) x1,000 ft²			
Hospital Land Uses	1,815	2,605	3,322
U. Ottawa Heart Institute	305	0	868
Other ¹	0	81	750
1. The 81,000 ft ² will include ancillary retail services within the NCD main hospital structure. The Life Science Park proposed for 2048 has approximately 100,000 ft ² Ground Floor Commercial, 162,500 ft ² Hospital Appointments, 487,500 ft ² Research and Development land uses.			

Overall, the site statistics remain similar to the *TIA and Mobility Study (July 2021)*, with the most notable change being an overall reduction in anticipated number of staff by 2028 and 2048.

Figure 1: Components of the New Campus Development Hospital and Central Utility Plan Phases



2.1.2 Phasing Plan

There are no changes anticipated in the phasing plan, outlined in **Section 3.1.2** of the *TIA and Mobility Study (July 2021)*.

2.1.3 Existing Conditions

The existing conditions as described in **Section 3.1.3** of the *TIA and Mobility Study (July 2021)* were still valid and used in this report.

Existing Transit Network

Minimal changes to existing transit network have occurred since the preparation of the *TIA and Mobility Study (July 2021)*. Overall, the same routes within the study area continue to operate, with the following minor changes noted and accounted for within the analyses:

- Frequent Route #53: was moved from former Parkdale Avenue to Holland Avenue (Scott Street to Carling Avenue).
- Local Route #56: was moved from former Holland Avenue to Parkdale Avenue (Scott Street to Carling Avenue).
- Local Route #55: no longer originates at Bayshore Mall, it now originates from Westgate Shopping Center.

Existing Peak Hour Volumes

It is noteworthy that the peak hour volumes used in the *TIA and Mobility Study (July 2021)*, *TIA Addendum #1 (October 2021)*, and this report reflect pre-COVID-19 pandemic traffic conditions. The pandemic work from home orders have been removed at the time of this writing, however commuting trends for both drivers and transit users have not returned to pre-pandemic levels. While the future of remote work is unclear, there may be a need to revisit baseline traffic assumptions as future phases of the NCD proceed, to determine if City-wide travel behaviour settles into a 'new normal' and the corresponding implications on the future transportation network.

2.1.4 Planned Conditions

New Official Plan and Transportation Master Plan

Section 3.1.4 of the *TIA and Mobility Study (July 2021)* acknowledged the draft new Official Plan and the 2013 Transportation Master Plan. Since that time, the New Official Plan was approved by City Council (November 24th, 2021) and has received provincial approval as of November 4th, 2022. The City's Transportation Master Plan (TMP) Update is still ongoing, with an anticipated completion date for Part 1 – Policies in Spring 2023 and Part 2 – infrastructure in Fall 2024, meaning the planned conditions still reflect the 2013 TMP.

Other Area Developments

New development applications within the study area have been accounted for in this report. **Figure 2** illustrates the previously captured developments in purple, and new developments to be added to background conditions in green. The new developments have also been described below:

A – 1081 Carling Avenue

The proposed development has a 22- and 28-storey residential towers. A total of 462 units are proposed. The Transportation Brief (prepared by Parsons) projects an increase in two-way traffic volumes of approximately 95 to 115 veh/h during peak hours. These volumes have been added to the background network.

B – 101, 105, 111, 115 Champagne Avenue

The 4 neighbouring high-rise towers, two for Envie and two for Soho will be treated as one lot.

- Envie Towers:
 - Phase 1 (105 Champagne): occupied prior to 2017 – captured in existing traffic counts
 - Phase 2 (101 Champagne): occupied in 2020 – not been captured in existing traffic counts
- Soho Towers:
 - Phase 1 (111 Champagne): occupied prior to 2017 – captured in existing traffic counts

- Phase 2 (115 Champagne): under construction – not been captured in existing traffic counts

No TIA for the Soho development was found; however, a transportation brief by Parsons for Envie Phase 1 and 2 combined projected two-way traffic volumes of approximately 60 to 65 veh/h during peak hours. Since the Envie and Soho developments share a similar site context and development size, for the purpose of this TIA Addendum #2, the volumes forecasted for Envie Phase 1 and 2 have been layered to the background network to account for volumes not captured in existing counts for Envie Phase 2 and Soho Phase 2.

C – 829 Carling Avenue

The proposed development is a 61-storey residential building. A total of 459 units plus some ground floor commercial uses are proposed. The Transportation Brief (prepared by Novatech) projects an increase in two-way traffic volumes of approximately 150 to 100 veh/h during peak hours. These volumes have been added to the background network.

D – 299 Carling Avenue

The proposed development is envisioned as a mixed-use site which could include approximately 550 residential units and 55,000 ft² of commercial uses. This project is still in its infancy and no official Site Plan or Transportation Impact Study have been submitted, thus, no volumes have been added to the background network for this development.

E – 275 Carling Avenue

The proposed development will host 168 senior/retirement units with a ground floor pharmacy. The Transportation Brief (prepared by Parsons) projects an increase in two-way traffic volumes of approximately 40 to 65 veh/h during peak hours. These volumes have been added to the background network.

F – 770 Bronson Avenue

The proposed development is a 26-storey residential building. A total of 153 apartment units and 71 student units are proposed. The Transportation Brief (prepared by CGH) projects an increase in two-way traffic volumes of approximately 70 to 80 veh/h during peak hours. These volumes have been added to the background network.

Figure 2: Updated Other Area Developments



2.2 Analysis Parameters

The timing of opening day and full buildout of the NCD, 2028 and 2048 respectively, have not changed for this study. The anticipated peak hour periods have been refined based on new information provided by TOH. The projected employee schedules were provided with corresponding start and end times, which paint a more accurate picture of arrival and departure windows for future employees.

Table 2 summarizes the different types of employee shifts anticipated at the NCD, including their range of start and end times. TOH provided the proportion of employees that would apply to each shift. It is acknowledged that some employees may arrive or depart earlier or later than the shown hours, however it was assumed the majority will adhere to the noted schedule.

Table 2: Types of Shift and Arrival/Departure Times

Type of Shift	General Arrival Time	General Departure Time	Proportion of Staff 2028 (2048)
Day Shift	06:00 – 08:00	15:00 – 18:00	68% (75%)
Evening Shift	14:00 – 15:00	23:00 – 00:00	11% (9%)
Night Shift	22:00 – 23:00	07:00 – 08:00	3% (3%)
12hr Day Shift	06:00 – 07:00	19:00 – 20:00	11% (8%)
12hr Night Shift	18:00 – 19:00	07:00 – 08:00	7% (5%)
Total			100% (100%)

In general, the peak morning hour of the NCD ('generator') occurs at a similar time to the peak hour of the adjacent street, while in the afternoon, the peak hour of the NCD is expected to occur earlier than the adjacent street peak hour. For this study, three time periods were analyzed, including:

- Morning peak hour for the NCD and adjacent street: 07:00 – 08:00

- Afternoon peak departure hour for the NCD: 15:00 – 16:00
- Afternoon peak hour for the adjacent street: heaviest 60-minute period between 15:30 – 17:30

2.3 Exemption Review

Site Plan Control Applications (SPA) and Zoning By-Law Amendments (ZBLA) reports differ in their context according to the City’s TIA Guidelines. The *TIA and Mobility Study (July 2021)* supported a ZBLA application. This TIA Addendum is supporting a SPC and as thus, different exemptions are permitted.

Additionally, there are four (4) separate transportation supporting studies that will accompany the SPC covering modules within the TIA in far greater detail. The following modules/elements of the TIA process will be exempted as listed in **Table 3**.

Table 3: Exemption Review Summary

Module	Element	Exemption Consideration
4.2 Parking	4.2.2 Spillover Parking	Parking spillover will be captured within a separate “Off-Street Parking Strategy” Report
4.5 Transportation Demand Management (TDM)	All Elements	TDM will be captured within a separate “Transportation Demand Management Strategy” Report
4.6 Neighbourhood Traffic Management (NTM)	All Elements	NTM will be captured within a separate “Neighbourhood Traffic Management Strategy” Report
4.8 Review of Network Concept	All Elements	Zoning has already been approved and NCD does not project any major deviations from original zoning

3.0 FORECASTING REPORT

3.1 Development-Generated Travel Demand

3.1.1 People Trip Generation

The *TIA and Mobility Study (July 2021)* developed a custom trip generation rate using the existing Civic Campus traffic data and calibrated based on research of similar institutions in North America. The three strongest independent variables; number of beds, number of employees and gross floor area (GFA) were blended together to produce a single local rate to derive person trips to/from the NCD.

At the time of the previous submission, TOH did not have any employee schedules or shifts available. Since that time, they have provided the project team with a comprehensive employee shift breakdown, which replaced the original trip generation approach and methodology. This new approach is expected to provide a more accurate estimate of the number and type of employee arriving and departing the NCD on each day of a week.

Note that approximately 81,000 ft² of commercial retail is proposed for Opening Day 2028; however, it is all assumed to be located inside of the main Hospital building and is meant to cater directly to people already within the NCD. All commercial retail trips for Opening Day 2028 are considered internal trips and will not generate any new people trips from the adjacent network.

Employee Person Trip Generation

TOH provided the estimated number of full-time equivalent (FTE) employees on a typical weekday based on their schedule and summarizes approximately how many employees work each type of position.

The project team then “adjusted” this number to reflect absenteeism and remote work. A 5% reduction was applied to account for absentees on vacation or sick leave. TOH also confirmed they anticipate approximately 25% of the “day-shift” workers will be administration roles, of which approximately 20% of them on average will be remote-workers and the remainder will travel to the NCD on a typical weekday. The final estimated employee breakdown at 2028 and 2048 is summarized in **Table 4**.

Table 4: Full Time Employees Anticipated at the NCD in a Typical Weekday – 2028 and 2048

Type of Shift	Est. Arrival Window	Est. Departure Window	2028 FTE	2028 Adjusted	2048 FTE	2048 Adjusted
The Ottawa Hospital Core Staff (TOH)						
Day Shift	06:00 – 08:00	15:00 – 18:00	3,466	3,128	4,488	4,050
Evening Shift	14:00 – 15:00	23:00 – 00:00	524	498	679	645
Night Shift	22:00 – 23:00	07:00 – 08:00	160	152	208	198
12hr Day Shift	06:00 – 07:00	19:00 – 20:00	439	417	568	540
12hr Night Shift	18:00 – 19:00	07:00 – 08:00	310	295	401	381
University of Ottawa Heart Institute (UOHI)						
Day Shift	06:00 – 08:00	15:00 – 18:00	0	0	964	916
Evening Shift	14:00 – 15:00	23:00 – 00:00	0	0	146	139
Night Shift	22:00 – 23:00	07:00 – 08:00	0	0	45	43
12hr Day Shift	06:00 – 07:00	19:00 – 20:00	0	0	122	116
12hr Night Shift	18:00 – 19:00	07:00 – 08:00	0	0	86	82
Residents (Doctors)						
12hr Day Shift	06:00 – 07:00	19:00 – 20:00	75	71	97	92
12hr Night Shift	18:00 – 19:00	07:00 – 08:00	25	24	32	30
Research						
Day Shift	06:00 – 08:00	15:00 – 18:00	0	0	2,120	2,014
TOTAL			5,000	4,585	9,956	9,246

Note: FTE = ‘Full Time Equivalent’ employees

The anticipated shift schedule provided by TOH was broken down further to understand arrival and departure patterns throughout the day. The employee schedules only provided a range of shift start times and end times, but it was acknowledged there would /be variability in the actual arrival and departure times.

Therefore, the project team requested the existing hourly employee parking entry and exit time stamps from the Civic Campus employee satellite lots. This helped provide a baseline estimate of hourly arrival and departures throughout a typical weekday that was applied to the future adjusted employee shift breakdown in **Table 4**. The parking data has been provided in **Appendix A. Table 5** summarizes the resulting arrival and departure distribution by shift type.

Table 5: Arrival and Departure Hourly Distribution to/from NCD by Staff – 2028 and 2048

Type of Shift	00:00 - 01:00	01:00 - 02:00	02:00 - 03:00	03:00 - 04:00	04:00 - 05:00	05:00 - 06:00	06:00 - 07:00	07:00 - 08:00	08:00 - 09:00	09:00 - 10:00	10:00 - 11:00	11:00 - 12:00	12:00 - 13:00	13:00 - 14:00	14:00 - 15:00	15:00 - 16:00	16:00 - 17:00	17:00 - 18:00	18:00 - 19:00	19:00 - 20:00	20:00 - 21:00	21:00 - 22:00	22:00 - 23:00	23:00 - 24:00
Day Shift TOH						5%	32%	37%	14%	5%	3%	2%	2%	4%	10%	25%	22%	14%	8%	13%	4%			
Day Shift Other*							50%	30%	20%							50%	30%	20%						
Evening Shift	20%	20%													60%	20%	20%							60%
Night Shift								75%	25%														75%	25%
12hr Day Shift						75%	25%													75%	25%			
12hr Night Shift								75%	25%										75%	25%				

Green – Proportion of Arrivals to NCD; Blue – Proportion of Departures from NCD; Grey – Shift Group Working at NCD; *Day Shift Other refers to UOH and Research

The adjusted full time employee estimates from **Table 4** were then distributed hourly based on the distribution of arrival and departure times for each shift shown in **Table 5**. **Table 6** and **Table 7** show the estimated hourly employee arrival and departure volumes (i.e., employee person trips) at Opening Day 2028 and Full Buildout 2048, respectively. Note that only the heavier forecasted hours between 06:00-09:00 and 15:00-20:00 have been shown in the tables below. For a full 24-hour breakdown, please refer to **Appendix B**.

Table 6: Estimated Hourly Employee Arrival and Departure Volume at NCD – 2028

Type of Shift	Day Shift TOH	Day Shift Other*	Evening Shift	Night Shift	12hr Day Shift	12hr Night Shift	TOTAL IN	TOTAL OUT	TOTAL 2-WAY
06:00 - 07:00	1,000	n/a			366		1,366		1,366
07:00 - 08:00	1,152	n/a		114	122	239	1,274	353	1,627
08:00 - 09:00	448	n/a		38		80	448	118	566
15:00 - 16:00	786	n/a	100				100	786	886
16:00 - 17:00	669	n/a	100				100	669	769
17:00 - 18:00	435	n/a						435	435
18:00 - 19:00	251					239	239	251	490
19:00 - 20:00	418				365	80	80	783	863

Green – Proportion of Arrivals to NCD; Blue – Proportion of Departures from NCD; *Day Shift Other refers to UOH and Research

Table 7: Estimated Hourly Employee Arrival and Departure Volume at NCD - 2048

Type of Shift	Day Shift TOH	Day Shift Other*	Evening Shift	Night Shift	12hr Day Shift	12hr Night Shift	TOTAL IN	TOTAL OUT	TOTAL 2-WAY
06:00 - 07:00	1,295	1,465			561		3,321		3,321
07:00 - 08:00	1,492	879		181	187	371	2,558	552	3,110
08:00 - 09:00	580	586		61		124	1,166	185	1,351
15:00 - 16:00	1,018	1,465	236				236	2,483	2,719
16:00 - 17:00	866	879	157				157	1,745	1,902
17:00 - 18:00	563	586						1,149	1,149
18:00 - 19:00	325					371	371	325	696
19:00 - 20:00	541				561	124	124	1,102	1,226

Green - Proportion of Arrivals to NCD; Blue - Proportion of Departures from NCD; *Day Shift Other refers to UOHI and Research

Visitor Person Trip Generation

The *TIA and Mobility Study (July 2021)* produced a blended trip generation rate that included employees, patients, and non-patient visitors. At the time, it was understood that approximately 1 in 4 person trips to the hospital was a visitor, while the remaining 3 in 4 people was an employee.

TOH has since provided more information regarding visitor trips, with historic numbers and future projections. The type of visit was split into two categories:

- Planned visits - includes patients with appointments and other non-emergency visitors
- Unplanned visits - emergency visits. Note that ambulances have been individually layered on top, which could cause a double counting of trips creating a slightly more conservative value.

TOH historic and forecasted visitation numbers were factored by an additional 20% to account for potential variability and to ensure a conservative approach. The resulting annual and daily visitor trips have been summarized in **Table 8**.

Table 8: Estimated Annual and Daily Planned and Unplanned Visits (Data Provided by TOH)

Type of Visitor	2018 Registered Visitor	2028 Estimated Visitor	2048 Estimated Visitor
Annual			
Planned Visitor	263,725	344,293	571,401
Unplanned/Emergency Visitor	86,275	112,632	186,928
TOTAL	350,000	456,925	758,329
Daily (Factored by 1.2)			
Planned Visitor	867	1,132	1,879
Unplanned/Emergency Visitor	284	370	615
TOTAL	1,151	1,502	2,493

Similar to the employee trip generation process, TOH also provided visitor parking activity within public lots at the existing Civic Campus, which provided arrival and departure times. Visitor arrivals and departures were generally consistent between 07:00 and 20:00, which coincided with typical visitor hours. During the time periods outside visitor hours, if the parking data showed no activity, a constant number was assumed to account for possible variability in emergency visits. It is noteworthy to mention that the total daily visitor numbers and growth factors for the future horizon years within this report are the same as the ones within the TDM Strategy Report; however, the number seen in the tables below varies to their peak visitor parking numbers within the heaviest parking demand hour. This is mostly to do with choosing the most conservative

distribution for both reports. For this report, it was assumed there would be uniform visitor arrivals and departures each hour, while TDM Strategy Report had assumed some visitors/patients may arrive and stay for longer than an hour. Besides this nuance, the total number of patients and visitors expected per day remains consistent between the two reports.

The resulting visitor trips at Opening Day 2028 and Full Buildout 2048 are shown in **Table 9** and **Table 10** respectively.

Table 9: Estimated Hourly Visitor Arrival and Departure Volume – 2028

Type of Shift	Planned Visit Arrival	Planned Visit Departure	Unplanned Visit Arrival	Unplanned Visit Departure	TOTAL IN	TOTAL OUT	TOTAL 2-WAY
06:00 - 07:00			19	19	19	19	38
07:00 - 08:00	103		19	19	122	19	141
08:00 - 09:00	103	103	19	19	122	122	244
15:00 - 16:00	103	103	19	19	122	122	244
16:00 - 17:00	103	103	19	19	122	122	244
17:00 - 18:00	51	103	19	19	70	122	192
18:00 - 19:00	51	51	19	19	70	70	140
19:00 - 20:00		51	19	19	19	70	89

Green – Proportion of Arrivals to NCD; Blue – Proportion of Departures from NCD

Table 10: Estimated Hourly Visitor Arrival and Departure Volume - 2048

Type of Shift	Planned Visit Arrival	Planned Visit Departure	Unplanned Visit Arrival	Unplanned Visit Departure	TOTAL IN	TOTAL OUT	TOTAL 2-WAY
06:00 - 07:00			31	31	31	31	62
07:00 - 08:00	171		31	31	202	31	233
08:00 - 09:00	171	171	31	31	202	202	404
15:00 - 16:00	171	171	31	31	202	202	404
16:00 - 17:00	171	171	31	31	202	202	404
17:00 - 18:00	85	171	31	31	116	202	318
18:00 - 19:00	85	85	31	31	116	116	232
19:00 - 20:00		85	31	31	31	116	147

Green – Proportion of Arrivals to NCD; Blue – Proportion of Departures from NCD

Life Sciences Park Person Trip Generation

The Life Sciences Park (formerly known as Carling Village) is a reserved parcel of land on the north-eastern quadrant of the site. No formal design has been submitted and only a very basic high-level vision for the site including approximately 750,000 ft² of development fronting Carling Avenue has been proposed.

The Life Science Park **will not be built by 2028 and is outside of the current SPC scope of work**. For completeness however, the trip generation analysis was updated to reflect potential land uses and incorporated into the 2048 horizon analysis. The former Carling Village trip generation within the original *TIA and Mobility Study (July 2021)*, now Life Science Park, were still considered applicable, however, in order to produce a more conservative analysis, this TIA addendum has assumed 650,000 ft² of medical/research office uses and 100,000 ft² of commercial uses.

The ITE Trip Generation Manual 11th Ed. was used to estimate the person trips generated by the Life Sciences Park. For the purposes of this analysis, it was assumed that 75% of the 650,000 ft² of medical/research office

use was considered “Research and Development”, while the remaining 25% were “Hospital Uses” under the ITE land use descriptions.

Additionally, the ground floor retail is intended to serve local foot traffic to/from the NCD and the local community already on the adjacent streets (i.e., Carling Avenue and Preston Street). Since these trips are already in the network, they are not creating a new trip and were subsequently treated as “internal” trips. An 80% internal reduction was used for the commercial retail component of the Life Sciences Park. **Table 11** summarizes the resulting person trips generated by the Life Science Park.

As previously mentioned, the Life Science Park (LSP) represents one of the final phases of the NCD, and the potential mix of uses and employee schedules will not be confirmed for many years. There are no reasonable estimate of staff and visitor schedules related to the LSP at this time. To reflect a worst-case scenario, the trip generation assumptions for the LSP were assigned only in the AM and PM peak hours for the adjacent street, despite peak period spreading of trips being possible. The trip generation assumptions and overall analysis will be revisited during the Site Plan Control application for the LSP.

Table 11: Life Science Park Trip Generation Rates

Land Uses in Life Sciences Park	Size	Reference	Peak Hour	Trip Generation Rate ¹	Person Trips Generated
Ground Floor Commercial (Shopping Center)	100,000 ft ²	ITE 820	AM	1.20 (x)	24 ₂
			PM	4.88 (x)	98 ₂
Hospital Use	162,500 ft ²	ITE 610	AM	0.82 (x)	133
			PM	0.86 (x)	139
Research and Development	487,500 ft ²	ITE 760	AM	1.03 (x)	502
			PM	0.98 (x)	477

1. Trip Generation Rates include a 1.28 factor to account for typical North American auto occupancy, transit and non-motorized mode
2. Person trips for commercial were internally reduced by 80%.

Emergency Transports, Service Vehicles and Transport Trucks

Similar to **Section 4.1.4** in the *TIA and Mobility Study (July 2021)*, the NCD estimates approximately 100 emergency transports per day.

Contractor service vehicles and other specialized vehicles such as garbage trucks, small supply deliveries, electronic/ telecommunications technicians, police vehicles, etc. are expected to access the site in addition to employees and visitors. It was assumed 20 of these vehicles (10 vehicles entering and 10 vehicles exiting) would occur during the morning and afternoon peak hour in 2028 and increasing to 40 total vehicles (20 in and 20 out) by 2048. The majority of these vehicles were assumed to use Road E/Prince of Wales Drive or Maple Drive/Road D accesses. Note that Maple Drive/Road D will be strictly reserved for emergency vehicles only (i.e., active ambulances).

Large transport trucks were not expected to operate frequently during the peak hour periods, as they have different operating schedules than regular commuters. Conservative, it was assumed that 4 transport trucks (2 in and 2 out) would occur during the peak hours in 2028, increasing to 8 transport trucks (4 in and 4 out) by 2048. These trucks will be destined to the loading area off Road F, which will only be accessible via Prince of Wales and Road B.

Conceptual circulation diagrams for the emergency, non-urgent, supplementary vehicles and large transports have been provided in **Appendix C**.

3.1.2 Mode Shares and Trips Generated by Mode

Existing Mode Shares

In 2022, TOH distributed an employee commute survey to all Civic Campus staff that was prepared by Steer and Parsons to better understand current travel trends amongst different staff positions and levels. This survey helped refine the mode share assumptions and captured the widespread effect of COVID-19 (such as increased work from home opportunities) that was not accounted for in the initial estimate developed in the *TIA and Mobility Study (July 2021)*. For further details related to the employee survey, please refer to the Transportation Demand Management Strategy report.

A limitation of the 2022 employee survey was it did not include patients/visitor travel data that would be expected to have a higher auto-driver mode share. The survey results reflect a more optimistic view of travel behaviour all campus users.

The reported mode share from the employee survey is shown in **Table 12**, and were lower than originally forecasted in the *TIA and Mobility Study (July 2021)*.

Table 12: Existing Employee Mode Shares at Civic Campus – 2022 Employee Survey

	Auto Driver	Passenger	Transit	Walk	Bike	Work from Home	Total
Staff Mode Share	62%	11%	7%	8%	6%	6%	100%

Future Mode Shares

The *TIA and Mobility Study (July 2021)* developed aggregate future mode share assumptions for all person-trips to/from the NCD, which had some limitations in not recognizing the discrete mode shares for different users (e.g. employees, planned visitors and emergency visitors), as this information was not clear or well defined at that time.

Since then, projected staff and visitor arrival and departure data have been provided by TOH, the project team was able to update future mode share assumptions to reflect each user-type noted above. Consideration was given for transit availability during different hours in day, the type of user, the trip context, and other factors which may influence someone from taking one mode of transportation versus another. At the end of this process, the updated mode share forecasts, when aggregated, was generally consistent with the original *TIA and Mobility Study (July 2021)* assumptions.

The mode share assumptions Opening Day 2028 and Full Buildout 2048 have been summarized in **Table 13** and **Table 14** respectively. It was assumed approximately 20% of administrative staff trips (approx. 25% of day shift employees are administrative staff) have been removed from people trips per time period for day shifts to reflect potential work-from-home opportunities separate from the traditional mode types, based on TOH guidance. These results mirror the future mode share assumptions made in the *Transportation Demand Management (TDM) Strategy* (within 0.5% related to rounding), which accounted for work-from-home as another mode share option based on the employee survey. Overall, the total number of trips and mode shares forecasted for 2028 and 2048 are consistent between both reports.

Table 13: Mode Share Assumptions by User Type at the NCD - 2028

Type of Shift / Patient	Auto Driver	Passenger	Transit	Walk	Bike	Total
Staff Shift Type						
Day Shift	40%	7%	44%	1%	8%	100%
Evening Shift	75%	14%	6%	1%	4%	100%
Night Shift	75%	15%	6%	1%	3%	100%
12hr Day Shift	50%	10%	35%	1%	4%	100%
12hr Night Shift	50%	11%	33%	1%	5%	100%
Patient Type						
Planned	60%	15%	20%	1%	4%	100%
Unplanned	80%	20%	0%	0%	0%	100%
SUBTOTAL WEIGHTED AVERAGE STAFF + PATIENTS						
Combined	51.4%	10.5%	31.4%	1.0%	5.8%	100%

Table 14: Mode Share Assumptions by User Type at the NCD - 2048

Type of Shift / Patient	Auto Driver	Passenger	Transit	Walk	Bike	Total
Staff Shift Type						
Day Shift	25%	11%	54%	2%	8%	100%
Evening Shift	70%	18%	7%	2%	3%	100%
Night Shift	70%	18%	7%	1%	4%	100%
12hr Day Shift	40%	15%	37%	2%	6%	100%
12hr Night Shift	40%	18%	34%	2%	6%	100%
Patient Type						
Planned	45%	25%	25%	2%	3%	100%
Unplanned	80%	20%	0%	0%	0%	100%
SUBTOTAL WEIGHTED AVERAGE STAFF + PATIENTS						
Combined	36.3%	14.7%	40.6%	2.1%	6.3%	100%
Life Sciences Park						
Commercial	12%	3%	5%	40%	40%	100%
Medical/Research	25%	8%	57%	5%	5%	100%

Trips by Mode

The future mode share assumptions were applied to person-trip volumes from each user type: employees and visitors, in 2028 and 2048. The assumptions were also applied to the person-trip results for the future Life Sciences Park, and layered onto the hospital peak hour volumes, but only accounted for the 2048 horizon. Additionally, the emergency, supplementary, and large transports were added separately to the peak hour traffic volumes at each horizon. The anticipated peak hour traffic volumes (including the PM peak hour of the generator) in 2028 and 2048 are shown in **Table 14** and **Table 15** respectively.

To reflect a worse-case scenario, the trip generation assumptions for the LSP were assigned only during the AM and PM peak hours for the adjacent street, not the PM peak of the generator. There is a likelihood of peak period spreading of LSP trips, which will be confirmed and applied accordingly during the site plan control application for the LSP. For a full breakdown of each hour, please refer to **Appendix D**.

Table 15: Trips Generated by NCD by Mode Shares – 2028

Mode Share		Auto Driver	Auto Passenger	Transit	Walk	Bike	TOTAL 2-WAY
AM Peak * 07:00 - 08:00	IN	611	112	570	14	101	1,408
	OUT	233	47	86	3	15	384
	TOTAL	844	159	656	17	116	1,792
PM Peak Generator 15:00 - 16:00	IN	164	33	27	2	8	234
	OUT	403	74	367	9	67	920
	TOTAL	567	107	394	11	75	1,154
PM Peak Adjacent Street 16:00 - 17:00	IN	164	33	27	2	8	234
	OUT	357	66	315	8	58	804
	TOTAL	521	99	342	10	66	1,038
*AM Peak is both of Adjacent Street and Generator Green – Proportion of Arrivals to NCD; Blue – Proportion of Departures from NCD							

Table 16: Trips Generated by NCD by Mode Shares – 2048

Mode Share		Auto Driver	Auto Passenger	Transit	Walk	Bike	TOTAL 2-WAY
AM Peak * 07:00 - 08:00	IN	842	353	1,495	69	219	2,978
	OUT	346	113	188	16	37	700
	TOTAL	1,188	466	1,683	85	256	3,678
PM Peak Generator 15:00 - 16:00	IN	291	92	60	8	12	463
	OUT	748	322	1,384	52	204	2,710
	TOTAL	1,039	414	1,444	60	216	3,173
PM Peak Adjacent Street 16:00 - 17:00	IN	266	86	111	30	33	527
	OUT	615	258	1,090	67	173	2,203
	TOTAL	881	344	1,202	97	206	2,730
*AM Peak is both of Adjacent Street and Generator Green – Proportion of Arrivals to NCD; Blue – Proportion of Departures from NCD							

3.1.3 Trip Distribution

The proposed number and location of site accesses has not changed from the original *TIA and Mobility Study (July 2021)*. Overall, the trip distribution will remain the same, with approximately 35% of trips going to and from the east and west and approximately 15% of trips going to and from the north and south.

3.1.4 Trip Assignment

The new site generated trips from **Section 3.1.2** were assigned to the road network based on the updated trip distribution, which have been shown in **Figure 3** and **Figure 4** for Opening Day 2028 and Full Buildout 2048 respectively. The proposed parking layout on the campus have evolved, which affected the trip assignment. Specifically, there was a minor increase in vehicular traffic at the Road E/Prince of Wales Drive intersection with a corresponding reduction at all other accesses when compared to the *TIA and Mobility Study (July 2021)*. Further details related to on-site parking can be found in **Section 4.2**.

Please note, as part of the design review of the Road E/Prince of Wales Drive intersection, both City staff and TOH agreed that there were too many constraints (e.g. environmental, tree and drainage impacts etc.) to develop a traditional protected intersection or roundabout design at this location. Therefore, an unsignalized intersection with a restricted outbound left-turn from Road E was agreed upon as the preferred design proposal. This collaborative choice has been reflected in the trip assignment, particularly shifting all outbound left-turns to the outbound right-turn, followed by an increase in U-turn traffic at The Scenic Driveway/Prince of Wales Drive roundabout to proceed north.

Further details related to the final design for Road E/Prince of Wales Drive intersection can be found in **Section 4.4**.

Figure 3: 2028 Opening Day Site Generated Volumes (Streets Adjacent to NCD)

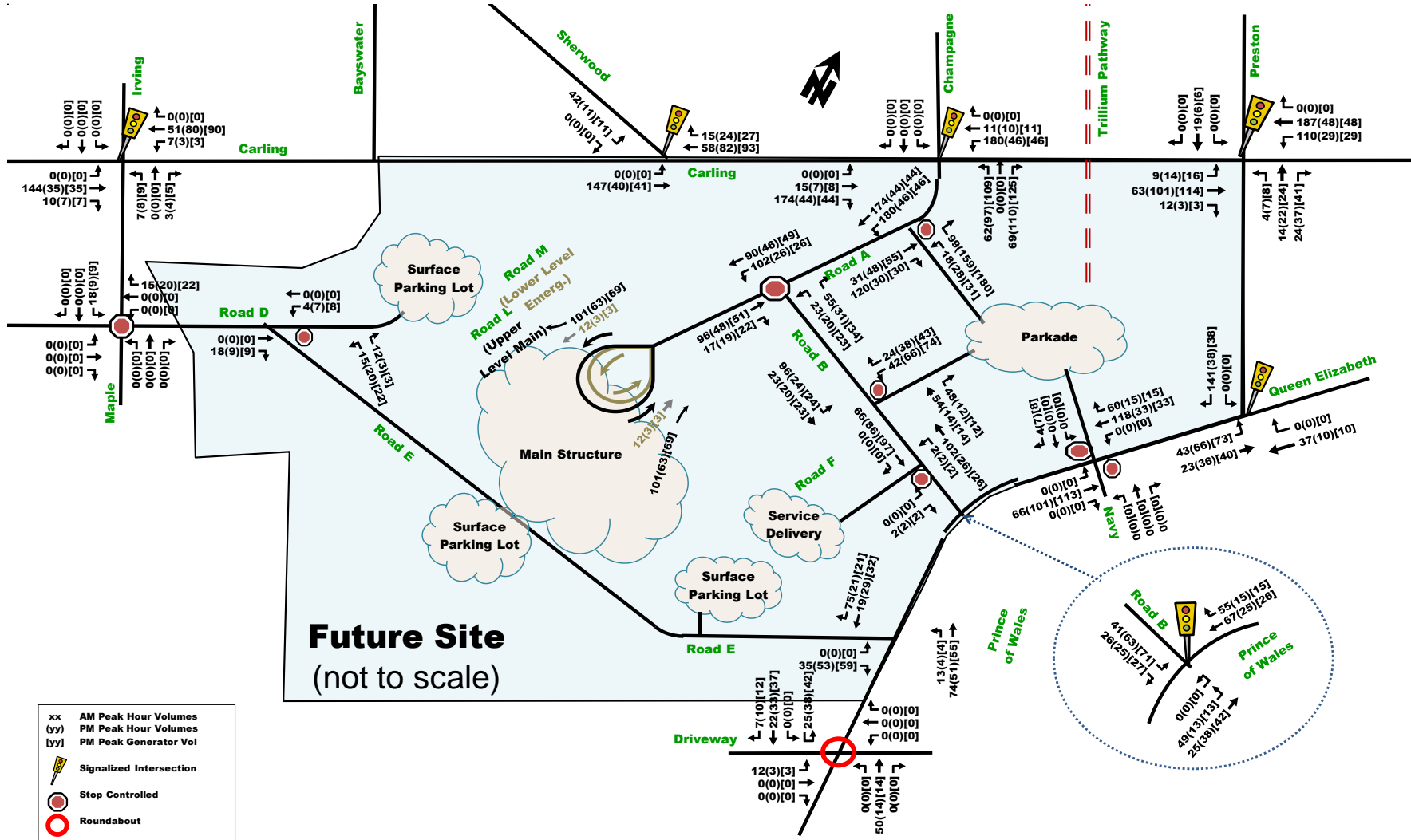
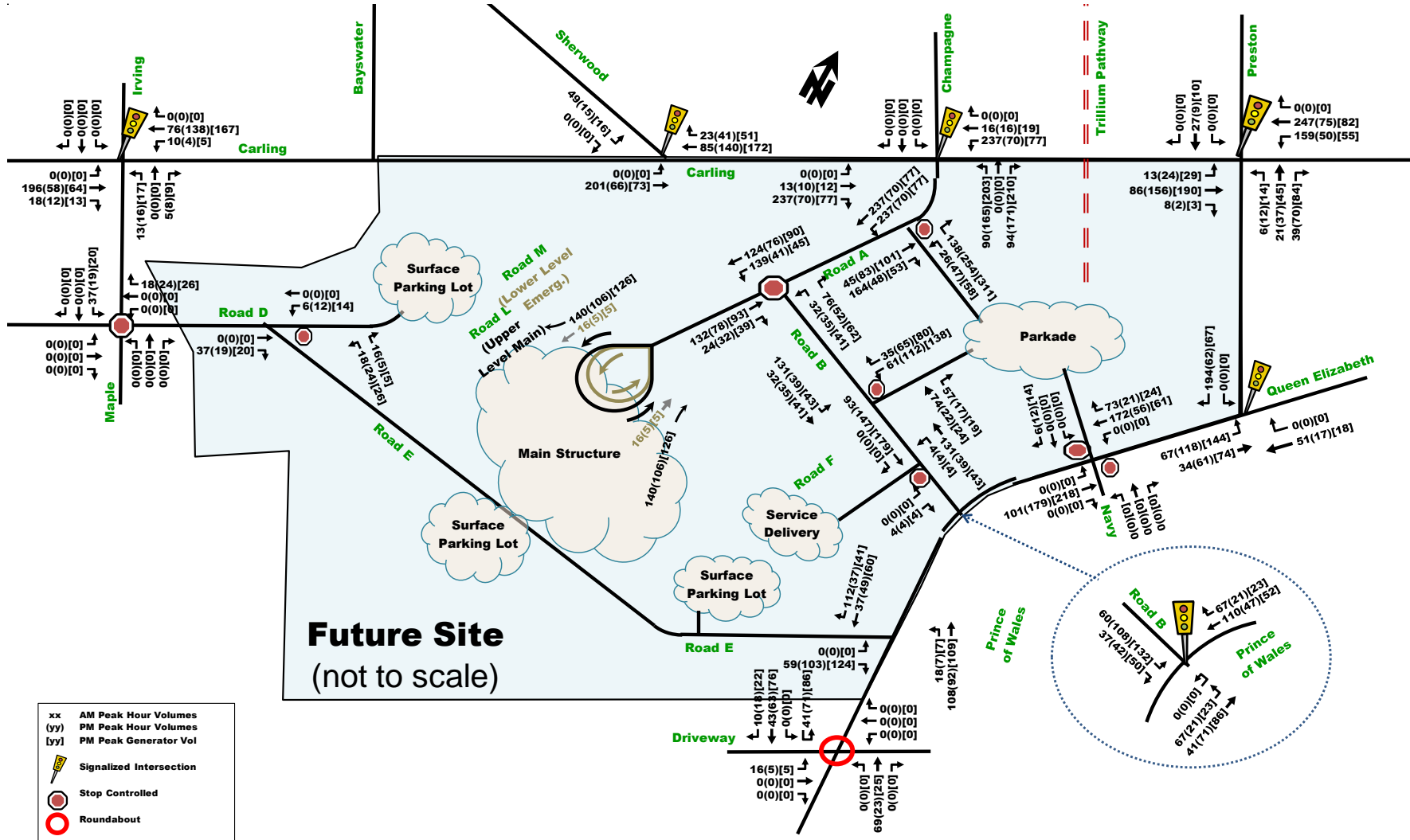


Figure 4: 2048 Full Buildout Site Generated Volumes (Streets Adjacent to NCD)



3.2 Background Network Travel Demands

Since the submission of the *TIA and Mobility Study (July 2021)*, TOH retained a ‘Streetlight’ software license which uses historic pings from location-based devices. Using this software tool in combination with existing peak hour traffic counts and TRANS data, Parsons was able to better estimate existing vehicle trips traveling to and from the existing Civic Campus.

For the 2028 background volume horizon, the hospital land use proportion of trips was removed from the network while the trips destined to the UOHI were maintained, estimated based on employee proportions provided by TOH. For the 2048 background volume horizon, the remaining trip generation from the UOHI were removed from the network.

In both horizon years, rehab vehicle trip generation were estimated and added separately following the same process as “Day Shift” staff in **Section 3.1.1**. As previously noted, the rehab program is expected to remain at the existing Civic Campus site.

Finally, some turning movements were balanced to the existing peak hour counts and TRANS data, to ensure the total volumes exiting and entering the greater network aligned better with the total vehicle volumes and directional splits as determined by Streetlight.

Other area development background volumes were updated to reflect the latest development applications within the study area, as discussed in **Section 2.1.4**. The new developments were added to the background volumes for all subsequent analyses. The combined other area development site generated traffic volumes have been provided in **Appendix E**.

Overall, the future background volumes in the TIA Addendum #2 were higher (more conservative) compared to the *TIA and Mobility Study (July 2021)* as they include additional other area developments and less conservative reduction factors related to the existing Civic Campus.

3.3 Demand Rationalization

Table 17 provides a comparison of the trip generation results from **Section 3.1** and the *TIA and Mobility Study (July 2021)*.

Table 17: TIA and Mobility Study Trip Generation (July 2021) vs Updated Trip Generation (2023)

Mode Share	Original (2021) TIA Peak Street		Updated (2023) Peak Street		% Change		New (2023) Peak Generator		New (2023) Peak 3h Total	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
2028										
Vehicle IN	764	456	611	164	-20%	-64%	611	164	1,466	629
Vehicle OUT	359	530	233	357	-35%	-33%	233	403	394	957
TOTAL 2-way	1,123	986	844	521	-25%	-47%	844	567	1,860	1,586
2048										
Vehicle IN	914	557	842	266	-8%	-52%	842	291	2,177	934
Vehicle OUT	434	646	346	615	-20%	-5%	346	748	565	1,563
TOTAL 2-way	1,348	1,203	1,188	881	-12%	-27%	1,188	1,039	2,742	2,497

The updated trip generation process resulted in notably lower peak hour vehicle traffic volume estimates in both 2028 and 2048 compared to the *TIA and Mobility Study (July 2021)*. The key reasons the updated results were considered more reliable and acceptable for this study is as follows:

- The *TIA and Mobility Study (July 2021)* aggregated the trip generation process by developing a local trip generation rate based on the existing Civic Campus, which comprised of a single day traffic count

at each access to the existing campus. This approach, while a common practice in the industry, is less reliable as it represents a single sample and risks not being representative of a typical weekday. The first principles approach based on projected employee shift schedules and historical arrival/departure data for employees and visitors provides a much more comprehensive and accurate forecast of travel activity at the NCD.

- The *TIA and Mobility Study (July 2021)* developed a trip generation rate using existing Civic Campus traffic counts that blended three independent variables: the number of beds, number of employees and the gross floor area. This approach is acceptable if no other information is available about employee travel patterns, but is less reliable based on how different the building design of existing Civic Campus will be compared to the NCD.
- The estimated number of employees at the NCD in 2028 and 2048 has decreased 24.6% and 4.6% relatively since the original *TIA and Mobility Study (July 2021)*, as more information about future programs has come to light.
- The original *TIA and Mobility Study (July 2021)* did not factor in remote work potential, which has since been confirmed by TOH. The assumed peak hour activity in the *TIA and Mobility Study (July 2021)* was based on the existing Civic Campus traffic counts prior to COVID-19.

There have been no major changes to the planned transportation network surrounding the NCD; the planned Carling Avenue Transit Priority project, the city-wide active transportation and transit initiatives, and active connections to the adjacent pathway networks remain the same. Therefore, the demand rationalizations developed in Section 4.3 in the original *TIA and Mobility Study (July 2021)* were still considered acceptable and were applied to peak hour traffic background volumes for 2028 and 2048 in this study.

The future background volumes were updated based on a new process discussed in **Section 3.2**. The demand rationalized background volumes and future forecasted volumes with the site generated trips, including updated other area developments have been provided in **Appendix F**.

4.0 STRATEGY REPORT

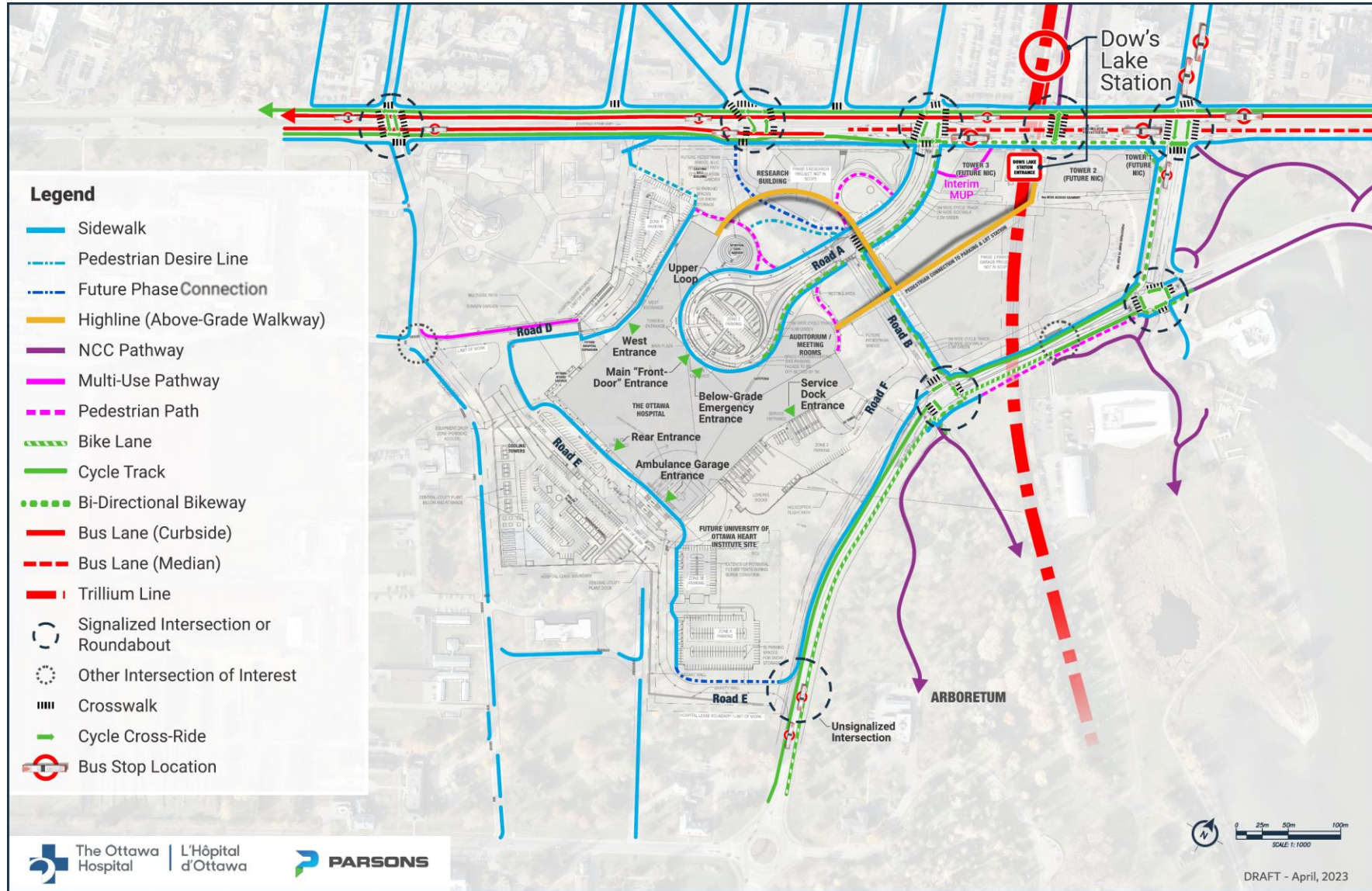
4.1 Development Design

The overall NCD site plan has undergone various refinements since the *TIA and Mobility Study (July 2021)* was submitted, however, many of these changes had little to no effect on the conclusions and recommendations from the previous submission. The more notable changes are discussed below.

With respect to access to and from the proposed parking garage, the original *TIA and Mobility Study (July 2021)* assumed entry to the parking garage via Road A was only open to the public, while the Road B and Navy Private parking garage accesses were open to staff only, for the purpose of balancing traffic distributions onsite and avoid congestion on the internal road network that risks spillback onto the municipal road network. **These assumptions were reassessed in this study with updated development information, and it was determined that these entry restrictions for specific user groups were no longer required.** The proposed parking garage accesses may be accessed by all user groups with low risk of congestion spilling back to the municipal road network.

The Active Transportation Plan for the NCD has been updated to reflect ongoing work and collaborations with City of Ottawa and the NCC, shown in **Figure 5**. The plan also identifies various design refinements made to the NCD site plan since the original *TIA and Mobility Study (July 2021)* submission. All pathways on site will be winter maintained and lit, with rest areas proposed every 30m.

Figure 5: Future Active Transportation Network Map



A list of the key changes is as follows:

- The Prince of Wales intersections at Preston and Road B are currently proposed as protected intersections, as per the City's Protected Intersection Design Guidelines (PIDG).
- The proposed Road E/Prince of Wales Drive intersection design is ongoing. The *TIA and Mobility Study (July 2021)* proposed an unsignalized all movement intersection at this location. As previously discussed in this report, the latest direction from City of Ottawa staff and TOH is to develop an unsignalized intersection that restricts the outbound left-turn movement that would reduce various environmental impacts compared to a signalized protected intersection and maintain adequate long-term operational performance. An unsignalized intersection at this location would also eliminate active transportation facilities crossing Prince of Wales Drive, but a new southbound unidirectional cycle track will be added, and the sidewalk will be maintained along the west side of Prince of Wales Drive.
- In the *TIA and Mobility Study (July 2021)*, there was a gap in active transportation facilities on the south side of Road A between the front door of the NCD and the Road A/Road B intersection. The *TIA Addendum #2 Draft (November 2022)* proposed a multi-use pathway (MUP) to fill this gap. This MUP has since been upgraded to separate pedestrian sidewalk and a bi-directional cycle track facilities to provide an even better active transportation experience and connectivity within the site.
- Due to AODA standards compliance, a short section of approximately 60m in length on Road B between the Road B Garage Access and Road A/B intersection bidirectional cycle-track will require a "mixing" zone for cyclists to mitigate conflict points between pedestrians crossing from the layby area to the adjacent sidewalk.
- A new 3m wide pedestrian path has been proposed that connects the sidewalk along the west building face around to the Road A sidewalk near the front of the main building, called "Woodland Path".
- The sidewalk on Road D has been relocated to the opposing side and has now been upgraded to a MUP between Maple Drive/Road D intersection and the proposed bike parking adjacent to the pedestrian crosswalk on Road D. Once on the southern side of Road D, a sidewalk will extend east towards the West Entrance and a series of smaller pedestrian desire lines and west towards the rear entrance.
- Interim bike lanes are proposed between Sherwood Drive to Road A-Champagne Avenue/Carling Avenue to replace former Queen Juliana Park connection between Sherwood Drive and Prince of Wales Drive. In the following phase of construction, Phase 5 – Research Building, the option of creating a challenging connection due to grades from Sherwood Drive to Road A and Road B cycling facilities will be examined. This connection will not be included within this phase of construction since the final design for the research building has not been completed and that area may be used as a staging zone during construction. It is recommended, if feasible, to build this active transportation facility after phases 3, 4 and 5 of the NCD to prevent building this connection now and tearing it down during construction periods. This will be confirmed during future phases, namely the Research Building.
- As mentioned previously, the latest Site Plan (provided in **Figure 1**) does not show approach treatments for Road A/Road B and Road E/Prince of Wales Drive intersections as some details have yet to be finalized. Ongoing discussions with City Staff, NCC, traffic signals and TOH will determine the final design.
- Sidewalk facilities along Road E near Prince of Wales Drive were purposely omitted for Phases 3 and 4 to prevent pedestrian activity near the emergency area. Zones 5B and 4 (where the future University of Ottawa Heart Institute is proposed) will function in the interim as an emergency staging area for surge emergency events in addition to its planned emergency access point for ambulances. TOH operations prefer walking traffic from non-emergency staff and the public be restricted until such time the

University of Ottawa Heart Institute phase is implemented. At that time, when surge capacity may be considered elsewhere on the campus such as Zone 1 parking, the opportunity to expand the sidewalks facilities will be examined, along with the need for an east-west pedestrian crossings at the Road E/Prince of Wales Drive intersection.

- Some of the pedestrian and cycling facility widths have been increased, namely the Preston Street and Prince of Wales Drive segments fronting the site.
- The unidirectional cycling facility on the west side of Prince of Wales Drive that formerly transformed into a paved shoulder south of Road B has now been extended south to the Road E intersection along the site's frontage.
- An Environmental Assessment (EA) is currently underway for an improved connection between Dow's Lake Station and the NCD, along with a potential MUP bridge crossing over the Trillium Line Corridor which would connect the Trillium MUP to the Road A cycle and pedestrian facilities.

In general, sidewalks are now 2m or wider, Multi-Use Pathways (MUPs) are 3m wide, and uni-directional cycle tracks are 1.8m or wider, which meet or exceed minimum requirements. A detailed breakdown of active transportation facility widths has been provided in **Appendix G**.

It is important to note that discussions are ongoing between TOH, NCC and City of Ottawa on the ultimate design of active transportation facilities on the campus, which may result in further refinements to the Active Transportation Plan over the course of the Site Plan Control approvals process, leading into the Developed Design.

4.2 Parking

4.2.1 Parking Supply

Vehicle Parking

Table 18 summarizes the minimum required and maximum permitted parking spaces based on the land uses and location of the NCD.

Table 18: Minimum Required and Maximum Permitted Parking Spaces

Land Use	GFA x 1,000 m ²	Min Rate	Min Required	Max Rate	Max Permitted	
Opening Day 2028	Hospital	155	0.7/100 m ²	1,085	1.6/100 m ²	2,480
Full Buildout 2048	Hospital Expansions ¹	175	0.7/100 m ²	1,225	1.6/100 m ²	2,800
	Office	23.5	1/100 m ²	235	2.2/100 m ²	517
	Research and Dev.	6	0.4/100 m ²	24	1/100 m ²	60
	Medical Facility	22	2/100 m ²	440	5/100 m ²	1,100
	Retail	7	1.25/100 m ²	88	3.6/100 m ²	252
Min Required			3,097	Max Permitted		7,209
Total Provided ²			3,097			
Additional NCC Parking Spaces in Parking Garage			200			

1. This row pertains to the future expansion of the Hospital and Heart Institute, not included in the Phase 3 and 4 project.
2. Total parking provided does not include parking spaces reserved for snow storage, emergency surge events nor temporary police parking.

The total number of vehicle parking spaces has changed with the redistribution of spaces in the parking garage and the surface lots within the campus. The parking garage has increased in capacity to roughly 2,850 spaces (including 200 designated for NCC parking), but the overall footprint and size of the previously proposed parking garage remains the same.

The current Site Plan proposes 427 surface parking spaces, plus an additional 100 spaces that will function as snow storage space during winter and 70 flex spaces which function as additional space for surge capacity

(i.e., emergency tents during disaster or medical events etc.), which raised the total parking spaces provided higher than quoted in the original *TIA and Mobility Study*. However, these additional spaces do not count towards the by-law requirement (not reflected in Table 18), but they have been considered in this report and the *TDM Strategy* when reviewing parking management, which is provided in **Section 4.2.2**.

The number and location of parking spaces are expected to undergo refinements as TOH proceeds to developed design, but the overall recommendations from the *TIA Addendum #1 (October 2021)* in support of Phase 2 Site Plan Application for the Parking Garage and Green Roof are still valid.

Bicycle Parking

The number of bike parking spaces within or near the parking garage compared to **Section 4.1.2** of the *TIA Addendum #1 (October 2021)* has been reduced from approximately 540 bike parking spaces to 310. However, the total quantity of bike parking proposed is still consistent with the *TIA and Mobility Study (July 2021)* and meets the minimum required bike parking. The reduction in bike parking spaces within the parking structure reflects an effort to redistribute bike parking closer to the front door of the hospital and reduce the walking distance for cyclists from the place that they park their bike to walk into the NCD structure. The new Site Plan proposes 48 new short-term outdoor bike parking spaces near the front door of the NCD, 168 long term covered/secured bike parking and 104 short term covered bike parking on the northwest wing of the NCD adjacent to the hospital structure, 184 long term covered/secured bike parking and 126 outdoor short term bike parking within the parking garage structure, for a combined total of 630 bike parking spaces. Future phases of the NCD will determine if additional bike parking is required and where it should be added.

NCD also proposes showers and storage lockers, located near the bike parking at the west entrance of the NCD within levels E1 and level 1. Another facility is also proposed near the main entrance and pavilion entrance, near to the public elevator core.

Similar to vehicle parking statistics, the distribution, type and final number of bike parking spaces are still under refinement and will continue to evolve into the Developed Design.

4.2.2 Parking Demand and Spillover

As previously noted, this section of the report has been exempted. TOH is preparing two separate studies that will discuss on-site and off-site parking management.

On-site parking management will be a central focus of the *TDM Strategy*, which aims to define policies, measures, and strategies to aid TOH in reducing single-occupant vehicle demand at the NCD. The *TDM Strategy* anticipates there will be sufficient parking to accommodate projected parking demand by 2028 and only a minor shortfall (roughly 2%) by 2048 with recommended TDM measures in place.

The off-site parking implications will be discussed in detail within the *Off-Site Parking Strategy*, including potential mitigation options. An important element of this report is the recommended regulatory changes to better protect neighbourhood streets from parking infiltration, and the process that is outlined, which provides the local communities the mechanism to initiate these changes with City staff at the appropriate time prior to opening day of the NCD.

4.3 Boundary Street Design

There have been some refinements made to the boundary streets since the original *TIA and Mobility Study* submission, the differences have been discussed below and their respective multi-modal level of service (MMLoS) for interim conditions has been summarized in **Table 19**:

- The full buildout segment of Carling Avenue between the Trillium Pathway and Preston Street is envisioned to have a 3.5m sidewalk with more than 2m boulevard separation and a 3m bi-

directional cycle-track. The interim design proposes a 3m bi-directional cycle track and a 2m sidewalk without a boulevard separation.

- The full buildout segment on Preston Street from Carling Avenue to Prince of Wales Drive was originally proposed as a 3m sidewalk with a 3m cycle-track and greater than 2m boulevard separation. The latest RMA proposes a 3m sidewalk with a 3.5m bi-directional cycle-track and greater than 2m boulevard separation to be built prior to 2028 Opening Day. Although an improvement to cycling facilities, the MMLoS analysis will show the same results.
- The full buildout segment on Prince of Wales Drive from Preston Street to Road B was originally proposed as a 2m sidewalk with a 2m unidirectional cycle-track and greater than 2m boulevard separation. The latest RMA proposes a 2m sidewalk with a 1.8m unidirectional cycle-track and greater than 2m boulevard separation to be built prior to 2028 Opening Day. The MMLoS analysis will show the same results.
- No changes anticipated for Maple Drive.

Table 19: Future Interim 2028 Adjacent Road Network MMLoS

Road Segment	Multi-Modal Level of Service (MMLoS)								
	Pedestrian			Bicycle		Transit		Truck	
	Full Buildout PLoS	Interim PLoS	Target	BLoS	Target	TLoS	Target	TkLoS	Target
Carling Ave.	C	E	A						
Preston St.	C	C	A	No change from Table 36 in original TIA and Mobility Study (July 2021)					
Prince of Wales Dr.	C	C	A						

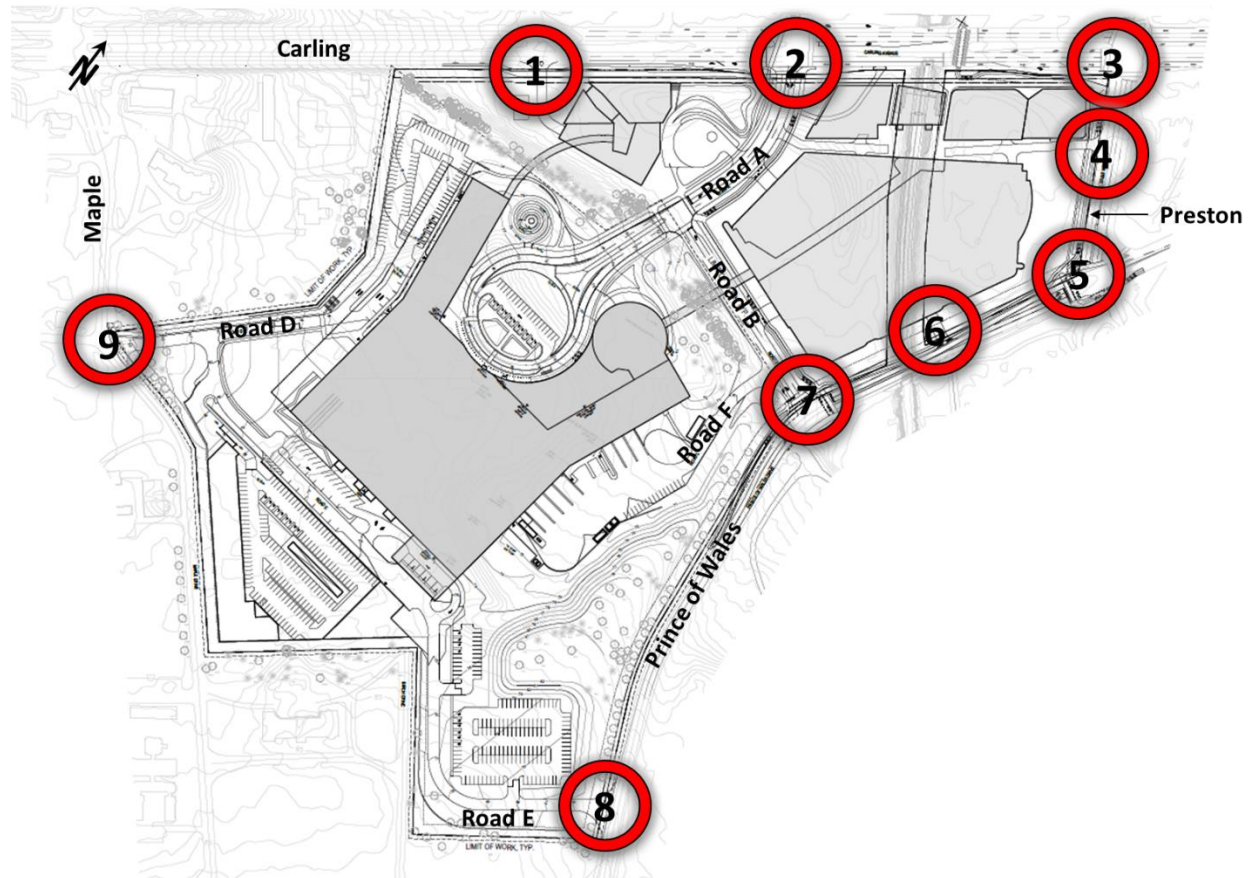
As shown in **Table 19**, Preston Street and Prince of Wales Drive segments are expected to be constructed to its ultimate design by opening day 2028 and show no changes in MMLoS performance. The Carling Avenue frontage will be redeveloped as part of the Carling Avenue Transit Priority Project and is expected to include pedestrian and segregated cycling facilities.

It is important to note that discussions are ongoing between TOH, NCC and City of Ottawa on the ultimate design of the adjacent road network, which may result in further refinements over the course of the SPC approvals process.

4.4 Access Intersection Design

Figure 6 below illustrates the study area intersections along the NCD frontage. Intersections 1, 2 and 3 (on Carling Avenue) will be built to interim conditions until the Carling Avenue Transit Priority project is implemented. The precise timing of Carling Avenue works is currently unknown but anticipated prior to 2029. All other intersections are expected to be constructed to their ultimate design before Opening Day 2028.

Figure 6: Study Area Intersections Fronting the NCD Site



A description of the key changes to the noted intersection is provided below. It is important to note that the intended function and expected users of each intersection has not fundamentally changed since the *TIA and Mobility Study (July 2021)* submission – only the designs of certain intersections have been refined.

At this time, two of the four designs have been approved by City staff, including Road A/Carling Avenue and Prince of Wales Drive/Preston Street. The Road B/Prince of Wales Drive intersection design had been approved, but a recent modification in the design will trigger a resubmission. The first design submission for the Road E/Prince of Wales Drive intersection has been initiated.

A composite plan showing the proposed off-site intersection designs has been provided in **Appendix H**.

1. **Carling Avenue/Sherwood Drive:** No changes are anticipated from the original *TIA and Mobility Study (July 2021)*.
2. **Carling Avenue/Champagne Avenue/Road A:** An interim new south leg will be built as part of the NCD, with a 75m-long westbound left-turn lane and a 30m-long eastbound right-turn lane are proposed. An extended concrete island on the west approach is proposed to provide a pedestrian shelter when crossing Carling Avenue. Once the Carling Avenue Transit Priority Project is implemented, it is anticipated that all approaches will have unidirectional cross-rides. The ensuing intersection performance analysis reflects a bi-directional cross-ride on the south approach, which represents a worst-case scenario (i.e., would require a time separated phase and an eastbound right-turn lane). The northbound through movement will be prohibited at this intersection to reduce traffic infiltration along Champagne Avenue and Beech Street.
3. **Carling Avenue/Preston Street:** No changes are anticipated from existing conditions until such time that the Carling Avenue Transit Priority Project is implemented. No changes are anticipated from the

original *TIA and Mobility Study (July 2021)* for the full buildout design. Once the Carling Avenue Transit Priority Project is implemented, it is anticipated that all approaches will have uni-directional cross-rides. The ensuing intersection performance analysis reflects a bi-directional cross-ride on the south approach, which represents a worst-case scenario (i.e., would require a time separated phase and an eastbound right-turn lane).

4. **Life Science Park Laneway/Preston Street:** the original *TIA and Mobility Study (July 2021)* suggested a one-way laneway from Preston Street to Road A. This assumption is still valid for horizon year 2048, once the Life Science Park is built. Prior to construction of the Life Science Park, the laneway will not connect across the Trillium Line and will function as a two-way laneway reserved for service vehicles and snow removal. It is anticipated to have very limited traffic and during off-peak hours only.
5. **Prince of Wales Drive/Preston Street:** The design of this intersection has evolved considerably since the original *TIA and Mobility Study (July 2021)*. In consultation with City of Ottawa staff and the NCC, the design has been augmented to a fully protected intersection with a bi-directional cross-ride on the west side (to facilitate the realigned Trillium Pathway connection), north side, and south side, with a unidirectional cross-ride on the east side.
6. **Prince of Wales Drive/Navy Private/Parking Garage Access:** No changes are anticipated from the original *TIA and Mobility Study (July 2021)*.
7. **Road B/Prince of Wales Drive:** The design of this intersection has evolved considerably since the original *TIA and Mobility Study (July 2021)* and the *TIA Addendum #2 Draft (November 2022)* submission. The most notable change is the conversion of the shared through-right and through lane with two receiving lanes to a single right-turn lane and single through lane with a single receiving lane. This decision was made collaboratively with city staff to minimize environmental impacts along the Prince of Wales Drive frontage. City staff also confirmed they would be able to manage potential queues on Prince of Wales Drive through signal timing optimizations. Potential queuing implications and risks will be discussed in **Section 4.9**.

Uni-directional cycle-cross rides are now proposed on the north and west approaches, while a bi-directional cycle track crossing is proposed on the east side of the intersection. The east side of the intersection has also been augmented with a bi-directional bikeway and sidewalk.

8. **Road E/Prince of Wales Drive:** This intersection was originally proposed as an all-movement unsignalized intersection with a stop-control on the Road E approach within the *TIA and Mobility Study (July 2021)*. Since that time, anticipated site generated traffic has been refined based on the evolving site plan, which resulted in more traffic utilizing Road E than previously anticipated and the all-movement unsignalized intersection no longer being sufficient to accommodate future NCD traffic.

At one point, either a signalized protected intersection or a roundabout was being contemplated, but both were ruled out due to significant environmental, drainage, and cost constraints. The latest direction with guidance from City of Ottawa, NCC and TOH has led back to an unsignalized intersection with a restricted outbound left-turn movement from Road E, which avoids the various constraints but still provides long-term operational capacity.

9. **Maple Drive/Winding Way/Road D:** No changes are anticipated from the original *TIA and Mobility Study (July 2021)*. TOH maintains their commitment to restrict access to Road D to emergency vehicles only, reducing traffic implications on Maple Drive.

Similar to the *TIA and Mobility Study (July 2021)*, traffic control signal warrants for Road B/Prince of Wales Drive and Road E/Prince of Wales Drive intersections were completed and in both cases, a signalized intersection was not warranted.

4.5 Transportation Demand Management

This section of the report has been exempted. TOH is preparing a comprehensive *Transportation Demand Management (TDM) Strategy* that will identify needs/opportunities, alternative solutions, and prepare a recommended plan that help TOH achieve the necessary mode share targets to limit single-occupant vehicle trips and ensure parking demand does not exceed supply at the NCD. This strategy also includes a long-term vision for TDM, through a framework that can be applied to all TOH hospitals and affiliates in the fullness of time. Key recommendations include:

- Continue work-from-home policies
- Virtual Care
- Travelling Doctors/Mobile Health Clinics
- TDM Coordinator
- TDM Platform
- Priority Carpool Parking
- Transit Subsidy
- Bike Room
- Bike Support Facilities
- Daily Parking Only

4.6 Neighbourhood Traffic Management

This section of the report has been exempted. TOH is preparing a comprehensive *Neighbourhood Traffic Management Strategy (NTMS)* that will identify needs/opportunities, develop a NTMS Toolkit, and prepare a recommended plan for area traffic management measures within the adjacent communities. Representatives from five adjacent community associations, Carlington Community Association, Civic Hospital Neighbourhood Association, Dalhousie Community Association, Dow's Lake Residents Association and Glebe Annex Community Association were engaged directly help identify community values, issues, and opportunities from varying perspectives, specific to each neighbourhood.

Various measures were recommended to help mitigate existing and potential future traffic implications related to the NCD in surrounding community associations, such as turn restrictions, speed humps, flex-posts etc. The strategy also included various community improvement measures for the City and/or NCC to consider that may not be directly related to area traffic management or the NCD, but were acknowledged as possessing intrinsic value and were of great importance to the local community associations.

The strategy also addressed the sensitivities of Maple Drive to the Central Experimental Farm (CEF) and Agriculture and Agri-food Canada (AAFC), and the recommended plan included measures to address potential concerns within the CEF.

4.7 Transit

The following transit discussion expands on the section provided in the *TIA and Mobility Study (July 2021)* now that more transit information has been provided by the City of Ottawa. The NCD will greatly benefit being located in close proximity to the Dow's Lake LRT Station (Line 2 – Trillium Line) and the future Carling Avenue Transit Priority Corridor – where bus rapid transit is envisioned within the next 10 years. As a result, there was a heavy focus on transit to move people to and from the site.

Transit Access

Although the site is predominantly within a 600m radius from the Dow's Lake LRT Station to the NCD, it is acknowledged this distance may be a challenge to some, predominantly those with mobility difficulties. The City is currently planning an Environmental Assessment (EA) process that would define possible grade separation solutions for pedestrians crossing Carling Avenue between Dow's Lake Station and the future Life Sciences Park.

Today, there are currently bus stops located on Preston Street between Carling Avenue and Prince of Wales Drive and on Prince of Wales Drive between Preston Street and The NCC Scenic Driveway. It is possible that in the future, OC Transpo may decide to bring these stops back in to regular weekday operation if demand exists.

Similarly, buses may be routed via the front door of the hospital if there is such a demand; Roads A and B have been designed to accommodate this possibility as directed by City Council.

Future Transit Demand

For the purposes of this study, it was estimated that approximately two-thirds of transit trips will arrive or depart using the Trillium Line LRT, while the remaining one-third would use surface bus routes on Carling Avenue, Preston Street or Prince of Wales Drive in the future. This assumption was based on existing Civic Campus visitor origin-destination data and staff postal code information provided by TOH. In addition, factors such as how direct the route options to arrive to the NCD, how many transfers would be required, estimated transit travel time and available hours of service were all considered during this process.

Historic ridership data was requested from OC Transpo and has been provided in **Appendix I**. The data suggests low historic ridership, particularly the average load at departure for Line 2 LRT at Dow's Lake Station, which averages around 35 passengers on the train, on trains with capacity of approximately 500 passengers. It is important to note, however, that these average load departures are taken over a 3-hour period. Further communication with OC Transpo confirmed that the driving force for the Trillium Line ridership is Carleton University, specifically students. It is expected that loads will be much higher in the short periods prior to and after classes.

As previously shown in **Table 15** and **Table 16**, the NCD is forecasted to produce up to 650 new transit trips during the peak hour in 2028 and up to 1,700 new transit trips in 2048. For both 2028 and 2048, the peak transit activity for the NCD is forecasted between 06:00-07:00 based on projected staff schedules. In the PM peak, travel activity was found to be less focused to a single period. Once the Line 2 LRT returns to operation, it is forecasted that the line could provide capacity for approximately 2,500 passengers per direction per hour.

There is a potential risk of a very heavy transit demand hour, exceeding the Line 2 LRT capacity if NCD staff schedules were to coincide with class schedules. That said, current NCD staff daytime shifts (6am-7am) are expected to start earlier than typical University class schedules (8am-9am).

Transit Capacity

The Trillium Line is currently under construction as part of ongoing Stage 2 LRT expansion works by the City, which will increase the catchment area for the line and attract new users, namely: McDonald Cartier Airport; South Keys; Leitrim Park and Ride; and Riverside South. Line 1 LRT is also undergoing expansions, broadening its catchment area, and making the use of Line 1 to Line 2 connectivity more desirable. Based on the conservative estimate of 1,700 peak hour transit demand for the 2048 horizon year at the NCD, with a two thirds Trillium Line usage (approximately 1,200 LRT trips), combined with increased commuter ridership growth and continued Carleton University classes, it is possible that the Trillium Line may need additional capacity by 2048, which may include a full twinning of the Trillium Line, platform extensions to provide longer trains or increased train frequencies where available.

Recent data from OC Transpo suggests there has been a 50% decrease in transit usage post Covid-19 pandemic; however, these numbers are expected to return to normal in the fullness of time and likely grow as the transit network matures. Once the LRT line expansions are complete, and pending data from OC-Transpo regarding peak existing ridership arrives (Carleton University usage influence), then a more comprehensive understanding of route capacity can be completed.

4.8 Review of Network Concept

As shown in **Table 3**, this section of the report has been exempted as the Zoning By-Law Amendment (ZBLA) was approved in October 2021.

4.9 Intersection Design

As previously discussed, the anticipated peak hour of the NCD generator in the morning was found to coincide with the peak hour of the adjacent street. In the afternoon, the peak hour of the generator and of the adjacent street did not align, and both scenarios were analyzed in 2028 and 2048.

4.9.1 Intersection Performance

Similar to the *TIA and Mobility Study (July 2021)*, overall intersection performance in 2028 and 2048 did not change significantly, with 2048 normally performing only slightly worse than 2028. All signalized intersections were shown to operate within acceptable limits (LOS 'E' or better) overall, which was an improvement over the *TIA and Mobility Study (July 2021)*.

As for unsignalized intersections, Rochester Street/Carling Avenue intersection continued to perform at an LOS of 'F' for the critical southbound movement due to the proposed removal of through lanes on Carling Avenue and its heavy westbound through movement. If persistent delays are observed during peak hours at this intersection, drivers have the option of using adjacent signalized intersections instead such as Booth Street or Preston Street with Carling Avenue. The PM peak of the adjacent street almost always performed worse than the PM peak of the NCD.

A summary table of intersection performance for 2028 and 2048 has been provided in **Appendix J** and detailed Synchro outputs in **Appendix K**. All results in this study do not vary significantly from the *TIA and Mobility Study (July 2021)*.

Road B/Prince of Wales Drive

As discussed in **Section 4.4**, Road B/Prince of Wales Drive has evolved from a previously recommended westbound shared through-right and through lane with two receiving lanes to a single right-turn lane and single through lane with a single receiving lane. In discussions with city staff, their observations at other intersections with similar designs showed low utilization of the second through lane suggesting the additional through lane capacity is not necessary. Operationally, both intersection configurations were shown to operate within city standards, with comparable results. However, reducing the number of receiving lanes by one would avoid notable impacts to surrounding trees and environment. For these reasons, the decision to reduce the number of receiving lanes was agreed to by city staff. They also confirmed potential queues on Prince of Wales Drive could be managed through traffic signal optimizations. The potential queuing implications were evaluated in **Section 4.9.2**.

Road E/Prince of Wales Drive Options

As previously discussed in **Section 4.4**, at some point since the *TIA and Mobility Study (July 2021)* was approved, three alternative intersection options were considered at this location:

- A signalized protected intersection,
- A roundabout and,
- An unsignalized intersection with an outbound left-turn movement restriction from Road E.

The signalized protected intersection option was preferred over the roundabout option since it provided better active transportation accommodations than a roundabout and it had a smaller footprint, reducing the number of trees impacted.

The two remaining options were subsequently analyzed in Synchro and Sim Traffic; the intersection performance for these two options has been summarized in **Table 20**.

Table 20: Road E/Prince of Wales Drive Intersection Performance (Signalized vs Unsignalized) – 2048 Horizon

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection 'As a Whole'		
	LoS	Max Delay (s) or v/c	Movement	Delay (s)	LoS	Max v/c
Signalized Intersections						
Road E/Prince of Wales Signalized	B(C) B]	0.63(0.73)[0.66]	NBT(SBT) SBT]	9.8(13.6)[12.7]	B(B) B]	0.61(0.69)[0.62]
Road E/Prince of Wales Unsignalized ¹	B(C) C]	13(23)[20]	EB(EB) EB]	0(1)[2]	A(A) A]	-

1. The NCC Scenic Driveway/Prince of Wales Drive was also tested with the added southbound U-turn movements from deviated eastbound left-turners at Road E/Prince of Wales Drive. Performance was similar to the *TIA and Mobility Study (July 2021)* and operated within City Standards.

Both intersection configurations operate within city standards. However, the unsignalized intersection design has far fewer implications related to the surrounding environment (e.g., trees), drainage and costs.

It is acknowledged that the preferred unsignalized option does not provide active transportation facilities across Prince of Wales Drive; however, there is not expected to be a strong pedestrian or cyclist desire line prior to opening of the University of Ottawa Heart Institute, which is planned closer to 2048. Implementing new facilities may be considered at that time as part of the Heart Institute Site Plan Control application. In the interim, there will be alternative crossing opportunities at the new Road B/Prince of Wales Drive or the existing Scenic Driveway/Prince of Wales Drive intersections.

4.9.2 Queueing Analysis

Another important measure of the health of an intersection is determining if there will be queueing implications and if vehicles are likely to spillback to adjacent intersections with consistency. A detailed summary of all queueing analysis using SimTraffic software along with intersections deemed sensitive or at risk of queueing implications have been summarized within the table in **Appendix L**.

Overall, most study area intersections have experienced a reduction in queue lengths compared to the *TIA and Mobility Study (July 2021)* with the exception of Preston Street/Prince of Wales Drive intersection.

Preston Street/Prince of Wales Drive

The Preston Street/Prince of Wales Drive intersection has a few movements which at times, predominantly the peak hours only, exceed the storage capacity. These movements include the eastbound left-turn, the southbound right-turn, and the southbound through-left-lane. However, this vehicular congestion is a direct result of applying contemporary protected intersection design guidelines to this intersection, which improves pedestrian and cycling priority at the expense of vehicle capacity. Anticipated queues will only occur during the peak hour periods, predominantly the hour between 15:30-16:30 when vehicle traffic is highest, but outside of these hours, the intersection is expected to function adequately.

Preston Street/Carling Avenue

The Preston Street/Carling Avenue intersection shows possible queuing constraints during the peak hour periods, but was considered reasonable considering it was modelled with a time separated bi-directional crossing of the south leg that improves cycling prioritization through the intersection. The City is expected to redesign this intersection as part of the Carling Avenue Transit Priority project, and the intersection will be reassessed at that time.

Road E/Prince of Wales Drive

The proposed unsignalized intersection design with a restricted outbound left-turn movement has no expected queuing complications with NCD traffic, while the alternative signalized protected intersection design has greater risks of spillback to The Scenic Driveway roundabout.

Road B/Prince of Wales Drive

A queuing sensitivity analysis was completed for Road B/Prince of Wales Drive between the two noted design configurations confirmed the city's assertion that removing the additional through lane does not have a notable impact on queues; while the additional benefit of this scaled-back configuration is it reduces the crossing distance for pedestrians and cyclists, and avoids impacts to the adjacent trees and environment.

There is approximately 85m between Road B and the right-in right-out (RIRO) along Prince of Wales Drive, and approximately 190m between Road B and Preston Street. The 95th percentile queue ranges between 170m and 190m in Sim Traffic and Synchro respectively during the critical PM peak hour, which suggests there is only a nominal risk of queue spillback to Preston Street during the most congested hour of the day. Outside of that peak hour, the risk of queue spillback drops significantly.

4.10 Monitoring

This section of the report has been exempted. TOH is preparing a comprehensive *Transportation Monitoring Strategy* that will outline how TOH will monitor, process, and report future traffic conditions to enable them to make informed decision related to the long-term implementation plan for each transportation strategy. The Monitoring Strategy will take shape after the recommendations within the four other transportation studies have been vetted by City of Ottawa staff.

5.0 CONCLUSIONS

As previously noted in the introduction of this report, there have been a number of refinements made to the NCD site plan since the submission of the *TIA and Mobility Study (July 2021)*. A summary of the key conclusions to the TIA Addendum #2 is as follows:

- The changes in the site plan and programming projections since the *TIA and Mobility Study (July 2021)* submission did not alter the overall conclusions and recommendations in that document.
- The main Hospital building can be accommodated by the adjacent road network with recommended modifications to the adjacent road network as included shown in the updated off-site roadway design plan attached in **Appendix H**. Note that new or updated RMA packages will be submitted for the Road E and Road B intersections with Prince of Wales Drive.
- The current Road E/Prince of Wales Drive intersection design will be an unsignalized intersection with eastbound left-turn movement prohibition.
- The Road B/Prince of Wales Drive intersection has been reduced in footprint by reducing the westbound movement from dual through lanes and dual receiving lanes to a single through lane with a single receiving lane. City of Ottawa staff accepted this adjustment and confirmed they could manage potential queues along Prince of Wales with signal timing optimizations.
- Discussions are ongoing between TOH, the City of Ottawa, NCC and federal departments on the design and implementation of adjacent road network modifications to support the main Hospital building and may be further refined prior to developed design.

For reference, the conclusions and recommendations from *TIA and Mobility Study (July 2021)* have been provided with corresponding commentary that relate to changes or implications stemming from the TIA Addendum #2, please refer to **Appendix M**.

**Appendix A:
Existing Civic Campus Parking Data**

TOH Parking Patient Summary

01/07/2021 30/06/2022



Amount Paid	Ticket Count	Lot Name	Lot Type	Campus	Duration of Stay	Weekday	Month
\$3,696,016	546,879	All	All	All	All	All	All

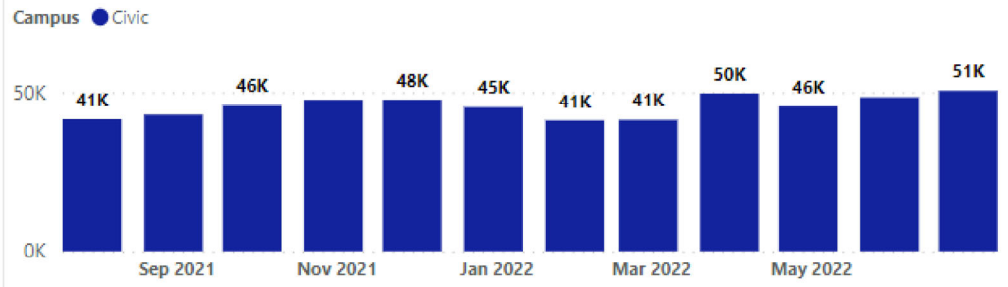
Ticket Count by Campus



Amount Paid by Campus



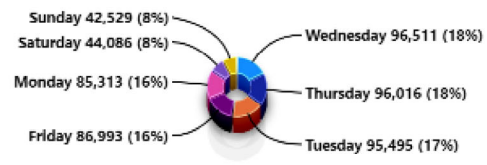
Ticket Count by Month



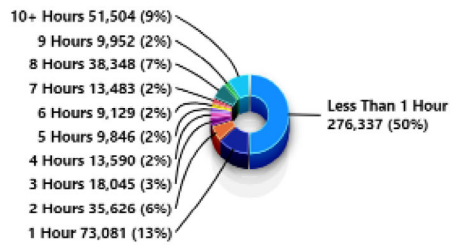
Ticket Count by Lot



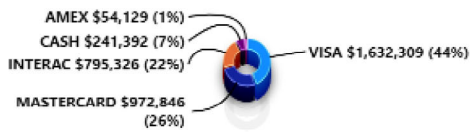
Ticket Count by Day of the Week



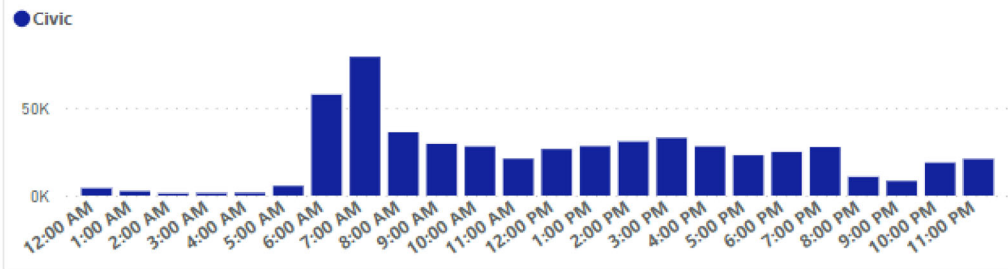
Ticket Count by Duration of Stay



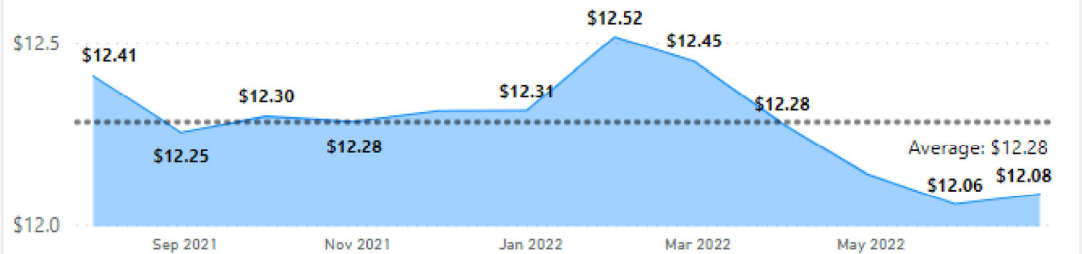
Amount Paid by Payment Type



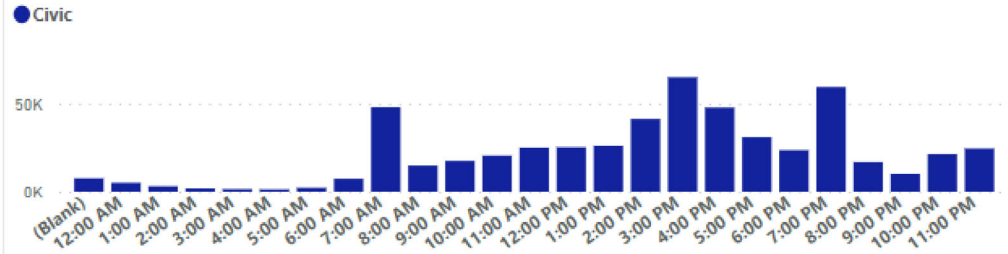
Ticket Count by Hour In and Campus



Average Amount Paid by Month

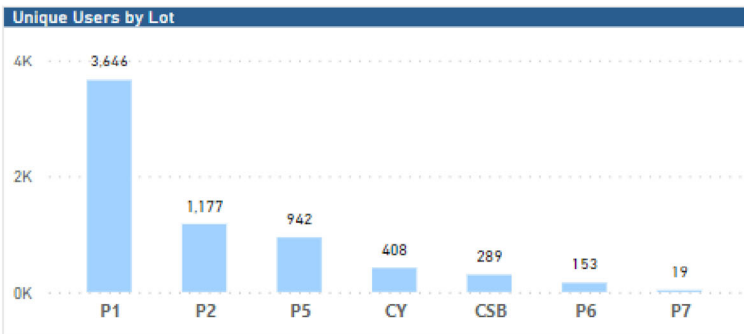
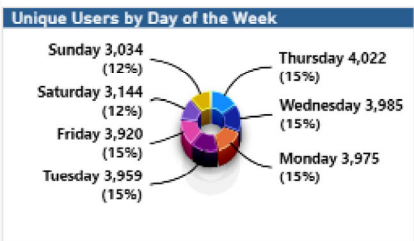
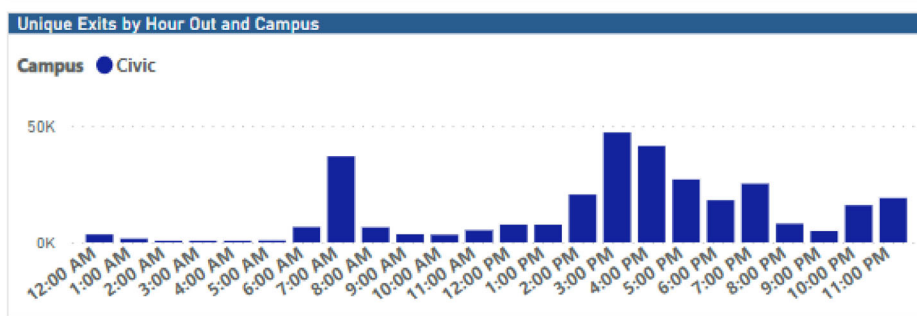
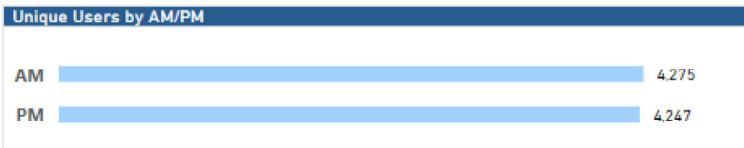
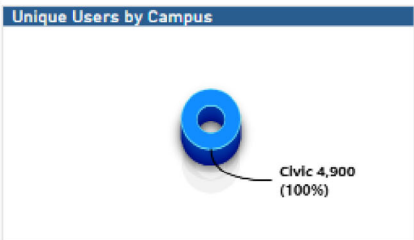
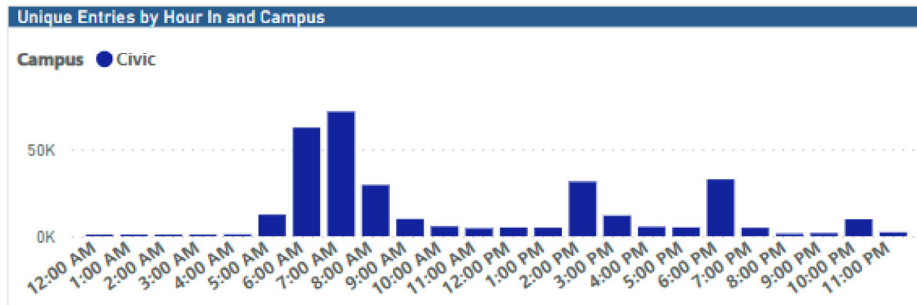
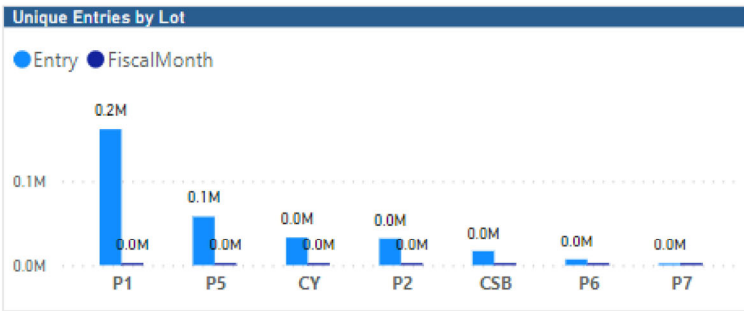
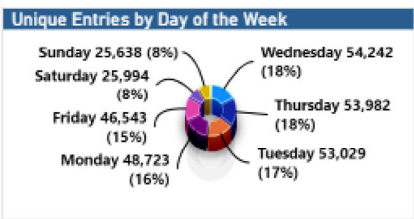
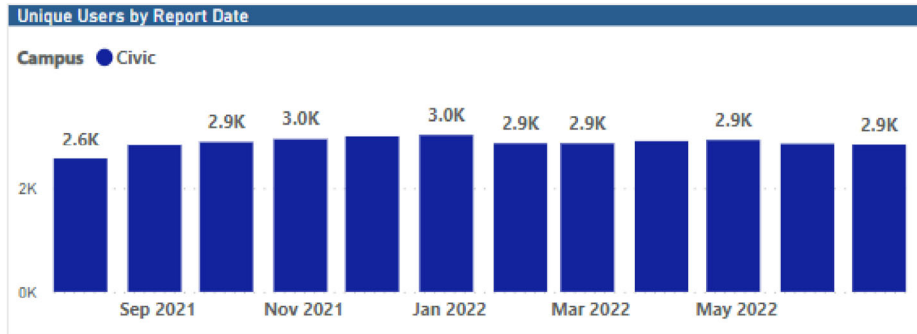
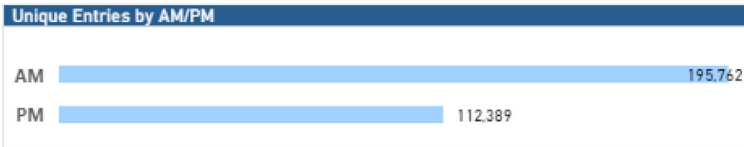
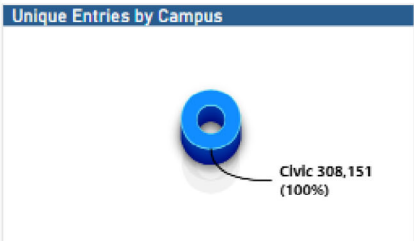


Ticket Count by Hour Out and Campus



TOH Parking Staff Summary

Unique Users 4,900	Unique Entries 308,151	Lot Name All	Lot Type All	Campus All	AM/PM All	Weekday All	Month All
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Appendix B:
24-Hour Estimated Hourly Trip Generation – People Trips

Number of Hourly Staff People Trips Generated To and From NCD - 2028

Type of Shift	23:00 - 24:00	22:00 - 23:00	21:00 - 22:00	20:00 - 21:00	19:00 - 20:00	18:00 - 19:00	17:00 - 18:00	16:00 - 17:00	15:00 - 16:00	14:00 - 15:00	13:00 - 14:00	12:00 - 13:00	11:00 - 12:00	10:00 - 11:00	09:00 - 10:00	08:00 - 09:00	07:00 - 08:00	06:00 - 07:00	05:00 - 06:00	04:00 - 05:00	03:00 - 04:00	02:00 - 03:00	01:00 - 02:00	00:00 - 01:00
Day Shift TOH				134	418	251	435	669	786	301	134	64	64	80	160	448	1152	1000	160					
Day Shift Other*							n/a	n/a	n/a							n/a	n/a	n/a						
Evening Shift	299							100	100	299													100	100
Night Shift	38	114														38	114							
12hr Day Shift				104	312												104	313						
12hr Night Shift						221										74	221							
12hr Day Res.				18	53												18	53						
12hr Night Res.						18										6	18							
TOTAL IN	38	114			80	239		100	100	299		64	64	80	160	448	1274	1366	160					
TOTAL OUT	299			256	783	251	435	669	786	301	134					118	353						100	100
TOTAL 2-WAY	337	114	0	256	863	490	435	769	886	600	134	64	64	80	160	566	1627	1366	160	0	0	0	100	100

Green - Proportion of Arrivals to NCD, Blue - Proportion of Departures from NCD, Grey - Shift Group Working at NCD *Day Shift Other refers to UOH and Research

Hourly Breakdown Estimate of Planned and Unplanned Patient/Visitor Person Trips - 2028

Type of Shift	23:00 - 24:00	22:00 - 23:00	21:00 - 22:00	20:00 - 21:00	19:00 - 20:00	18:00 - 19:00	17:00 - 18:00	16:00 - 17:00	15:00 - 16:00	14:00 - 15:00	13:00 - 14:00	12:00 - 13:00	11:00 - 12:00	10:00 - 11:00	09:00 - 10:00	08:00 - 09:00	07:00 - 08:00	06:00 - 07:00	05:00 - 06:00	04:00 - 05:00	03:00 - 04:00	02:00 - 03:00	01:00 - 02:00	00:00 - 01:00	
Planned Visit Arrival						51	51	103	103	103	103	103	103	103	103	103	103								
Planned Visit Departure					51	51	103	103	103	103	103	103	103	103	103	103									
Unplanned Visit Arrival	9	9	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	9	9	9	9	9	9	9
Unplanned Visit Departure	9	9	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	9	9	9	9	9	9	9
TOTAL IN	9	9	19	19	19	70	70	122	122	122	122	122	122	122	122	122	122	19	9	9	9	9	9	9	9
TOTAL OUT	9	9	19	19	70	70	122	122	122	122	122	122	122	122	122	122	19	9	9	9	9	9	9	9	9
TOTAL 2-WAY	18	18	38	38	89	140	192	244	244	244	244	244	244	244	244	244	141	38	18	18	18	18	18	18	18

Green - Proportion of Arrivals to NCD, Blue - Proportion of Departures from NCD

Number of Hourly Staff People Trips Generated To and From NCD - 2048

Type of Shift	23:00 - 24:00	22:00 - 23:00	21:00 - 22:00	20:00 - 21:00	19:00 - 20:00	18:00 - 19:00	17:00 - 18:00	16:00 - 17:00	15:00 - 16:00	14:00 - 15:00	13:00 - 14:00	12:00 - 13:00	11:00 - 12:00	10:00 - 11:00	09:00 - 10:00	08:00 - 09:00	07:00 - 08:00	06:00 - 07:00	05:00 - 06:00	04:00 - 05:00	03:00 - 04:00	02:00 - 03:00	01:00 - 02:00	00:00 - 01:00
Day Shift TOH				173	541	325	563	866	1018	390	173	83	83	104	207	580	1492	1295	207					
Day Shift Other*							586	879	1465							586	879	1465						
Evening Shift	393							157	236	393													157	236
Night Shift	61	181														61	181							
12hr Day Shift				164	492												164	492						
12hr Night Shift						348										116	348							
12hr Day Shift				23	69											8	23	69						
12hr Night Res.						23											23							
TOTAL IN	61	181			124	371		157	236	393		83	83	104	207	1166	2558	3321	207					
TOTAL OUT	393			360	1102	325	1149	1745	2483	390	173					185	552						157	236
TOTAL 2-WAY	454	181	0	360	1226	696	1149	1902	2719	783	173	83	83	104	207	1351	3110	3321	207	0	0	0	157	236

Green - Proportion of Arrivals to NCD, Blue - Proportion of Departures from NCD, Grey - Shift Group Working at NCD *Day Shift Other refers to UOH and Research

Hourly Breakdown Estimate of Planned and Unplanned Patient/Visitor Person Trips - 2048

Type of Shift	23:00 - 24:00	22:00 - 23:00	21:00 - 22:00	20:00 - 21:00	19:00 - 20:00	18:00 - 19:00	17:00 - 18:00	16:00 - 17:00	15:00 - 16:00	14:00 - 15:00	13:00 - 14:00	12:00 - 13:00	11:00 - 12:00	10:00 - 11:00	09:00 - 10:00	08:00 - 09:00	07:00 - 08:00	06:00 - 07:00	05:00 - 06:00	04:00 - 05:00	03:00 - 04:00	02:00 - 03:00	01:00 - 02:00	00:00 - 01:00
Planned Visit Arrival						85	85	171	171	171	171	171	171	171	171	171	171							
Planned Visit Departure					85	85	171	171	171	171	171	171	171	171	171	171								
Unplanned Visit Arrival	15	15	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	15	15	15	15	15
Unplanned Visit Departure	15	15	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	31	15	15	15	15	15
TOTAL IN	15	15	31	31	31	116	116	202	202	202	202	202	202	202	202	202	202	31	15	15	15	15	15	15
TOTAL OUT	15	15	31	31	116	116	202	202	202	202	202	202	202	202	202	202	31	15	15	15	15	15	15	15
TOTAL 2-WAY	30	30	62	62	147	232	318	404	404	404	404	404	404	404	404	404	233	62	30	30	30	30	30	30

Green - Proportion of Arrivals to NCD, Blue - Proportion of Departures from NCD

Appendix C:
Conceptual Vehicle Circulation Diagrams for NCD

1.3.6.2 Staff Circulation

Figure 60 illustrates that vehicular staff access and circulation is planned from Prince of Wales Drive to Level P1, or from Road B to Level P2, including the opportunity for staff to enter and exit the garage at Road B via Carling Avenue. Garage access from Road A is reserved for public, patients and visitors as a way to give precedent and to manage congestion into and out of the Parking Garage on Road A.

Likewise, staff will utilize Road E from Prince of Wales Drive to access parking lots south and east of the Hospital.

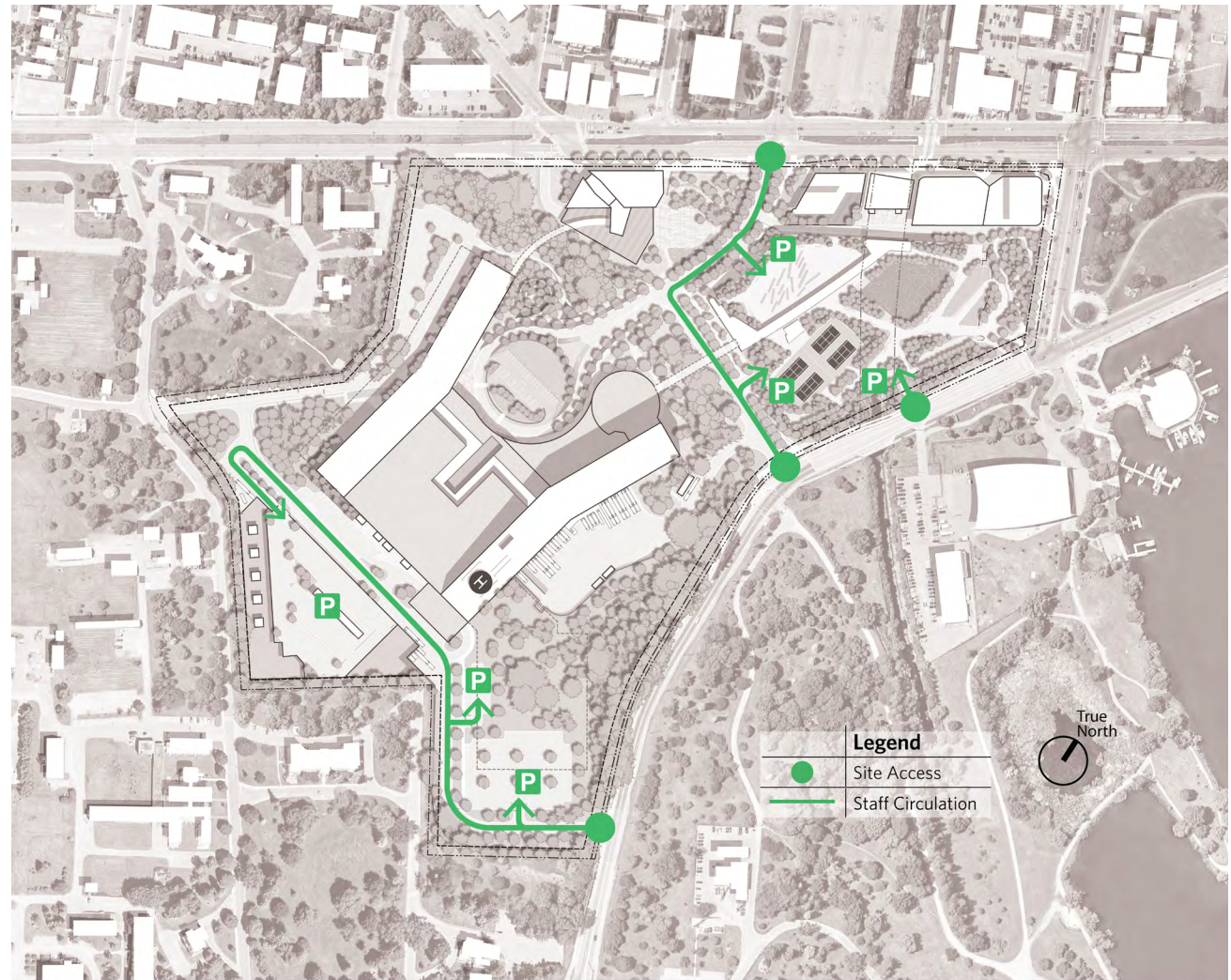


Figure 60: Hospital - Staff Vehicular Garage Access Circulation

1.3.6.3 Public Vehicular Access

Figure 61 illustrates public, front of house, vehicular access to the hospital from the north and east; from Carling Avenue and Prince of Wales Drive respectively. Public parking is provided at the main entrance to the Hospital on level 1 and on the lower level E for the emergency walk-in entrance. Primary public parking however will be provided for at the parking garage, accessible from Roads A and B and Prince of Wales Drive.

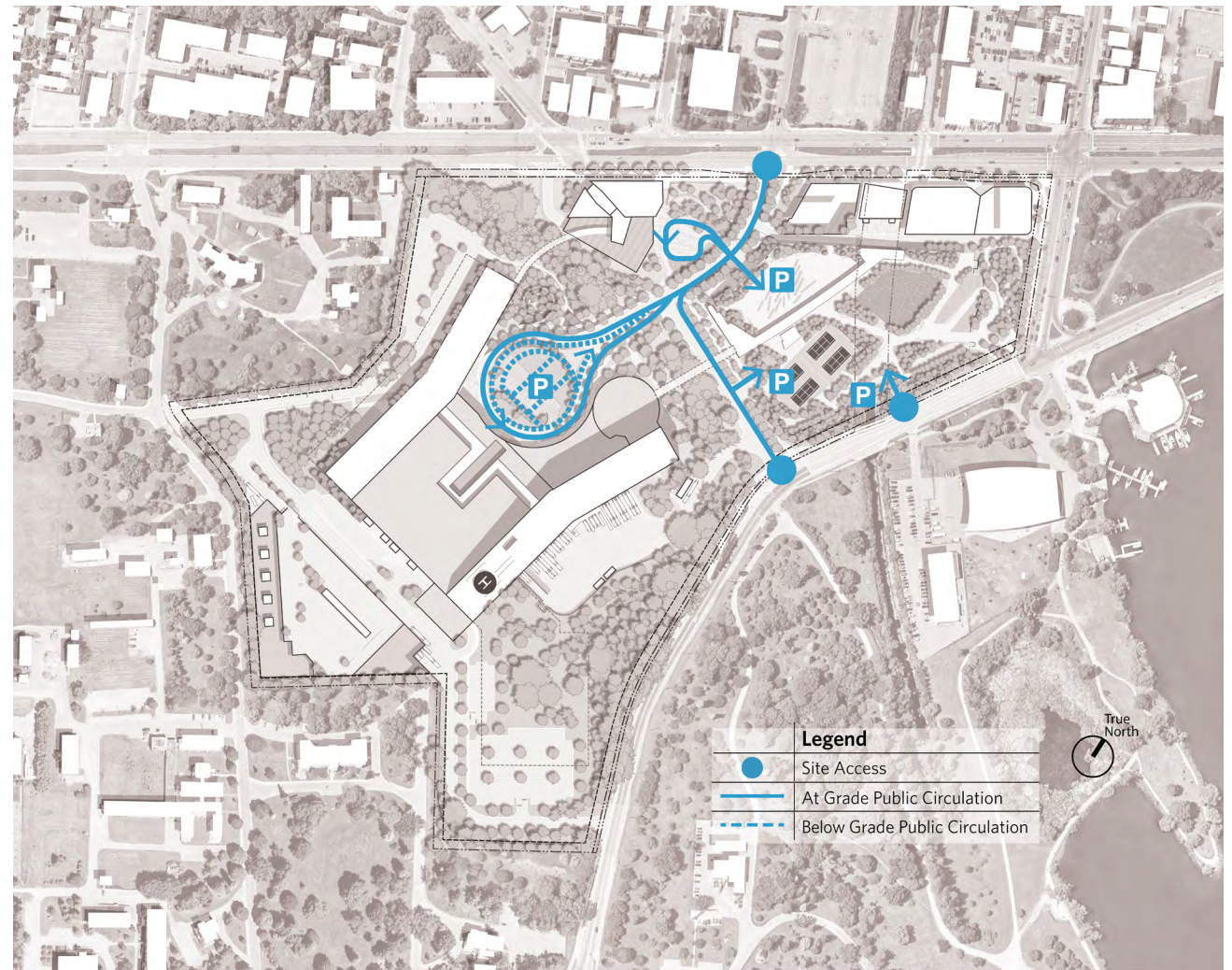


Figure 61: Hospital - Public Vehicular Circulation

1.3.6.4 Bicycle Circulation

Figure 62 illustrates bicycle circulation to and through the NCD, which plans for localized bike traffic from the Intersection of Roads A and B, with either a multi-use path or bi-directional cycle track along the south side of Road A to the main entrance of the Hospital on level 1.

Consistent with the Master Site Plan, a multi-use path is being provided along the north side of Road D, connecting Maple Drive to the west hospital entrance.

Bicycle parking is planned at each of the public entrances to the Hospital at level 1 main entry plaza and at the west entry on level E.

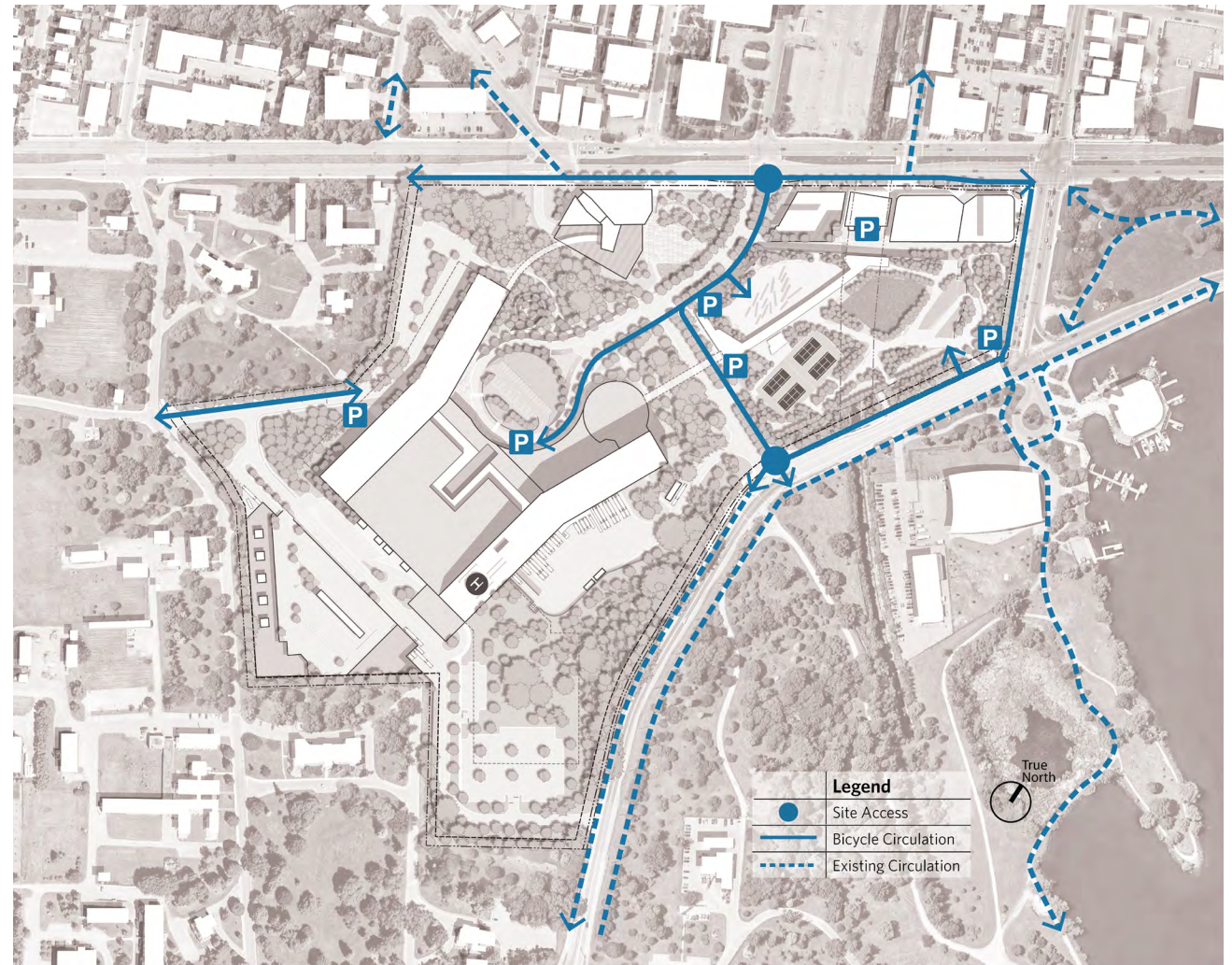


Figure 62: Hospital - Bicycle Circulation

1.3.6.5 Emergency Services Circulation

Figure 63 illustrates ambulance access routes, for which the destination is emergency services on the south side of the Hospital. Primary access for ambulances is shown from Carling Avenue and Maple Drive with secondary, access from Prince of Wales Drive.

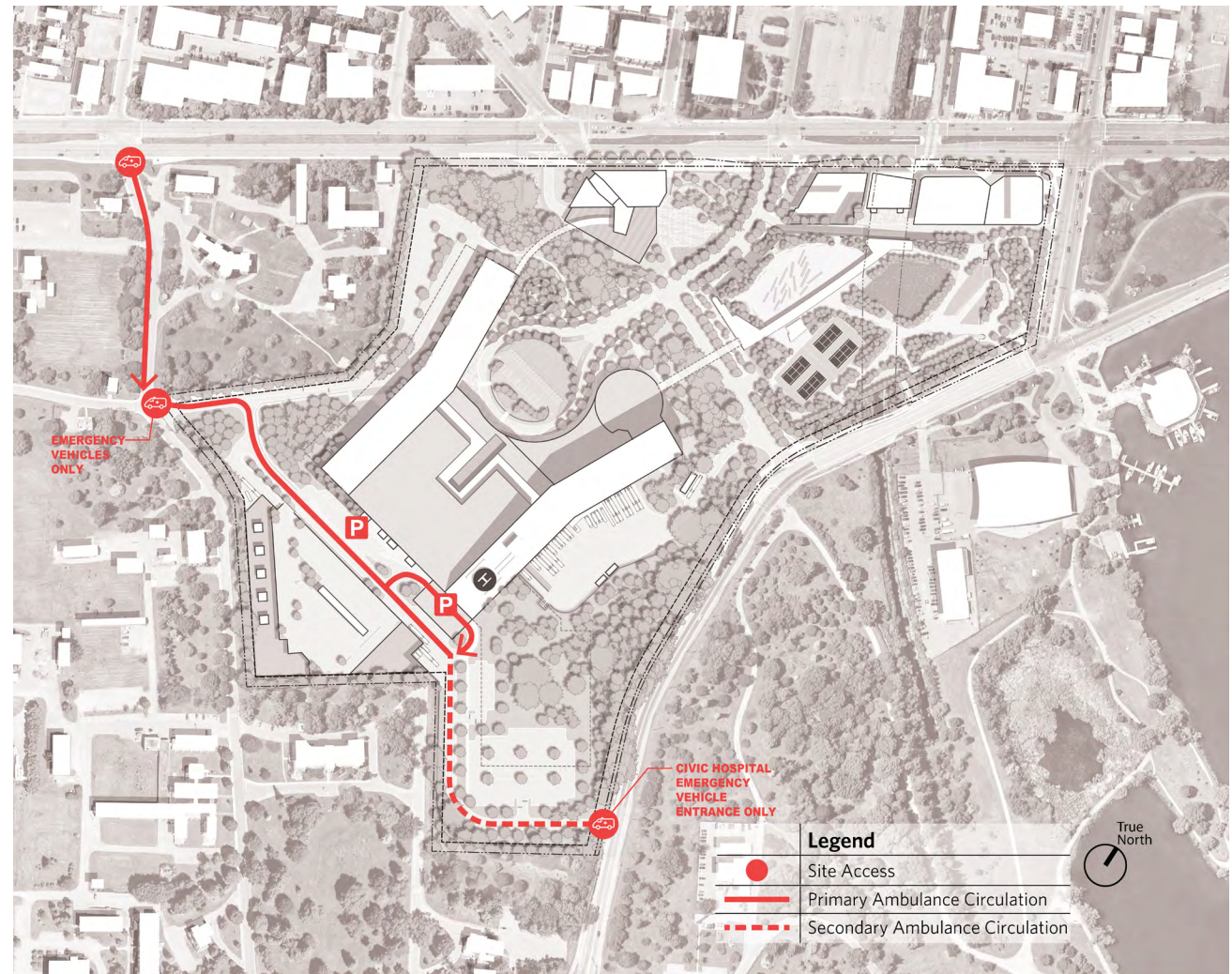


Figure 63: Hospital - Emergency Services Circulation

1.3.6.6 Service Access

Loading docks are the lifeline of the Hospital and service and delivery trucks need to access the lowest level of the hospital to move materials efficiently to and through the Hospital. For this reason, the docks are on Level B, with access to the formal City trucking route: Prince of Wales Drive.

The CUP will receive FedEx truck-style delivery and garbage pick-up vehicles, daily and weekly. It will also receive diesel fuel trucks approximately once per month to replace fuel used for emergency generator tests. These vehicled trips are intended to come from Prince of Wales Drive.

Once every five years large, semi-trucks are expected to need access to the CUP to replace equipment. Refer to Figure 64.

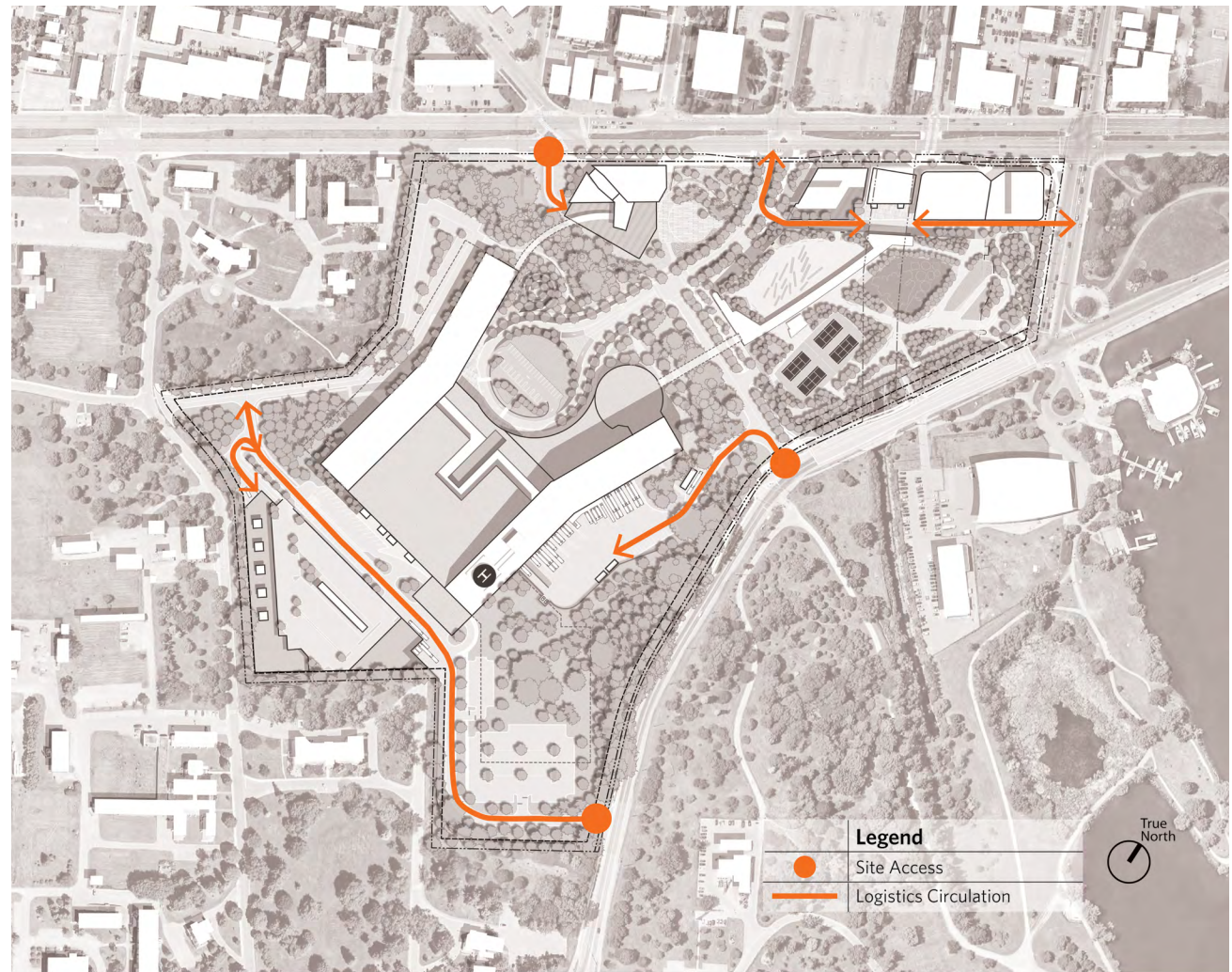


Figure 64: Hospital - Emergency Services Circulation

Appendix D:
24-Hour Estimated Hourly Trip Generation – Trips by Mode Share

Trips Generated by NCD by Mode Shares - 2028

Type of Shift	00:00 - 01:00	01:00 - 02:00	02:00 - 03:00	03:00 - 04:00	04:00 - 05:00	05:00 - 06:00	06:00 - 07:00	07:00 - 08:00	08:00 - 09:00	09:00 - 10:00	10:00 - 11:00	11:00 - 12:00	12:00 - 13:00	13:00 - 14:00	14:00 - 15:00	15:00 - 16:00	16:00 - 17:00	17:00 - 18:00	18:00 - 19:00	19:00 - 20:00	20:00 - 21:00	21:00 - 22:00	22:00 - 23:00	23:00 - 24:00
Auto Driver IN Staff	0	0	0	0	0	64	584	522	179	64	32	26	0	0	224	75	75	0	120	40	0	0	86	29
Auto Driver OUT Staff	75	75	0	0	0	0	0	206	69	0	0	0	26	54	120	314	268	174	100	350	115	0	0	224
Passenger Staff	14	14	0	0	0	11	106	136	46	11	6	4	4	9	63	69	61	30	44	74	21	0	17	48
Transit Staff	6	6	0	0	0	70	569	635	225	70	35	28	28	59	150	352	300	191	189	338	101	0	7	20
Walk Staff	1	1	0	0	0	2	14	16	5	2	1	1	1	1	6	9	8	4	5	9	2	0	1	3
Bike Staff	4	4	0	0	0	13	95	112	41	13	6	5	5	11	36	67	58	35	32	51	16	0	3	13
Two-Way Total Staff	100	100	0	0	0	160	1368	1627	565	160	80	64	64	134	599	886	770	434	490	862	255	0	114	337
Auto Driver IN Patient	7	7	7	7	7	7	15	77	77	77	77	77	77	77	77	77	77	46	46	15	15	15	7	7
Auto Driver OUT Pat.	7	7	7	7	7	7	15	15	77	77	77	77	77	77	77	77	77	77	46	46	15	15	7	7
Passenger Patient	4	4	4	4	4	4	8	23	38	38	38	38	38	38	38	38	38	31	24	16	8	4	4	4
Transit Patient	0	0	0	0	0	0	0	21	42	42	42	42	42	42	42	42	42	31	20	10	0	0	0	0
Walk Patient	0	0	0	0	0	0	0	1	2	2	2	2	2	2	2	2	2	2	2	1	0	0	0	0
Bike Patient	0	0	0	0	0	0	0	4	8	8	8	8	8	8	8	8	8	6	4	2	0	0	0	0
Two-Way Total Pat.	18	18	18	18	18	18	38	141	244	244	244	244	244	244	244	244	244	193	142	90	38	38	18	18
Auto Driver IN LSP																								
Auto Driver OUT LSP																								
Passenger LSP																								
Transit LSP																								
Walk LSP																								
Bike LSP																								
Two-Way Total LSP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Auto Driver IN TOTAL	7	7	7	7	7	71	599	611	256	141	109	103	77	77	301	164	164	46	166	55	15	15	93	36
Auto Driver OUT TOTAL	82	82	7	7	7	7	15	233	146	77	77	77	103	131	197	403	357	251	146	396	130	15	7	231

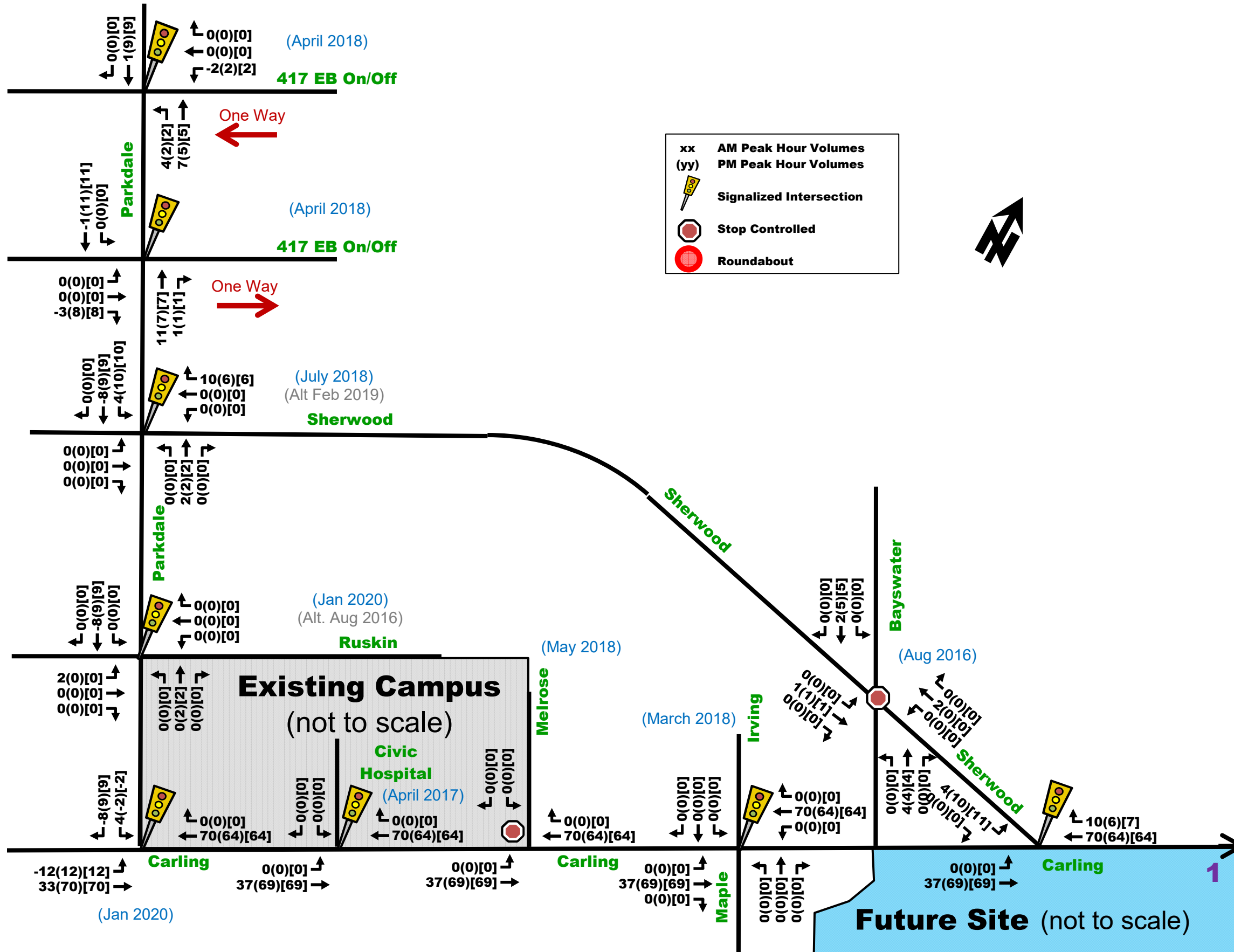
267	52	20	3		47	308	355
100	21	7	1		123	9	132
30	8	0	0		19	19	38
145	29	101	2		19	274	293
451	90	348	10		99	853	952
312	68	209	7		310	322	632
297	61	222	6		71	556	627
521	99	342	10	24	234	804	1038
567	107	394	11	24	234	920	1154
498	101	192	8		421	422	843
208	47	101	3		122	256	378
180	42	70	3		122	186	308
180	42	70	3		186	122	308
186	44	77	3		202	122	324
218	49	112	4		282	122	404
402	84	267	7		569	240	809
844	159	656	17	24	1,408	384	1792
614	114	569	14		1,387	19	1406
78	15	70	2		169	9	178
14	4	0	0		9	9	18
14	4	0	0		9	9	18
14	4	0	0		9	9	18
89	18	6	1		9	109	118
89	18	6	1		9	109	118
89	18	6	1		9	109	118
Passenger TOTAL	Transit TOTAL	Walk TOTAL	Bike TOTAL	Transports	TOTAL IN	TOTAL OUT	TOTAL 2-WAY

Trips Generated by NCD by Mode Shares - 2048

Type of Shift	00:00 - 01:00	01:00 - 02:00	02:00 - 03:00	03:00 - 04:00	04:00 - 05:00	05:00 - 06:00	06:00 - 07:00	07:00 - 08:00	08:00 - 09:00	09:00 - 10:00	10:00 - 11:00	11:00 - 12:00	12:00 - 13:00	13:00 - 14:00	14:00 - 15:00	15:00 - 16:00	16:00 - 17:00	17:00 - 18:00	18:00 - 19:00	19:00 - 20:00	20:00 - 21:00	21:00 - 22:00	22:00 - 23:00	23:00 - 24:00
Auto Driver IN Staff	0	0	0	0	0	52	916	668	292	52	26	21	0	0	275	165	110	0	148	49	0	0	126	43
Auto Driver OUT Staff	165	110	0	0	0	0	0	274	92	0	0	0	21	43	98	622	437	288	81	360	118	0	0	275
Passenger Staff	43	28	0	0	0	23	387	386	161	23	11	9	9	19	114	316	219	126	102	166	46	0	33	82
Transit Staff	17	11	0	0	0	112	1,698	1,489	677	112	56	45	45	93	239	1,358	954	621	302	542	163	0	12	33
Walk Staff	5	4	0	0	0	4	66	60	27	4	2	2	2	3	15	54	39	23	14	24	7	0	1	8
Bike Staff	7	5	0	0	0	17	255	229	102	17	8	7	7	14	43	206	144	92	48	83	25	0	7	14
Two-Way Total Staff	237	158	0	0	0	208	3,322	3,106	1,351	208	103	84	84	172	784	2,721	1,903	1,150	695	1,224	359	0	179	455
Auto Driver IN Patient	12	12	12	12	12	12	25	102	102	102	102	102	102	102	102	102	102	63	63	25	25	25	12	12
Auto Driver OUT Pat.	12	12	12	12	12	12	25	25	102	102	102	102	102	102	102	102	102	102	63	63	25	25	12	12
Passenger Patient	6	6	6	6	6	6	12	55	98	98	98	98	98	98	98	98	98	76	54	33	12	6	6	
Transit Patient	0	0	0	0	0	0	0	43	86	86	86	86	86	86	86	86	86	64	42	21	0	0	0	
Walk Patient	0	0	0	0	0	0	0	3	6	6	6	6	6	6	6	6	6	5	4	2	0	0	0	
Bike Patient	0	0	0	0	0	0	0	5	10	10	10	10	10	10	10	10	10	8	6	3	0	0	0	
Two-Way Total Pat.	30	30	30	30	30	30	62	233	404	404	404	404	404	404	404	404	404	318	232	147	62	62	30	
Auto Driver IN LSP								48									30							
Auto Driver OUT LSP								23									52							
Passenger LSP								25									27							
Transit LSP								151									163							
Walk LSP								22									52							
Bike LSP								22									52							
Two-Way Total LSP	0	0	0	0	0	0	0	291	0	0	0	0	0	0	0	0	376	0	0	0	0	0	0	0
Auto Driver IN TOTAL	12	12	12	12	12	64	941	842	394	154	128	123	102	102	377	291	266	63	211	74	25	25	138	55
Auto Driver OUT TOTAL	177	122	12	12	12	12	25	346	194	102	102	123	145	200	748	615	390	144	423	143	25	12	287	287

342	88	33	8		77	408	485
150	39	12	1		194	15	209
50	12	0	0		31	31	62
168	58	163	7		31	390	421
497	199	563	26		153	1,218	1,371
355	156	344	18		485	442	927
453	202	685	28		116	1,352	1,468
881	344	1,200	97	48	527	2,203	2,730
1,000	414	1,400	60	48	463	2,710	3,173
577	212	325	21		595	593	1,188
247	117	179	9		202	374	576
225	107	131	8		202	286	488
225	107	131	8		286	202	488
230	109	142	8		305	202	507
256	121	198	10		410	202	612
588	259	763	33		1,369	386	1,755
1,100	466	1,600	85	48	2,978	700	3,678
966	399	1,600	66		3,353	31	3,384
76	29	112	4		223	15	238
24	6	0	0		15	15	30
24	6	0	0		15	15	30
24	6	0	0		15	15	30
134	34	11	4		15	173	188
189	49	17	5		15	252	267
Passenger TOTAL	Transit TOTAL	Walk TOTAL	Bike TOTAL	Transports	TOTAL IN	TOTAL OUT	TOTAL 2-WAY

**Appendix E:
Combined Other Area Development Background Volumes**

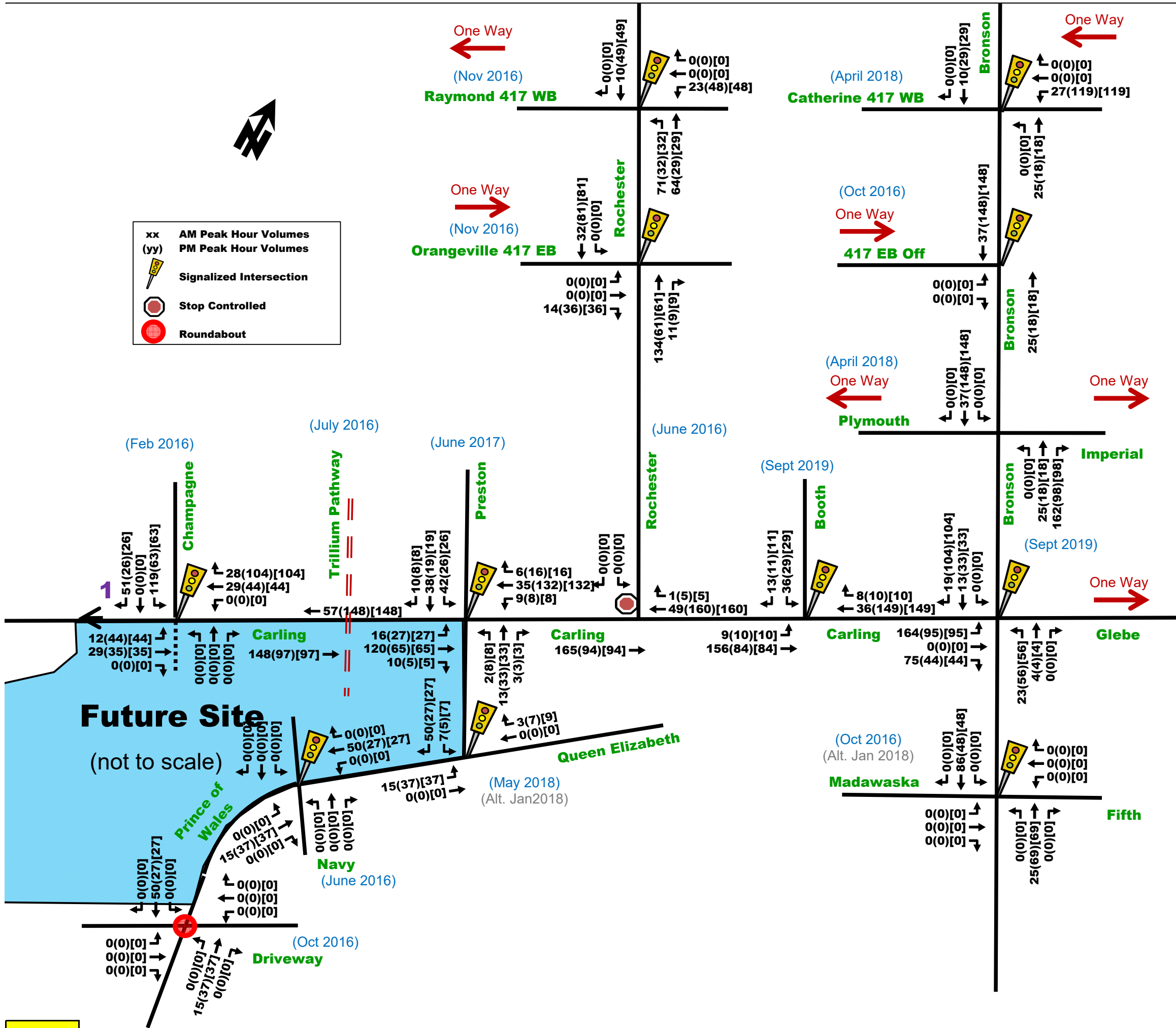


xx AM Peak Hour Volumes
 (yy) PM Peak Hour Volumes

Signalized Intersection

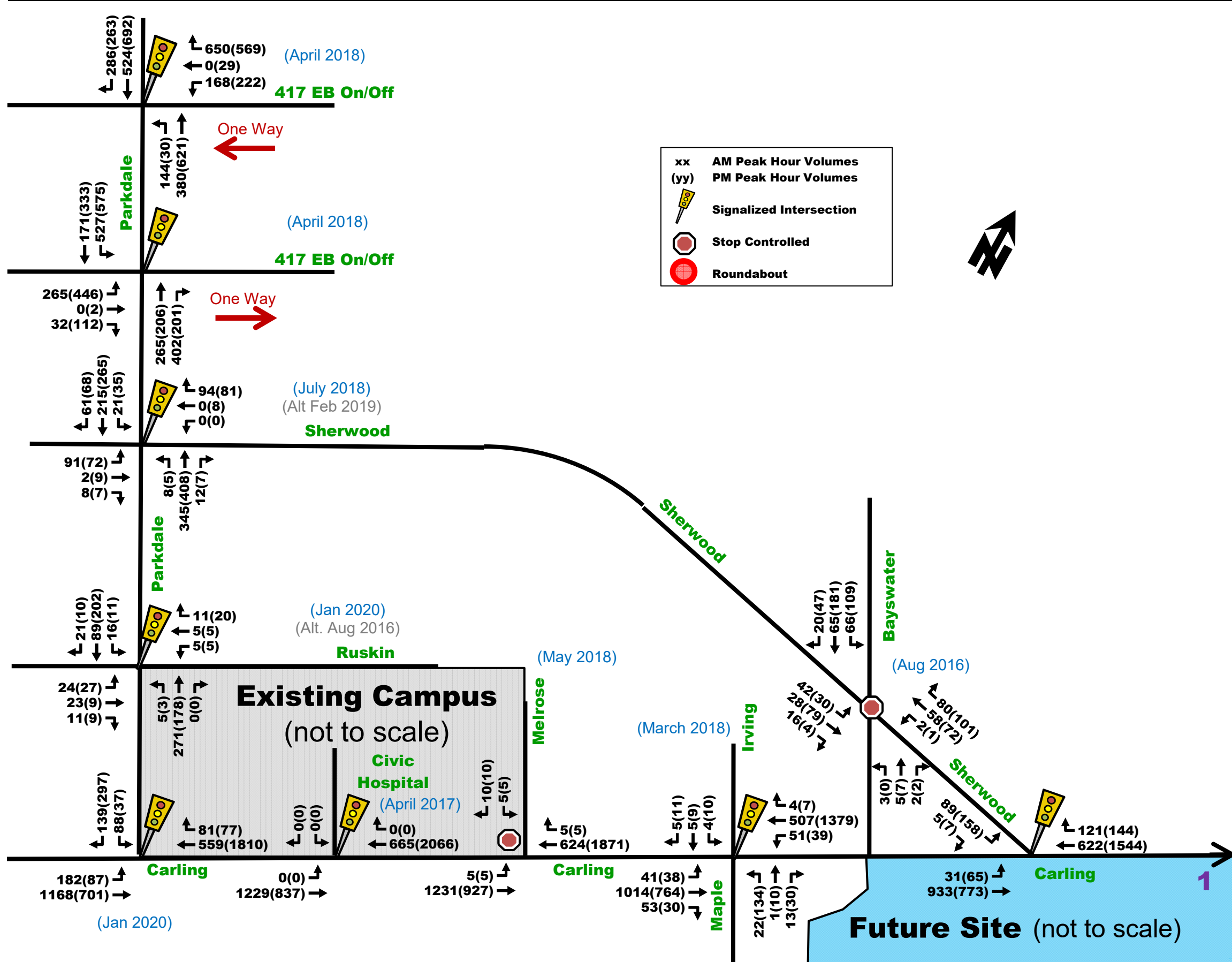
Stop Controlled

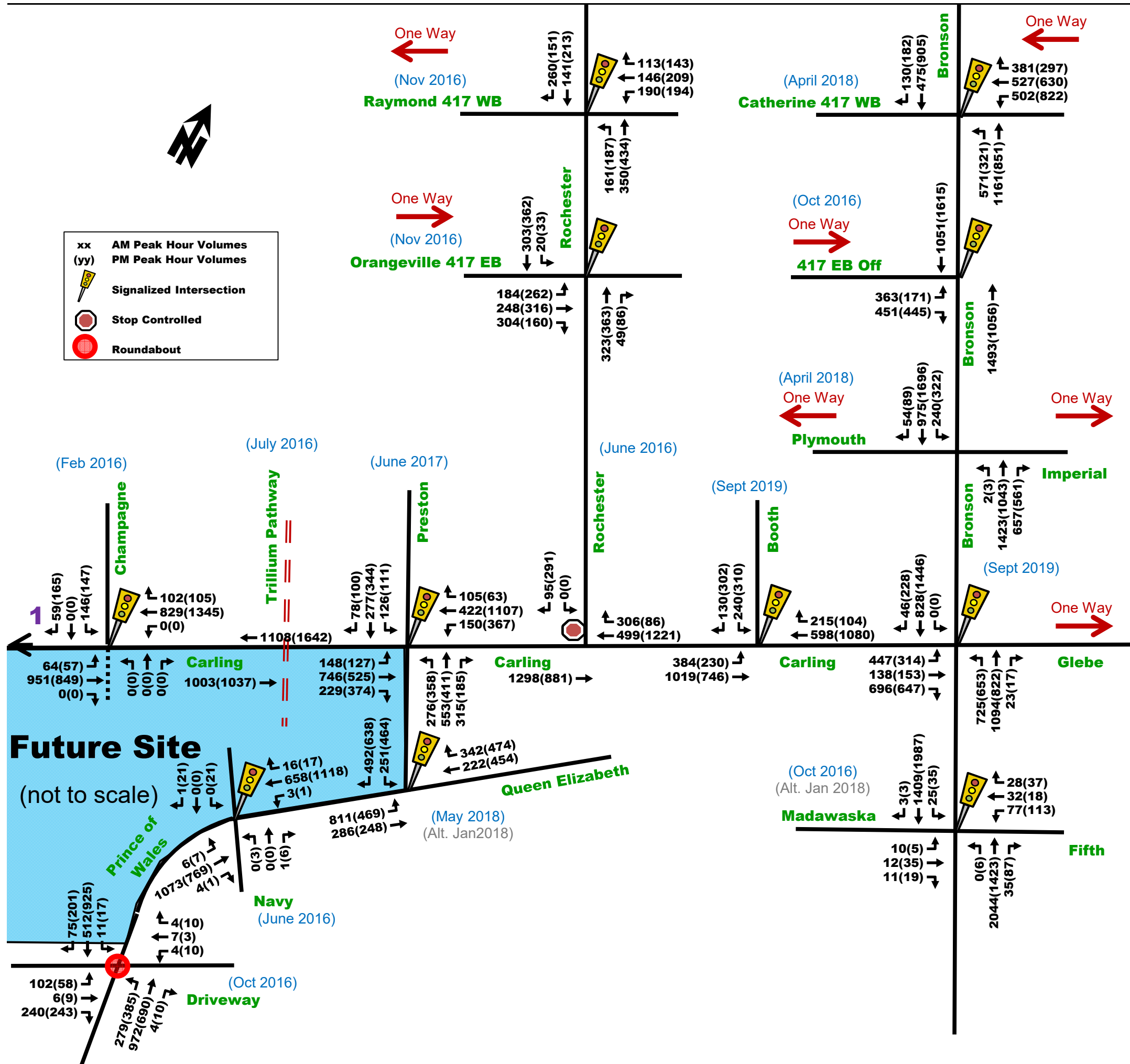
Roundabout



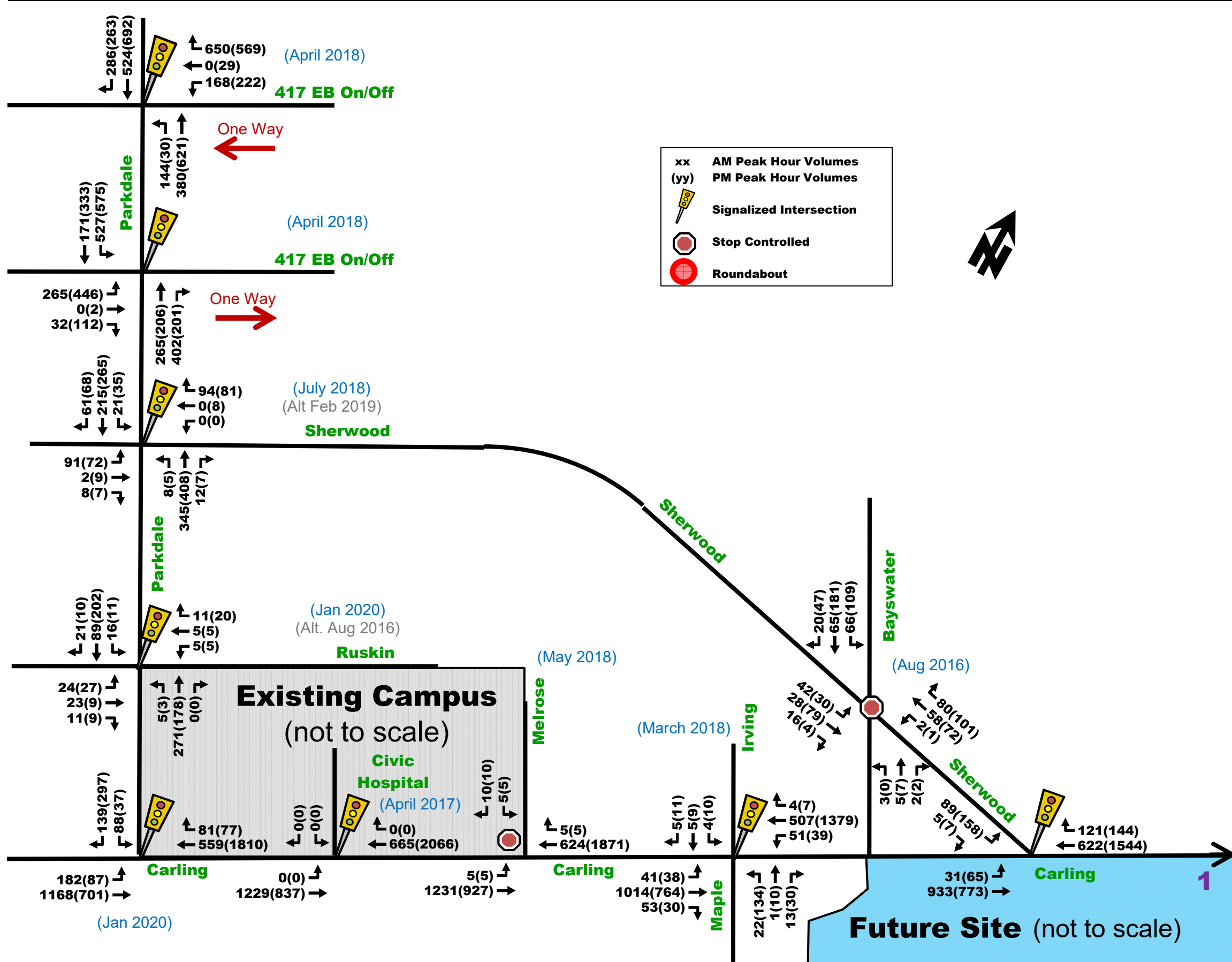
**Appendix F:
Future Projected Background Volumes**

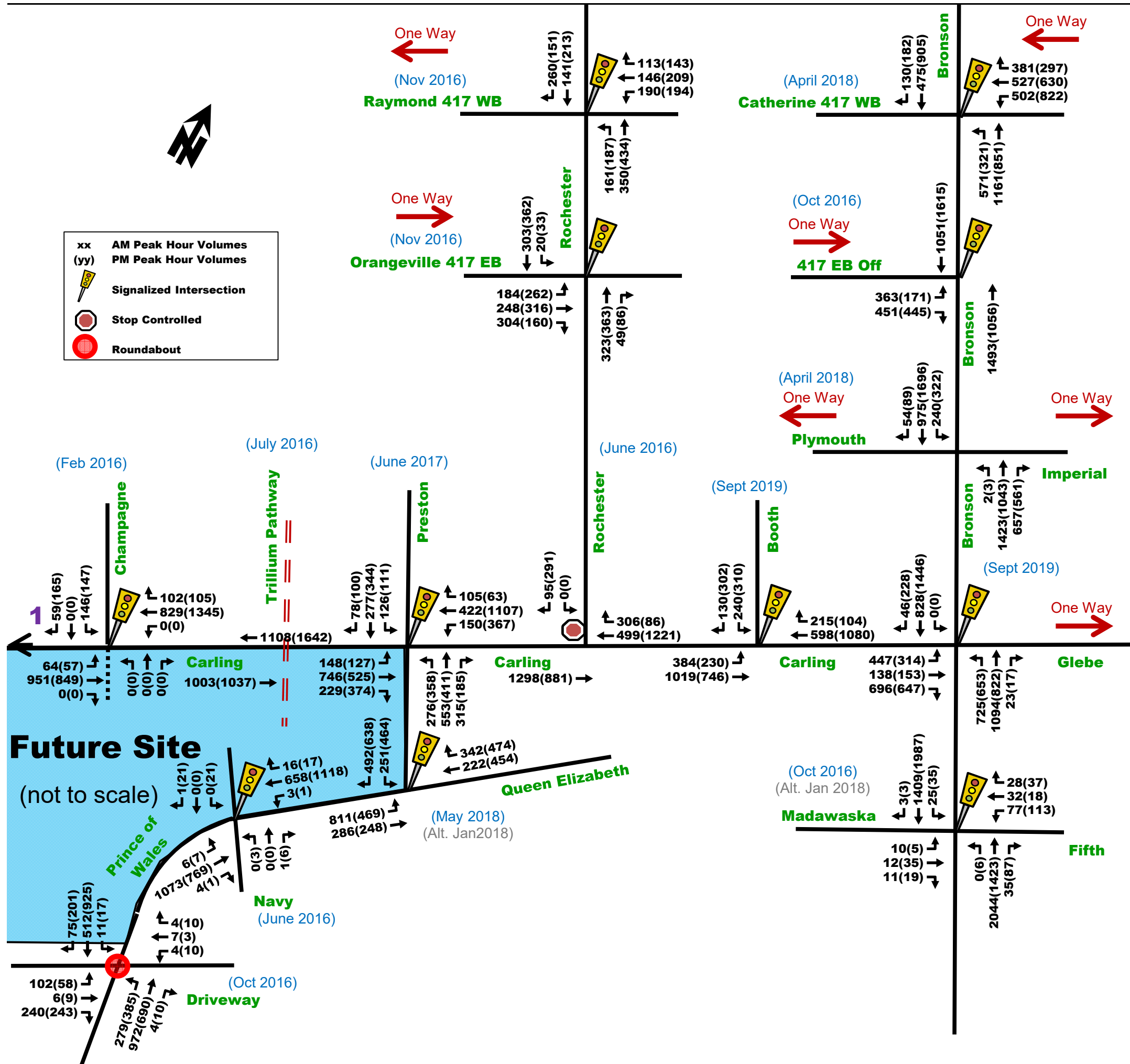
2028 Background Volumes



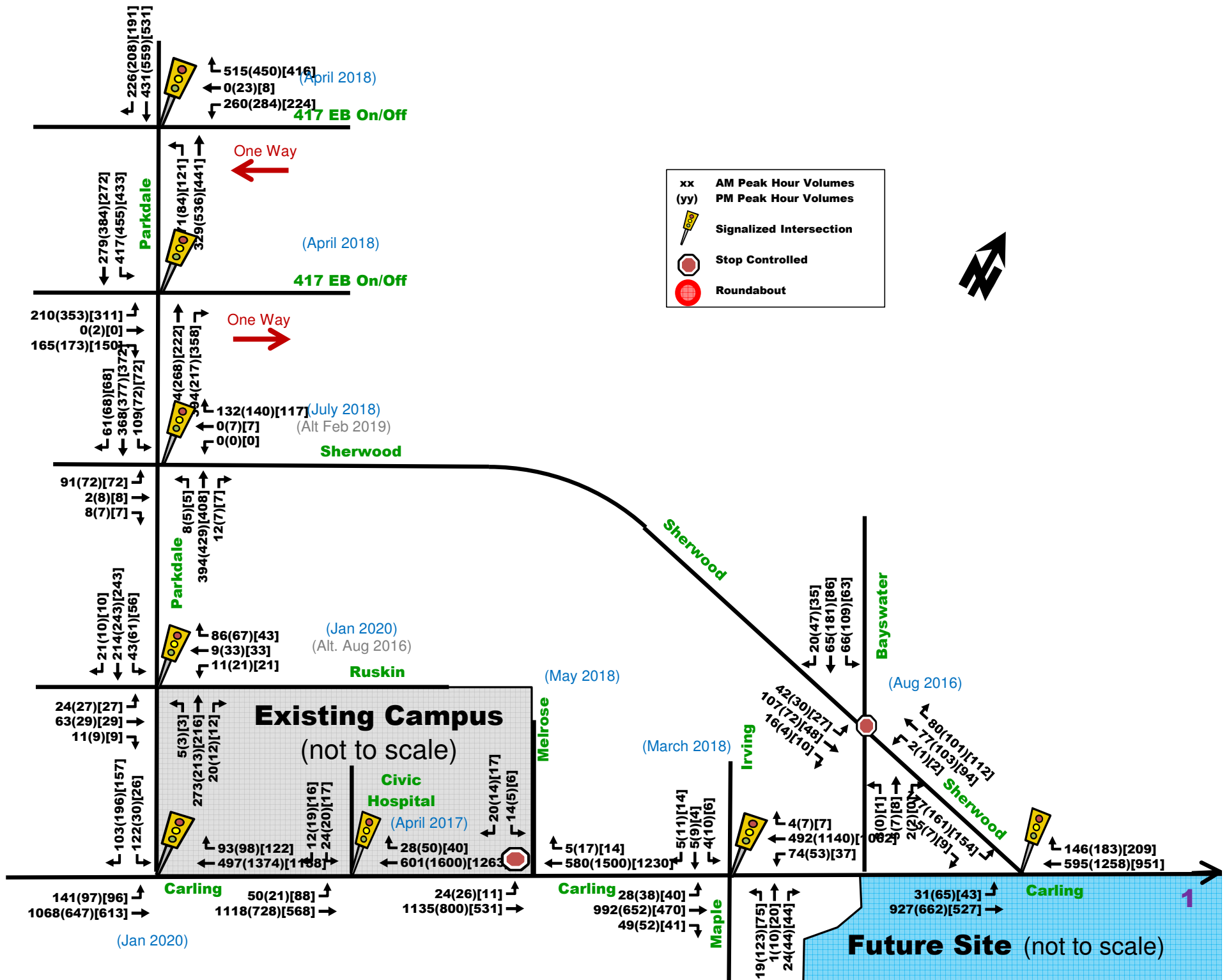


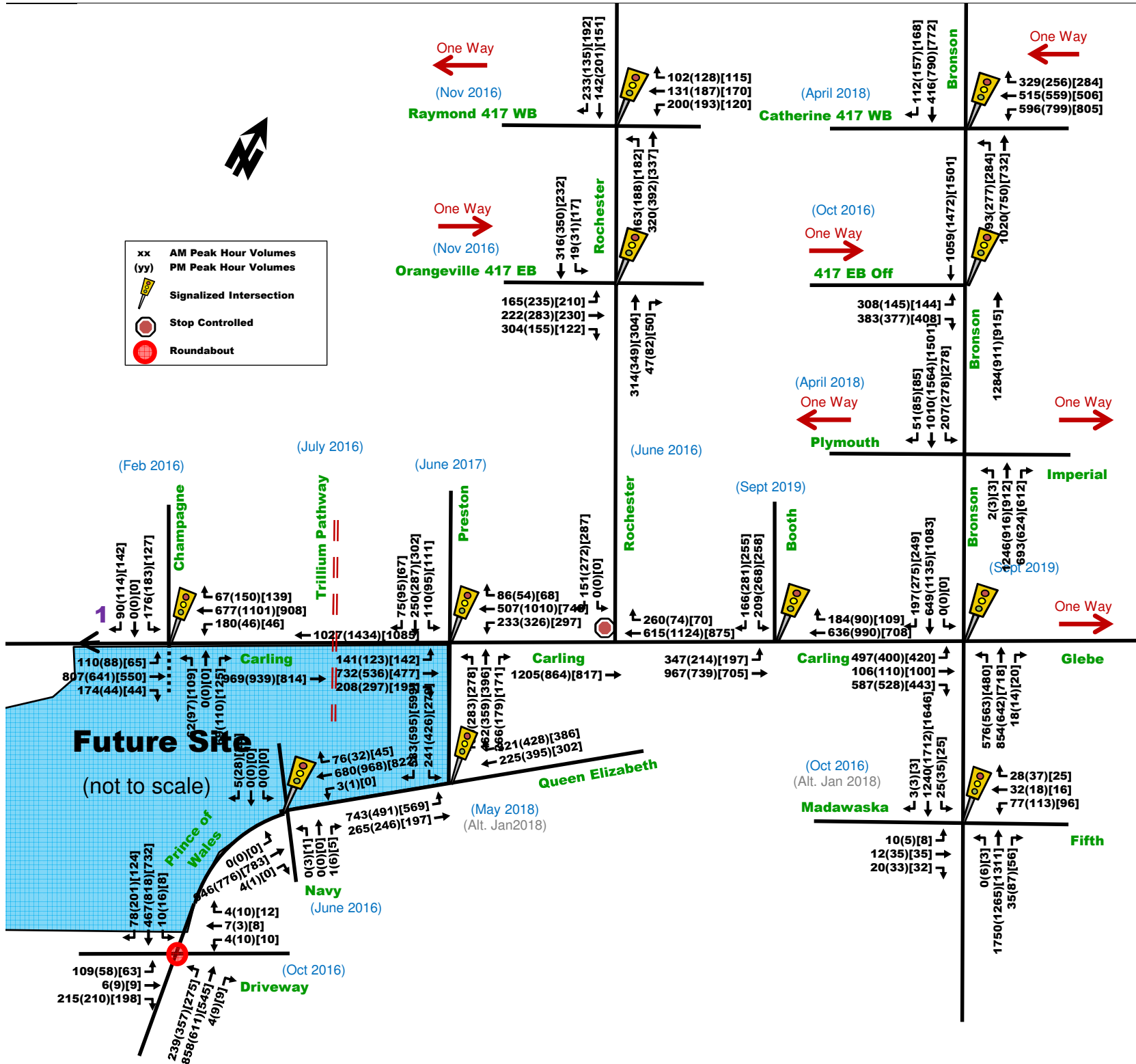
2048 Background Volumes

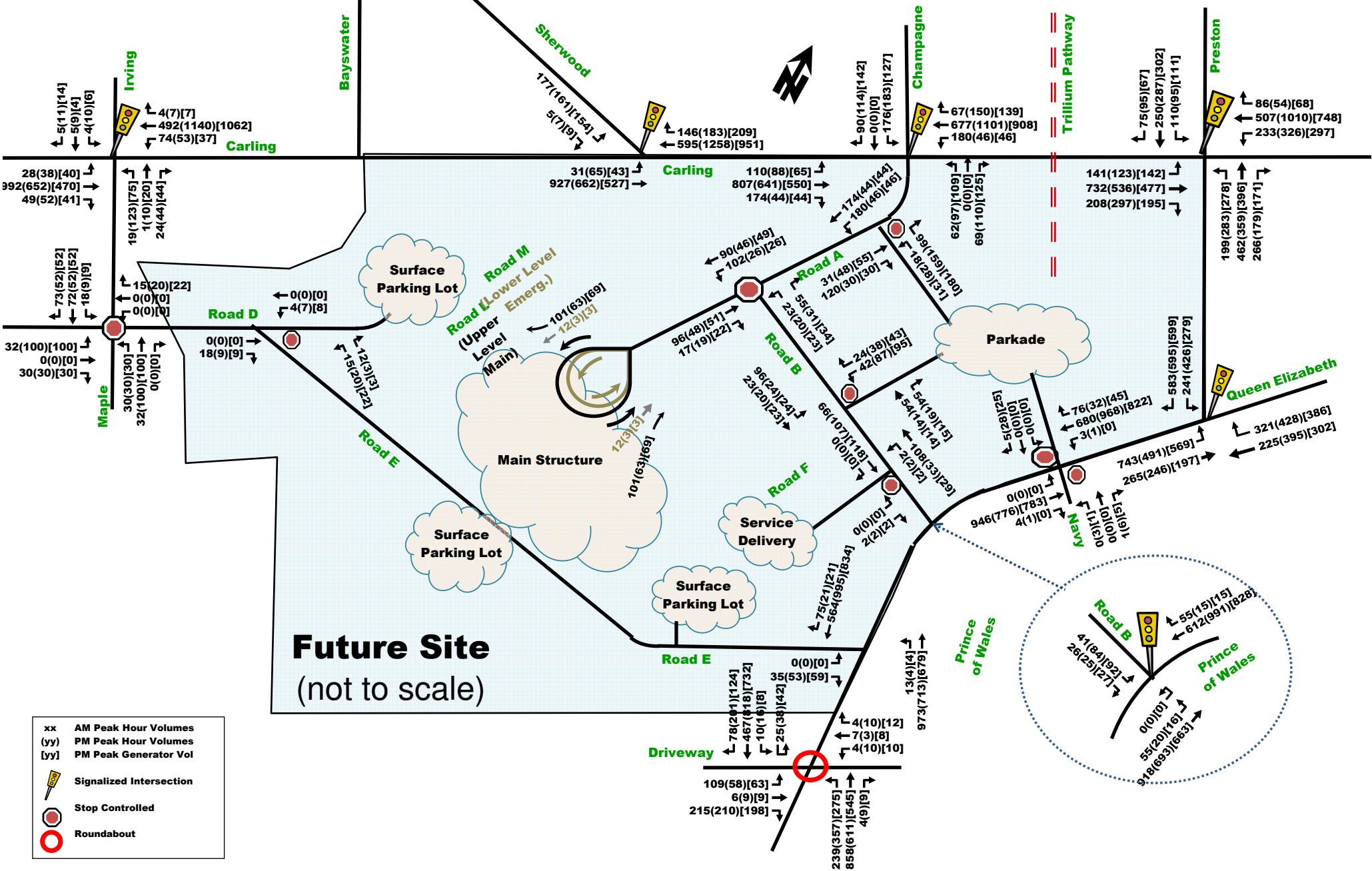




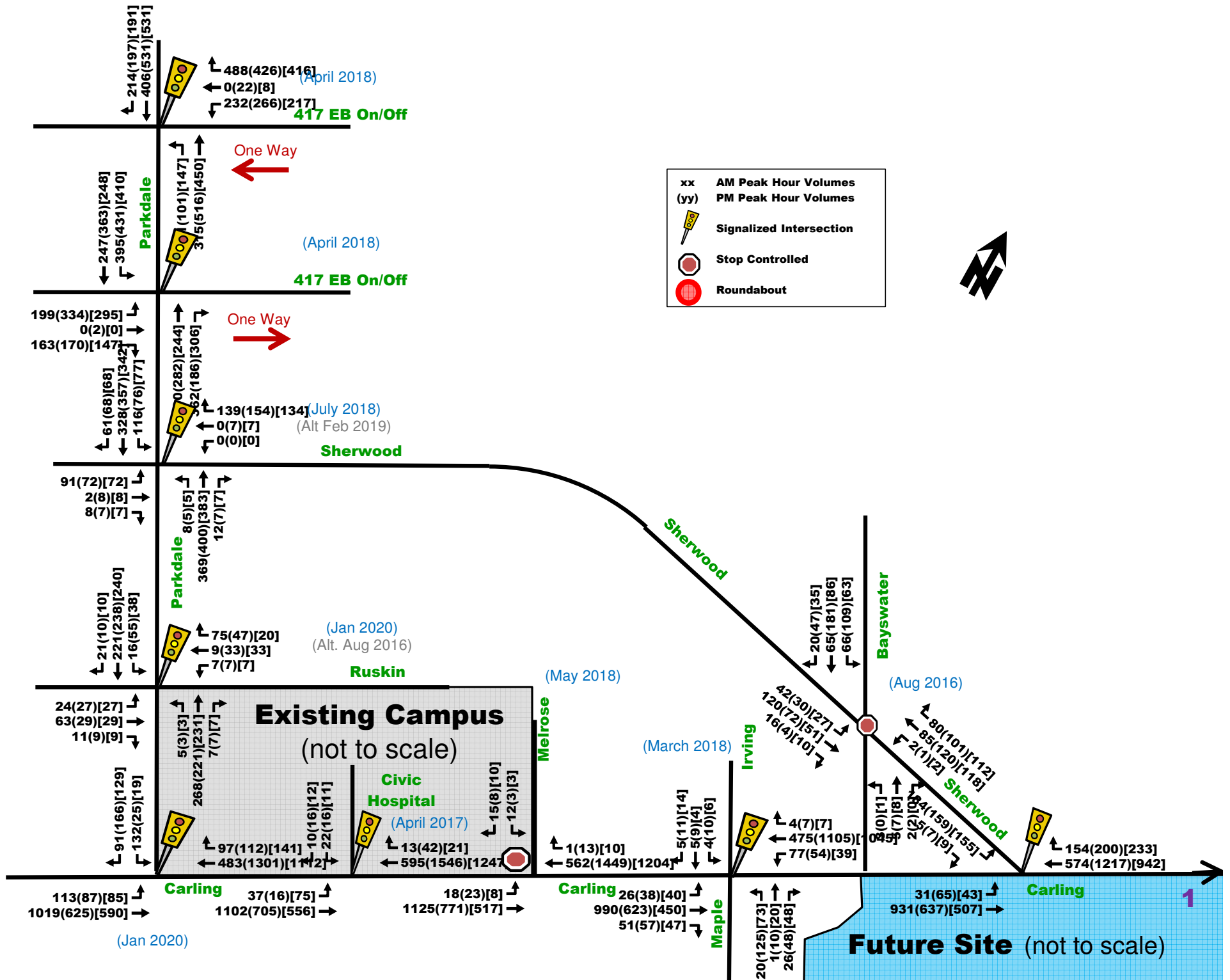
2028 Forecasted Volumes with NCD

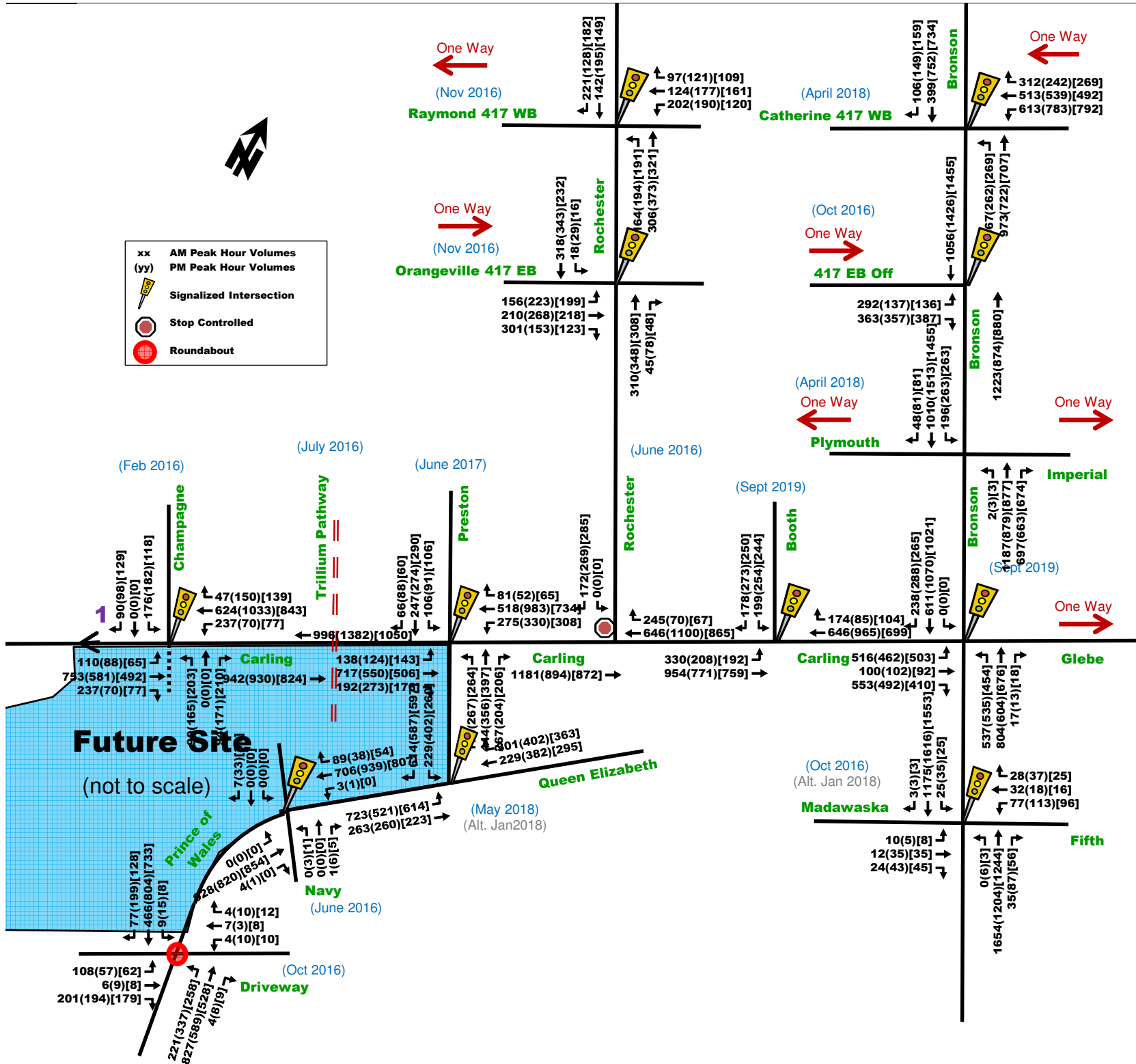


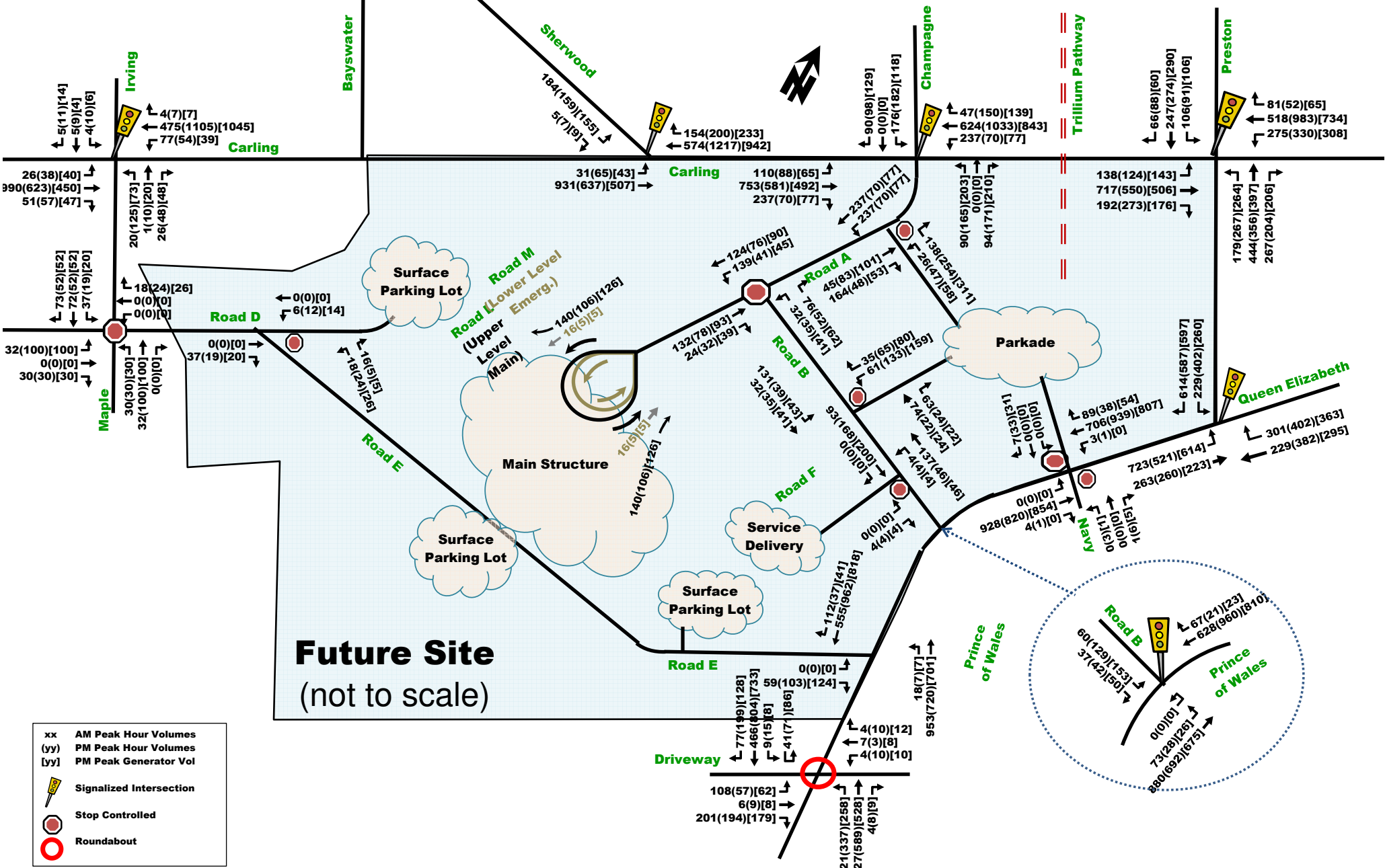




2048 Forecasted Volumes with NCD





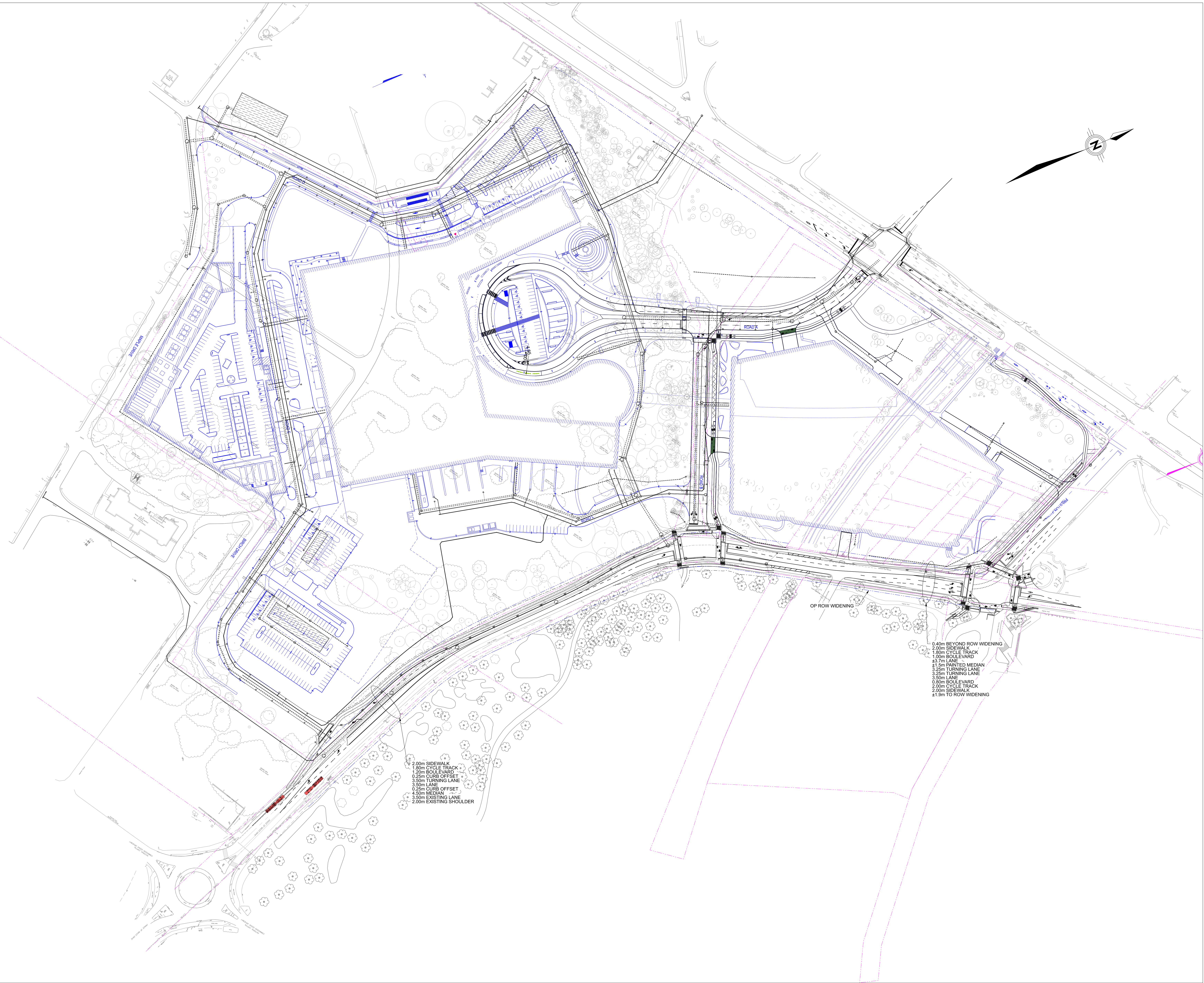
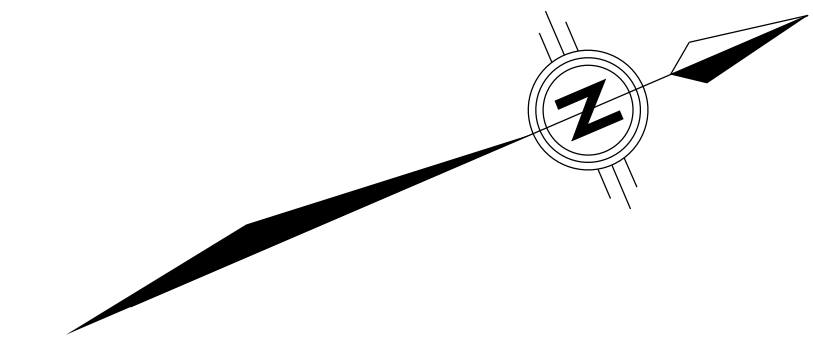


**Appendix G:
Active Transportation Facility Proposed Widths**

Active Transportation Facilities Proposed

Roadway	Side	From where to where?	Sidewalk Facility	Cycling Facility	Multi-Use Pathway (MUP)
Road A	North	Carling to front door	2 to 2.5 m	-	-
Road A	South	35 m south of Carling to front door	2 m	3 m (bidirect.)	-
Carling to Road A	South	Connects Carling facilities to 35 m south of Carling facilities on south side of Road A	-	-	3 m
Road B	East	Road A to Prince of Wales	2 m	3 m (bidirect.)	-
Carling near Preston	South	Trillium MUP to Preston	2 m	3 m (bidirect.)	-
Preston	West	Carling to Prince of Wales	3 m	3.5 m (bidirect.)	-
Prince of Wales	Northwest	Preston to Road B	2 m	1.8 m (unidirect.)	-
Prince of Wales	Northwest	Road B to Road E	2 m	Paved shoulder	-
Prince of Wales	Southeast	Preston to Navy	2 m	1.8 m (unidirect.)	-
Prince of Wales	Southeast	Navy to Road E	2 m	Paved shoulder	-
Road D	North	Maple to bike racks & crosswalk	-	-	3 m
Road D	South	Along NCD frontage	2 m	-	-
Woodland Path	-	Road D sidewalks to Road A	2 m	-	-
Road E	East	Road D to Zone 4 Parking	1.8 to 3 m		
Road E	North	Zone 4 Parking to Prince of Wales		Part of a future phase	
Other Internals	-				

**Appendix H:
Composite Plan Showing Proposed Off-Site
Intersection Designs**



2.00m SIDEWALK
1.80m CYCLE TRACK
1.20m BOULEVARD
0.25m CURB OFFSET
3.50m TURNING LANE
1.50m LANE
0.25m CURB OFFSET
4.50m MEDIAN
3.50m EXISTING LANE
2.00m EXISTING SHOULDER

0.40m BEYOND ROW WIDENING
2.00m SIDEWALK
1.80m CYCLE TRACK
1.00m BOULEVARD
0.50m LANE
±1.5m PAINTED MEDIAN
3.25m TURNING LANE
3.50m LANE
0.80m BOULEVARD
2.00m CYCLE TRACK
2.00m SIDEWALK
±1.9m TO ROW WIDENING

OP ROW WIDENING

**Appendix I:
Historic OC-Transpo Ridership Data**

Bus stops near current hospital site

Data previously provided for Fall 2019 (October 6 - December 21) and Winter 2020 pre-pandemic (January 5 - March 11) periods

Spring 2022 (April 24 - June 25)												
Stop	Location	Route	Dir.	AM (06:00-09:00)			PM (15:00-18:00)			24-hr		
				Boardings	Alightings	Avg Load at Departure	Boardings	Alightings	Avg Load at Departure	Boardings	Alightings	Avg Load at Departure
1324	Carling / Parkdale	55	WB	0	0	4	0	0	7	0	0	4
		85	WB	9	2	17	7	0	17	27	8	13
2390	Carling / Parkdale	55	EB	3	0	8	4	0	6	7	0	5
		85	EB	1	1	13	5	9	15	14	23	11
3644	Carling / Melrose South	55	EB	2	0	9	10	0	9	16	0	7
		56	EB	0	1	6	9	3	6	10	5	5
		85	EB	4	7	11	7	0	17	14	11	11
7359	Parkdale / Ruskin	56	EB	0	0	7	1	0	4	1	1	3
		114	WB	-	-	-	-	-	-	0	0	3
7360	Parkdale / Inglewood	56	WB	1	1	4	6	10	8	14	12	3
		114	EB	-	-	-	-	-	-	0	0	4
7361	Parkdale / Carling	56	EB	2	1	6	1	0	5	3	2	2
		114	WB	-	-	-	-	-	-	0	0	3
7365	Carling / Melrose South	55	WB	0	16	6	1	2	7	1	33	5
		56	WB	2	17	5	1	0	8	3	21	5
		85	WB	1	7	17	4	0	16	20	15	12
8016	Carling / TOH Civic Campus	55	WB	0	16	4	2	8	7	5	58	4
		85	WB	8	20	16	17	3	16	79	59	13
8020	Carling / TOH Civic Campus	55	EB	14	0	9	19	0	8	68	0	6
		56	EB	3	5	6	16	1	6	23	8	5
		85	EB	2	11	12	21	6	16	56	55	11
8070	Parkdale / Ruskin	56	WB	0	2	4	5	0	9	8	2	3
		114	EB	-	-	-	-	-	-	0	0	4
8075	Parkdale / Inglewood	56	EB	0	4	6	0	0	4	1	5	3
		114	WB	-	-	-	-	-	-	0	0	3

Bus stops near future hospital site

Fall 2019 (October 6 - December 21)

Stop	Location	Route	Dir.	AM (06:00-09:00)			PM (15:00-18:00)			24-hr		
				Boardings	Alightings	Avg Load at Departure	Boardings	Alightings	Avg Load at Departure	Boardings	Alightings	Avg Load at Departure
2397	Preston / Carling	85	WB	4	11	18	15	8	21	37	23	14
6657	Preston / Carling	85	EB	12	11	22	21	5	23	54	40	16
7367	Carling / Sherwood	55	WB	5	2	23	4	3	33	9	7	19
		56	WB	1	0	12	6	0	18	7	1	11
		85	WB	4	1	21	16	13	26	36	20	18
7368	Carling / Sherwood	55	EB	1	4	36	2	6	23	7	15	20
		56	EB	1	0	14	0	0	10	1	1	10
		85	EB	4	5	27	4	8	26	23	33	19
7369	Carling / O-Train Station	55	EB	9	16	34	8	32	20	28	89	18
		56	EB	4	6	14	2	5	9	7	11	10
		85	EB	7	46	23	4	51	22	31	214	16
8014	Carling / O-Train Station	55	WB	29	8	23	26	6	31	104	33	19
		56	WB	15	15	12	6	11	17	26	27	11
		85	WB	33	5	20	88	13	26	273	54	17
8015	Maple Drive / Central Experimental Farm	55	WB	0	9	22	5	3	33	7	15	19
		56	WB	1	8	11	2	3	17	2	11	11
		85	WB	11	9	19	23	21	26	82	54	18
8021	Maple Drive / Central Experimental Farm	55	EB	3	4	36	10	0	23	15	5	20
		56	EB	0	0	14	5	0	10	4	0	10
		85	EB	2	1	26	12	2	26	22	14	19
8023	Carling / Preston	55	EB	2	16	31	7	8	18	12	29	17
		56	EB	4	5	13	2	2	9	5	9	9

Winter 2020 pre-pandemic (January 5 - March 16)

Stop	Location	Route	Dir.	AM (06:00-09:00)			PM (15:00-18:00)			24-hr		
				Boardings	Alightings	Avg Load at Departure	Boardings	Alightings	Avg Load at Departure	Boardings	Alightings	Avg Load at Departure
2397	Preston / Carling	85	WB	5	24	22	21	6	20	43	42	15
6657	Preston / Carling	85	EB	27	32	22	20	7	19	68	64	15
7367	Carling / Sherwood	55	WB	5	2	23	1	9	27	9	16	18
		56	WB	4	20	9	0	2	15	4	25	10
		85	WB	1	2	24	11	8	27	41	28	18
7368	Carling / Sherwood	55	EB	2	2	31	3	2	17	9	13	18
		56	EB	2	0	7	0	0	12	2	0	9
		85	EB	17	10	28	9	13	22	30	34	17
7369	Carling / O-Train Station	55	EB	9	22	29	4	32	15	19	106	16
		56	EB	4	4	6	2	11	11	9	19	8
		85	EB	8	70	22	9	51	18	35	235	15
8014	Carling / O-Train Station	55	WB	35	6	23	30	5	28	103	17	18
		56	WB	8	5	11	12	5	16	24	12	11

		85 WB	29	10	23	86	24	27	257	69	18
8015	Maple Drive / Central Experimental Farm	55 WB	0	10	22	9	3	28	10	19	17
		56 WB	0	8	9	0	2	15	0	13	10
		85 WB	2	14	22	25	14	29	66	57	19
8021	Maple Drive / Central Experimental Farm	55 EB	2	3	30	6	0	17	14	3	18
		56 EB	2	2	7	7	0	12	9	3	9
		85 EB	3	10	27	11	1	23	21	20	17
8023	Carling / Preston	55 EB	2	21	27	6	9	14	18	39	16
		56 EB	1	1	7	5	2	12	6	6	9

Spring 2022 (April 24 - June 25)

Stop	Location	Route Dir.	AM (06:00-09:00)			PM (15:00-18:00)			24-hr		
			Boardings	Alightings	Avg Load at Departure	Boardings	Alightings	Avg Load at Departure	Boardings	Alightings	Avg Load at Departure
2397	Preston / Carling	85 WB	18	10	16	39	12	15	137	44	12
6657	Preston / Carling	2 NB	7	48	4	17	79	6	53	317	4
		85 EB	10	21	9	19	35	14	62	107	9
7367	Carling / Sherwood	55 WB	0	2	7	0	4	7	0	6	6
		56 WB	0	0	7	0	0	8	0	1	6
		85 WB	8	0	17	7	3	16	27	10	12
7368	Carling / Sherwood	55 EB	2	0	9	2	1	9	4	1	7
		56 EB	0	0	6	1	0	7	1	0	6
		85 EB	9	4	12	0	5	18	13	16	11
7369	Carling / O-Train Station	55 EB	6	0	9	10	0	10	38	0	7
		56 EB	2	0	6	6	1	8	10	1	6
		85 EB	1	17	10	2	21	15	8	73	10
8014	Carling / O-Train Station	55 WB	5	4	8	6	11	7	16	33	6
		56 WB	2	2	7	0	6	8	2	10	6
		85 WB	12	1	17	14	0	15	56	9	12
8015	Maple Drive / Central Experimental Farm	55 WB	0	5	7	2	2	7	2	11	6
		56 WB	0	4	7	0	0	8	0	4	6
		85 WB	0	1	17	3	3	15	10	7	12
8021	Maple Drive / Central Experimental Farm	55 EB	0	0	9	5	0	9	5	0	7
		56 EB	0	0	6	5	0	7	6	0	6
		85 EB	2	6	11	4	2	18	10	18	11
8023	Carling / Preston	55 EB	3	4	9	7	1	10	23	9	8
		56 EB	0	0	6	4	3	7	4	3	6

O-Train Line 2, before closure for Stage 2 expansion

Winter 2020 pre-pandemic (January 5 - March 16)												
Stop	Location	Route	Direction	AM (06:00-09:00)			PM (15:00-18:00)			24-hr		
				Boardings	Alightings	Avg Load at Departure	Boardings	Alightings	Avg Load at Departure	Boardings	Alightings	Avg Load at Departure
3061	Carling Station	Line 2	NB	124	165	40	207	308	65	589	1108	33
		Line 2	SB	197	143	15	285	208	18	1134	694	13

Appendix J:
Summary 2028 and 2048 Intersection Performance

2028 Intersection Performance Based on Synchro and Sidra

Intersection	Weekday AM Peak (PM Peak of Street) [PM Peak of Generator]					
	Critical Movement			Intersection 'As a Whole'		
	LoS	Max Delay (s) or v/c	Movement	Delay (s)	LoS	Max v/c
Signalized Intersections						
Parkdale/Carling	C	0.77	SBL	22.1	A	0.48
	(C)	(0.73)	(SBL)	(18.7)	(B)	(0.66)
	[B]	[0.67]	[SBL]	[15.9]	[A]	[0.57]
Civic/Carling	A	0.38	EBT	3.0	A	0.38
	(A)	(0.60)	(WBT)	(6.8)	(A)	(0.59)
	[A]	[0.53]	[WBT]	[10.1]	[A]	[0.52]
Maple/Old Irving/Carling	A	0.41	EBT	10.2	A	0.38
	(B)	(0.69)	(NBT)	(13.0)	(A)	(0.48)
	[A]	[0.56]	[NBT]	[11.0]	[A]	[0.43]
Sherwood/Carling	C	0.71	SBL	11.6	A	0.42
	(B)	(0.70)	(SBL)	(10.0)	(A)	(0.56)
	[B]	[0.69]	[SBL]	[10.0]	[A]	[0.44]
Road A/Champagne/Carling	C	0.79	SBL	29.0	A	0.54
	(D)	(0.82)	(SBL)	(39.3)	(B)	(0.66)
	[C]	[0.71]	[SBL]	[27.6]	[A]	[0.51]
Trillium MUP/Carling	A	0.42	WBT	8.3	A	0.42
	(A)	(0.48)	(WBT)	(6.0)	(A)	(0.48)
	[A]	[0.36]	[WBT]	[4.7]	[A]	[0.36]
Preston/Carling	E	0.92	EBR	60.4	D	0.87
	(E)	(0.99)	(NBL)	(80.0)	(E)	(0.97)
	[E]	[0.96]	[WBL]	[61.2]	[D]	[0.82]
Booth/Carling	D	0.85	WBT	26.7	C	0.77
	(E)	(1.00)	(WBT)	(43.6)	(E)	(0.95)
	[C]	[0.73]	[WBT]	[22.9]	[B]	[0.69]
Bronson/Carling	D	0.89	EBL	41.2	D	0.86
	(E)	(0.95)	(SBT)	(54.3)	(E)	(0.94)
	[E]	[0.94]	[SBT]	[48.4]	[D]	[0.90]
Hwy 417 WB on-off/Parkdale	C	0.75	WBT	23.9	B	0.70
	(D)	(0.83)	(WBT)	(26.2)	(C)	(0.76)
	[C]	[0.74]	[SBT]	[18.9]	[B]	[0.68]
Hwy 417 EB on-off/Parkdale	B	0.70	EBT	32.6	A	0.57
	(C)	(0.78)	(EBT)	(32.5)	(B)	(0.63)
	[C]	[0.78]	[EBT]	[26.1]	[B]	[0.61]
Sherwood/Parkdale	A	0.56	EBT	10.1	A	0.44
	(A)	(0.58)	(SBT)	(9.9)	(A)	(0.47)
	[A]	[0.57]	[SBT]	[9.9]	[A]	[0.48]
Ruskin/Parkdale	A	0.40	EBT	9.6	A	0.25
	(A)	(0.39)	(WBT)	(10.2)	(A)	(0.25)
	[A]	[0.35]	[EBT]	[10.1]	[A]	[0.22]
Preston/Prince of Wales	D	0.87	SBR	32.2	C	0.71
	(E)	(0.97)	(WBT)	(47.6)	(C)	(0.80)
	[D]	[0.89]	[SBR]	[39.8]	[B]	[0.70]
Hwy 417 on Raymond/Rochester	A	0.58	WBT	12.3	A	0.45
	(C)	(0.72)	(WBT)	(18.7)	(A)	(0.53)
	[B]	[0.70]	[WBT]	[17.1]	[A]	[0.49]
Hwy 417 off Orangeville/Rochester	B	0.70	EBT	11.2	A	0.44
	(C)	(0.74)	(EBT)	(16.9)	(A)	(0.46)
	[C]	[0.71]	[EBT]	[16.8]	[A]	[0.42]
Hwy 417 on-off Catherine/Bronson	D	0.90	NBL	35.5	D	0.81
	(E)	(0.97)	(WBL)	(56.8)	(E)	(0.96)
	[E]	[0.98]	[WBL]	[59.8]	[E]	[0.96]
Hwy 417 EB off/Bronson	D	0.85	EBR	17.7	B	0.66
	(D)	(0.86)	(EBR)	(18.5)	(C)	(0.74)
	[D]	[0.87]	[EBR]	[21.1]	[C]	[0.78]

Road B/Prince of Wales with Two WB Receiving Lanes	B (A) [A]	0.61 (0.55) [0.58]	EBT (SBL) [SBL]	9.0 (9.8) [10.3]	A (A) [A]	0.60 (0.49) [0.47]
Road B/Prince of Wales with Single WB Receiving Lanes	B (C) [A]	0.61 (0.73) [0.60]	EBT (WBT) [WBT]	11.6 (12.5) [11.8]	A (B) [A]	0.60 (0.70) [0.59]
Unsignalized Intersections						
Melrose/Carling	C (E) [C]	20 (40) [24]	SB (SB) [SB]	1 (1) [0]	A (A) [A]	-
Rochester/Carling	C (F) [F]	17 (206) [84]	SB (SB) [SB]	1 (24) [12]	A (C) [B]	-
Navy/Prince of Wales	C (D) [C]	17 (34) [21]	NB (NB) [NB]	0 (0) [0]	A (A) [A]	-
Road A/Parking garage	B (B) [B]	11 (10) [10]	NB (NB) [NB]	4 (6) [6]	A (A) [A]	-
Road B/Parking garage	B (B) [B]	10 (10) [10]	WB (WB) [WB]	5 (7) [7]	A (A) [A]	-
Road B/Road F	B (B) [B]	10 (10) [10]	EB (EB) [EB]	0 (0) [0]	A (A) [A]	-
Road E/Road D	A (A) [A]	9 (9) [9]	NB (NB) [NB]	5 (7) [7]	A (A) [A]	-
Bayswater/Sherwood	A (B) [A]	9 (11) [9]	SB (SB) [SB]	9 (10) [9]	A (B) [A]	-
Maple/Road D	A (A) [A]	8 (8) [8]	SB (EB) [EB]	8 (8) [8]	A (A) [A]	-
Road A/Road B	A (A) [A]	9 (8) [8]	WB (WB) [WB]	8 (8) [8]	A (A) [A]	-
Road E/Prince of Wales ¹	B (C) [C]	13 (21) [17]	EB (EB) [EB]	0 (1) [1]	A (A) [A]	-

Note: Analysis of intersections assumes a PHF of 1.0 and a saturation flow rate of 1800 veh/h/lane; 1. Option as signals or unsignalized with EBL prohibited. Note signals only tested in more critical 2048. NCC Scenic Driveway/Prince of Wales only tested in more critical 2048 horizon with added U-turns from deviated EBL turns at Road E/Prince of Wales.

2048 Intersection Performance based on Synchro and Sidra

Intersection	Weekday AM Peak (PM Peak of Street) [PM Peak of Generator]					
	Critical Movement			Intersection 'As a Whole'		
	LoS	Max Delay (s) or v/c	Movement	Delay (s)	LoS	Max v/c
Signalized Intersections						
Parkdale/Carling						
Civic/Carling						
Maple/Old Irving/Carling						
Sherwood/Carling						
Road A/Champagne/Carling						
Trillium MUP/Carling						
Preston/Carling	D (E) [E]	0.90 (0.97) [0.94]	WBL (NBL) [NBL]	59.4 (66.7) [53.8]	C (D) [C]	0.78 (0.84) [0.80]
Booth/Carling	D (E) [C]	0.85 (0.97) [0.71]	WBT (WBT) [WBT]	25.9 (37.9) [21.6]	C (E) [B]	0.77 (0.92) [0.66]
Bronson/Carling	D (E) [E]	0.90 (0.96) [0.94]	EBL (EBL) [SBT]	40.0 (54.4) [50.2]	D (E) [E]	0.84 (0.95) [0.92]
Hwy 417 WB on-off/Parkdale						
Hwy 417 EB on-off/Parkdale						
Sherwood/Parkdale						
Ruskin/Parkdale						
Preston/Prince of Wales	D (E) [D]	0.89 (0.94) [0.88]	SBR (SBT) [SBR]	32.4 (45.5) [38.7]	C (C) [B]	0.71 (0.77) [0.69]
Hwy 417 on Raymond/Rochester						
Hwy 417 off Orangeville/Rochester						
Hwy 417 on-off Catherine/Bronson	D (E) [E]	0.89 (0.96) [0.97]	NBL (WBL) [WBL]	33.6 (50.5) [52.0]	C (E) [E]	0.78 (0.92) [0.93]
Hwy 417 EB off/Bronson	D (D) [D]	0.82 (0.86) [0.86]	EBR (EBR) [EBR]	16.1 (17.3) [17.8]	B (C) [C]	0.62 (0.71) [0.74]
Road B/Prince of Wales						
Road E/Prince of Wales ¹	B (C) [B]	0.63 (0.73) [0.66]	NBT (SBT) [SBT]	9.8 (13.6) [12.7]	B (B) [B]	0.61 (0.69) [0.62]
Unsignalized Intersections						
Melrose/Carling	C (E) [C]	19 (35) [21]	SB (SB) [SB]	0 (0) [0]	A (A) [A]	-
Rochester/Carling	C (F) [F]	19 (186) [79]	SB (SB) [SB]	1 (17) [11]	A (B) [B]	-
Navy/Prince of Wales	C (E) [C]	16 (36) [23]	NB (NB) [NB]	0 (1) [0]	A (A) [A]	-
Bayswater/Sherwood						
Road A/Parking garage						
Road B/Parking garage						
Road B/Road F						
Road E/Road D						
Maple/Road D						
Road A/Road B						
Road E/Prince of Wales ¹	B (C) [C]	13 (23) [20]	EB (EB) [EB]	0 (1) [2]	A (A) [A]	-
Roundabout Intersections						
NCC Scenic Driveway/Prince of Wales	B (C) [B]	14 (25) [19]	WB (EB) [EB]	7 (11) [8]	A (B) [A]	-

Note: Analysis of intersections assumes a PHF of 1.0 and a saturation flow rate of 1800 veh/h/lane; 1. Option as signals or unsignalized with EBL prohibited

**Appendix K:
2028 and 2048 Detailed Intersection Performance**

Lanes, Volumes, Timings
10: Carling & Parkdale

2028 AM Demand Rationalized Main Hospital SPA

03/20/2023



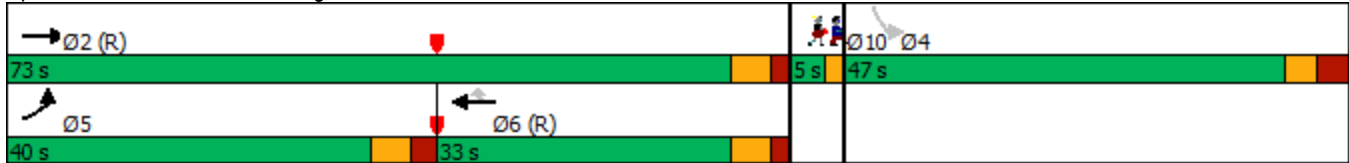
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø10
Lane Configurations							
Traffic Volume (vph)	141	1068	497	93	122	103	
Future Volume (vph)	141	1068	497	93	122	103	
Satd. Flow (prot)	1695	3390	3390	1517	1610	0	
Flt Permitted	0.950				0.974		
Satd. Flow (perm)	1599	3390	3390	1273	1592	0	
Satd. Flow (RTOR)				93	36		
Lane Group Flow (vph)	141	1068	497	93	225	0	
Turn Type	Prot	NA	NA	Perm	Perm		
Protected Phases	5	2	6				10
Permitted Phases				6	4		
Detector Phase	5	2	6	6	4		
Switch Phase							
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0		1.0
Minimum Split (s)	11.1	26.7	26.7	26.7	37.2		5.0
Total Split (s)	40.0	73.0	33.0	33.0	47.0		5.0
Total Split (%)	32.0%	58.4%	26.4%	26.4%	37.6%		4%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.0		2.0
All-Red Time (s)	2.4	1.9	1.9	1.9	3.2		0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	6.1	5.6	5.6	5.6	6.2		
Lead/Lag	Lead		Lag	Lag			
Lead-Lag Optimize?	Yes		Yes	Yes			
Recall Mode	None	C-Min	C-Min	C-Min	None		Min
Act Effct Green (s)	15.8	85.0	63.2	63.2	20.7		
Actuated g/C Ratio	0.13	0.68	0.51	0.51	0.17		
v/c Ratio	0.66	0.46	0.29	0.13	0.77		
Control Delay	66.2	10.9	20.4	5.0	58.2		
Queue Delay	0.0	0.0	0.0	0.0	0.0		
Total Delay	66.2	10.9	20.4	5.0	58.2		
LOS	E	B	C	A	E		
Approach Delay		17.3	17.9		58.2		
Approach LOS		B	B		E		
Queue Length 50th (m)	33.5	58.9	36.2	0.0	45.2		
Queue Length 95th (m)	52.1	89.6	59.8	10.5	67.3		
Internal Link Dist (m)		207.1	170.5		278.4		
Turn Bay Length (m)	155.0			80.0			
Base Capacity (vph)	459	2306	1713	689	543		
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	0.31	0.46	0.29	0.13	0.41		

Intersection Summary

Cycle Length: 125
 Actuated Cycle Length: 125
 Offset: 106 (85%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.77	Intersection LOS: C
Intersection Signal Delay: 22.1	ICU Level of Service B
Intersection Capacity Utilization 59.1%	
Analysis Period (min) 15	

Splits and Phases: 10: Carling & Parkdale



Lanes, Volumes, Timings
11: Carling & Civic

2028 AM Demand Rationalized Main Hospital SPA

03/20/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	50	1118	601	28	24	12
Future Volume (vph)	50	1118	601	28	24	12
Satd. Flow (prot)	1695	3390	3390	1517	1620	0
Flt Permitted	0.425				0.968	
Satd. Flow (perm)	746	3390	3390	1411	1575	0
Satd. Flow (RTOR)				28	12	
Lane Group Flow (vph)	50	1118	601	28	36	0
Turn Type	Perm	NA	NA	Perm	Perm	
Protected Phases		2	6			
Permitted Phases	2			6	4	
Detector Phase	2	2	6	6	4	
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	31.3	31.3	31.3	31.3	23.3	
Total Split (s)	90.0	90.0	51.0	51.0	30.0	
Total Split (%)	75.0%	75.0%	42.5%	42.5%	25.0%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.3	
All-Red Time (s)	2.7	2.7	2.7	2.7	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.4	6.4	6.4	6.4	5.3	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Min	C-Min	C-Min	C-Min	None	
Act Effct Green (s)	105.4	105.4	105.4	105.4	11.6	
Actuated g/C Ratio	0.88	0.88	0.88	0.88	0.10	
v/c Ratio	0.08	0.38	0.20	0.02	0.22	
Control Delay	2.9	3.1	0.6	0.0	39.1	
Queue Delay	0.0	0.2	0.0	0.0	0.0	
Total Delay	2.9	3.3	0.6	0.0	39.1	
LOS	A	A	A	A	D	
Approach Delay		3.3	0.6		39.1	
Approach LOS		A	A		D	
Queue Length 50th (m)	1.8	29.1	2.4	0.0	5.4	
Queue Length 95th (m)	6.0	54.0	4.6	0.0	14.6	
Internal Link Dist (m)		170.5	180.8		39.9	
Turn Bay Length (m)	90.0			140.0		
Base Capacity (vph)	655	2976	2976	1242	333	
Starvation Cap Reductn	0	898	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.08	0.54	0.20	0.02	0.11	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
 Natural Cycle: 55
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.38	
Intersection Signal Delay: 3.0	Intersection LOS: A
Intersection Capacity Utilization 55.1%	ICU Level of Service B
Analysis Period (min) 15	

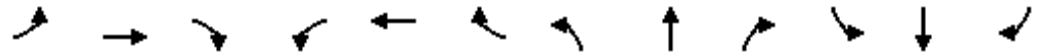
Splits and Phases: 11: Carling & Civic



Lanes, Volumes, Timings
13: Maple/Old Irvine & Carling

2028 AM Demand Rationalized Main Hospital SPA

03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘		↕			↕	
Traffic Volume (vph)	28	992	49	74	492	4	19	1	24	4	5	5
Future Volume (vph)	28	992	49	74	492	4	19	1	24	4	5	5
Satd. Flow (prot)	1695	3390	1517	1695	3390	1517	0	1589	0	0	1646	0
Flt Permitted	0.470			0.258				0.884			0.940	
Satd. Flow (perm)	811	3390	1323	453	3390	1361	0	1413	0	0	1561	0
Satd. Flow (RTOR)			40					24			5	
Lane Group Flow (vph)	28	992	49	74	492	4	0	44	0	0	14	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8				4
Permitted Phases	2		2	6		6	8			4		
Detector Phase	2	2	2	6	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	35.0	35.0	35.0	34.3	34.3	34.3	42.4	42.4		42.4	42.4	
Total Split (s)	77.0	77.0	77.0	77.0	77.0	77.0	43.0	43.0		43.0	43.0	
Total Split (%)	64.2%	64.2%	64.2%	64.2%	64.2%	64.2%	35.8%	35.8%		35.8%	35.8%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	4.4	4.4		4.4	4.4	
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	5.7	5.7	5.7	5.7		7.4			7.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Min	C-Min	C-Min	C-Min	C-Min	C-Min	None	None		None	None	
Act Effct Green (s)	86.5	86.5	86.5	86.5	86.5	86.5		25.0			25.0	
Actuated g/C Ratio	0.72	0.72	0.72	0.72	0.72	0.72		0.21			0.21	
v/c Ratio	0.05	0.41	0.05	0.23	0.20	0.00		0.14			0.04	
Control Delay	9.7	10.2	3.9	13.3	9.1	0.0		18.8			24.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0			0.0	
Total Delay	9.7	10.2	3.9	13.3	9.1	0.0		18.8			24.1	
LOS	A	B	A	B	A	A		B			C	
Approach Delay		9.9			9.6			18.8			24.1	
Approach LOS		A			A			B			C	
Queue Length 50th (m)	2.6	64.4	0.7	8.3	28.3	0.0		3.4			1.5	
Queue Length 95th (m)	6.5	79.3	5.5	18.1	37.7	m0.0		12.3			6.5	
Internal Link Dist (m)		236.1			191.5			174.3			220.8	
Turn Bay Length (m)	20.0		15.0	45.0		25.0						
Base Capacity (vph)	584	2444	965	326	2444	992		436			466	
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	0.05	0.41	0.05	0.23	0.20	0.00		0.10			0.03	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 75 (63%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.41

Intersection Signal Delay: 10.2

Intersection LOS: B

Intersection Capacity Utilization 75.6%

ICU Level of Service D

Analysis Period (min) 15

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

Splits and Phases: 13: Maple/Old Irvine & Carling



Lanes, Volumes, Timings
15: Carling & Sherwood

2028 AM Demand Rationalized Main Hospital SPA

03/20/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↗	↖	↖	↘	↘
Traffic Volume (vph)	31	927	595	146	177	5
Future Volume (vph)	31	927	595	146	177	5
Satd. Flow (prot)	1695	3390	3390	1517	1695	1517
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1510	3390	3390	1094	1668	1472
Satd. Flow (RTOR)				146		4
Lane Group Flow (vph)	31	927	595	146	177	5
Turn Type	Prot	NA	NA	Perm	Perm	Perm
Protected Phases	5	2	6			
Permitted Phases				6	4	4
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	10.3	25.1	25.1	25.1	25.1	25.1
Total Split (s)	13.0	79.0	66.0	66.0	41.0	41.0
Total Split (%)	10.8%	65.8%	55.0%	55.0%	34.2%	34.2%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.3	5.3	5.3	5.3	5.3	5.3
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Min	C-Min	C-Min	None	None
Act Effct Green (s)	7.7	91.3	82.8	82.8	18.1	18.1
Actuated g/C Ratio	0.06	0.76	0.69	0.69	0.15	0.15
v/c Ratio	0.29	0.36	0.25	0.18	0.71	0.02
Control Delay	63.5	4.8	6.8	1.0	62.8	26.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	63.5	4.8	6.8	1.0	62.8	26.6
LOS	E	A	A	A	E	C
Approach Delay		6.7	5.7		61.8	
Approach LOS		A	A		E	
Queue Length 50th (m)	7.2	25.7	24.0	0.0	40.1	0.2
Queue Length 95th (m)	17.0	40.8	26.2	2.5	59.9	3.6
Internal Link Dist (m)		118.3	141.7		152.1	
Turn Bay Length (m)	30.0			90.0		15.0
Base Capacity (vph)	118	2578	2338	800	496	440
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	0.26	0.36	0.25	0.18	0.36	0.01

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 112 (93%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 65
 Control Type: Actuated-Coordinated

Lanes, Volumes, Timings
 15: Carling & Sherwood

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 11.6

Intersection LOS: B

Intersection Capacity Utilization 47.4%

ICU Level of Service A

Analysis Period (min) 15

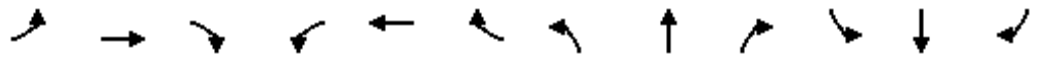
Splits and Phases: 15: Carling & Sherwood



Lanes, Volumes, Timings
16: Road A/Champagne & Carling

2028 AM Demand Rationalized Main Hospital SPA

03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Traffic Volume (vph)	110	807	174	180	677	67	62	0	69	176	0	90
Future Volume (vph)	110	807	174	180	677	67	62	0	69	176	0	90
Satd. Flow (prot)	1695	3390	1517	1695	3390	1517	1695	1414	0	1695	1456	0
Flt Permitted	0.950			0.950			0.699			0.712		
Satd. Flow (perm)	1516	3390	1370	1665	3390	1058	1218	1414	0	1206	1456	0
Satd. Flow (RTOR)						111					352	
Lane Group Flow (vph)	110	807	174	180	677	67	62	69	0	176	90	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8				4
Permitted Phases			2			6	8			4		
Detector Phase	5	2	2	1	6	6	8	8		4		4
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	10.3	26.3	26.3	10.3	26.3	26.3	18.3	18.3		32.9	32.9	
Total Split (s)	16.0	32.0	32.0	38.0	59.0	59.0	35.0	35.0		35.0	35.0	
Total Split (%)	13.3%	26.7%	26.7%	31.7%	49.2%	49.2%	29.2%	29.2%		29.2%	29.2%	
Yellow Time (s)	3.3	3.7	3.7	3.3	3.7	3.7	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.0	1.6	1.6	2.0	1.6	1.6	2.0	2.0		2.6	2.6	
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)	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3		5.9	5.9	
Lead/Lag	Lead			Lead								
Lead-Lag Optimize?	Yes			Yes								
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None		None	None	
Act Effct Green (s)	12.0	60.8	60.8	18.1	67.3	67.3	22.8	22.8		22.2	22.2	
Actuated g/C Ratio	0.10	0.51	0.51	0.15	0.56	0.56	0.19	0.19		0.18	0.18	
v/c Ratio	0.65	0.47	0.25	0.71	0.36	0.10	0.27	0.26		0.79	0.16	
Control Delay	63.7	26.7	25.1	75.4	8.1	1.0	42.4	41.8		70.3	0.6	
Queue Delay	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0		0.0	0.0	
Total Delay	63.7	26.7	25.1	75.4	8.2	1.0	42.4	41.8		70.3	0.6	
LOS	E	C	C	E	A	A	D	D		E	A	
Approach Delay		30.2			20.8			42.1			46.7	
Approach LOS		C			C			D			D	
Queue Length 50th (m)	24.6	69.6	26.0	40.0	9.7	0.0	12.5	13.9		39.7	0.0	
Queue Length 95th (m)	#53.4	118.7	55.1	45.5	72.4	3.3	23.7	25.5		61.2	0.0	
Internal Link Dist (m)		141.7			98.6			63.9			477.2	
Turn Bay Length (m)	55.0		75.0	61.0		35.0				30.0		
Base Capacity (vph)	176	1716	693	461	1901	642	301	349		292	619	
Starvation Cap Reductn	0	0	0	0	409	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	0.63	0.47	0.25	0.39	0.45	0.10	0.21	0.20		0.60	0.15	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated

Lane Group	Ø9	Ø10	Ø11
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Satd. Flow (RTOR)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	9	10	11
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	1.0	1.0	1.0
Minimum Split (s)	5.0	5.0	5.0
Total Split (s)	10.0	5.0	5.0
Total Split (%)	8%	4%	4%
Yellow Time (s)	2.0	2.0	2.0
All-Red Time (s)	0.0	0.0	0.0
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	
Recall Mode	None	None	None
Act Effct Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
LOS			
Approach Delay			
Approach LOS			
Queue Length 50th (m)			
Queue Length 95th (m)			
Internal Link Dist (m)			
Turn Bay Length (m)			
Base Capacity (vph)			
Starvation Cap Reductn			
Spillback Cap Reductn			
Storage Cap Reductn			
Reduced v/c Ratio			
Intersection Summary			

Lanes, Volumes, Timings
 16: Road A/Champagne & Carling

2028 AM Demand Rationalized Main Hospital SPA

03/20/2023

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 29.0

Intersection LOS: C

Intersection Capacity Utilization 67.5%

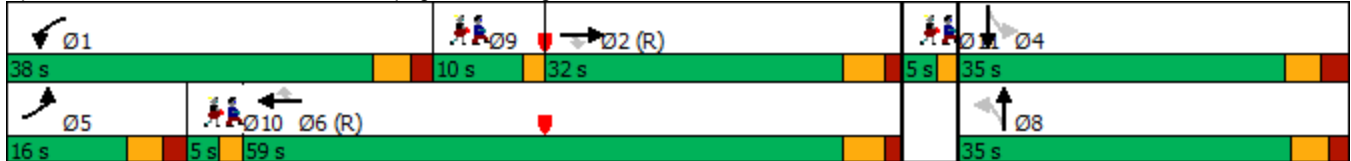
ICU Level of Service C

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 16: Road A/Champagne & Carling



Lanes, Volumes, Timings
17: Carling & Trillium MUP

2028 AM Demand Rationalized Main Hospital SPA

03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑							
Traffic Volume (vph)	0	969	0	0	1027	0	0	0	0	0	0	0
Future Volume (vph)	0	969	0	0	1027	0	0	0	0	0	0	0
Satd. Flow (prot)	0	3390	0	0	3390	0	0	0	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	3390	0	0	3390	0	0	0	0	0	0	0
Satd. Flow (RTOR)												
Lane Group Flow (vph)	0	969	0	0	1027	0	0	0	0	0	0	0
Turn Type		NA			NA							
Protected Phases		2			6							
Permitted Phases												
Detector Phase		2			6							
Switch Phase												
Minimum Initial (s)		10.0			10.0							
Minimum Split (s)		31.3			31.3							
Total Split (s)		84.0			84.0							
Total Split (%)		70.0%			70.0%							
Yellow Time (s)		3.7			3.7							
All-Red Time (s)		1.4			1.4							
Lost Time Adjust (s)		0.0			0.0							
Total Lost Time (s)		5.1			5.1							
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		C-Min			C-Min							
Act Effct Green (s)		87.4			87.4							
Actuated g/C Ratio		0.73			0.73							
v/c Ratio		0.39			0.42							
Control Delay		6.5			9.1							
Queue Delay		0.1			0.8							
Total Delay		6.6			9.9							
LOS		A			A							
Approach Delay		6.6			9.9							
Approach LOS		A			A							
Queue Length 50th (m)		35.5			56.7							
Queue Length 95th (m)		35.0			70.2							
Internal Link Dist (m)		98.6			92.8			53.0			60.9	
Turn Bay Length (m)												
Base Capacity (vph)		2470			2470							
Starvation Cap Reductn		355			1025							
Spillback Cap Reductn		0			0							
Storage Cap Reductn		0			0							
Reduced v/c Ratio		0.46			0.71							
Intersection Summary												
Cycle Length: 120												
Actuated Cycle Length: 120												
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green												
Natural Cycle: 70												
Control Type: Actuated-Coordinated												

Lane Group	Ø4	Ø8
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	4	8
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	10.0	10.0
Minimum Split (s)	35.6	35.6
Total Split (s)	36.0	36.0
Total Split (%)	30%	30%
Yellow Time (s)	3.0	3.0
All-Red Time (s)	3.6	3.6
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag		
Lead-Lag Optimize?		
Recall Mode	None	None
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

Lanes, Volumes, Timings
 17: Carling & Trillium MUP

2028 AM Demand Rationalized Main Hospital SPA

03/20/2023

Maximum v/c Ratio: 0.42

Intersection Signal Delay: 8.3

Intersection LOS: A

Intersection Capacity Utilization 34.2%

ICU Level of Service A

Analysis Period (min) 15

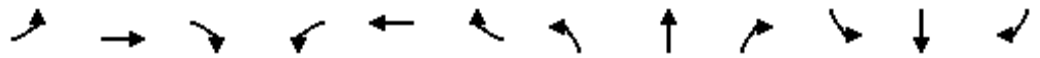
Splits and Phases: 17: Carling & Trillium MUP

 Ø2 (R) 84 s	 Ø4 36 s
 Ø6 (R) 84 s	 Ø8 36 s

Lanes, Volumes, Timings
18: Preston & Carling

2028 AM Demand Rationalized Main Hospital SPA

03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Traffic Volume (vph)	141	732	208	233	507	86	199	462	266	110	250	75
Future Volume (vph)	141	732	208	233	507	86	199	462	266	110	250	75
Satd. Flow (prot)	1695	3390	1517	1695	3390	1517	1695	3168	0	1695	1679	0
Flt Permitted	0.950			0.950			0.201			0.375		
Satd. Flow (perm)	1586	3390	1517	1647	3390	1272	351	3168	0	665	1679	0
Satd. Flow (RTOR)						193					11	
Lane Group Flow (vph)	141	732	208	233	507	86	199	728	0	110	325	0
Turn Type	Prot	NA	custom	Prot	NA	Perm	pm+pt	NA		Perm	NA	
Protected Phases	5	9 2	9 3	1	6		3	8				4
Permitted Phases						6	8			4		
Detector Phase	5	9 2	9 3	1	6	6	3	8		4		4
Switch Phase												
Minimum Initial (s)	5.0			5.0	10.0	10.0	5.0	10.0		10.0	10.0	
Minimum Split (s)	11.2			11.2	30.0	30.0	11.9	43.9		38.9	38.9	
Total Split (s)	23.5			31.0	41.6	41.6	16.0	54.9		38.9	38.9	
Total Split (%)	18.1%			23.8%	32.0%	32.0%	12.3%	42.2%		29.9%	29.9%	
Yellow Time (s)	3.7			3.7	3.7	3.7	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.5			2.5	2.3	2.3	3.6	3.6		3.6	3.6	
Lost Time Adjust (s)	0.0			0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.2			6.2	6.0	6.0	6.9	6.9		6.9	6.9	
Lead/Lag	Lead			Lead			Lead					
Lead-Lag Optimize?	Yes			Yes			Yes					
Recall Mode	None			None	C-Min	C-Min	None	None		None	None	
Act Effct Green (s)	14.8	39.5	19.5	21.7	41.5	41.5	49.8	45.8		29.8	29.8	
Actuated g/C Ratio	0.11	0.30	0.15	0.17	0.32	0.32	0.38	0.35		0.23	0.23	
v/c Ratio	0.73	0.71	0.92	0.83	0.47	0.16	0.87	0.65		0.72	0.83	
Control Delay	76.9	46.6	96.3	75.3	39.2	0.6	88.9	64.2		72.7	63.9	
Queue Delay	0.0	2.3	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	76.9	48.8	96.3	75.3	39.2	0.6	88.9	64.2		72.7	63.9	
LOS	E	D	F	E	D	A	F	E		E	E	
Approach Delay		61.6			45.3			69.5			66.1	
Approach LOS		E			D			E			E	
Queue Length 50th (m)	35.1	92.6	53.5	57.5	58.6	0.0	47.0	90.9		25.6	75.5	
Queue Length 95th (m)	57.0	#119.1	#100.7	#89.1	76.3	0.0	#87.4	119.4		#52.8	#116.1	
Internal Link Dist (m)		92.8			165.9			145.6			55.2	
Turn Bay Length (m)	70.0		90.0	120.0		95.0				35.0		
Base Capacity (vph)	225	1029	227	323	1083	537	228	1169		163	421	
Starvation Cap Reductn	0	173	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	0.63	0.86	0.92	0.72	0.47	0.16	0.87	0.62		0.67	0.77	

Intersection Summary

Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 116 (89%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 115
 Control Type: Actuated-Coordinated

Lane Group	Ø2	Ø9	Ø10	Ø11	Ø12
Lane Configurations					
Traffic Volume (vph)					
Future Volume (vph)					
Satd. Flow (prot)					
Flt Permitted					
Satd. Flow (perm)					
Satd. Flow (RTOR)					
Lane Group Flow (vph)					
Turn Type					
Protected Phases	2	9	10	11	12
Permitted Phases					
Detector Phase					
Switch Phase					
Minimum Initial (s)	10.0	1.0	1.0	1.0	1.0
Minimum Split (s)	30.0	7.0	5.0	5.0	5.0
Total Split (s)	30.1	9.0	5.0	5.0	5.0
Total Split (%)	23%	7%	4%	4%	4%
Yellow Time (s)	3.7	3.7	2.0	2.0	2.0
All-Red Time (s)	2.3	2.3	0.0	0.0	0.0
Lost Time Adjust (s)					
Total Lost Time (s)					
Lead/Lag	Lag		Lag	Lag	
Lead-Lag Optimize?	Yes		Yes	Yes	
Recall Mode	C-Min	Min	None	None	None
Act Effct Green (s)					
Actuated g/C Ratio					
v/c Ratio					
Control Delay					
Queue Delay					
Total Delay					
LOS					
Approach Delay					
Approach LOS					
Queue Length 50th (m)					
Queue Length 95th (m)					
Internal Link Dist (m)					
Turn Bay Length (m)					
Base Capacity (vph)					
Starvation Cap Reductn					
Spillback Cap Reductn					
Storage Cap Reductn					
Reduced v/c Ratio					
Intersection Summary					

Maximum v/c Ratio: 0.92

Intersection Signal Delay: 60.4

Intersection LOS: E

Intersection Capacity Utilization 93.6%

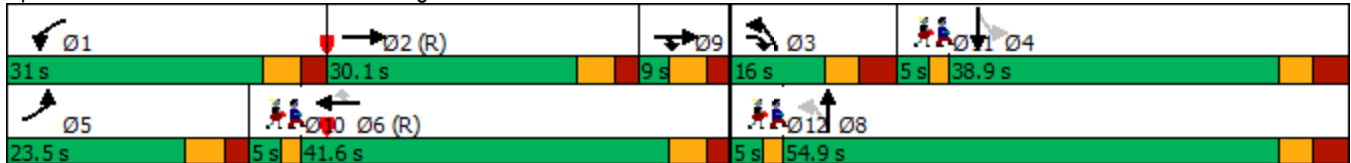
ICU Level of Service F

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

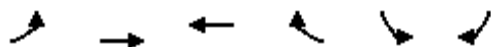
Splits and Phases: 18: Preston & Carling



Lanes, Volumes, Timings
20: Carling & Booth

2028 AM Demand Rationalized Main Hospital SPA

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Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↗↗	↖	↗	↘	↙
Traffic Volume (vph)	347	967	636	184	209	166
Future Volume (vph)	347	967	636	184	209	166
Satd. Flow (prot)	1695	3390	1784	1517	1695	1517
Flt Permitted	0.135				0.950	
Satd. Flow (perm)	241	3390	1784	1197	1658	1187
Satd. Flow (RTOR)				65		163
Lane Group Flow (vph)	347	967	636	184	209	166
Turn Type	pm+pt	NA	NA	Perm	Perm	Perm
Protected Phases	5	2	6			
Permitted Phases	2			6	4	4
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	10.9	29.7	29.7	29.7	39.0	39.0
Total Split (s)	34.0	81.0	47.0	47.0	39.0	39.0
Total Split (%)	28.3%	67.5%	39.2%	39.2%	32.5%	32.5%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.3	3.3
All-Red Time (s)	2.2	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)	5.9	5.7	5.7	5.7	6.0	6.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Min	C-Min	C-Min	None	None
Act Effct Green (s)	79.1	79.3	50.2	50.2	29.0	29.0
Actuated g/C Ratio	0.66	0.66	0.42	0.42	0.24	0.24
v/c Ratio	0.79	0.43	0.85	0.34	0.52	0.40
Control Delay	34.7	11.3	47.1	20.0	43.3	8.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.7	11.3	47.1	20.0	43.3	8.5
LOS	C	B	D	B	D	A
Approach Delay		17.4	41.0		27.9	
Approach LOS		B	D		C	
Queue Length 50th (m)	49.9	58.2	145.6	19.8	40.9	0.5
Queue Length 95th (m)	83.0	72.2	#230.3	40.8	64.0	17.2
Internal Link Dist (m)		100.4	299.3		220.7	
Turn Bay Length (m)	50.0			30.0		30.0
Base Capacity (vph)	499	2239	746	538	455	444
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	0.70	0.43	0.85	0.34	0.46	0.37

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 116 (97%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
 Natural Cycle: 100
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 26.7

Intersection LOS: C

Intersection Capacity Utilization 97.0%

ICU Level of Service F

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 20: Carling & Booth



Lanes, Volumes, Timings
21: Bronson & Carling/Glebe

2028 AM Demand Rationalized Main Hospital SPA

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	497	106	587	0	0	0	576	854	18	0	649	197
Future Volume (vph)	497	106	587	0	0	0	576	854	18	0	649	197
Satd. Flow (prot)	1610	1646	1517	0	0	0	3288	1773	0	0	3223	0
Flt Permitted	0.950	0.971					0.950					
Satd. Flow (perm)	1520	1591	1274	0	0	0	3200	1773	0	0	3223	0
Satd. Flow (RTOR)			177					2			37	
Lane Group Flow (vph)	343	260	587	0	0	0	576	872	0	0	846	0
Turn Type	Perm	NA	pm+ov				Prot	NA			NA	
Protected Phases		4	5				5	2			6	
Permitted Phases	4		4									
Detector Phase	4	4	5				5	2			6	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0				10.0	10.0			10.0	
Minimum Split (s)	31.0	31.0	16.0				16.0	25.1			33.0	
Total Split (s)	31.0	31.0	33.0				33.0	79.0			46.0	
Total Split (%)	26.5%	26.5%	28.2%				28.2%	67.5%			39.3%	
Yellow Time (s)	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			2.7	
Lost Time Adjust (s)	0.0	0.0	0.0				0.0	0.0			0.0	
Total Lost Time (s)	6.0	6.0	6.0				6.0	6.0			6.0	
Lead/Lag			Lead				Lead				Lag	
Lead-Lag Optimize?			Yes				Yes				Yes	
Recall Mode	None	None	None				None	C-Min			C-Min	
Act Effct Green (s)	29.8	29.8	54.9				25.1	67.8			36.7	
Actuated g/C Ratio	0.25	0.25	0.47				0.21	0.58			0.31	
v/c Ratio	0.89	0.64	0.79				0.82	0.85			0.82	
Control Delay	68.4	48.8	25.9				53.9	29.1			42.5	
Queue Delay	0.0	0.0	0.0				0.0	0.0			0.0	
Total Delay	68.4	48.8	25.9				53.9	29.1			42.5	
LOS	E	D	C				D	C			D	
Approach Delay		43.1						39.0			42.5	
Approach LOS		D						D			D	
Queue Length 50th (m)	80.9	56.7	65.8				63.8	152.9			91.4	
Queue Length 95th (m)	#150.1	#98.5	#117.0				83.6	195.7			109.7	
Internal Link Dist (m)		74.7			115.0			394.4			328.4	
Turn Bay Length (m)	40.0						50.0					
Base Capacity (vph)	387	405	765				758	1106			1126	
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	0.89	0.64	0.77				0.76	0.79			0.75	

Intersection Summary

Cycle Length: 117
 Actuated Cycle Length: 117
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated

Lane Group	Ø10
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	10
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	7.0
Total Split (s)	7.0
Total Split (%)	6%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	Min
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Maximum v/c Ratio: 0.89

Intersection Signal Delay: 41.2

Intersection LOS: D

Intersection Capacity Utilization 82.8%

ICU Level of Service E

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 21: Bronson & Carling/Glebe



Lanes, Volumes, Timings
22: Parkdale & 417 WB on/off

2028 AM Demand Rationalized Main Hospital SPA

03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	260	0	515	171	329	0	0	431	226
Future Volume (vph)	0	0	0	260	0	515	171	329	0	0	431	226
Satd. Flow (prot)	0	0	0	1695	1481	0	1695	1784	0	0	1662	0
Flt Permitted				0.950			0.266					
Satd. Flow (perm)	0	0	0	1695	1481	0	475	1784	0	0	1662	0
Satd. Flow (RTOR)					482						35	
Lane Group Flow (vph)	0	0	0	260	515	0	171	329	0	0	657	0
Turn Type				Perm	NA		pm+pt	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases				8			2					
Detector Phase				8	8		5	2			6	
Switch Phase												
Minimum Initial (s)				10.0	10.0		5.0	10.0			10.0	
Minimum Split (s)				29.0	29.0		10.3	27.3			25.1	
Total Split (s)				34.0	34.0		14.0	66.0			52.0	
Total Split (%)				34.0%	34.0%		14.0%	66.0%			52.0%	
Yellow Time (s)				3.3	3.3		3.0	3.0			3.0	
All-Red Time (s)				2.2	2.2		2.2	3.3			3.3	
Lost Time Adjust (s)				0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)				5.5	5.5		5.2	6.3			6.3	
Lead/Lag							Lag				Lead	
Lead-Lag Optimize?							Yes				Yes	
Recall Mode				None	None		None	C-Min			C-Min	
Act Effct Green (s)				21.0	21.0		68.3	67.2			52.3	
Actuated g/C Ratio				0.21	0.21		0.68	0.67			0.52	
v/c Ratio				0.73	0.75		0.39	0.27			0.74	
Control Delay				48.3	11.5		14.1	7.3			25.7	
Queue Delay				0.0	0.0		10.7	1.4			5.6	
Total Delay				48.3	11.5		24.8	8.7			31.3	
LOS				D	B		C	A			C	
Approach Delay					23.8			14.2			31.3	
Approach LOS					C			B			C	
Queue Length 50th (m)				47.1	5.2		11.6	23.7			97.3	
Queue Length 95th (m)				67.1	34.9		21.1	41.9			#170.6	
Internal Link Dist (m)		157.5			140.3			45.3			171.5	
Turn Bay Length (m)												
Base Capacity (vph)				483	766		448	1198			885	
Starvation Cap Reductn				0	0		243	665			0	
Spillback Cap Reductn				0	0		0	0			172	
Storage Cap Reductn				0	0		0	0			0	
Reduced v/c Ratio				0.54	0.67		0.83	0.62			0.92	

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 69 (69%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.75

Intersection Signal Delay: 23.9

Intersection LOS: C

Intersection Capacity Utilization 120.1%

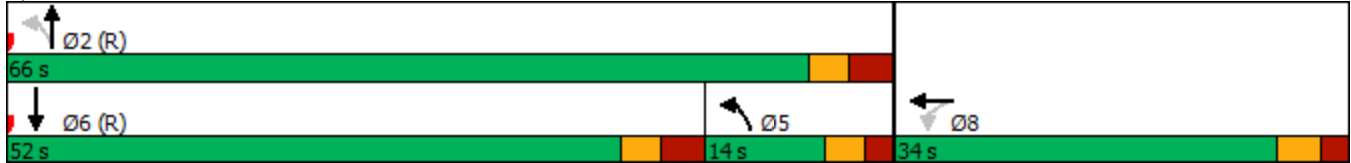
ICU Level of Service H

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 22: Parkdale & 417 WB on/off



Lanes, Volumes, Timings
23: Parkdale & 417 EB on/off

2028 AM Demand Rationalized Main Hospital SPA

03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗					↕↗		↗	↕	
Traffic Volume (vph)	210	0	165	0	0	0	0	294	394	417	279	0
Future Volume (vph)	210	0	165	0	0	0	0	294	394	417	279	0
Satd. Flow (prot)	0	1695	1517	0	0	0	0	2918	0	1695	1784	0
Flt Permitted		0.950								0.278		
Satd. Flow (perm)	0	1692	1474	0	0	0	0	2918	0	487	1784	0
Satd. Flow (RTOR)			165					372				
Lane Group Flow (vph)	0	210	165	0	0	0	0	688	0	417	279	0
Turn Type	Perm	NA	Perm					NA		pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		4							6		
Detector Phase	4	4	4					2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0					10.0		5.0	10.0	
Minimum Split (s)	25.1	25.1	25.1					25.1		10.3	25.1	
Total Split (s)	34.0	34.0	34.0					40.0		26.0	66.0	
Total Split (%)	34.0%	34.0%	34.0%					40.0%		26.0%	66.0%	
Yellow Time (s)	3.3	3.3	3.3					3.0		3.0	3.0	
All-Red Time (s)	2.6	2.6	2.6					2.8		2.3	2.8	
Lost Time Adjust (s)		0.0	0.0					0.0		0.0	0.0	
Total Lost Time (s)		5.9	5.9					5.8		5.3	5.8	
Lead/Lag								Lag		Lead		
Lead-Lag Optimize?								Yes		Yes		
Recall Mode	None	None	None					C-Min		None	C-Min	
Act Effct Green (s)		17.7	17.7					43.0		71.1	70.6	
Actuated g/C Ratio		0.18	0.18					0.43		0.71	0.71	
v/c Ratio		0.70	0.42					0.47		0.68	0.22	
Control Delay		50.9	8.5					13.9		21.0	8.6	
Queue Delay		0.0	0.0					0.2		56.9	2.5	
Total Delay		50.9	8.5					14.1		77.9	11.1	
LOS		D	A					B		E	B	
Approach Delay		32.3						14.1			51.1	
Approach LOS		C						B			D	
Queue Length 50th (m)		38.7	0.0					25.4		49.8	25.3	
Queue Length 95th (m)		57.8	15.5					49.9		76.3	m45.1	
Internal Link Dist (m)		109.8			145.0			90.1			45.3	
Turn Bay Length (m)			75.0									
Base Capacity (vph)		475	532					1493		634	1259	
Starvation Cap Reductn		0	0					213		296	842	
Spillback Cap Reductn		0	0					44		0	0	
Storage Cap Reductn		0	0					0		0	0	
Reduced v/c Ratio		0.44	0.31					0.54		1.23	0.67	

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 53 (53%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 70
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.70

Intersection Signal Delay: 32.6

Intersection LOS: C

Intersection Capacity Utilization 120.1%

ICU Level of Service H

Analysis Period (min) 15

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

Splits and Phases: 23: Parkdale & 417 EB on/off



Lanes, Volumes, Timings
24: Parkdale & Sherwood

2028 AM Demand Rationalized Main Hospital SPA

03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	91	2	8	0	0	132	8	394	12	109	368	61
Future Volume (vph)	91	2	8	0	0	132	8	394	12	109	368	61
Satd. Flow (prot)	0	1665	0	0	1441	0	0	1769	0	0	1726	0
Flt Permitted		0.565						0.991			0.835	
Satd. Flow (perm)	0	978	0	0	1441	0	0	1754	0	0	1441	0
Satd. Flow (RTOR)		4			537			5			20	
Lane Group Flow (vph)	0	101	0	0	132	0	0	414	0	0	538	0
Turn Type	Perm	NA			NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	1.0	1.0		1.0	1.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	18.0	18.0		18.0	18.0		25.1	25.1		25.1	25.1	
Total Split (s)	18.0	18.0		18.0	18.0		82.0	82.0		82.0	82.0	
Total Split (%)	18.0%	18.0%		18.0%	18.0%		82.0%	82.0%		82.0%	82.0%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.0			4.0			5.6			5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Ped	Ped		Ped	Ped		C-Min	C-Min		C-Min	C-Min	
Act Effct Green (s)		18.0			18.0			72.4			72.4	
Actuated g/C Ratio		0.18			0.18			0.72			0.72	
v/c Ratio		0.56			0.19			0.33			0.51	
Control Delay		47.6			0.6			6.3			8.1	
Queue Delay		0.0			0.0			0.0			0.4	
Total Delay		47.6			0.6			6.3			8.4	
LOS		D			A			A			A	
Approach Delay		47.6			0.6			6.3			8.4	
Approach LOS		D			A			A			A	
Queue Length 50th (m)		17.4			0.0			24.1			36.4	
Queue Length 95th (m)		32.0			0.0			46.0			42.9	
Internal Link Dist (m)		221.3			335.0			289.1			90.1	
Turn Bay Length (m)												
Base Capacity (vph)		179			700			1341			1105	
Starvation Cap Reductn		0			0			0			190	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.56			0.19			0.31			0.59	
Intersection Summary												
Cycle Length: 100												
Actuated Cycle Length: 100												
Offset: 25 (25%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green												
Natural Cycle: 55												
Control Type: Actuated-Coordinated												

Maximum v/c Ratio: 0.56

Intersection Signal Delay: 10.1

Intersection LOS: B

Intersection Capacity Utilization 93.3%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 24: Parkdale & Sherwood



Lanes, Volumes, Timings
25: Parkdale & Ruskin

2028 AM Demand Rationalized Main Hospital SPA

03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↖	↗			↕			↕	
Traffic Volume (vph)	24	63	11	11	9	86	5	273	20	43	214	21
Future Volume (vph)	24	63	11	11	9	86	5	273	20	43	214	21
Satd. Flow (prot)	0	1714	0	1695	1468	0	0	1761	0	0	1747	0
Flt Permitted		0.895		0.716				0.996			0.920	
Satd. Flow (perm)	0	1542	0	1184	1468	0	0	1756	0	0	1616	0
Satd. Flow (RTOR)		6			86			10			11	
Lane Group Flow (vph)	0	98	0	11	95	0	0	298	0	0	278	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	19.4	19.4		19.4	19.4		31.8	31.8		31.8	31.8	
Total Split (s)	20.0	20.0		20.0	20.0		65.0	65.0		65.0	65.0	
Total Split (%)	23.5%	23.5%		23.5%	23.5%		76.5%	76.5%		76.5%	76.5%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.4	2.4		2.4	2.4		2.8	2.8		2.8	2.8	
Lost Time Adjust (s)		0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)		5.4		5.4	5.4			5.8			5.8	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Min	C-Min		C-Min	C-Min	
Act Effct Green (s)		13.3		13.3	13.3			64.7			64.7	
Actuated g/C Ratio		0.16		0.16	0.16			0.76			0.76	
v/c Ratio		0.40		0.06	0.31			0.22			0.23	
Control Delay		34.9		30.6	11.9			4.5			4.6	
Queue Delay		0.0		0.0	0.0			0.0			0.0	
Total Delay		34.9		30.6	11.9			4.5			4.6	
LOS		C		C	B			A			A	
Approach Delay		34.9			13.8			4.5			4.6	
Approach LOS		C			B			A			A	
Queue Length 50th (m)		13.4		1.5	1.3			14.0			13.0	
Queue Length 95th (m)		27.4		5.9	13.5			23.6			22.3	
Internal Link Dist (m)		220.6			228.6			278.4			289.1	
Turn Bay Length (m)				40.0								
Base Capacity (vph)		269		203	323			1339			1233	
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		0.36		0.05	0.29			0.22			0.23	

Intersection Summary

Cycle Length: 85
 Actuated Cycle Length: 85
 Offset: 45 (53%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 55
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.40

Intersection Signal Delay: 9.6

Intersection LOS: A

Intersection Capacity Utilization 62.5%

ICU Level of Service B

Analysis Period (min) 15

























Splits and Phases: 25: Parkdale & Ruskin



Lanes, Volumes, Timings
30: Prince of Wales & Preston

2028 AM Demand Rationalized Main Hospital SPA

03/20/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 			 				 			 	
Traffic Volume (vph)	743	265	1	0	225	321	0	2	1	241	1	583
Future Volume (vph)	743	265	1	0	225	321	0	2	1	241	1	583
Satd. Flow (prot)	3288	1782	0	1784	1784	1517	0	1633	0	0	1700	1517
Flt Permitted	0.950		0.726									
Satd. Flow (perm)	3218	1782	0	1784	1784	1483	0	1633	0	0	1203	1422
Satd. Flow (RTOR)							273					
Lane Group Flow (vph)	743	266	0	0	225	321	0	3	0	0	242	583
Turn Type	Prot	NA		Prot	NA	Free		NA		custom	NA	custom
Protected Phases	5	2		1	6			8		11	4 11	5
Permitted Phases							Free	8		4		
Detector Phase	5	2		1	6		8	8		11	4 11	5
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0		10.0		5.0
Minimum Split (s)	11.1	27.1		10.3	26.1		23.5	23.5		20.0		11.1
Total Split (s)	56.0	69.9		10.3	29.2		24.8	24.8		20.0		56.0
Total Split (%)	43.1%	53.8%		7.9%	22.5%		19.1%	19.1%		15.4%		43.1%
Yellow Time (s)	3.7	3.7		3.3	3.7		3.3	3.3		2.0		3.7
All-Red Time (s)	2.4	2.4		2.0	2.4		2.2	2.2		0.0		2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0				0.0
Total Lost Time (s)	6.1	6.1		5.3	6.1			5.5				6.1
Lead/Lag				Lead								
Lead-Lag Optimize?				Yes								
Recall Mode	None	C-Min		None	C-Min		None	None		None		None
Act Effct Green (s)	45.6	83.4		33.1	130.0			13.5			28.0	58.5
Actuated g/C Ratio	0.35	0.64		0.25	1.00			0.10			0.22	0.45
v/c Ratio	0.64	0.23		0.50	0.22			0.02			0.77	0.87
Control Delay	38.6	13.0		49.4	0.3			49.0			60.1	31.6
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	0.5
Total Delay	38.6	13.0		49.4	0.3			49.0			60.1	32.0
LOS	D	B		D	A			D			E	C
Approach Delay	31.8		20.5		49.0		40.3					
Approach LOS	C		C		D		D					
Queue Length 50th (m)	75.2	20.2		53.6	0.0			0.7			51.5	77.3
Queue Length 95th (m)	118.3	69.5		#84.0	0.0			3.6			m69.4	m91.3
Internal Link Dist (m)	79.9		173.8		12.4		145.6					
Turn Bay Length (m)	45.0				45.0							
Base Capacity (vph)	1281	1142		454	1483			242			378	731
Starvation Cap Reductn	0	0		0	0			0			0	19
Spillback Cap Reductn	0	0		0	0			0			0	0
Storage Cap Reductn	0	0		0	0			0			0	0
Reduced v/c Ratio	0.58	0.23		0.50	0.22			0.01			0.64	0.82

Intersection Summary
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated

Lane Group	Ø4	Ø9	Ø12
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Satd. Flow (RTOR)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	4	9	12
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	10.0	1.0	1.0
Minimum Split (s)	15.5	5.0	20.0
Total Split (s)	24.8	5.0	20.0
Total Split (%)	19%	4%	15%
Yellow Time (s)	3.3	2.0	2.0
All-Red Time (s)	2.2	0.0	0.0
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag		Lag	
Lead-Lag Optimize?		Yes	
Recall Mode	None	None	None
Act Effct Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
LOS			
Approach Delay			
Approach LOS			
Queue Length 50th (m)			
Queue Length 95th (m)			
Internal Link Dist (m)			
Turn Bay Length (m)			
Base Capacity (vph)			
Starvation Cap Reductn			
Spillback Cap Reductn			
Storage Cap Reductn			
Reduced v/c Ratio			
Intersection Summary			

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 32.2

Intersection LOS: C

Intersection Capacity Utilization 83.0%

ICU Level of Service E

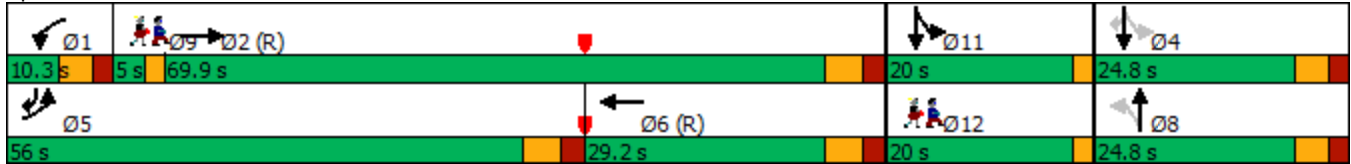
Analysis Period (min) 15

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.

Splits and Phases: 30: Prince of Wales & Preston



Lanes, Volumes, Timings
31: Rochester & 417 WB on/Raymond

2028 AM Demand Rationalized Main Hospital SPA
03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	200	131	102	163	320	0	0	142	233
Future Volume (vph)	0	0	0	200	131	102	163	320	0	0	142	233
Satd. Flow (prot)	0	0	0	1695	1621	0	1695	1784	0	0	1784	1517
Flt Permitted				0.950			0.533					
Satd. Flow (perm)	0	0	0	1678	1621	0	930	1784	0	0	1784	1436
Satd. Flow (RTOR)					67							233
Lane Group Flow (vph)	0	0	0	200	233	0	163	320	0	0	142	233
Turn Type				Perm	NA		pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8			2					6
Detector Phase				8	8		5	2			6	6
Switch Phase												
Minimum Initial (s)				10.0	10.0		5.0	10.0			10.0	10.0
Minimum Split (s)				23.7	23.7		10.9	27.3			24.9	24.9
Total Split (s)				24.0	24.0		11.0	36.0			25.0	25.0
Total Split (%)				40.0%	40.0%		18.3%	60.0%			41.7%	41.7%
Yellow Time (s)				3.3	3.3		3.3	3.3			3.3	3.3
All-Red Time (s)				2.4	2.4		2.6	2.6			2.6	2.6
Lost Time Adjust (s)				0.0	0.0		0.0	0.0			0.0	0.0
Total Lost Time (s)				5.7	5.7		5.9	5.9			5.9	5.9
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Recall Mode				None	None		None	C-Min			C-Min	C-Min
Act Effct Green (s)				13.0	13.0		35.4	35.4			24.7	24.7
Actuated g/C Ratio				0.22	0.22		0.59	0.59			0.41	0.41
v/c Ratio				0.55	0.58		0.26	0.30			0.19	0.32
Control Delay				26.2	20.1		5.9	5.9			14.9	4.0
Queue Delay				0.0	0.0		0.0	0.2			0.0	0.0
Total Delay				26.2	20.1		5.9	6.2			14.9	4.0
LOS				C	C		A	A			B	A
Approach Delay					22.9			6.1			8.2	
Approach LOS					C			A			A	
Queue Length 50th (m)				20.0	16.2		7.6	15.3			10.4	0.0
Queue Length 95th (m)				32.7	30.5		11.8	21.2			23.0	12.5
Internal Link Dist (m)		122.0			89.8			72.3			151.7	
Turn Bay Length (m)												35.0
Base Capacity (vph)				511	540		639	1051			736	729
Starvation Cap Reductn				0	0		0	257			0	0
Spillback Cap Reductn				0	0		0	0			0	0
Storage Cap Reductn				0	0		0	0			0	0
Reduced v/c Ratio				0.39	0.43		0.26	0.40			0.19	0.32

Intersection Summary

Cycle Length: 60
 Actuated Cycle Length: 60
 Offset: 53 (88%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated

Lanes, Volumes, Timings
31: Rochester & 417 WB on/Raymond

2028 AM Demand Rationalized Main Hospital SPA
03/20/2023

Maximum v/c Ratio: 0.58

Intersection Signal Delay: 12.3

Intersection LOS: B

Intersection Capacity Utilization 56.2%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 31: Rochester & 417 WB on/Raymond



Lanes, Volumes, Timings
32: Rochester & 417 EB off/Orangeville

2028 AM Demand Rationalized Main Hospital SPA

03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕						↕↕			↕↕	
Traffic Volume (vph)	165	222	304	0	0	0	0	314	47	19	316	0
Future Volume (vph)	165	222	304	0	0	0	0	314	47	19	316	0
Satd. Flow (prot)	0	3078	0	0	0	0	0	3307	0	0	3380	0
Flt Permitted		0.988									0.928	
Satd. Flow (perm)	0	3075	0	0	0	0	0	3307	0	0	3144	0
Satd. Flow (RTOR)		304						33				
Lane Group Flow (vph)	0	691	0	0	0	0	0	361	0	0	335	0
Turn Type	Perm	NA						NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4									6		
Detector Phase	4	4						2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0						10.0		10.0	10.0	
Minimum Split (s)	26.0	26.0						25.1		25.1	25.1	
Total Split (s)	30.0	30.0						30.0		30.0	30.0	
Total Split (%)	50.0%	50.0%						50.0%		50.0%	50.0%	
Yellow Time (s)	3.3	3.3						3.3		3.3	3.3	
All-Red Time (s)	2.3	2.3						2.1		2.1	2.1	
Lost Time Adjust (s)		0.0						0.0			0.0	
Total Lost Time (s)		5.6						5.4			5.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None						C-Min		C-Min	C-Min	
Act Effct Green (s)		14.7						34.3			34.3	
Actuated g/C Ratio		0.24						0.57			0.57	
v/c Ratio		0.70						0.19			0.19	
Control Delay		14.9						7.2			7.9	
Queue Delay		0.0						0.0			0.0	
Total Delay		14.9						7.2			7.9	
LOS		B						A			A	
Approach Delay		14.9						7.2			7.9	
Approach LOS		B						A			A	
Queue Length 50th (m)		19.3						15.7			13.7	
Queue Length 95th (m)		29.9						m19.2			21.6	
Internal Link Dist (m)		104.8			107.2			99.1			72.3	
Turn Bay Length (m)												
Base Capacity (vph)		1430						1904			1797	
Starvation Cap Reductn		0						0			0	
Spillback Cap Reductn		0						0			0	
Storage Cap Reductn		0						0			0	
Reduced v/c Ratio		0.48						0.19			0.19	

Intersection Summary

Cycle Length: 60
 Actuated Cycle Length: 60
 Offset: 52 (87%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 55
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.70

Intersection Signal Delay: 11.2

Intersection LOS: B

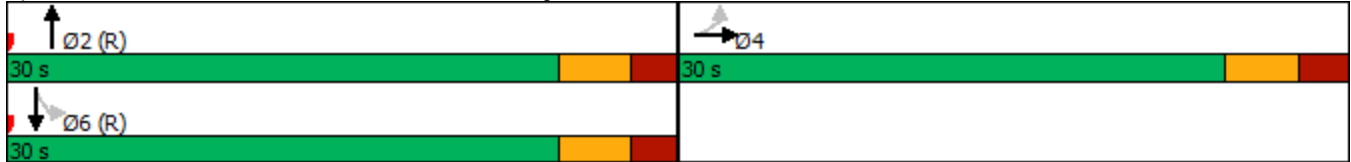
Intersection Capacity Utilization 59.6%

ICU Level of Service B

Analysis Period (min) 15

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

Splits and Phases: 32: Rochester & 417 EB off/Orangeville



Lanes, Volumes, Timings
33: Bronson & Catherine 417 WB on

2028 AM Demand Rationalized Main Hospital SPA

03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↖	↔		↗	↕			↕	↗
Traffic Volume (vph)	0	0	0	596	515	329	493	1020	0	0	416	112
Future Volume (vph)	0	0	0	596	515	329	493	1020	0	0	416	112
Satd. Flow (prot)	0	0	0	1458	4239	0	1695	3390	0	0	3239	0
Flt Permitted				0.950	0.991		0.230					
Satd. Flow (perm)	0	0	0	1458	4239	0	404	3390	0	0	3239	0
Satd. Flow (RTOR)					56						33	
Lane Group Flow (vph)	0	0	0	405	1035	0	493	1020	0	0	528	0
Turn Type				Perm	NA		pm+pt	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases				8			2					
Detector Phase				8	8		5	2			6	
Switch Phase												
Minimum Initial (s)				10.0	10.0		5.0	10.0			10.0	
Minimum Split (s)				25.9	25.9		11.0	25.1			25.1	
Total Split (s)				41.0	41.0		26.0	54.0			28.0	
Total Split (%)				43.2%	43.2%		27.4%	56.8%			29.5%	
Yellow Time (s)				3.3	3.3		3.3	3.3			3.3	
All-Red Time (s)				2.6	2.6		2.7	2.8			2.8	
Lost Time Adjust (s)				0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)				5.9	5.9		6.0	6.1			6.1	
Lead/Lag							Lead				Lag	
Lead-Lag Optimize?							Yes				Yes	
Recall Mode				None	None		None	C-Min			C-Min	
Act Effct Green (s)				31.7	31.7		51.4	51.3			21.0	
Actuated g/C Ratio				0.33	0.33		0.54	0.54			0.22	
v/c Ratio				0.83	0.71		0.90	0.56			0.71	
Control Delay				44.6	28.7		43.8	20.5			38.2	
Queue Delay				4.2	0.1		14.3	4.0			0.0	
Total Delay				48.9	28.9		58.0	24.5			38.3	
LOS				D	C		E	C			D	
Approach Delay					34.5			35.4			38.3	
Approach LOS					C			D			D	
Queue Length 50th (m)				75.0	57.4		77.6	80.1			45.2	
Queue Length 95th (m)				#119.5	72.1		#135.5	107.5			61.3	
Internal Link Dist (m)		151.3			165.9			71.3			230.9	
Turn Bay Length (m)												
Base Capacity (vph)				538	1602		549	1831			789	
Starvation Cap Reductn				0	0		55	709			0	
Spillback Cap Reductn				75	72		0	0			1	
Storage Cap Reductn				0	0		0	0			0	
Reduced v/c Ratio				0.87	0.68		1.00	0.91			0.67	

Intersection Summary

Cycle Length: 95
 Actuated Cycle Length: 95
 Offset: 35 (37%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 35.5

Intersection LOS: D

Intersection Capacity Utilization 112.0%

ICU Level of Service H

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 33: Bronson & Catherine 417 WB on



Lanes, Volumes, Timings
34: Bronson & 417 EB off

2028 AM Demand Rationalized Main Hospital SPA

03/20/2023



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	308	383	0	1284	1059	0
Future Volume (vph)	308	383	0	1284	1059	0
Satd. Flow (prot)	1695	1517	0	3390	3390	0
Flt Permitted	0.950					
Satd. Flow (perm)	1695	1474	0	3390	3390	0
Satd. Flow (RTOR)	115					
Lane Group Flow (vph)	308	383	0	1284	1059	0
Turn Type	Perm	Perm		NA	NA	
Protected Phases	2 6					
Permitted Phases	4	4				
Detector Phase	4	4		2	6	
Switch Phase						
Minimum Initial (s)	10.0	10.0		10.0	10.0	
Minimum Split (s)	25.1	25.1		34.3	34.3	
Total Split (s)	30.0	30.0		65.0	65.0	
Total Split (%)	31.6%	31.6%		68.4%	68.4%	
Yellow Time (s)	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.1	2.1		2.5	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.4	5.4		5.8	5.8	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None		C-Min	C-Min	
Act Effct Green (s)	23.5	23.5		60.3	60.3	
Actuated g/C Ratio	0.25	0.25		0.63	0.63	
v/c Ratio	0.74	0.85		0.60	0.49	
Control Delay	43.2	41.1		12.5	6.8	
Queue Delay	0.6	0.0		0.2	0.6	
Total Delay	43.8	41.1		12.8	7.5	
LOS	D	D		B	A	
Approach Delay	42.3			12.8	7.5	
Approach LOS	D			B	A	
Queue Length 50th (m)	51.0	47.1		69.0	2.8	
Queue Length 95th (m)	76.1	#82.8		96.5	114.6	
Internal Link Dist (m)	81.4			50.7	71.3	
Turn Bay Length (m)	60.0					
Base Capacity (vph)	467	489		2209	2209	
Starvation Cap Reductn	0	0		0	712	
Spillback Cap Reductn	28	0		308	0	
Storage Cap Reductn	0	0		0	0	
Reduced v/c Ratio	0.70	0.78		0.68	0.71	

Intersection Summary

Cycle Length: 95
 Actuated Cycle Length: 95
 Offset: 72 (76%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 17.7

Intersection LOS: B

Intersection Capacity Utilization 112.0%

ICU Level of Service H

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 34: Bronson & 417 EB off

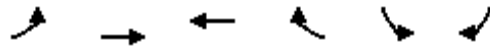


Lanes, Volumes, Timings 39:
Prince of Wales & Road B

2028 AM Demand Rationalized Main Hospital SPA

03/20/2023

(dual WBT)



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø9
Lane Configurations	↕	↗	↖↗		↘	↘	
Traffic Volume (vph)	55	918	612	55	41	26	
Future Volume (vph)	55	918	612	55	41	26	
Satd. Flow (prot)	1695	1784	3338	0	1695	1517	
Flt Permitted	0.364				0.950		
Satd. Flow (perm)	646	1784	3338	0	1634	1419	
Satd. Flow (RTOR)						26	
Lane Group Flow (vph)	55	918	667	0	41	26	
Turn Type	pm+pt	NA	NA		Perm	Perm	
Protected Phases	5	2	6				9
Permitted Phases	2				4	4	
Detector Phase	5	2	6		4	4	
Switch Phase							
Minimum Initial (s)	5.0	10.0	10.0		10.0	10.0	1.0
Minimum Split (s)	10.3	23.3	23.3		23.3	23.3	15.0
Total Split (s)	10.4	91.7	81.3		23.3	23.3	15.0
Total Split (%)	8.0%	70.5%	62.5%		17.9%	17.9%	12%
Yellow Time (s)	3.3	3.3	3.3		3.3	3.3	2.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.3	5.3	5.3		5.3	5.3	
Lead/Lag	Lead		Lag				
Lead-Lag Optimize?	Yes		Yes				
Recall Mode	None	C-Min	C-Min		None	None	None
Act Effct Green (s)	107.9	108.9	99.6		11.6	11.6	
Actuated g/C Ratio	0.83	0.84	0.77		0.09	0.09	
v/c Ratio	0.09	0.61	0.26		0.28	0.17	
Control Delay	4.3	8.7	6.1		59.3	20.3	
Queue Delay	0.0	0.0	0.0		0.0	0.0	
Total Delay	4.3	8.7	6.1		59.3	20.3	
LOS	A	A	A		E	C	
Approach Delay		8.5	6.1		44.2		
Approach LOS		A	A		D		
Queue Length 50th (m)	1.8	58.4	3.4		10.1	0.0	
Queue Length 95th (m)	9.1	208.6	69.4		20.3	8.5	
Internal Link Dist (m)		198.2	95.9		17.7		
Turn Bay Length (m)	45.0						
Base Capacity (vph)	585	1494	2567		226	218	
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	0.09	0.61	0.26		0.18	0.12	

Intersection Summary

Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.61

Intersection Signal Delay: 9.0

Intersection LOS: A

Intersection Capacity Utilization 70.1%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 39: Prince of Wales & Road B

Ø2 (R)	Ø9	Ø4
91.7 s	15 s	23.3 s
Ø5	Ø6 (R)	
10.4 s	81.3 s	

Lanes, Volumes, Timings
 Prince of Wales & Road B (single WBT)

2028 AM Demand Rationalized Main Hospital SPA

04/04/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø9
Lane Configurations	↶	↷	↶	↷	↶	↷	
Traffic Volume (vph)	55	918	612	55	41	26	
Future Volume (vph)	55	918	612	55	41	26	
Satd. Flow (prot)	1695	1784	1784	1517	1695	1517	
Flt Permitted	0.354				0.950		
Satd. Flow (perm)	632	1784	1784	1455	1634	1354	
Satd. Flow (RTOR)						26	
Lane Group Flow (vph)	55	918	612	55	41	26	
Turn Type	pm+pt	NA	NA	Perm	Perm	Perm	
Protected Phases	5	2	6				9
Permitted Phases	2			6	4	4	
Detector Phase	5	2	6	6	4	4	
Switch Phase							
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	10.0	1.0
Minimum Split (s)	10.3	23.3	23.3	23.3	23.3	23.3	15.0
Total Split (s)	10.4	91.7	81.3	81.3	23.3	23.3	15.0
Total Split (%)	8.0%	70.5%	62.5%	62.5%	17.9%	17.9%	12%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	2.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.3	5.3	5.3	5.3	5.3	5.3	
Lead/Lag	Lead		Lag	Lag			
Lead-Lag Optimize?	Yes		Yes	Yes			
Recall Mode	None	C-Min	C-Min	C-Min	None	None	None
Act Effct Green (s)	107.9	108.9	99.6	99.6	11.6	11.6	
Actuated g/C Ratio	0.83	0.84	0.77	0.77	0.09	0.09	
v/c Ratio	0.10	0.61	0.45	0.05	0.28	0.18	
Control Delay	4.3	8.7	12.8	9.4	59.3	20.6	
Queue Delay	0.0	0.0	0.4	0.0	0.0	0.0	
Total Delay	4.3	8.7	13.2	9.4	59.3	20.6	
LOS	A	A	B	A	E	C	
Approach Delay		8.5	12.9		44.3		
Approach LOS		A	B		D		
Queue Length 50th (m)	1.8	58.4	88.2	3.1	10.1	0.0	
Queue Length 95th (m)	9.1	208.6	m123.2	m11.6	20.3	8.5	
Internal Link Dist (m)		198.2	95.9		17.7		
Turn Bay Length (m)	45.0			35.0			
Base Capacity (vph)	574	1494	1371	1119	226	209	
Starvation Cap Reductn	0	0	316	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	0.10	0.61	0.58	0.05	0.18	0.12	

Intersection Summary

Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 95 (73%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated

Lanes, Volumes, Timings
 Prince of Wales & Road B (single WBT)

2028 AM Demand Rationalized Main Hospital SPA

04/04/2023

Maximum v/c Ratio: 0.61

Intersection Signal Delay: 11.6

Intersection LOS: B

Intersection Capacity Utilization 70.1%

ICU Level of Service C

Analysis Period (min) 15

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

Splits and Phases: 39: Prince of Wales & Road B

 Ø2 (R)	 Ø9	 Ø4
91.7 s	15 s	23.3 s
 Ø5	 Ø6 (R)	
10.4 s	81.3 s	

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	24	1135	580	5	14	20
Future Vol, veh/h	24	1135	580	5	14	20
Conflicting Peds, #/hr	40	0	0	40	3	9
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	25	-	-	20	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	24	1135	580	5	14	20

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	625	0	-	0	1239 339
Stage 1	-	-	-	-	620 -
Stage 2	-	-	-	-	619 -
Critical Hdwy	4.14	-	-	-	6.84 6.94
Critical Hdwy Stg 1	-	-	-	-	5.84 -
Critical Hdwy Stg 2	-	-	-	-	5.84 -
Follow-up Hdwy	2.22	-	-	-	3.52 3.32
Pot Cap-1 Maneuver	952	-	-	-	168 657
Stage 1	-	-	-	-	499 -
Stage 2	-	-	-	-	499 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	920	-	-	-	153 630
Mov Cap-2 Maneuver	-	-	-	-	153 -
Stage 1	-	-	-	-	470 -
Stage 2	-	-	-	-	482 -

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	19.9
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	920	-	-	-	276
HCM Lane V/C Ratio	0.026	-	-	-	0.123
HCM Control Delay (s)	9	-	-	-	19.9
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4

Intersection						
Int Delay, s/veh	1.1					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑	↑		↑
Traffic Vol, veh/h	0	1205	615	260	0	151
Future Vol, veh/h	0	1205	615	260	0	151
Conflicting Peds, #/hr	36	0	0	36	1	2
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	30	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1205	615	260	0	151

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	-
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	-
Pot Cap-1 Maneuver	0	-	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	16.9
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	451
HCM Lane V/C Ratio	-	-	-	0.335
HCM Control Delay (s)	-	-	-	16.9
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q(veh)	-	-	-	1.5

Intersection												
Int Delay, s/veh	0											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↻			↻			↻				↻
Traffic Vol, veh/h	0	946	4	3	680	76	0	0	1	0	0	5
Future Vol, veh/h	0	946	4	3	680	76	0	0	1	0	0	5
Conflicting Peds, #/hr	2	0	7	7	0	2	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	946	4	3	680	76	0	0	1	0	0	5

Major/Minor	Major1		Major2		Minor1		Minor2					
Conflicting Flow All	-	0	0	957	0	0	1682	1719	955	-	-	720
Stage 1	-	-	-	-	-	-	955	955	-	-	-	-
Stage 2	-	-	-	-	-	-	727	764	-	-	-	-
Critical Hdwy	-	-	-	4.12	-	-	7.12	6.52	6.22	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	-	-	-
Follow-up Hdwy	-	-	-	2.218	-	-	3.518	4.018	3.318	-	-	3.318
Pot Cap-1 Maneuver	0	-	-	719	-	-	75	90	313	0	0	428
Stage 1	0	-	-	-	-	-	310	337	-	0	0	-
Stage 2	0	-	-	-	-	-	415	413	-	0	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	715	-	-	73	89	311	-	-	427
Mov Cap-2 Maneuver	-	-	-	-	-	-	73	89	-	-	-	-
Stage 1	-	-	-	-	-	-	310	335	-	-	-	-
Stage 2	-	-	-	-	-	-	407	409	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	0		0		16.6		13.5	
HCM LOS					C		B	

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	311	-	-	715	-	-	427
HCM Lane V/C Ratio	0.003	-	-	0.004	-	-	0.012
HCM Control Delay (s)	16.6	-	-	10.1	0	-	13.5
HCM Lane LOS	C	-	-	B	A	-	B
HCM 95th %tile Q(veh)	0	-	-	0	-	-	0

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗	↘	↑	↑	↗
Traffic Vol, veh/h	0	35	13	973	564	75
Future Vol, veh/h	0	35	13	973	564	75
Conflicting Peds, #/hr	0	0	10	0	0	10
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	50	-	-	50
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	12	10	8	2	2	4
Mvmt Flow	0	35	13	973	564	75

Major/Minor	Minor2	Major1	Major2		
Conflicting Flow All	-	574	649	0	0
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	6.3	4.18	-	-
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	3.39	2.272	-	-
Pot Cap-1 Maneuver	0	503	909	-	-
Stage 1	0	-	-	-	-
Stage 2	0	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	-	499	901	-	-
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.8	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	901	-	499	-	-
HCM Lane V/C Ratio	0.014	-	0.07	-	-
HCM Control Delay (s)	9.1	-	12.8	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection												
Int Delay, s/veh	4.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔↔			↔			↔	
Traffic Vol, veh/h	0	31	120	180	174	5	18	0	99	0	0	5
Future Vol, veh/h	0	31	120	180	174	5	18	0	99	0	0	5
Conflicting Peds, #/hr	10	0	10	10	0	10	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	31	120	180	174	5	18	0	99	0	0	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	189	0	0	161	0	0	548	650	86	563	708	100
Stage 1	-	-	-	-	-	-	101	101	-	547	547	-
Stage 2	-	-	-	-	-	-	447	549	-	16	161	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1382	-	-	1416	-	-	419	387	956	409	358	936
Stage 1	-	-	-	-	-	-	894	811	-	489	516	-
Stage 2	-	-	-	-	-	-	560	515	-	1001	764	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1370	-	-	1404	-	-	368	327	948	324	302	928
Mov Cap-2 Maneuver	-	-	-	-	-	-	368	327	-	324	302	-
Stage 1	-	-	-	-	-	-	887	805	-	485	439	-
Stage 2	-	-	-	-	-	-	478	438	-	896	758	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			4.1			10.6			8.9		
HCM LOS							B			A		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	763	1370	-	-	1404	-	-	928
HCM Lane V/C Ratio	0.153	-	-	-	0.128	-	-	0.005
HCM Control Delay (s)	10.6	0	-	-	7.9	0.2	-	8.9
HCM Lane LOS	B	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.5	0	-	-	0.4	-	-	0

Intersection						
Int Delay, s/veh	4.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘↗		↑	↑		↖↗
Traffic Vol, veh/h	42	24	54	54	96	23
Future Vol, veh/h	42	24	54	54	96	23
Conflicting Peds, #/hr	0	0	0	15	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	0	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	42	24	54	54	96	23

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	273	69	0	0	123
Stage 1	69	-	-	-	-
Stage 2	204	-	-	-	-
Critical Hdwy	6.63	6.23	-	-	4.13
Critical Hdwy Stg 1	5.43	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-
Follow-up Hdwy	3.519	3.319	-	-	2.219
Pot Cap-1 Maneuver	705	994	-	-	1463
Stage 1	953	-	-	-	-
Stage 2	811	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	649	981	-	-	1444
Mov Cap-2 Maneuver	649	-	-	-	-
Stage 1	941	-	-	-	-
Stage 2	757	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.3	0	6.2
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	740	1444
HCM Lane V/C Ratio	-	-	0.089	0.066
HCM Control Delay (s)	-	-	10.3	7.7
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.3	0.2

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Traffic Vol, veh/h	0	2	2	108	66	0
Future Vol, veh/h	0	2	2	108	66	0
Conflicting Peds, #/hr	0	0	5	0	0	5
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	100	100	100	2	2	100
Mvmt Flow	0	2	2	108	66	0

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	129	38	71	0	0
Stage 1	71	-	-	-	-
Stage 2	58	-	-	-	-
Critical Hdwy	8.8	8.9	6.1	-	-
Critical Hdwy Stg 1	7.8	-	-	-	-
Critical Hdwy Stg 2	7.8	-	-	-	-
Follow-up Hdwy	4.5	4.3	3.2	-	-
Pot Cap-1 Maneuver	632	780	1029	-	-
Stage 1	717	-	-	-	-
Stage 2	731	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	626	777	1025	-	-
Mov Cap-2 Maneuver	626	-	-	-	-
Stage 1	713	-	-	-	-
Stage 2	728	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.6	0.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1025	-	777	-	-
HCM Lane V/C Ratio	0.002	-	0.003	-	-
HCM Control Delay (s)	8.5	0	9.6	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection						
Int Delay, s/veh	5.4					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	18	4	0	15	12
Future Vol, veh/h	0	18	4	0	15	12
Conflicting Peds, #/hr	0	10	10	0	10	10
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	18	4	0	15	12

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	28	0	37 29
Stage 1	-	-	-	-	19 -
Stage 2	-	-	-	-	18 -
Critical Hdwy	-	-	4.12	-	6.42 6.22
Critical Hdwy Stg 1	-	-	-	-	5.42 -
Critical Hdwy Stg 2	-	-	-	-	5.42 -
Follow-up Hdwy	-	-	2.218	-	3.518 3.318
Pot Cap-1 Maneuver	-	-	1585	-	975 1046
Stage 1	-	-	-	-	1004 -
Stage 2	-	-	-	-	1005 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1572	-	956 1028
Mov Cap-2 Maneuver	-	-	-	-	956 -
Stage 1	-	-	-	-	996 -
Stage 2	-	-	-	-	994 -

Approach	EB	WB	NB
HCM Control Delay, s	0	7.3	8.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	987	-	-	1572	-
HCM Lane V/C Ratio	0.027	-	-	0.003	-
HCM Control Delay (s)	8.8	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Intersection Delay, s/veh	8.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	42	107	16	2	77	80	3	5	2	66	65	20
Future Vol, veh/h	42	107	16	2	77	80	3	5	2	66	65	20
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	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	42	107	16	2	77	80	3	5	2	66	65	20
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.7	8.2	7.9	8.8
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	30%	25%	1%	44%
Vol Thru, %	50%	65%	48%	43%
Vol Right, %	20%	10%	50%	13%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	10	165	159	151
LT Vol	3	42	2	66
Through Vol	5	107	77	65
RT Vol	2	16	80	20
Lane Flow Rate	10	165	159	151
Geometry Grp	1	1	1	1
Degree of Util (X)	0.013	0.206	0.186	0.196
Departure Headway (Hd)	4.785	4.486	4.211	4.672
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	747	802	854	769
Service Time	2.82	2.507	2.232	2.698
HCM Lane V/C Ratio	0.013	0.206	0.186	0.196
HCM Control Delay	7.9	8.7	8.2	8.8
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0	0.8	0.7	0.7

Intersection	
Intersection Delay, s/veh	7.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	32	0	30	0	0	15	30	32	0	18	72	73
Future Vol, veh/h	32	0	30	0	0	15	30	32	0	18	72	73
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	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	32	0	30	0	0	15	30	32	0	18	72	73
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.6	6.9	7.7	7.8
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	48%	52%	0%	11%
Vol Thru, %	52%	0%	0%	44%
Vol Right, %	0%	48%	100%	45%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	62	62	15	163
LT Vol	30	32	0	18
Through Vol	32	0	0	72
RT Vol	0	30	15	73
Lane Flow Rate	62	62	15	163
Geometry Grp	1	1	1	1
Degree of Util (X)	0.074	0.071	0.016	0.175
Departure Headway (Hd)	4.289	4.145	3.878	3.867
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	828	850	928	921
Service Time	2.353	2.241	1.878	1.921
HCM Lane V/C Ratio	0.075	0.073	0.016	0.177
HCM Control Delay	7.7	7.6	6.9	7.8
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.2	0.2	0	0.6

Intersection	
Intersection Delay, s/veh	8.2
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↙	↑	↘	
Traffic Vol, veh/h	96	17	102	90	23	55
Future Vol, veh/h	96	17	102	90	23	55
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	96	17	102	90	23	55
Number of Lanes	2	0	1	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	2
HCM Control Delay	7.9	8.6	7.7
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2
Vol Left, %	29%	0%	0%	100%	0%
Vol Thru, %	0%	100%	65%	0%	100%
Vol Right, %	71%	0%	35%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	78	64	49	102	90
LT Vol	23	0	0	102	0
Through Vol	0	64	32	0	90
RT Vol	55	0	17	0	0
Lane Flow Rate	78	64	49	102	90
Geometry Grp	2	7	7	7	7
Degree of Util (X)	0.093	0.087	0.063	0.148	0.118
Departure Headway (Hd)	4.291	4.876	4.632	5.232	4.731
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	839	738	776	679	750
Service Time	2.296	2.587	2.343	3.013	2.512
HCM Lane V/C Ratio	0.093	0.087	0.063	0.15	0.12
HCM Control Delay	7.7	8.1	7.7	8.9	8.2
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.3	0.3	0.2	0.5	0.4

Lanes, Volumes, Timings
10: Carling & Parkdale

2028 PM Demand Rationalized Main Hospital SPA

03/20/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø10
Lane Configurations							
Traffic Volume (vph)	97	647	1374	98	30	196	
Future Volume (vph)	97	647	1374	98	30	196	
Satd. Flow (prot)	1695	3390	3390	1517	1524	0	
Flt Permitted	0.950				0.993		
Satd. Flow (perm)	1656	3390	3390	1239	1522	0	
Satd. Flow (RTOR)				88	188		
Lane Group Flow (vph)	97	647	1374	98	226	0	
Turn Type	Prot	NA	NA	Perm	Perm		
Protected Phases	5	2	6				10
Permitted Phases				6	4		
Detector Phase	5	2	6	6	4		
Switch Phase							
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0		1.0
Minimum Split (s)	11.1	26.7	26.7	26.7	37.2		5.0
Total Split (s)	16.0	92.8	76.8	76.8	37.2		5.0
Total Split (%)	11.9%	68.7%	56.9%	56.9%	27.6%		4%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.0		2.0
All-Red Time (s)	2.4	1.9	1.9	1.9	3.2		0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	6.1	5.6	5.6	5.6	6.2		
Lead/Lag	Lead		Lag	Lag			
Lead-Lag Optimize?	Yes		Yes	Yes			
Recall Mode	None	C-Min	C-Min	C-Min	None		Min
Act Effct Green (s)	13.7	103.2	83.3	83.3	12.5		
Actuated g/C Ratio	0.10	0.76	0.62	0.62	0.09		
v/c Ratio	0.56	0.25	0.66	0.12	0.73		
Control Delay	69.8	5.2	19.7	3.8	26.7		
Queue Delay	0.0	0.0	1.6	0.0	0.0		
Total Delay	69.8	5.2	21.2	3.8	26.7		
LOS	E	A	C	A	C		
Approach Delay		13.6	20.1		26.7		
Approach LOS		B	C		C		
Queue Length 50th (m)	25.0	20.7	111.3	0.9	9.8		
Queue Length 95th (m)	42.3	36.4	173.6	9.7	35.3		
Internal Link Dist (m)		297.5	170.5		278.4		
Turn Bay Length (m)	155.0			80.0			
Base Capacity (vph)	174	2591	2092	798	494		
Starvation Cap Reductn	0	0	499	0	0		
Spillback Cap Reductn	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0		
Reduced v/c Ratio	0.56	0.25	0.86	0.12	0.46		

Intersection Summary

Cycle Length: 135
 Actuated Cycle Length: 135
 Offset: 66 (49%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 100
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 18.7

Intersection LOS: B

Intersection Capacity Utilization 80.2%

ICU Level of Service D

Analysis Period (min) 15

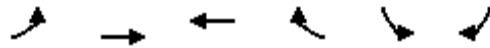
Splits and Phases: 10: Carling & Parkdale



Lanes, Volumes, Timings
11: Carling & Civic

2028 PM Demand Rationalized Main Hospital SPA

03/20/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	21	728	1600	50	20	19
Future Volume (vph)	21	728	1600	50	20	19
Satd. Flow (prot)	1695	3390	3390	1517	1590	0
Flt Permitted	0.950				0.975	
Satd. Flow (perm)	1686	3390	3390	1394	1578	0
Satd. Flow (RTOR)				50	19	
Lane Group Flow (vph)	21	728	1600	50	39	0
Turn Type	Prot	NA	NA	Perm	Perm	
Protected Phases	5	2	6			
Permitted Phases				6	4	
Detector Phase	5	2	6	6	4	
Switch Phase						
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	11.4	31.3	31.3	31.3	23.3	
Total Split (s)	12.5	106.7	94.2	94.2	23.3	
Total Split (%)	9.6%	82.1%	72.5%	72.5%	17.9%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.3	
All-Red Time (s)	2.7	2.7	2.7	2.7	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.4	6.4	6.4	6.4	5.3	
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Min	C-Min	C-Min	None	
Act Effct Green (s)	7.2	111.0	102.3	102.3	11.6	
Actuated g/C Ratio	0.06	0.85	0.79	0.79	0.09	
v/c Ratio	0.23	0.25	0.60	0.05	0.25	
Control Delay	63.9	2.8	7.3	1.5	36.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	63.9	2.8	7.3	1.5	36.6	
LOS	E	A	A	A	D	
Approach Delay		4.5	7.2		36.6	
Approach LOS		A	A		D	
Queue Length 50th (m)	5.3	16.2	71.9	0.0	4.9	
Queue Length 95th (m)	13.8	30.6	82.2	1.9	15.2	
Internal Link Dist (m)		170.5	180.8		39.9	
Turn Bay Length (m)	90.0			140.0		
Base Capacity (vph)	95	2895	2685	1114	234	
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	0.22	0.25	0.60	0.04	0.17	

Intersection Summary

Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.60

Intersection Signal Delay: 6.8

Intersection LOS: A

Intersection Capacity Utilization 67.4%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 11: Carling & Civic



Lanes, Volumes, Timings
13: Maple/Old Irvine & Carling

2028 PM Demand Rationalized Main Hospital SPA

03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↑↑	↗	↘	↑↑	↗		↕			↕	
Traffic Volume (vph)	38	652	52	53	1140	7	123	10	44	10	9	11
Future Volume (vph)	38	652	52	53	1140	7	123	10	44	10	9	11
Satd. Flow (prot)	1695	3390	1517	1695	3390	1517	0	1649	0	0	1652	0
Flt Permitted	0.214			0.390				0.774			0.891	
Satd. Flow (perm)	372	3390	1293	665	3390	1178	0	1309	0	0	1486	0
Satd. Flow (RTOR)			37			37		13			11	
Lane Group Flow (vph)	38	652	52	53	1140	7	0	177	0	0	30	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8				4
Permitted Phases	2		2	6		6	8			4		
Detector Phase	2	2	2	6	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	35.0	35.0	35.0	34.3	34.3	34.3	42.4	42.4		42.4	42.4	
Total Split (s)	87.0	87.0	87.0	87.0	87.0	87.0	43.0	43.0		43.0	43.0	
Total Split (%)	66.9%	66.9%	66.9%	66.9%	66.9%	66.9%	33.1%	33.1%		33.1%	33.1%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	4.4	4.4		4.4	4.4	
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	5.7	5.7	5.7	5.7		7.4			7.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Min	C-Min	C-Min	C-Min	C-Min	C-Min	None	None		None	None	
Act Effct Green (s)	92.4	92.4	92.4	92.4	92.4	92.4		24.5			24.5	
Actuated g/C Ratio	0.71	0.71	0.71	0.71	0.71	0.71		0.19			0.19	
v/c Ratio	0.14	0.27	0.06	0.11	0.47	0.01		0.69			0.10	
Control Delay	8.3	6.6	2.9	8.8	10.2	0.0		57.7			28.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0			0.0	
Total Delay	8.3	6.6	2.9	8.8	10.2	0.0		57.7			28.0	
LOS	A	A	A	A	B	A		E			C	
Approach Delay		6.4			10.1			57.7			28.0	
Approach LOS		A			B			E			C	
Queue Length 50th (m)	1.6	15.1	0.4	3.5	55.1	0.0		40.7			4.2	
Queue Length 95th (m)	5.6	28.7	3.3	11.0	97.3	0.0		58.6			11.3	
Internal Link Dist (m)		236.1			191.5			174.3			220.8	
Turn Bay Length (m)	20.0		15.0	45.0		25.0						
Base Capacity (vph)	264	2408	929	472	2408	847		367			414	
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	0.14	0.27	0.06	0.11	0.47	0.01		0.48			0.07	

Intersection Summary

Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 28 (22%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.69

Intersection Signal Delay: 13.0

Intersection LOS: B

Intersection Capacity Utilization 81.5%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 13: Maple/Old Irvine & Carling



Lanes, Volumes, Timings
15: Carling & Sherwood

2028 PM Demand Rationalized Main Hospital SPA

03/20/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↗	↗↗	↗↗	↗	↘	↘
Traffic Volume (vph)	65	662	1258	183	161	7
Future Volume (vph)	65	662	1258	183	161	7
Satd. Flow (prot)	1695	3390	3390	1517	1695	1517
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1615	3390	3390	1072	1669	1473
Satd. Flow (RTOR)				183		5
Lane Group Flow (vph)	65	662	1258	183	161	7
Turn Type	Prot	NA	NA	Perm	Perm	Perm
Protected Phases	5	2	6			
Permitted Phases				6	4	4
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	10.3	25.1	25.1	25.1	25.1	25.1
Total Split (s)	15.0	89.0	74.0	74.0	41.0	41.0
Total Split (%)	11.5%	68.5%	56.9%	56.9%	31.5%	31.5%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.3	5.3	5.3	5.3	5.3	5.3
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Min	C-Min	C-Min	None	None
Act Effct Green (s)	10.3	101.5	88.2	88.2	17.9	17.9
Actuated g/C Ratio	0.08	0.78	0.68	0.68	0.14	0.14
v/c Ratio	0.49	0.25	0.55	0.23	0.70	0.03
Control Delay	69.3	4.5	3.2	0.6	69.1	30.3
Queue Delay	0.0	0.0	0.3	0.0	0.0	0.0
Total Delay	69.3	4.5	3.5	0.6	69.1	30.3
LOS	E	A	A	A	E	C
Approach Delay		10.3	3.1		67.5	
Approach LOS		B	A		E	
Queue Length 50th (m)	16.3	20.3	13.1	0.0	39.9	0.5
Queue Length 95th (m)	30.5	33.1	17.2	m0.0	60.0	4.7
Internal Link Dist (m)		118.3	141.7		152.1	
Turn Bay Length (m)	30.0			90.0		15.0
Base Capacity (vph)	146	2646	2300	786	458	408
Starvation Cap Reductn	0	0	395	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	0.45	0.25	0.66	0.23	0.35	0.02

Intersection Summary

Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 24 (18%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 70
 Control Type: Actuated-Coordinated

Lanes, Volumes, Timings
 15: Carling & Sherwood

Maximum v/c Ratio: 0.70

Intersection Signal Delay: 10.0

Intersection LOS: A

Intersection Capacity Utilization 64.8%

ICU Level of Service C

Analysis Period (min) 15

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

Splits and Phases: 15: Carling & Sherwood



Lanes, Volumes, Timings
16: Road A/Champagne & Carling

2028 PM Demand Rationalized Main Hospital SPA

03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Traffic Volume (vph)	88	641	44	46	1101	150	97	0	110	183	0	114
Future Volume (vph)	88	641	44	46	1101	150	97	0	110	183	0	114
Satd. Flow (prot)	1695	3390	1517	1695	3390	1517	1695	1402	0	1695	1417	0
Flt Permitted	0.950			0.950			0.498			0.686		
Satd. Flow (perm)	1588	3390	1357	1641	3390	1021	854	1402	0	1156	1417	0
Satd. Flow (RTOR)						147					294	
Lane Group Flow (vph)	88	641	44	46	1101	150	97	110	0	183	114	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA		Perm	NA	
Protected Phases	5	2		1	6		3	8				4
Permitted Phases			2			6	8			4		
Detector Phase	5	2	2	1	6	6	3	8		4		4
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	5.0	10.0		10.0	10.0	
Minimum Split (s)	15.3	26.3	26.3	15.3	26.3	26.3	10.3	23.3		37.9	37.9	
Total Split (s)	15.3	50.8	50.8	15.3	55.8	55.8	11.0	53.9		37.9	37.9	
Total Split (%)	11.8%	39.1%	39.1%	11.8%	42.9%	42.9%	8.5%	41.5%		29.2%	29.2%	
Yellow Time (s)	3.3	3.7	3.7	3.3	3.7	3.7	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.0	1.6	1.6	2.0	1.6	1.6	2.0	2.0		2.6	2.6	
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)	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3		5.9	5.9	
Lead/Lag	Lead			Lead			Lead					
Lead-Lag Optimize?	Yes			Yes			Yes					
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None		None	None	
Act Effct Green (s)	11.5	65.4	65.4	10.1	61.9	61.9	39.7	39.7		25.0	25.0	
Actuated g/C Ratio	0.09	0.50	0.50	0.08	0.48	0.48	0.31	0.31		0.19	0.19	
v/c Ratio	0.59	0.38	0.06	0.35	0.68	0.27	0.31	0.26		0.82	0.22	
Control Delay	75.8	21.8	19.8	64.9	30.9	5.4	34.2	33.9		77.9	1.0	
Queue Delay	0.0	0.0	0.0	0.0	18.6	0.0	0.0	0.0		0.0	0.0	
Total Delay	75.8	21.8	19.8	64.9	49.4	5.4	34.2	33.9		77.9	1.0	
LOS	E	C	B	E	D	A	C	C		E	A	
Approach Delay		27.8			44.9			34.1			48.4	
Approach LOS		C			D			C			D	
Queue Length 50th (m)	20.9	62.9	6.0	11.4	117.1	0.4	17.8	20.6		45.1	0.0	
Queue Length 95th (m)	#46.9	92.5	14.6	24.2	161.4	14.3	28.9	33.1		68.4	0.0	
Internal Link Dist (m)		141.7			98.6			63.9			477.2	
Turn Bay Length (m)	55.0		75.0	61.0		35.0				30.0		
Base Capacity (vph)	149	1704	682	131	1613	563	311	524		284	570	
Starvation Cap Reductn	0	0	0	0	530	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	0	19	0	0	0		0	1	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.59	0.38	0.06	0.35	1.02	0.27	0.31	0.21		0.64	0.20	

Intersection Summary

Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 115
 Control Type: Actuated-Coordinated

Lane Group	Ø9	Ø10	Ø11
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Satd. Flow (RTOR)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	9	10	11
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	1.0	1.0	1.0
Minimum Split (s)	10.0	5.0	5.0
Total Split (s)	10.0	5.0	5.0
Total Split (%)	8%	4%	4%
Yellow Time (s)	2.0	2.0	2.0
All-Red Time (s)	0.0	0.0	0.0
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes
Recall Mode	None	None	None
Act Effct Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
LOS			
Approach Delay			
Approach LOS			
Queue Length 50th (m)			
Queue Length 95th (m)			
Internal Link Dist (m)			
Turn Bay Length (m)			
Base Capacity (vph)			
Starvation Cap Reductn			
Spillback Cap Reductn			
Storage Cap Reductn			
Reduced v/c Ratio			
Intersection Summary			

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 39.3

Intersection LOS: D

Intersection Capacity Utilization 78.8%

ICU Level of Service D

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.













Splits and Phases: 16: Road A/Champagne & Carling

Ø1 15.3 s	Ø9 10 s	Ø2 (R) 50.8 s	Ø3 11 s	Ø10 5 s	Ø4 37.9 s
Ø5 15.3 s	Ø10 5 s	Ø6 (R) 55.8 s	Ø8 53.9 s		

Lanes, Volumes, Timings
17: Carling & Trillium MUP

2028 PM Demand Rationalized Main Hospital SPA

03/20/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑							
Traffic Volume (vph)	0	939	0	0	1434	0	0	0	0	0	0	0
Future Volume (vph)	0	939	0	0	1434	0	0	0	0	0	0	0
Satd. Flow (prot)	0	3390	0	0	3390	0	0	0	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	3390	0	0	3390	0	0	0	0	0	0	0
Satd. Flow (RTOR)												
Lane Group Flow (vph)	0	939	0	0	1434	0	0	0	0	0	0	0
Turn Type		NA			NA							
Protected Phases		2			6							
Permitted Phases												
Detector Phase		2			6							
Switch Phase												
Minimum Initial (s)		10.0			10.0							
Minimum Split (s)		31.1			31.1							
Total Split (s)		35.0			35.0							
Total Split (%)		50.0%			50.0%							
Yellow Time (s)		3.7			3.7							
All-Red Time (s)		1.4			1.4							
Lost Time Adjust (s)		0.0			0.0							
Total Lost Time (s)		5.1			5.1							
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		C-Min			C-Min							
Act Effct Green (s)		62.0			62.0							
Actuated g/C Ratio		0.89			0.89							
v/c Ratio		0.31			0.48							
Control Delay		4.9			6.6							
Queue Delay		0.0			0.0							
Total Delay		4.9			6.6							
LOS		A			A							
Approach Delay		4.9			6.6							
Approach LOS		A			A							
Queue Length 50th (m)		0.0			7.5							
Queue Length 95th (m)		67.7			m#114.7							
Internal Link Dist (m)		98.6			92.8			53.0			60.9	
Turn Bay Length (m)												
Base Capacity (vph)		3002			3002							
Starvation Cap Reductn		45			29							
Spillback Cap Reductn		68			0							
Storage Cap Reductn		0			0							
Reduced v/c Ratio		0.32			0.48							
Intersection Summary												
Cycle Length: 70												
Actuated Cycle Length: 70												
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green												
Natural Cycle: 75												
Control Type: Actuated-Coordinated												

Lane Group	Ø4	Ø8
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	4	8
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	1.0
Minimum Split (s)	35.6	35.6
Total Split (s)	35.0	35.0
Total Split (%)	50%	50%
Yellow Time (s)	3.0	3.0
All-Red Time (s)	3.6	3.6
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag		
Lead-Lag Optimize?		
Recall Mode	None	None
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

Maximum v/c Ratio: 0.48

Intersection Signal Delay: 6.0

Intersection LOS: A

Intersection Capacity Utilization 46.1%

ICU Level of Service A

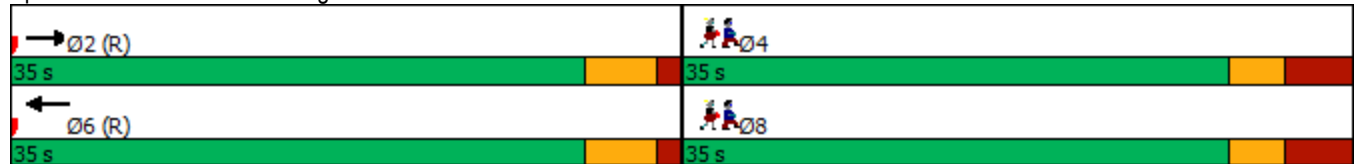
Analysis Period (min) 15

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.

Splits and Phases: 17: Carling & Trillium MUP



Lanes, Volumes, Timings
18: Preston & Carling

2028 PM Demand Rationalized Main Hospital SPA

03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Traffic Volume (vph)	123	536	297	326	1010	54	283	359	179	95	287	95
Future Volume (vph)	123	536	297	326	1010	54	283	359	179	95	287	95
Satd. Flow (prot)	1695	3390	1517	1695	3390	1517	1695	3099	0	1695	1662	0
Flt Permitted	0.950			0.950			0.128			0.452		
Satd. Flow (perm)	1631	3390	1517	1633	3390	1242	228	3099	0	769	1662	0
Satd. Flow (RTOR)						179					11	
Lane Group Flow (vph)	123	536	297	326	1010	54	283	538	0	95	382	0
Turn Type	Prot	NA	custom	Prot	NA	Perm	pm+pt	NA		Perm	NA	
Protected Phases	5	9 2	9 3	1	6		3	8				4
Permitted Phases						6	8			4		
Detector Phase	5	9 2	9 3	1	6	6	3	8		4		4
Switch Phase												
Minimum Initial (s)	5.0			5.0	10.0	10.0	5.0	10.0		10.0	10.0	
Minimum Split (s)	11.2			11.2	25.0	25.0	11.9	38.9		38.9	38.9	
Total Split (s)	20.2			36.0	46.1	46.1	24.8	61.7		38.9	38.9	
Total Split (%)	14.4%			25.7%	32.9%	32.9%	17.7%	44.1%		27.8%	27.8%	
Yellow Time (s)	3.7			3.7	3.7	3.7	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.5			2.5	2.3	2.3	3.6	3.6		3.6	3.6	
Lost Time Adjust (s)	0.0			0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.2			6.2	6.0	6.0	6.9	6.9		6.9	6.9	
Lead/Lag	Lead			Lead			Lead					
Lead-Lag Optimize?	Yes			Yes			Yes					
Recall Mode	None			None	C-Min	C-Min	None	None		None	None	
Act Effct Green (s)	13.1	32.5	29.1	28.9	42.4	42.4	61.3	55.7		32.5	32.5	
Actuated g/C Ratio	0.09	0.23	0.21	0.21	0.30	0.30	0.44	0.40		0.23	0.23	
v/c Ratio	0.78	0.68	0.94	0.93	0.98	0.11	0.99	0.44		0.53	0.97	
Control Delay	91.3	50.0	93.1	85.6	76.8	0.3	106.6	15.2		60.0	90.1	
Queue Delay	0.0	1.4	8.4	4.9	15.7	0.0	20.1	0.0		0.0	40.4	
Total Delay	91.3	51.4	101.5	90.4	92.5	0.3	126.7	15.2		60.0	130.5	
LOS	F	D	F	F	F	A	F	B		E	F	
Approach Delay		72.1			88.4			53.6			116.5	
Approach LOS		E			F			D			F	
Queue Length 50th (m)	33.6	72.8	82.7	94.3	~156.9	0.0	62.2	25.0		23.4	103.6	
Queue Length 95th (m)	#64.3	80.5	#148.8 m	#107.8 m	#172.9	m0.0	#117.2	31.8		42.9	#168.9	
Internal Link Dist (m)		92.8			165.9			145.6			55.2	
Turn Bay Length (m)	70.0		90.0	120.0		95.0				35.0		
Base Capacity (vph)	169	744	315	360	1026	500	287	1232		178	394	
Starvation Cap Reductn	0	79	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	14	15	56	0	19	0		0	69	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.73	0.81	0.99	0.94	1.04	0.11	1.06	0.44		0.53	1.18	

Intersection Summary

Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 6 (4%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 120
 Control Type: Actuated-Coordinated

Lane Group	Ø2	Ø9	Ø10	Ø11	Ø12
Lane Configurations					
Traffic Volume (vph)					
Future Volume (vph)					
Satd. Flow (prot)					
Flt Permitted					
Satd. Flow (perm)					
Satd. Flow (RTOR)					
Lane Group Flow (vph)					
Turn Type					
Protected Phases	2	9	10	11	12
Permitted Phases					
Detector Phase					
Switch Phase					
Minimum Initial (s)	10.0	1.0	1.0	1.0	1.0
Minimum Split (s)	26.0	5.3	5.0	5.0	5.0
Total Split (s)	29.0	6.3	5.0	5.0	7.0
Total Split (%)	21%	5%	4%	4%	5%
Yellow Time (s)	2.0	2.0	2.0	2.0	2.0
All-Red Time (s)	0.0	2.3	0.0	0.0	0.0
Lost Time Adjust (s)					
Total Lost Time (s)					
Lead/Lag	Lag		Lag	Lag	
Lead-Lag Optimize?	Yes		Yes	Yes	
Recall Mode	C-Min	Min	None	None	None
Act Effct Green (s)					
Actuated g/C Ratio					
v/c Ratio					
Control Delay					
Queue Delay					
Total Delay					
LOS					
Approach Delay					
Approach LOS					
Queue Length 50th (m)					
Queue Length 95th (m)					
Internal Link Dist (m)					
Turn Bay Length (m)					
Base Capacity (vph)					
Starvation Cap Reductn					
Spillback Cap Reductn					
Storage Cap Reductn					
Reduced v/c Ratio					
Intersection Summary					

Maximum v/c Ratio: 0.99

Intersection Signal Delay: 80.0

Intersection LOS: E

Intersection Capacity Utilization 101.3%

ICU Level of Service G

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

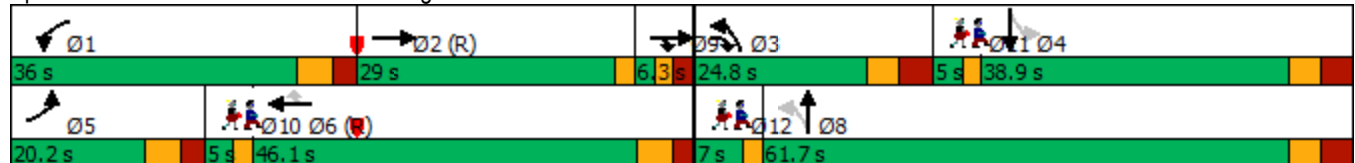
Queue shown is maximum after two cycles.

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.

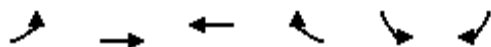
Splits and Phases: 18: Preston & Carling



Lanes, Volumes, Timings
20: Carling & Booth

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Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	214	739	990	90	268	281
Future Volume (vph)	214	739	990	90	268	281
Satd. Flow (prot)	1695	3390	1784	1517	1695	1517
Flt Permitted	0.048				0.950	
Satd. Flow (perm)	86	3390	1784	1141	1663	1187
Satd. Flow (RTOR)				25		175
Lane Group Flow (vph)	214	739	990	90	268	281
Turn Type	pm+pt	NA	NA	Perm	Perm	Perm
Protected Phases	5	2	6			
Permitted Phases	2			6	4	4
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	10.9	29.7	29.7	29.7	39.0	39.0
Total Split (s)	19.2	101.0	81.8	81.8	39.0	39.0
Total Split (%)	13.7%	72.1%	58.4%	58.4%	27.9%	27.9%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.3	3.3
All-Red Time (s)	2.2	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)	5.9	5.7	5.7	5.7	6.0	6.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Min	C-Min	C-Min	None	None
Act Effct Green (s)	97.9	98.1	77.7	77.7	30.2	30.2
Actuated g/C Ratio	0.70	0.70	0.56	0.56	0.22	0.22
v/c Ratio	0.95	0.31	1.00	0.14	0.75	0.72
Control Delay	97.1	7.4	60.3	11.9	64.5	29.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	97.1	7.4	60.3	11.9	64.5	29.1
LOS	F	A	E	B	E	C
Approach Delay		27.6	56.2		46.4	
Approach LOS		C	E		D	
Queue Length 50th (m)	~52.6	32.0	~290.2	8.4	68.2	26.7
Queue Length 95th (m)	m#99.4	38.7	#368.9	17.6	99.7	60.7
Internal Link Dist (m)		100.4	299.3		220.7	
Turn Bay Length (m)	50.0			30.0		30.0
Base Capacity (vph)	226	2375	990	644	391	413
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	0.95	0.31	1.00	0.14	0.69	0.68

Intersection Summary

Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
 Natural Cycle: 120
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.00

Intersection Signal Delay: 43.6

Intersection LOS: D

Intersection Capacity Utilization 109.0%

ICU Level of Service G

Analysis Period (min) 15

~ 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.

Splits and Phases: 20: Carling & Booth



Lanes, Volumes, Timings
21: Bronson & Carling/Glebe

2028 PM Demand Rationalized Main Hospital SPA

03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	400	110	528	0	0	0	563	642	14	0	1135	275
Future Volume (vph)	400	110	528	0	0	0	563	642	14	0	1135	275
Satd. Flow (prot)	1610	1651	1517	0	0	0	3288	1770	0	0	3246	0
Flt Permitted	0.950	0.974					0.950					
Satd. Flow (perm)	1511	1597	1413	0	0	0	3244	1770	0	0	3246	0
Satd. Flow (RTOR)			103					2			26	
Lane Group Flow (vph)	276	234	528	0	0	0	563	656	0	0	1410	0
Turn Type	Perm	NA	pm+ov				Prot	NA			NA	
Protected Phases		4	5				5	2			6	
Permitted Phases	4		4									
Detector Phase	4	4	5				5	2			6	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0				10.0	10.0			10.0	
Minimum Split (s)	31.0	31.0	16.0				16.0	25.1			33.0	
Total Split (s)	36.0	36.0	33.0				33.0	104.0			71.0	
Total Split (%)	24.5%	24.5%	22.4%				22.4%	70.7%			48.3%	
Yellow Time (s)	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			2.7	
Lost Time Adjust (s)	0.0	0.0	0.0				0.0	0.0			0.0	
Total Lost Time (s)	6.0	6.0	6.0				6.0	6.0			6.0	
Lead/Lag			Lead				Lead				Lag	
Lead-Lag Optimize?			Yes				Yes				Yes	
Recall Mode	None	None	None				None	C-Min			C-Min	
Act Effct Green (s)	28.9	28.9	55.6				26.7	99.0			66.3	
Actuated g/C Ratio	0.20	0.20	0.38				0.18	0.67			0.45	
v/c Ratio	0.93	0.75	0.85				0.94	0.55			0.95	
Control Delay	94.6	70.9	45.4				84.2	14.8			53.4	
Queue Delay	0.0	0.0	0.0				0.0	0.0			0.0	
Total Delay	94.6	70.9	45.4				84.2	14.8			53.4	
LOS	F	E	D				F	B			D	
Approach Delay		64.2						46.9			53.4	
Approach LOS		E						D			D	
Queue Length 50th (m)	83.3	67.6	105.4				84.2	94.3			206.4	
Queue Length 95th (m)	#137.2	99.8	#160.2				#117.6	126.0			#258.4	
Internal Link Dist (m)		74.7			115.0			394.4			328.4	
Turn Bay Length (m)	40.0						50.0					
Base Capacity (vph)	308	325	620				603	1192			1477	
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	0.90	0.72	0.85				0.93	0.55			0.95	

Intersection Summary

Cycle Length: 147
 Actuated Cycle Length: 147
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 120
 Control Type: Actuated-Coordinated

Lane Group	Ø10
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	10
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	7.0
Total Split (s)	7.0
Total Split (%)	5%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	Min
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Maximum v/c Ratio: 0.95

Intersection Signal Delay: 54.3

Intersection LOS: D

Intersection Capacity Utilization 96.3%

ICU Level of Service F

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 21: Bronson & Carling/Glebe



Lanes, Volumes, Timings
22: Parkdale & 417 WB on/off

2028 PM Demand Rationalized Main Hospital SPA

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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	0	284	23	450	84	536	0	0	559	208
Future Volume (vph)	0	0	0	284	23	450	84	536	0	0	559	208
Satd. Flow (prot)	0	0	0	1695	1474	0	1695	1784	0	0	1685	0
Flt Permitted				0.950			0.225					
Satd. Flow (perm)	0	0	0	1695	1474	0	401	1784	0	0	1685	0
Satd. Flow (RTOR)					337						29	
Lane Group Flow (vph)	0	0	0	284	473	0	84	536	0	0	767	0
Turn Type				Perm	NA		pm+pt	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases				8			2					
Detector Phase				8	8		5	2			6	
Switch Phase												
Minimum Initial (s)				10.0	10.0		5.0	10.0			10.0	
Minimum Split (s)				29.0	29.0		10.3	27.3			25.1	
Total Split (s)				29.0	29.0		11.0	71.0			60.0	
Total Split (%)				29.0%	29.0%		11.0%	71.0%			60.0%	
Yellow Time (s)				3.3	3.3		3.0	3.0			3.0	
All-Red Time (s)				2.2	2.2		2.2	3.3			3.3	
Lost Time Adjust (s)				0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)				5.5	5.5		5.2	6.3			6.3	
Lead/Lag							Lag				Lead	
Lead-Lag Optimize?							Yes				Yes	
Recall Mode				None	None		None	C-Min			C-Min	
Act Effct Green (s)				20.7	20.7		69.7	67.5			58.4	
Actuated g/C Ratio				0.21	0.21		0.70	0.68			0.58	
v/c Ratio				0.81	0.83		0.23	0.45			0.77	
Control Delay				55.9	24.2		5.2	5.5			23.7	
Queue Delay				0.0	0.0		1.4	1.5			8.2	
Total Delay				55.9	24.2		6.5	7.0			31.9	
LOS				E	C		A	A			C	
Approach Delay					36.1			7.0			31.9	
Approach LOS					D			A			C	
Queue Length 50th (m)				51.3	23.8		4.4	32.1			116.1	
Queue Length 95th (m)				#81.0	#74.2		m1.2	15.2			#181.4	
Internal Link Dist (m)		157.5			140.3			45.3			171.5	
Turn Bay Length (m)												
Base Capacity (vph)				398	604		359	1204			997	
Starvation Cap Reductn				0	0		154	462			0	
Spillback Cap Reductn				0	0		0	0			196	
Storage Cap Reductn				0	0		0	0			0	
Reduced v/c Ratio				0.71	0.78		0.41	0.72			0.96	

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 39 (39%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.83

Intersection Signal Delay: 26.2

Intersection LOS: C

Intersection Capacity Utilization 124.2%

ICU Level of Service H

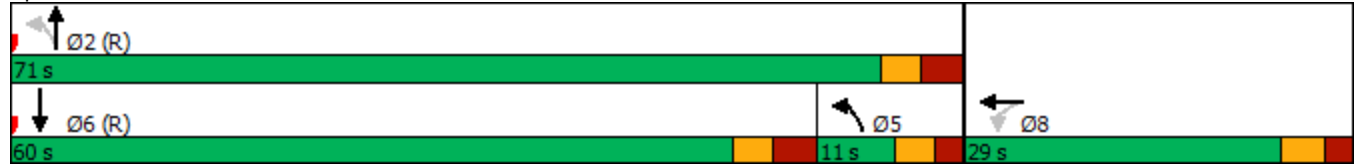
Analysis Period (min) 15

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.

Splits and Phases: 22: Parkdale & 417 WB on/off



Lanes, Volumes, Timings
23: Parkdale & 417 EB on/off

2028 PM Demand Rationalized Main Hospital SPA

03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗					↕↗		↗	↕	
Traffic Volume (vph)	353	2	173	0	0	0	0	268	217	455	384	0
Future Volume (vph)	353	2	173	0	0	0	0	268	217	455	384	0
Satd. Flow (prot)	0	1700	1517	0	0	0	0	3031	0	1695	1784	0
Flt Permitted		0.953								0.360		
Satd. Flow (perm)	0	1700	1482	0	0	0	0	3031	0	626	1784	0
Satd. Flow (RTOR)			173					217				
Lane Group Flow (vph)	0	355	173	0	0	0	0	485	0	455	384	0
Turn Type	Perm	NA	Perm					NA		pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		4							6		
Detector Phase	4	4	4					2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0					10.0		5.0	10.0	
Minimum Split (s)	25.1	25.1	25.1					25.1		10.3	25.1	
Total Split (s)	30.0	30.0	30.0					38.0		32.0	70.0	
Total Split (%)	30.0%	30.0%	30.0%					38.0%		32.0%	70.0%	
Yellow Time (s)	3.3	3.3	3.3					3.0		3.0	3.0	
All-Red Time (s)	2.6	2.6	2.6					2.8		2.3	2.8	
Lost Time Adjust (s)		0.0	0.0					0.0		0.0	0.0	
Total Lost Time (s)		5.9	5.9					5.8		5.3	5.8	
Lead/Lag								Lag		Lead		
Lead-Lag Optimize?								Yes		Yes		
Recall Mode	None	None	None					C-Min		None	C-Min	
Act Effct Green (s)		26.8	26.8					36.2		62.0	61.5	
Actuated g/C Ratio		0.27	0.27					0.36		0.62	0.62	
v/c Ratio		0.78	0.33					0.39		0.76	0.35	
Control Delay		45.7	5.7					16.0		21.1	13.9	
Queue Delay		0.0	0.0					0.0		41.8	3.3	
Total Delay		45.7	5.7					16.0		62.9	17.2	
LOS		D	A					B		E	B	
Approach Delay		32.6						16.0			42.0	
Approach LOS		C						B			D	
Queue Length 50th (m)		63.1	0.0					18.9		56.8	46.2	
Queue Length 95th (m)		87.3	13.7					40.7		m74.1	m62.4	
Internal Link Dist (m)		109.8			145.0			90.1			45.3	
Turn Bay Length (m)			75.0									
Base Capacity (vph)		472	536					1314		677	1162	
Starvation Cap Reductn		0	0					0		250	664	
Spillback Cap Reductn		0	0					23		0	0	
Storage Cap Reductn		0	0					0		0	0	
Reduced v/c Ratio		0.75	0.32					0.38		1.07	0.77	

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 29 (29%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 70
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 32.5

Intersection LOS: C

Intersection Capacity Utilization 124.2%

ICU Level of Service H

Analysis Period (min) 15

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

Splits and Phases: 23: Parkdale & 417 EB on/off



Lanes, Volumes, Timings
24: Parkdale & Sherwood

2028 PM Demand Rationalized Main Hospital SPA

03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	72	8	7	0	7	140	5	429	7	72	377	68
Future Volume (vph)	72	8	7	0	7	140	5	429	7	72	377	68
Satd. Flow (prot)	0	1683	0	0	1489	0	0	1777	0	0	1726	0
Flt Permitted		0.704						0.995			0.891	
Satd. Flow (perm)	0	1231	0	0	1489	0	0	1769	0	0	1544	0
Satd. Flow (RTOR)		7			140			2			23	
Lane Group Flow (vph)	0	87	0	0	147	0	0	441	0	0	517	0
Turn Type	Perm	NA			NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	1.0	1.0		1.0	1.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	18.0	18.0		18.0	18.0		25.1	25.1		25.1	25.1	
Total Split (s)	18.0	18.0		18.0	18.0		37.0	37.0		37.0	37.0	
Total Split (%)	32.7%	32.7%		32.7%	32.7%		67.3%	67.3%		67.3%	67.3%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.0			4.0			5.6			5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Ped	Ped		Ped	Ped		C-Min	C-Min		C-Min	C-Min	
Act Effct Green (s)		14.0			14.0			31.4			31.4	
Actuated g/C Ratio		0.25			0.25			0.57			0.57	
v/c Ratio		0.27			0.30			0.44			0.58	
Control Delay		18.1			6.1			8.4			10.5	
Queue Delay		0.0			0.0			0.0			0.4	
Total Delay		18.1			6.1			8.4			10.9	
LOS		B			A			A			B	
Approach Delay		18.1			6.1			8.4			10.9	
Approach LOS		B			A			A			B	
Queue Length 50th (m)		6.3			0.5			21.7			27.2	
Queue Length 95th (m)		15.9			11.2			37.9			50.5	
Internal Link Dist (m)		221.3			335.0			289.1			90.1	
Turn Bay Length (m)												
Base Capacity (vph)		318			483			1010			891	
Starvation Cap Reductn		0			0			0			99	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.27			0.30			0.44			0.65	

Intersection Summary

Cycle Length: 55
 Actuated Cycle Length: 55
 Offset: 26 (47%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 50
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.58

Intersection Signal Delay: 9.9

Intersection LOS: A

Intersection Capacity Utilization 93.6%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 24: Parkdale & Sherwood



Lanes, Volumes, Timings
25: Parkdale & Ruskin

2028 PM Demand Rationalized Main Hospital SPA

03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↗	↘			↕			↕	
Traffic Volume (vph)	27	29	9	21	33	67	3	213	12	61	243	10
Future Volume (vph)	27	29	9	21	33	67	3	213	12	61	243	10
Satd. Flow (prot)	0	1695	0	1695	1512	0	0	1762	0	0	1757	0
Flt Permitted		0.820		0.807				0.997			0.903	
Satd. Flow (perm)	0	1385	0	1353	1512	0	0	1758	0	0	1588	0
Satd. Flow (RTOR)		7			67			8			5	
Lane Group Flow (vph)	0	65	0	21	100	0	0	228	0	0	314	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	19.4	19.4		19.4	19.4		31.8	31.8		31.8	31.8	
Total Split (s)	20.0	20.0		20.0	20.0		75.0	75.0		75.0	75.0	
Total Split (%)	21.1%	21.1%		21.1%	21.1%		78.9%	78.9%		78.9%	78.9%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.4	2.4		2.4	2.4		2.8	2.8		2.8	2.8	
Lost Time Adjust (s)		0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)		5.4		5.4	5.4			5.8			5.8	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Min	C-Min		C-Min	C-Min	
Act Effct Green (s)		12.4		12.4	12.4			75.6			75.6	
Actuated g/C Ratio		0.13		0.13	0.13			0.80			0.80	
v/c Ratio		0.35		0.12	0.39			0.16			0.25	
Control Delay		39.0		37.2	20.0			3.5			4.1	
Queue Delay		0.0		0.0	0.0			0.0			0.0	
Total Delay		39.0		37.2	20.0			3.5			4.1	
LOS		D		D	B			A			A	
Approach Delay		39.0			23.0			3.5			4.1	
Approach LOS		D			C			A			A	
Queue Length 50th (m)		9.6		3.4	5.3			10.2			15.6	
Queue Length 95th (m)		21.8		9.9	19.6			16.8			24.6	
Internal Link Dist (m)		220.6			228.6			278.4			289.1	
Turn Bay Length (m)				40.0								
Base Capacity (vph)		218		207	289			1401			1265	
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		0.30		0.10	0.35			0.16			0.25	

Intersection Summary

Cycle Length: 95
 Actuated Cycle Length: 95
 Offset: 40 (42%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 55
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.39

Intersection Signal Delay: 10.2

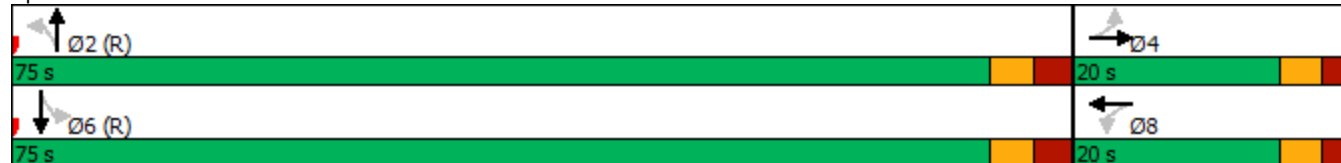
Intersection LOS: B

Intersection Capacity Utilization 68.7%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 25: Parkdale & Ruskin



Lanes, Volumes, Timings
30: Prince of Wales & Preston

2028 PM Demand Rationalized Main Hospital SPA

03/20/2023

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	491	246	0	3	395	428	1	0	0	426	3	595
Future Volume (vph)	491	246	0	3	395	428	1	0	0	426	3	595
Satd. Flow (prot)	3288	1784	0	1695	1784	1517	0	1695	0	0	1700	1517
Flt Permitted	0.950			0.950				0.513			0.728	
Satd. Flow (perm)	3189	1784	0	1474	1784	1484	0	785	0	0	1157	1352
Satd. Flow (RTOR)						213						
Lane Group Flow (vph)	491	246	0	3	395	428	0	1	0	0	429	595
Turn Type	Prot	NA		Prot	NA	Free	Perm	NA		custom	NA	custom
Protected Phases	5	2		1	6			8		11	4 11	5
Permitted Phases						Free	8			4		4
Detector Phase	5	2		1	6		8	8		11	4 11	5
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0		10.0		5.0
Minimum Split (s)	11.1	27.1		10.3	26.1		24.5	24.5		15.3		11.1
Total Split (s)	52.0	66.7		10.3	30.0		33.0	33.0		25.0		52.0
Total Split (%)	37.1%	47.6%		7.4%	21.4%		23.6%	23.6%		17.9%		37.1%
Yellow Time (s)	3.7	3.7		3.3	3.7		3.3	3.3		3.3		3.7
All-Red Time (s)	2.4	2.4		2.0	2.4		2.2	2.2		2.0		2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0				0.0
Total Lost Time (s)	6.1	6.1		5.3	6.1			5.5				6.1
Lead/Lag				Lead								
Lead-Lag Optimize?				Yes								
Recall Mode	None	C-Min		None	C-Min		None	None		None		None
Act Effct Green (s)	40.0	75.0		5.2	32.0	140.0		25.3			44.8	64.7
Actuated g/C Ratio	0.29	0.54		0.04	0.23	1.00		0.18			0.32	0.46
v/c Ratio	0.52	0.26		0.05	0.97	0.29		0.01			0.96	0.89
Control Delay	44.5	18.3		67.0	91.1	0.5		46.0			77.6	45.5
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0			0.0	0.0
Total Delay	44.5	18.3		67.0	91.1	0.5		46.0			77.6	45.5
LOS	D	B		E	F	A		D			E	D
Approach Delay		35.8			44.1			46.0			58.9	
Approach LOS		D			D			D			E	
Queue Length 50th (m)	51.0	29.5		0.8	~118.2	0.0		0.2			121.2	104.7
Queue Length 95th (m)	79.7	48.6		4.1	#202.6	0.0		1.8			m#135.1	m100.1
Internal Link Dist (m)		79.9			173.8			12.4			145.6	
Turn Bay Length (m)	45.0			30.0		45.0						
Base Capacity (vph)	1077	956		62	407	1484		154			464	736
Starvation Cap Reductn	0	0		0	0	0		0			0	1
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	0.46	0.26		0.05	0.97	0.29		0.01			0.92	0.81

Intersection Summary

Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 105.9 (76%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated

Lane Group	Ø4	Ø9	Ø12
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Satd. Flow (RTOR)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	4	9	12
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	10.0	1.0	1.0
Minimum Split (s)	15.5	5.0	20.0
Total Split (s)	33.0	5.0	25.0
Total Split (%)	24%	4%	18%
Yellow Time (s)	3.3	2.0	2.0
All-Red Time (s)	2.2	0.0	0.0
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag		Lag	
Lead-Lag Optimize?		Yes	
Recall Mode	None	None	None
Act Effct Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
LOS			
Approach Delay			
Approach LOS			
Queue Length 50th (m)			
Queue Length 95th (m)			
Internal Link Dist (m)			
Turn Bay Length (m)			
Base Capacity (vph)			
Starvation Cap Reductn			
Spillback Cap Reductn			
Storage Cap Reductn			
Reduced v/c Ratio			
Intersection Summary			

Maximum v/c Ratio: 0.97

Intersection Signal Delay: 47.6

Intersection LOS: D

Intersection Capacity Utilization 93.6%

ICU Level of Service F

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

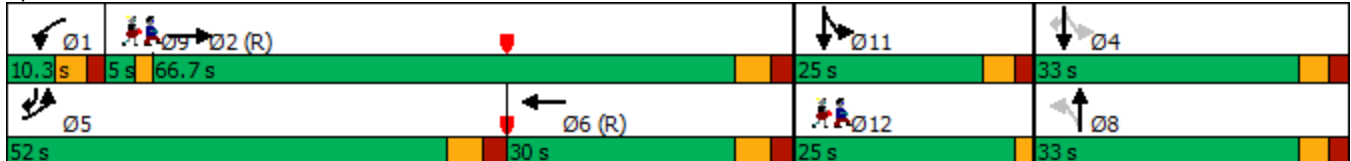
Queue shown is maximum after two cycles.

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.

Splits and Phases: 30: Prince of Wales & Preston



Lanes, Volumes, Timings
31: Rochester & 417 WB on/Raymond

2028 PM Demand Rationalized Main Hospital SPA
03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	193	187	128	188	392	0	0	201	135
Future Volume (vph)	0	0	0	193	187	128	188	392	0	0	201	135
Satd. Flow (prot)	0	0	0	1695	1636	0	1695	1784	0	0	1784	1517
Flt Permitted				0.950			0.519					
Satd. Flow (perm)	0	0	0	1685	1636	0	899	1784	0	0	1784	1414
Satd. Flow (RTOR)					56							135
Lane Group Flow (vph)	0	0	0	193	315	0	188	392	0	0	201	135
Turn Type				Perm	NA		pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8			2					6
Detector Phase				8	8		5	2			6	6
Switch Phase												
Minimum Initial (s)				10.0	10.0		5.0	10.0			10.0	10.0
Minimum Split (s)				32.0	32.0		10.9	27.3			24.9	24.9
Total Split (s)				32.0	32.0		13.0	38.0			25.0	25.0
Total Split (%)				45.7%	45.7%		18.6%	54.3%			35.7%	35.7%
Yellow Time (s)				3.3	3.3		3.3	3.3			3.3	3.3
All-Red Time (s)				2.4	2.4		2.6	2.6			2.6	2.6
Lost Time Adjust (s)				0.0	0.0		0.0	0.0			0.0	0.0
Total Lost Time (s)				5.7	5.7		5.9	5.9			5.9	5.9
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Recall Mode				None	None		None	C-Min			C-Min	C-Min
Act Effct Green (s)				16.9	16.9		41.5	41.5			27.0	27.0
Actuated g/C Ratio				0.24	0.24		0.59	0.59			0.39	0.39
v/c Ratio				0.47	0.72		0.30	0.37			0.29	0.21
Control Delay				25.3	28.7		12.6	14.4			18.7	5.1
Queue Delay				0.0	0.0		0.0	0.6			0.0	0.0
Total Delay				25.3	28.7		12.6	15.0			18.7	5.1
LOS				C	C		B	B			B	A
Approach Delay					27.4			14.2			13.3	
Approach LOS					C			B			B	
Queue Length 50th (m)				21.7	31.1		11.5	42.8			17.9	0.0
Queue Length 95th (m)				33.2	47.9		31.3	62.5			38.7	11.3
Internal Link Dist (m)		122.0			89.8			72.3			151.7	
Turn Bay Length (m)												35.0
Base Capacity (vph)				633	649		631	1056			689	628
Starvation Cap Reductn				0	0		0	336			0	0
Spillback Cap Reductn				0	0		0	0			0	0
Storage Cap Reductn				0	0		0	0			0	0
Reduced v/c Ratio				0.30	0.49		0.30	0.54			0.29	0.21

Intersection Summary

Cycle Length: 70
 Actuated Cycle Length: 70
 Offset: 8 (11%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 70
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.72

Intersection Signal Delay: 18.7

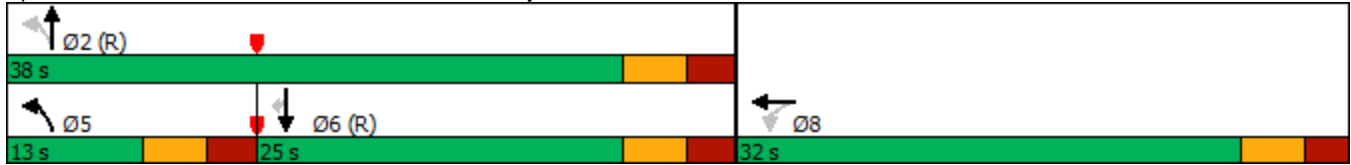
Intersection LOS: B

Intersection Capacity Utilization 60.8%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 31: Rochester & 417 WB on/Raymond



Lanes, Volumes, Timings
32: Rochester & 417 EB off/Orangeville

2028 PM Demand Rationalized Main Hospital SPA

03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕						↕↕			↕↕	
Traffic Volume (vph)	235	283	155	0	0	0	0	349	82	31	350	0
Future Volume (vph)	235	283	155	0	0	0	0	349	82	31	350	0
Satd. Flow (prot)	0	3190	0	0	0	0	0	3269	0	0	3377	0
Flt Permitted		0.983									0.901	
Satd. Flow (perm)	0	3184	0	0	0	0	0	3269	0	0	3051	0
Satd. Flow (RTOR)		57						65				
Lane Group Flow (vph)	0	673	0	0	0	0	0	431	0	0	381	0
Turn Type	Perm	NA						NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4									6		
Detector Phase	4	4						2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0						10.0		10.0	10.0	
Minimum Split (s)	26.0	26.0						25.1		25.1	25.1	
Total Split (s)	26.0	26.0						44.0		44.0	44.0	
Total Split (%)	37.1%	37.1%						62.9%		62.9%	62.9%	
Yellow Time (s)	3.3	3.3						3.3		3.3	3.3	
All-Red Time (s)	2.3	2.3						2.1		2.1	2.1	
Lost Time Adjust (s)		0.0						0.0			0.0	
Total Lost Time (s)		5.6						5.4			5.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None						C-Min		C-Min	C-Min	
Act Effct Green (s)		19.0						40.0			40.0	
Actuated g/C Ratio		0.27						0.57			0.57	
v/c Ratio		0.74						0.23			0.22	
Control Delay		26.2						6.9			12.0	
Queue Delay		0.0						0.0			0.0	
Total Delay		26.2						6.9			12.0	
LOS		C						A			B	
Approach Delay		26.2						6.9			12.0	
Approach LOS		C						A			B	
Queue Length 50th (m)		38.1						12.7			8.8	
Queue Length 95th (m)		50.2						m19.5			40.0	
Internal Link Dist (m)		104.8			107.2			99.1			72.3	
Turn Bay Length (m)												
Base Capacity (vph)		1008						1935			1780	
Starvation Cap Reductn		0						0			0	
Spillback Cap Reductn		0						9			0	
Storage Cap Reductn		0						0			0	
Reduced v/c Ratio		0.67						0.22			0.21	

Intersection Summary

Cycle Length: 70
 Actuated Cycle Length: 70
 Offset: 67 (96%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 55
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 16.9

Intersection LOS: B

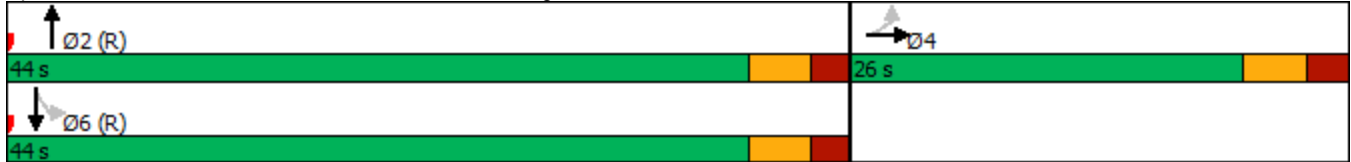
Intersection Capacity Utilization 66.5%

ICU Level of Service C

Analysis Period (min) 15

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

Splits and Phases: 32: Rochester & 417 EB off/Orangeville



Lanes, Volumes, Timings
33: Bronson & Catherine 417 WB on

2028 PM Demand Rationalized Main Hospital SPA

03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↖	↔		↖	↕			↕	↗
Traffic Volume (vph)	0	0	0	799	559	256	277	750	0	0	790	157
Future Volume (vph)	0	0	0	799	559	256	277	750	0	0	790	157
Satd. Flow (prot)	0	0	0	1458	4335	0	1695	3390	0	0	3258	0
Flt Permitted				0.950	0.988		0.115					
Satd. Flow (perm)	0	0	0	1458	4335	0	205	3390	0	0	3258	0
Satd. Flow (RTOR)					96						25	
Lane Group Flow (vph)	0	0	0	543	1071	0	277	750	0	0	947	0
Turn Type				Perm	NA		pm+pt	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases				8			2					
Detector Phase				8	8		5	2			6	
Switch Phase												
Minimum Initial (s)				10.0	10.0		5.0	10.0			10.0	
Minimum Split (s)				25.9	25.9		11.0	25.1			25.1	
Total Split (s)				42.0	42.0		18.0	53.0			35.0	
Total Split (%)				44.2%	44.2%		18.9%	55.8%			36.8%	
Yellow Time (s)				3.3	3.3		3.3	3.3			3.3	
All-Red Time (s)				2.6	2.6		2.7	2.8			2.8	
Lost Time Adjust (s)				0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)				5.9	5.9		6.0	6.1			6.1	
Lead/Lag							Lead				Lag	
Lead-Lag Optimize?							Yes				Yes	
Recall Mode				None	None		None	C-Min			C-Min	
Act Effct Green (s)				36.3	36.3		46.8	46.7			28.7	
Actuated g/C Ratio				0.38	0.38		0.49	0.49			0.30	
v/c Ratio				0.97	0.62		0.96	0.45			0.95	
Control Delay				63.4	23.5		72.9	23.2			50.4	
Queue Delay				25.6	0.1		0.0	3.8			44.7	
Total Delay				89.0	23.5		72.9	27.0			95.0	
LOS				F	C		E	C			F	
Approach Delay					45.6			39.4			95.0	
Approach LOS					D			D			F	
Queue Length 50th (m)				112.4	55.4		47.3	65.0			86.5	
Queue Length 95th (m)				#189.5	70.6		#84.9	79.5			#125.9	
Internal Link Dist (m)		151.3			165.9			71.3			237.2	
Turn Bay Length (m)												
Base Capacity (vph)				557	1714		289	1673			1008	
Starvation Cap Reductn				0	0		0	815			0	
Spillback Cap Reductn				47	50		0	0			188	
Storage Cap Reductn				0	0		0	0			0	
Reduced v/c Ratio				1.06	0.64		0.96	0.87			1.15	

Intersection Summary

Cycle Length: 95
 Actuated Cycle Length: 95
 Offset: 59 (62%), 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: 56.8

Intersection LOS: E

Intersection Capacity Utilization 114.6%

ICU Level of Service H

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 33: Bronson & Catherine 417 WB on





Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	145	377	0	911	1472	0
Future Volume (vph)	145	377	0	911	1472	0
Satd. Flow (prot)	1695	1517	0	3390	3390	0
Flt Permitted	0.950					
Satd. Flow (perm)	1695	1491	0	3390	3390	0
Satd. Flow (RTOR)	46					
Lane Group Flow (vph)	145	377	0	911	1472	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)	10.0	10.0		10.0	10.0	
Minimum Split (s)	25.1	25.1		34.3	34.3	
Total Split (s)	30.0	30.0		65.0	65.0	
Total Split (%)	31.6%	31.6%		68.4%	68.4%	
Yellow Time (s)	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.1	2.1		2.5	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.4	5.4		5.8	5.8	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None		C-Min	C-Min	
Act Effct Green (s)	25.7	25.7		58.1	58.1	
Actuated g/C Ratio	0.27	0.27		0.61	0.61	
v/c Ratio	0.32	0.86		0.44	0.71	
Control Delay	29.4	49.6		10.9	10.6	
Queue Delay	0.1	0.0		0.0	3.6	
Total Delay	29.4	49.6		11.0	14.2	
LOS	C	D		B	B	
Approach Delay	44.0			11.0	14.2	
Approach LOS	D			B	B	
Queue Length 50th (m)	20.1	55.4		47.3	80.7	
Queue Length 95th (m)	38.0	#112.0		53.5	m126.3	
Internal Link Dist (m)	81.4			50.7	71.3	
Turn Bay Length (m)	60.0					
Base Capacity (vph)	475	451		2147	2147	
Starvation Cap Reductn	0	0		0	567	
Spillback Cap Reductn	21	0		126	0	
Storage Cap Reductn	0	0		0	0	
Reduced v/c Ratio	0.32	0.84		0.45	0.93	

Intersection Summary

Cycle Length: 95
 Actuated Cycle Length: 95
 Offset: 91 (96%), 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: 18.5

Intersection LOS: B

Intersection Capacity Utilization 114.6%

ICU Level of Service H

Analysis Period (min) 15

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.

Splits and Phases: 34: Bronson & 417 EB off

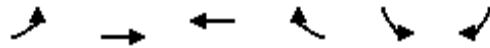


Lanes, Volumes, Timings 39:
Prince of Wales & Road B

2028 PM Demand Rationalized Main Hospital SPA

03/20/2023

(dual WBT)



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø9
Lane Configurations							
Traffic Volume (vph)	20	693	991	15	84	25	
Future Volume (vph)	20	693	991	15	84	25	
Satd. Flow (prot)	1695	1784	3381	0	1695	1517	
Flt Permitted	0.244				0.950		
Satd. Flow (perm)	435	1784	3381	0	1629	1424	
Satd. Flow (RTOR)						25	
Lane Group Flow (vph)	20	693	1006	0	84	25	
Turn Type	pm+pt	NA	NA		Perm	Perm	
Protected Phases	5	2	6				9
Permitted Phases	2				4	4	
Detector Phase	5	2	6		4	4	
Switch Phase							
Minimum Initial (s)	5.0	10.0	10.0		10.0	10.0	1.0
Minimum Split (s)	10.3	23.3	23.3		23.3	23.3	15.0
Total Split (s)	12.0	97.0	85.0		28.0	28.0	15.0
Total Split (%)	8.6%	69.3%	60.7%		20.0%	20.0%	11%
Yellow Time (s)	3.3	3.3	3.3		3.3	3.3	2.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.3	5.3	5.3		5.3	5.3	
Lead/Lag	Lead		Lag				
Lead-Lag Optimize?	Yes		Yes				
Recall Mode	None	C-Min	C-Min		None	None	None
Act Effct Green (s)	113.3	113.3	106.4		13.1	13.1	
Actuated g/C Ratio	0.81	0.81	0.76		0.09	0.09	
v/c Ratio	0.05	0.48	0.39		0.55	0.16	
Control Delay	4.5	6.7	6.5		73.7	21.2	
Queue Delay	0.0	0.0	0.0		0.0	0.0	
Total Delay	4.5	6.7	6.5		73.7	21.2	
LOS	A	A	A		E	C	
Approach Delay		6.6	6.5		61.7		
Approach LOS		A	A		E		
Queue Length 50th (m)	0.7	41.1	41.2		22.7	0.0	
Queue Length 95th (m)	4.2	121.0	m95.0		38.7	8.8	
Internal Link Dist (m)		198.2	95.9		17.7		
Turn Bay Length (m)	45.0						
Base Capacity (vph)	412	1443	2570		264	251	
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	0.05	0.48	0.39		0.32	0.10	

Intersection Summary

Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.55

Intersection Signal Delay: 9.8

Intersection LOS: A

Intersection Capacity Utilization 57.6%

ICU Level of Service B

Analysis Period (min) 15

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

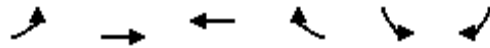
Splits and Phases: 39: Prince of Wales & Road B

 Ø2 (R)	 Ø9	 Ø4
97 s	15 s	28 s
 Ø5	 Ø6 (R)	
12 s	85 s	

Lanes, Volumes, Timings
 Prince of Wales & Road B (single WBT)

2028 PM Demand Rationalized Main Hospital SPA

04/04/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø9
Lane Configurations							
Traffic Volume (vph)	20	693	991	15	84	25	
Future Volume (vph)	20	693	991	15	84	25	
Satd. Flow (prot)	1695	1784	1784	1517	1695	1517	
Flt Permitted	0.177				0.950		
Satd. Flow (perm)	316	1784	1784	1453	1629	1345	
Satd. Flow (RTOR)						25	
Lane Group Flow (vph)	20	693	991	15	84	25	
Turn Type	pm+pt	NA	NA	Perm	Perm	Perm	
Protected Phases	5	2	6				9
Permitted Phases	2			6	4	4	
Detector Phase	5	2	6	6	4	4	
Switch Phase							
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	10.0	1.0
Minimum Split (s)	10.3	23.3	23.3	23.3	23.3	23.3	15.0
Total Split (s)	10.3	101.7	91.4	91.4	23.3	23.3	15.0
Total Split (%)	7.4%	72.6%	65.3%	65.3%	16.6%	16.6%	11%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	2.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.3	5.3	5.3	5.3	5.3	5.3	
Lead/Lag	Lead		Lag	Lag			
Lead-Lag Optimize?	Yes		Yes	Yes			
Recall Mode	None	C-Min	C-Min	C-Min	None	None	None
Act Effct Green (s)	113.3	113.3	106.8	106.8	13.1	13.1	
Actuated g/C Ratio	0.81	0.81	0.76	0.76	0.09	0.09	
v/c Ratio	0.06	0.48	0.73	0.01	0.55	0.17	
Control Delay	4.7	6.7	10.3	4.5	73.7	21.5	
Queue Delay	0.0	0.0	1.1	0.0	0.0	0.0	
Total Delay	4.7	6.7	11.4	4.5	73.7	21.5	
LOS	A	A	B	A	E	C	
Approach Delay		6.6	11.3		61.7		
Approach LOS		A	B		E		
Queue Length 50th (m)	0.7	41.1	88.3	1.3	22.7	0.0	
Queue Length 95th (m)	4.2	121.0	m197.0	m1.1	38.7	8.8	
Internal Link Dist (m)		198.2	95.9		17.7		
Turn Bay Length (m)	45.0			35.0			
Base Capacity (vph)	310	1443	1360	1108	209	194	
Starvation Cap Reductn	0	0	163	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	0.06	0.48	0.83	0.01	0.40	0.13	

Intersection Summary

Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 137 (98%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
 Natural Cycle: 120
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 12.5

Intersection LOS: B

Intersection Capacity Utilization 74.1%

ICU Level of Service D

Analysis Period (min) 15

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

Splits and Phases: 39: Prince of Wales & Road B

 Ø2 (R)	 Ø9	 Ø4
101.7 s	15 s	23.3 s
 Ø5	 Ø6 (R)	
10.3 s	91.4 s	

Intersection						
Int Delay, s/veh	0.5					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	26	800	1500	17	5	14
Future Vol, veh/h	26	800	1500	17	5	14
Conflicting Peds, #/hr	42	0	0	42	4	8
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	25	-	-	20	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	26	800	1500	17	5	14

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	1559	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.14	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.22	-	-
Pot Cap-1 Maneuver	420	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	405	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0.5	0	39.9
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	405	-	-	-	122
HCM Lane V/C Ratio	0.064	-	-	-	0.156
HCM Control Delay (s)	14.5	-	-	-	39.9
HCM Lane LOS	B	-	-	-	E
HCM 95th %tile Q(veh)	0.2	-	-	-	0.5

Intersection						
Int Delay, s/veh	24					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑	↑		↑
Traffic Vol, veh/h	0	864	1124	74	0	272
Future Vol, veh/h	0	864	1124	74	0	272
Conflicting Peds, #/hr	70	0	0	70	1	5
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	30	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	864	1124	74	0	272

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	- 0 - 1199
Stage 1	-	-	- - -
Stage 2	-	-	- - -
Critical Hdwy	-	-	- - 6.23
Critical Hdwy Stg 1	-	-	- - -
Critical Hdwy Stg 2	-	-	- - -
Follow-up Hdwy	-	-	- - 3.319
Pot Cap-1 Maneuver	0	-	- - 0 ~ 225
Stage 1	0	-	- - 0 -
Stage 2	0	-	- - 0 -
Platoon blocked, %	-	-	- - -
Mov Cap-1 Maneuver	-	-	- - ~ 211
Mov Cap-2 Maneuver	-	-	- - -
Stage 1	-	-	- - -
Stage 2	-	-	- - -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	206
HCM LOS			F

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	211
HCM Lane V/C Ratio	-	-	-	1.289
HCM Control Delay (s)	-	-	-	206
HCM Lane LOS	-	-	-	F
HCM 95th %tile Q(veh)	-	-	-	14.6

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection												
Int Delay, s/veh	0.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↑			↔				↔
Traffic Vol, veh/h	0	776	1	1	968	32	3	0	6	0	0	28
Future Vol, veh/h	0	776	1	1	968	32	3	0	6	0	0	28
Conflicting Peds, #/hr	8	0	6	6	0	8	1	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	776	1	1	968	32	3	0	6	0	0	28

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	783	0	0	1784	1793	783	-	-	993
Stage 1	-	-	-	-	-	-	783	783	-	-	-	-
Stage 2	-	-	-	-	-	-	1001	1010	-	-	-	-
Critical Hdwy	-	-	-	4.12	-	-	7.12	6.52	6.22	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	-	-	-
Follow-up Hdwy	-	-	-	2.218	-	-	3.518	4.018	3.318	-	-	3.318
Pot Cap-1 Maneuver	0	-	-	835	-	-	63	81	394	0	0	298
Stage 1	0	-	-	-	-	-	387	404	-	0	0	-
Stage 2	0	-	-	-	-	-	293	317	-	0	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	831	-	-	57	80	392	-	-	296
Mov Cap-2 Maneuver	-	-	-	-	-	-	57	80	-	-	-	-
Stage 1	-	-	-	-	-	-	387	402	-	-	-	-
Stage 2	-	-	-	-	-	-	264	314	-	-	-	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			34.3			18.4		
HCM LOS							D			C		

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	132	-	-	831	-	-	296
HCM Lane V/C Ratio	0.068	-	-	0.001	-	-	0.095
HCM Control Delay (s)	34.3	-	-	9.3	-	-	18.4
HCM Lane LOS	D	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	0	-	-	0.3

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗	↘	↑	↑	↗
Traffic Vol, veh/h	0	53	4	713	995	21
Future Vol, veh/h	0	53	4	713	995	21
Conflicting Peds, #/hr	0	0	10	0	0	10
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	50	-	-	50
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	8	7	33	2	2	21
Mvmt Flow	0	53	4	713	995	21

Major/Minor	Minor2	Major1	Major2		
Conflicting Flow All	-	1005	1026	0	0
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	6.27	4.43	-	-
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	3.363	2.497	-	-
Pot Cap-1 Maneuver	0	287	570	-	-
Stage 1	0	-	-	-	-
Stage 2	0	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	-	285	565	-	-
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	20.5	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	565	-	285	-	-
HCM Lane V/C Ratio	0.007	-	0.186	-	-
HCM Control Delay (s)	11.4	-	20.5	-	-
HCM Lane LOS	B	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.7	-	-

Intersection												
Int Delay, s/veh	6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔↔			↔			↔	
Traffic Vol, veh/h	0	48	30	46	44	5	28	0	159	0	0	5
Future Vol, veh/h	0	48	30	46	44	5	28	0	159	0	0	5
Conflicting Peds, #/hr	10	0	10	10	0	10	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	48	30	46	44	5	28	0	159	0	0	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	59	0	0	88	0	0	187	224	49	173	237	35
Stage 1	-	-	-	-	-	-	73	73	-	149	149	-
Stage 2	-	-	-	-	-	-	114	151	-	24	88	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1543	-	-	1506	-	-	756	674	1009	774	663	1030
Stage 1	-	-	-	-	-	-	928	833	-	838	773	-
Stage 2	-	-	-	-	-	-	879	771	-	991	821	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1530	-	-	1493	-	-	728	642	1000	630	632	1021
Mov Cap-2 Maneuver	-	-	-	-	-	-	728	642	-	630	632	-
Stage 1	-	-	-	-	-	-	921	826	-	831	742	-
Stage 2	-	-	-	-	-	-	847	740	-	833	814	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			3.6			9.7			8.5		
HCM LOS							A			A		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	947	1530	-	-	1493	-	-	1021
HCM Lane V/C Ratio	0.197	-	-	-	0.031	-	-	0.005
HCM Control Delay (s)	9.7	0	-	-	7.5	0	-	8.5
HCM Lane LOS	A	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.7	0	-	-	0.1	-	-	0

Intersection						
Int Delay, s/veh	6.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘↗		↑	↗		↖↗
Traffic Vol, veh/h	87	38	14	19	24	20
Future Vol, veh/h	87	38	14	19	24	20
Conflicting Peds, #/hr	0	0	0	15	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	0	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	87	38	14	19	24	20

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	87	29	0	0	48
Stage 1	29	-	-	-	-
Stage 2	58	-	-	-	-
Critical Hdwy	6.63	6.23	-	-	4.13
Critical Hdwy Stg 1	5.43	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-
Follow-up Hdwy	3.519	3.319	-	-	2.219
Pot Cap-1 Maneuver	909	1045	-	-	1558
Stage 1	993	-	-	-	-
Stage 2	958	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	883	1032	-	-	1538
Mov Cap-2 Maneuver	883	-	-	-	-
Stage 1	980	-	-	-	-
Stage 2	943	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.5	0	4
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	924	1538
HCM Lane V/C Ratio	-	-	0.135	0.016
HCM Control Delay (s)	-	-	9.5	7.4
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.5	0

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Traffic Vol, veh/h	0	2	2	33	107	0
Future Vol, veh/h	0	2	2	33	107	0
Conflicting Peds, #/hr	0	0	5	0	0	5
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	100	100	100	2	2	100
Mvmt Flow	0	2	2	33	107	0

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	133	59	112	0	0
Stage 1	112	-	-	-	-
Stage 2	21	-	-	-	-
Critical Hdwy	8.8	8.9	6.1	-	-
Critical Hdwy Stg 1	7.8	-	-	-	-
Critical Hdwy Stg 2	7.8	-	-	-	-
Follow-up Hdwy	4.5	4.3	3.2	-	-
Pot Cap-1 Maneuver	627	749	978	-	-
Stage 1	673	-	-	-	-
Stage 2	774	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	621	746	974	-	-
Mov Cap-2 Maneuver	621	-	-	-	-
Stage 1	669	-	-	-	-
Stage 2	771	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.8	0.5	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	974	-	746	-	-
HCM Lane V/C Ratio	0.002	-	0.003	-	-
HCM Control Delay (s)	8.7	0	9.8	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection						
Int Delay, s/veh	6.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	9	7	0	20	3
Future Vol, veh/h	0	9	7	0	20	3
Conflicting Peds, #/hr	0	10	10	0	10	10
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	9	7	0	20	3

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	19	0	39
Stage 1	-	-	-	-	15
Stage 2	-	-	-	-	24
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1597	-	973
Stage 1	-	-	-	-	1008
Stage 2	-	-	-	-	999
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1583	-	954
Mov Cap-2 Maneuver	-	-	-	-	954
Stage 1	-	-	-	-	1000
Stage 2	-	-	-	-	987

Approach	EB	WB	NB
HCM Control Delay, s	0	7.3	8.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	964	-	-	1583	-
HCM Lane V/C Ratio	0.024	-	-	0.004	-
HCM Control Delay (s)	8.8	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Intersection Delay, s/veh	10.3
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	30	72	4	1	103	101	0	7	2	109	181	47
Future Vol, veh/h	30	72	4	1	103	101	0	7	2	109	181	47
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	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	30	72	4	1	103	101	0	7	2	109	181	47
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9	9.3	8.1	11.3
HCM LOS	A	A	A	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	28%	0%	32%
Vol Thru, %	78%	68%	50%	54%
Vol Right, %	22%	4%	49%	14%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	9	106	205	337
LT Vol	0	30	1	109
Through Vol	7	72	103	181
RT Vol	2	4	101	47
Lane Flow Rate	9	106	205	337
Geometry Grp	1	1	1	1
Degree of Util (X)	0.012	0.149	0.263	0.436
Departure Headway (Hd)	4.966	5.059	4.618	4.662
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	715	705	775	768
Service Time	3.038	3.115	2.665	2.708
HCM Lane V/C Ratio	0.013	0.15	0.265	0.439
HCM Control Delay	8.1	9	9.3	11.3
HCM Lane LOS	A	A	A	B
HCM 95th-tile Q	0	0.5	1.1	2.2

Intersection	
Intersection Delay, s/veh	8.1
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	100	0	30	0	0	20	30	100	0	9	52	52
Future Vol, veh/h	100	0	30	0	0	20	30	100	0	9	52	52
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	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	100	0	30	0	0	20	30	100	0	9	52	52
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.4	7.1	8.3	7.8
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	23%	77%	0%	8%
Vol Thru, %	77%	0%	0%	46%
Vol Right, %	0%	23%	100%	46%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	130	130	20	113
LT Vol	30	100	0	9
Through Vol	100	0	0	52
RT Vol	0	30	20	52
Lane Flow Rate	130	130	20	113
Geometry Grp	1	1	1	1
Degree of Util (X)	0.161	0.163	0.022	0.131
Departure Headway (Hd)	4.445	4.511	4.025	4.164
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	809	797	890	863
Service Time	2.461	2.529	2.048	2.18
HCM Lane V/C Ratio	0.161	0.163	0.022	0.131
HCM Control Delay	8.3	8.4	7.1	7.8
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.6	0.6	0.1	0.5

Intersection	
Intersection Delay, s/veh	7.5
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↖	↑	↘	
Traffic Vol, veh/h	48	19	26	46	20	31
Future Vol, veh/h	48	19	26	46	20	31
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	48	19	26	46	20	31
Number of Lanes	2	0	1	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	2
HCM Control Delay	7.4	7.8	7.2
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2
Vol Left, %	39%	0%	0%	100%	0%
Vol Thru, %	0%	100%	46%	0%	100%
Vol Right, %	61%	0%	54%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	51	32	35	26	46
LT Vol	20	0	0	26	0
Through Vol	0	32	16	0	46
RT Vol	31	0	19	0	0
Lane Flow Rate	51	32	35	26	46
Geometry Grp	2	7	7	7	7
Degree of Util (X)	0.056	0.041	0.042	0.037	0.06
Departure Headway (Hd)	3.978	4.66	4.28	5.158	4.657
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	906	766	834	693	768
Service Time	1.978	2.402	2.021	2.895	2.394
HCM Lane V/C Ratio	0.056	0.042	0.042	0.038	0.06
HCM Control Delay	7.2	7.6	7.2	8.1	7.7
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.2	0.1	0.1	0.1	0.2

Lanes, Volumes, Timings
10: Carling & Parkdale

2028 PM Demand Rationalized Main Hospital SPA PEAK GEN

03/20/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø10
Lane Configurations							
Traffic Volume (vph)	96	613	1158	122	26	157	
Future Volume (vph)	96	613	1158	122	26	157	
Satd. Flow (prot)	1695	3390	3390	1517	1526	0	
Flt Permitted	0.950				0.993		
Satd. Flow (perm)	1643	3390	3390	1239	1524	0	
Satd. Flow (RTOR)				122	157		
Lane Group Flow (vph)	96	613	1158	122	183	0	
Turn Type	Prot	NA	NA	Perm	Perm		
Protected Phases	5	2	6				10
Permitted Phases				6	4		
Detector Phase	5	2	6	6	4		
Switch Phase							
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0		1.0
Minimum Split (s)	11.1	26.7	26.7	26.7	37.2		5.0
Total Split (s)	16.0	92.8	76.8	76.8	37.2		5.0
Total Split (%)	11.9%	68.7%	56.9%	56.9%	27.6%		4%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.0		2.0
All-Red Time (s)	2.4	1.9	1.9	1.9	3.2		0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	6.1	5.6	5.6	5.6	6.2		
Lead/Lag	Lead		Lag	Lag			
Lead-Lag Optimize?	Yes		Yes	Yes			
Recall Mode	None	C-Min	C-Min	C-Min	None		Min
Act Effct Green (s)	13.6	104.0	84.3	84.3	11.7		
Actuated g/C Ratio	0.10	0.77	0.62	0.62	0.09		
v/c Ratio	0.56	0.23	0.55	0.15	0.67		
Control Delay	69.9	4.8	16.5	2.6	25.0		
Queue Delay	0.0	0.0	0.7	0.0	0.0		
Total Delay	69.9	4.8	17.2	2.6	25.0		
LOS	E	A	B	A	C		
Approach Delay		13.6	15.8		25.0		
Approach LOS		B	B		C		
Queue Length 50th (m)	24.7	19.3	84.6	0.0	6.6		
Queue Length 95th (m)	41.7	31.7	127.1	8.7	29.5		
Internal Link Dist (m)		297.5	170.5		278.4		
Turn Bay Length (m)	155.0			80.0			
Base Capacity (vph)	173	2612	2116	819	470		
Starvation Cap Reductn	0	0	570	0	0		
Spillback Cap Reductn	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0		
Reduced v/c Ratio	0.55	0.23	0.75	0.15	0.39		

Intersection Summary

Cycle Length: 135
 Actuated Cycle Length: 135
 Offset: 66 (49%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.67

Intersection Signal Delay: 15.9

Intersection LOS: B

Intersection Capacity Utilization 72.1%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 10: Carling & Parkdale





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↗	↗↗	↗↗	↗	↘↘	
Traffic Volume (vph)	88	568	1263	40	17	16
Future Volume (vph)	88	568	1263	40	17	16
Satd. Flow (prot)	1695	3390	3390	1517	1592	0
Flt Permitted	0.950				0.975	
Satd. Flow (perm)	1680	3390	3390	1394	1580	0
Satd. Flow (RTOR)				40	16	
Lane Group Flow (vph)	88	568	1263	40	33	0
Turn Type	Prot	NA	NA	Perm	Perm	
Protected Phases	5	2	6			
Permitted Phases				6	4	
Detector Phase	5	2	6	6	4	
Switch Phase						
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	11.4	31.3	31.3	31.3	23.3	
Total Split (s)	12.5	106.7	94.2	94.2	23.3	
Total Split (%)	9.6%	82.1%	72.5%	72.5%	17.9%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.3	
All-Red Time (s)	2.7	2.7	2.7	2.7	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.4	6.4	6.4	6.4	5.3	
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Min	C-Min	C-Min	None	
Act Effct Green (s)	15.2	115.4	91.2	91.2	11.6	
Actuated g/C Ratio	0.12	0.89	0.70	0.70	0.09	
v/c Ratio	0.44	0.19	0.53	0.04	0.21	
Control Delay	60.9	2.2	9.8	2.6	36.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	60.9	2.2	9.8	2.6	36.3	
LOS	E	A	A	A	D	
Approach Delay		10.1	9.5		36.3	
Approach LOS		B	A		D	
Queue Length 50th (m)	21.4	11.8	63.7	0.0	4.1	
Queue Length 95th (m)	37.8	23.1	78.5	3.2	13.7	
Internal Link Dist (m)		170.5	180.8		39.9	
Turn Bay Length (m)	90.0			140.0		
Base Capacity (vph)	198	3009	2442	1015	232	
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	0.44	0.19	0.52	0.04	0.14	

Intersection Summary

Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 70
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.53

Intersection Signal Delay: 10.1

Intersection LOS: B

Intersection Capacity Utilization 68.0%

ICU Level of Service C

Analysis Period (min) 15

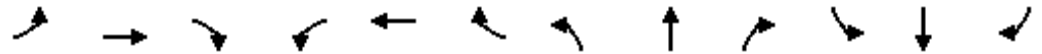
Splits and Phases: 11: Carling & Civic



Lanes, Volumes, Timings
13: Maple/Old Irvine & Carling

2028 PM Demand Rationalized Main Hospital SPA PEAK GEN

03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘		↕			↕	
Traffic Volume (vph)	40	470	41	37	1062	7	75	20	44	6	4	14
Future Volume (vph)	40	470	41	37	1062	7	75	20	44	6	4	14
Satd. Flow (prot)	1695	3390	1517	1695	3390	1517	0	1643	0	0	1599	0
Flt Permitted	0.240			0.483				0.818			0.921	
Satd. Flow (perm)	415	3390	1293	808	3390	1178	0	1370	0	0	1483	0
Satd. Flow (RTOR)			37			37		18			14	
Lane Group Flow (vph)	40	470	41	37	1062	7	0	139	0	0	24	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8				4
Permitted Phases	2		2	6		6	8			4		
Detector Phase	2	2	2	6	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	35.0	35.0	35.0	34.3	34.3	34.3	42.4	42.4		42.4	42.4	
Total Split (s)	87.0	87.0	87.0	87.0	87.0	87.0	43.0	43.0		43.0	43.0	
Total Split (%)	66.9%	66.9%	66.9%	66.9%	66.9%	66.9%	33.1%	33.1%		33.1%	33.1%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	4.4	4.4		4.4	4.4	
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	5.7	5.7	5.7	5.7		7.4			7.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Min	C-Min	C-Min	C-Min	C-Min	C-Min	None	None		None	None	
Act Effct Green (s)	94.7	94.7	94.7	94.7	94.7	94.7		22.2			22.2	
Actuated g/C Ratio	0.73	0.73	0.73	0.73	0.73	0.73		0.17			0.17	
v/c Ratio	0.13	0.19	0.04	0.06	0.43	0.01		0.56			0.09	
Control Delay	7.4	5.5	1.8	8.0	8.9	0.0		49.1			23.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0			0.0	
Total Delay	7.4	5.5	1.8	8.0	8.9	0.0		49.1			23.0	
LOS	A	A	A	A	A	A		D			C	
Approach Delay		5.4			8.8			49.1			23.0	
Approach LOS		A			A			D			C	
Queue Length 50th (m)	1.4	8.6	0.1	2.0	40.7	0.0		30.2			2.3	
Queue Length 95th (m)	9.9	20.3	1.0	7.8	85.3	m0.0		44.2			8.7	
Internal Link Dist (m)		236.1			191.5			174.3			220.8	
Turn Bay Length (m)	20.0		15.0	45.0		25.0						
Base Capacity (vph)	302	2470	952	588	2470	868		388			416	
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	0.13	0.19	0.04	0.06	0.43	0.01		0.36			0.06	

Intersection Summary

Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 28 (22%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.56

Intersection Signal Delay: 11.0

Intersection LOS: B

Intersection Capacity Utilization 69.3%

ICU Level of Service C

Analysis Period (min) 15

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

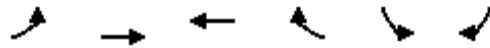
Splits and Phases: 13: Maple/Old Irvine & Carling



Lanes, Volumes, Timings
15: Carling & Sherwood

2028 PM Demand Rationalized Main Hospital SPA PEAK GEN

03/20/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↗↗	↖↖	↗	↘	↘
Traffic Volume (vph)	43	527	951	209	154	9
Future Volume (vph)	43	527	951	209	154	9
Satd. Flow (prot)	1695	3390	3390	1517	1695	1517
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1573	3390	3390	1072	1669	1473
Satd. Flow (RTOR)				209		7
Lane Group Flow (vph)	43	527	951	209	154	9
Turn Type	Prot	NA	NA	Perm	Perm	Perm
Protected Phases	5	2	6			
Permitted Phases				6	4	4
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	10.3	25.1	25.1	25.1	25.1	25.1
Total Split (s)	15.0	89.0	74.0	74.0	41.0	41.0
Total Split (%)	11.5%	68.5%	56.9%	56.9%	31.5%	31.5%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.3	5.3	5.3	5.3	5.3	5.3
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Min	C-Min	C-Min	None	None
Act Effct Green (s)	8.7	102.0	90.2	90.2	17.4	17.4
Actuated g/C Ratio	0.07	0.78	0.69	0.69	0.13	0.13
v/c Ratio	0.38	0.20	0.40	0.26	0.69	0.04
Control Delay	66.7	4.1	2.8	0.7	69.3	27.8
Queue Delay	0.0	0.0	0.1	0.0	0.0	0.0
Total Delay	66.7	4.1	2.9	0.7	69.3	27.8
LOS	E	A	A	A	E	C
Approach Delay		8.8	2.5		67.0	
Approach LOS		A	A		E	
Queue Length 50th (m)	10.7	15.2	7.9	0.0	38.2	0.5
Queue Length 95th (m)	22.5	25.6	20.0	0.0	57.8	5.4
Internal Link Dist (m)		118.3	141.7		152.1	
Turn Bay Length (m)	30.0			90.0		15.0
Base Capacity (vph)	133	2660	2352	807	458	409
Starvation Cap Reductn	0	0	361	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	0.32	0.20	0.48	0.26	0.34	0.02

Intersection Summary

Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 24 (18%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 65
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.69

Intersection Signal Delay: 10.0

Intersection LOS: A

Intersection Capacity Utilization 55.6%

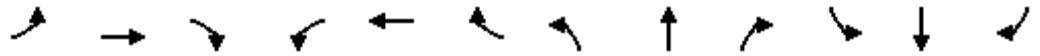
ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 15: Carling & Sherwood



Lanes, Volumes, Timings 2028 PM Demand Rationalized Main Hospital SPA PEAK GEN
 16: Road A/Champagne & Carling 03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Traffic Volume (vph)	65	550	44	46	908	139	109	0	125	127	0	142
Future Volume (vph)	65	550	44	46	908	139	109	0	125	127	0	142
Satd. Flow (prot)	1695	3390	1517	1695	3390	1517	1695	1402	0	1695	1417	0
Flt Permitted	0.950			0.950			0.405			0.677		
Satd. Flow (perm)	1555	3390	1356	1634	3390	1019	697	1402	0	1142	1417	0
Satd. Flow (RTOR)						147					309	
Lane Group Flow (vph)	65	550	44	46	908	139	109	125	0	127	142	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA		Perm	NA	
Protected Phases	5	2		1	6		3	8				4
Permitted Phases			2			6	8			4		
Detector Phase	5	2	2	1	6	6	3	8		4		4
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	5.0	10.0		10.0	10.0	
Minimum Split (s)	15.3	26.3	26.3	15.3	26.3	26.3	10.3	23.3		37.9	37.9	
Total Split (s)	15.3	48.2	48.2	15.3	53.2	53.2	12.5	56.5		39.0	39.0	
Total Split (%)	11.8%	37.1%	37.1%	11.8%	40.9%	40.9%	9.6%	43.5%		30.0%	30.0%	
Yellow Time (s)	3.3	3.7	3.7	3.3	3.7	3.7	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.0	1.6	1.6	2.0	1.6	1.6	2.0	2.0		2.6	2.6	
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)	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3		5.9	5.9	
Lead/Lag	Lead			Lead			Lead					
Lead-Lag Optimize?	Yes			Yes			Yes					
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None		None	None	
Act Effct Green (s)	10.7	67.6	67.6	10.3	68.2	68.2	37.3	37.3		20.5	20.5	
Actuated g/C Ratio	0.08	0.52	0.52	0.08	0.52	0.52	0.29	0.29		0.16	0.16	
v/c Ratio	0.47	0.31	0.06	0.34	0.51	0.23	0.40	0.31		0.71	0.29	
Control Delay	65.3	21.5	21.9	64.1	24.6	4.5	37.4	36.2		71.1	1.5	
Queue Delay	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.0		0.0	0.0	
Total Delay	65.3	21.5	21.9	64.1	26.2	4.5	37.4	36.2		71.1	1.5	
LOS	E	C	C	E	C	A	D	D		E	A	
Approach Delay		25.9			25.1			36.8				34.4
Approach LOS		C			C			D				C
Queue Length 50th (m)	16.7	51.4	5.1	11.4	79.0	0.0	21.3	25.2		31.4	0.0	
Queue Length 95th (m)	24.8	82.1	18.7	24.0	129.0	12.1	31.2	36.4		47.9	0.0	
Internal Link Dist (m)		141.7			98.6			63.9				477.2
Turn Bay Length (m)	55.0		75.0	61.0		35.0				30.0		
Base Capacity (vph)	139	1762	704	134	1778	604	275	552		290	591	
Starvation Cap Reductn	0	0	0	0	653	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	0.47	0.31	0.06	0.34	0.81	0.23	0.40	0.23		0.44	0.24	

Intersection Summary
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 105
 Control Type: Actuated-Coordinated

Lane Group	Ø9	Ø10	Ø11
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Satd. Flow (RTOR)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	9	10	11
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	1.0	1.0	1.0
Minimum Split (s)	10.0	5.0	5.0
Total Split (s)	10.0	5.0	5.0
Total Split (%)	8%	4%	4%
Yellow Time (s)	2.0	2.0	2.0
All-Red Time (s)	0.0	0.0	0.0
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes
Recall Mode	None	None	None
Act Effct Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
LOS			
Approach Delay			
Approach LOS			
Queue Length 50th (m)			
Queue Length 95th (m)			
Internal Link Dist (m)			
Turn Bay Length (m)			
Base Capacity (vph)			
Starvation Cap Reductn			
Spillback Cap Reductn			
Storage Cap Reductn			
Reduced v/c Ratio			
Intersection Summary			

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 27.6









Intersection LOS: C

Intersection Capacity Utilization 83.0%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 16: Road A/Champagne & Carling

 Ø1 15.3 s	 Ø9 10 s	 Ø2 (R) 48.2 s	 Ø3 12.5 s	 Ø1 5 s	 Ø4 39 s
 Ø5 15.3 s	 Ø10 5 s	 Ø6 (R) 53.2 s	 Ø8 56.5 s		

Lanes, Volumes, Timings
17: Carling & Trillium MUP

2028 PM Demand Rationalized Main Hospital SPA PEAK GEN

03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑							
Traffic Volume (vph)	0	814	0	0	1085	0	0	0	0	0	0	0
Future Volume (vph)	0	814	0	0	1085	0	0	0	0	0	0	0
Satd. Flow (prot)	0	3390	0	0	3390	0	0	0	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	3390	0	0	3390	0	0	0	0	0	0	0
Satd. Flow (RTOR)												
Lane Group Flow (vph)	0	814	0	0	1085	0	0	0	0	0	0	0
Turn Type		NA			NA							
Protected Phases		2			6							
Permitted Phases												
Detector Phase		2			6							
Switch Phase												
Minimum Initial (s)		10.0			10.0							
Minimum Split (s)		31.1			31.1							
Total Split (s)		35.0			35.0							
Total Split (%)		50.0%			50.0%							
Yellow Time (s)		3.7			3.7							
All-Red Time (s)		1.4			1.4							
Lost Time Adjust (s)		0.0			0.0							
Total Lost Time (s)		5.1			5.1							
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		C-Min			C-Min							
Act Effct Green (s)		62.0			62.0							
Actuated g/C Ratio		0.89			0.89							
v/c Ratio		0.27			0.36							
Control Delay		4.7			4.7							
Queue Delay		0.0			0.0							
Total Delay		4.7			4.7							
LOS		A			A							
Approach Delay		4.7			4.7							
Approach LOS		A			A							
Queue Length 50th (m)		0.0			0.0							
Queue Length 95th (m)		56.5			m94.4							
Internal Link Dist (m)		98.6			92.8			53.0			60.9	
Turn Bay Length (m)												
Base Capacity (vph)		3002			3002							
Starvation Cap Reductn		0			32							
Spillback Cap Reductn		0			0							
Storage Cap Reductn		0			0							
Reduced v/c Ratio		0.27			0.37							

Intersection Summary

Cycle Length: 70
Actuated Cycle Length: 70
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated

Lane Group	Ø4	Ø8
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	4	8
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	1.0
Minimum Split (s)	35.6	35.6
Total Split (s)	35.0	35.0
Total Split (%)	50%	50%
Yellow Time (s)	3.0	3.0
All-Red Time (s)	3.6	3.6
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag		
Lead-Lag Optimize?		
Recall Mode	None	None
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

Maximum v/c Ratio: 0.36

Intersection Signal Delay: 4.7

Intersection LOS: A

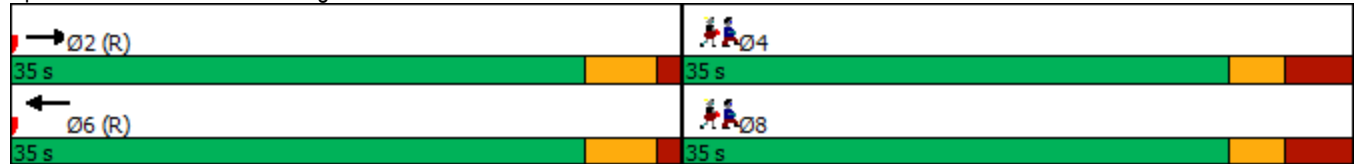
Intersection Capacity Utilization 35.9%

ICU Level of Service A

Analysis Period (min) 15

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

Splits and Phases: 17: Carling & Trillium MUP



Lanes, Volumes, Timings
18: Preston & Carling

2028 PM Demand Rationalized Main Hospital SPA PEAK GEN

03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Traffic Volume (vph)	142	477	195	297	748	68	278	396	171	111	302	67
Future Volume (vph)	142	477	195	297	748	68	278	396	171	111	302	67
Satd. Flow (prot)	1695	3390	1517	1695	3390	1517	1695	3127	0	1695	1695	0
Flt Permitted	0.950			0.950			0.132			0.439		
Satd. Flow (perm)	1602	3390	1517	1617	3390	1242	236	3127	0	748	1695	0
Satd. Flow (RTOR)						179					7	
Lane Group Flow (vph)	142	477	195	297	748	68	278	567	0	111	369	0
Turn Type	Prot	NA	custom	Prot	NA	Perm	pm+pt	NA		Perm	NA	
Protected Phases	5	9 2	9 3	1	6		3	8				4
Permitted Phases						6	8			4		
Detector Phase	5	9 2	9 3	1	6	6	3	8		4		4
Switch Phase												
Minimum Initial (s)	5.0			5.0	10.0	10.0	5.0	10.0		10.0	10.0	
Minimum Split (s)	11.2			11.2	25.0	25.0	11.9	38.9		38.9	38.9	
Total Split (s)	21.0			32.0	45.0	45.0	25.0	64.0		39.0	39.0	
Total Split (%)	15.0%			22.9%	32.1%	32.1%	17.9%	45.7%		27.9%	27.9%	
Yellow Time (s)	3.7			3.7	3.7	3.7	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.5			2.5	2.3	2.3	3.6	3.6		3.6	3.6	
Lost Time Adjust (s)	0.0			0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.2			6.2	6.0	6.0	6.9	6.9		6.9	6.9	
Lead/Lag	Lead			Lead			Lead					
Lead-Lag Optimize?	Yes			Yes			Yes					
Recall Mode	None			None	C-Min	C-Min	None	None		None	None	
Act Effct Green (s)	14.2	36.2	34.0	25.7	41.9	41.9	60.8	56.8		31.5	31.5	
Actuated g/C Ratio	0.10	0.26	0.24	0.18	0.30	0.30	0.43	0.41		0.22	0.22	
v/c Ratio	0.83	0.55	0.53	0.96	0.74	0.14	0.95	0.45		0.66	0.96	
Control Delay	97.2	44.6	56.4	97.6	50.1	0.6	77.8	13.7		69.4	88.0	
Queue Delay	0.0	0.9	1.8	0.0	0.0	0.0	6.3	0.0		0.0	39.3	
Total Delay	97.2	45.4	58.2	97.6	50.1	0.6	84.1	13.7		69.4	127.3	
LOS	F	D	E	F	D	A	F	B		E	F	
Approach Delay		57.5			59.8			36.8				113.9
Approach LOS		E			E			D				F
Queue Length 50th (m)	39.0	61.2	47.4	82.2	101.2	0.0	34.3	21.2		28.1	99.5	
Queue Length 95th (m)	#75.3	70.5	82.8	#138.3	125.1	0.0	#111.7	30.7		#53.6	#159.3	
Internal Link Dist (m)		92.8			165.9			145.6				55.2
Turn Bay Length (m)	70.0		90.0	120.0		95.0				35.0		
Base Capacity (vph)	179	849	369	312	1015	497	294	1275		171	394	
Starvation Cap Reductn	0	153	36	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	72	0	0	0	10	0		0	54	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.79	0.69	0.66	0.95	0.74	0.14	0.98	0.44		0.65	1.09	

Intersection Summary

Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 6 (4%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 120
 Control Type: Actuated-Coordinated

Lane Group	Ø2	Ø9	Ø10	Ø11	Ø12
Lane Configurations					
Traffic Volume (vph)					
Future Volume (vph)					
Satd. Flow (prot)					
Flt Permitted					
Satd. Flow (perm)					
Satd. Flow (RTOR)					
Lane Group Flow (vph)					
Turn Type					
Protected Phases	2	9	10	11	12
Permitted Phases					
Detector Phase					
Switch Phase					
Minimum Initial (s)	10.0	1.0	1.0	1.0	1.0
Minimum Split (s)	26.0	5.3	5.0	5.0	5.0
Total Split (s)	28.9	10.1	5.0	5.0	5.0
Total Split (%)	21%	7%	4%	4%	4%
Yellow Time (s)	2.0	2.0	2.0	2.0	2.0
All-Red Time (s)	0.0	2.3	0.0	0.0	0.0
Lost Time Adjust (s)					
Total Lost Time (s)					
Lead/Lag	Lag		Lag	Lag	
Lead-Lag Optimize?	Yes		Yes	Yes	
Recall Mode	C-Min	Min	None	None	None
Act Effct Green (s)					
Actuated g/C Ratio					
v/c Ratio					
Control Delay					
Queue Delay					
Total Delay					
LOS					
Approach Delay					
Approach LOS					
Queue Length 50th (m)					
Queue Length 95th (m)					
Internal Link Dist (m)					
Turn Bay Length (m)					
Base Capacity (vph)					
Starvation Cap Reductn					
Spillback Cap Reductn					
Storage Cap Reductn					
Reduced v/c Ratio					
Intersection Summary					

Maximum v/c Ratio: 0.96

Intersection Signal Delay: 61.2

Intersection LOS: E

Intersection Capacity Utilization 94.4%

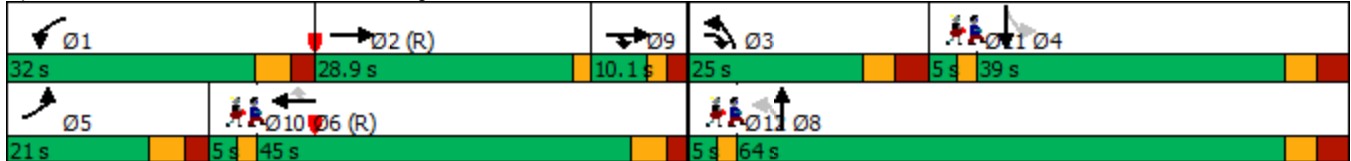
ICU Level of Service F

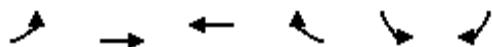
Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 18: Preston & Carling





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↗↗	↖	↗	↘	↘
Traffic Volume (vph)	197	705	708	109	258	255
Future Volume (vph)	197	705	708	109	258	255
Satd. Flow (prot)	1695	3390	1784	1517	1695	1517
Flt Permitted	0.196				0.950	
Satd. Flow (perm)	350	3390	1784	1161	1665	1209
Satd. Flow (RTOR)				40		183
Lane Group Flow (vph)	197	705	708	109	258	255
Turn Type	pm+pt	NA	NA	Perm	Perm	Perm
Protected Phases	5	2	6			
Permitted Phases	2			6	4	4
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	10.9	29.7	29.7	29.7	39.0	39.0
Total Split (s)	23.0	90.0	67.0	67.0	40.0	40.0
Total Split (%)	17.7%	69.2%	51.5%	51.5%	30.8%	30.8%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.3	3.3
All-Red Time (s)	2.2	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)	5.9	5.7	5.7	5.7	6.0	6.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Min	C-Min	C-Min	None	None
Act Effct Green (s)	88.2	88.4	70.7	70.7	29.9	29.9
Actuated g/C Ratio	0.68	0.68	0.54	0.54	0.23	0.23
v/c Ratio	0.55	0.31	0.73	0.17	0.68	0.61
Control Delay	14.4	9.4	30.1	11.9	54.3	19.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.4	9.4	30.1	11.9	54.3	19.3
LOS	B	A	C	B	D	B
Approach Delay		10.5	27.7		36.9	
Approach LOS		B	C		D	
Queue Length 50th (m)	18.3	38.2	138.8	8.7	58.7	14.7
Queue Length 95th (m)	28.7	48.6	#213.5	21.2	86.9	43.1
Internal Link Dist (m)		100.4	299.3		220.7	
Turn Bay Length (m)	50.0			30.0		30.0
Base Capacity (vph)	415	2305	969	649	435	451
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	0.47	0.31	0.73	0.17	0.59	0.57

Intersection Summary

Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 110 (85%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 22.9

Intersection LOS: C

Intersection Capacity Utilization 92.3%

ICU Level of Service F

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 20: Carling & Booth



Lanes, Volumes, Timings
21: Bronson & Carling/Glebe

2028 PM Demand Rationalized Main Hospital SPA PEAK GEN

03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↖	↖				↖	↖			↖	↖
Traffic Volume (vph)	420	100	443	0	0	0	480	718	20	0	1083	249
Future Volume (vph)	420	100	443	0	0	0	480	718	20	0	1083	249
Satd. Flow (prot)	1610	1649	1517	0	0	0	3288	1766	0	0	3251	0
Flt Permitted	0.950	0.973					0.950					
Satd. Flow (perm)	1511	1592	1415	0	0	0	3239	1766	0	0	3251	0
Satd. Flow (RTOR)			105					2			22	
Lane Group Flow (vph)	290	230	443	0	0	0	480	738	0	0	1332	0
Turn Type	Perm	NA	pm+ov				Prot	NA			NA	
Protected Phases		4	5				5	2			6	
Permitted Phases	4		4									
Detector Phase	4	4	5				5	2			6	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0				10.0	10.0			10.0	
Minimum Split (s)	31.0	31.0	16.0				16.0	25.1			33.0	
Total Split (s)	47.0	47.0	29.0				29.0	93.0			64.0	
Total Split (%)	32.0%	32.0%	19.7%				19.7%	63.3%			43.5%	
Yellow Time (s)	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			2.7	
Lost Time Adjust (s)	0.0	0.0	0.0				0.0	0.0			0.0	
Total Lost Time (s)	6.0	6.0	6.0				6.0	6.0			6.0	
Lead/Lag			Lead				Lead				Lag	
Lead-Lag Optimize?			Yes				Yes				Yes	
Recall Mode	None	None	None				None	C-Min			C-Min	
Act Effct Green (s)	32.9	32.9	58.5				25.6	95.1			63.5	
Actuated g/C Ratio	0.22	0.22	0.40				0.17	0.65			0.43	
v/c Ratio	0.86	0.65	0.69				0.84	0.65			0.94	
Control Delay	77.6	59.6	29.6				72.3	20.3			53.3	
Queue Delay	0.0	0.0	0.0				0.0	0.0			0.0	
Total Delay	77.6	59.6	29.6				72.3	20.3			53.3	
LOS	E	E	C				E	C			D	
Approach Delay		51.2						40.8			53.3	
Approach LOS		D						D			D	
Queue Length 50th (m)	85.7	64.2	71.2				68.4	124.2			~202.5	
Queue Length 95th (m)	115.2	88.3	103.6				#104.2	192.1			#258.5	
Internal Link Dist (m)		74.7			115.0			394.4			328.4	
Turn Bay Length (m)	40.0						50.0					
Base Capacity (vph)	421	444	645				574	1143			1417	
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	0.69	0.52	0.69				0.84	0.65			0.94	

Intersection Summary

Cycle Length: 147
 Actuated Cycle Length: 147
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated

Lane Group	Ø10
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	10
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	7.0
Total Split (s)	7.0
Total Split (%)	5%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	Min
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Maximum v/c Ratio: 0.94

Intersection Signal Delay: 48.4

Intersection LOS: D

Intersection Capacity Utilization 91.7%

ICU Level of Service F

Analysis Period (min) 15

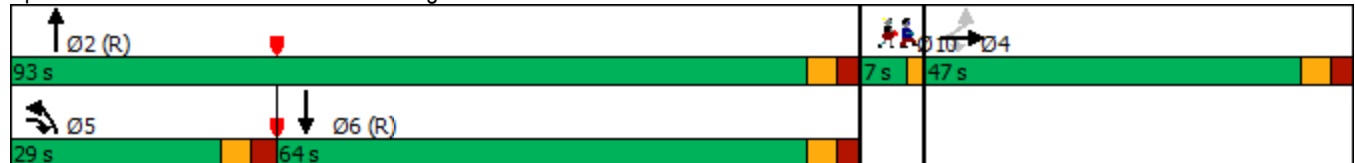
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 21: Bronson & Carling/Glebe



Lanes, Volumes, Timings
22: Parkdale & 417 WB on/off

2028 PM Demand Rationalized Main Hospital SPA PEAK GEN

03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	224	8	416	121	441	0	0	531	191
Future Volume (vph)	0	0	0	224	8	416	121	441	0	0	531	191
Satd. Flow (prot)	0	0	0	1695	1465	0	1695	1784	0	0	1687	0
Flt Permitted				0.950			0.254					
Satd. Flow (perm)	0	0	0	1695	1465	0	453	1784	0	0	1687	0
Satd. Flow (RTOR)					409						28	
Lane Group Flow (vph)	0	0	0	224	424	0	121	441	0	0	722	0
Turn Type				Perm	NA		pm+pt	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases				8			2					
Detector Phase				8	8		5	2			6	
Switch Phase												
Minimum Initial (s)				10.0	10.0		5.0	10.0			10.0	
Minimum Split (s)				29.0	29.0		10.3	27.3			25.1	
Total Split (s)				29.0	29.0		11.0	71.0			60.0	
Total Split (%)				29.0%	29.0%		11.0%	71.0%			60.0%	
Yellow Time (s)				3.3	3.3		3.0	3.0			3.0	
All-Red Time (s)				2.2	2.2		2.2	3.3			3.3	
Lost Time Adjust (s)				0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)				5.5	5.5		5.2	6.3			6.3	
Lead/Lag							Lag				Lead	
Lead-Lag Optimize?							Yes				Yes	
Recall Mode				None	None		None	C-Min			C-Min	
Act Effct Green (s)				18.2	18.2		71.1	70.0			57.4	
Actuated g/C Ratio				0.18	0.18		0.71	0.70			0.57	
v/c Ratio				0.72	0.71		0.29	0.35			0.74	
Control Delay				51.7	11.2		4.9	3.6			22.0	
Queue Delay				0.0	0.0		1.5	1.0			2.0	
Total Delay				51.7	11.2		6.4	4.6			24.0	
LOS				D	B		A	A			C	
Approach Delay					25.2			5.0			24.0	
Approach LOS					C			A			C	
Queue Length 50th (m)				41.2	2.4		4.6	18.5			96.6	
Queue Length 95th (m)				62.1	29.1		m2.8	14.1			153.9	
Internal Link Dist (m)		157.5			140.3			45.3			171.5	
Turn Bay Length (m)												
Base Capacity (vph)				398	657		413	1248			987	
Starvation Cap Reductn				0	0		164	541			0	
Spillback Cap Reductn				0	0		0	0			138	
Storage Cap Reductn				0	0		0	0			0	
Reduced v/c Ratio				0.56	0.65		0.49	0.62			0.85	

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 39 (39%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 18.9

Intersection LOS: B

Intersection Capacity Utilization 119.8%

ICU Level of Service H

Analysis Period (min) 15

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

Splits and Phases: 22: Parkdale & 417 WB on/off



Lanes, Volumes, Timings
23: Parkdale & 417 EB on/off

2028 PM Demand Rationalized Main Hospital SPA PEAK GEN

03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗					↕↗		↖	↖	
Traffic Volume (vph)	311	0	150	0	0	0	0	222	358	433	272	0
Future Volume (vph)	311	0	150	0	0	0	0	222	358	433	272	0
Satd. Flow (prot)	0	1695	1517	0	0	0	0	2898	0	1695	1784	0
Flt Permitted		0.950								0.317		
Satd. Flow (perm)	0	1695	1482	0	0	0	0	2898	0	555	1784	0
Satd. Flow (RTOR)			150					358				
Lane Group Flow (vph)	0	311	150	0	0	0	0	580	0	433	272	0
Turn Type	Perm	NA	Perm					NA		pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		4							6		
Detector Phase	4	4	4					2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0					10.0		5.0	10.0	
Minimum Split (s)	25.1	25.1	25.1					25.1		10.3	25.1	
Total Split (s)	30.0	30.0	30.0					38.0		32.0	70.0	
Total Split (%)	30.0%	30.0%	30.0%					38.0%		32.0%	70.0%	
Yellow Time (s)	3.3	3.3	3.3					3.0		3.0	3.0	
All-Red Time (s)	2.6	2.6	2.6					2.8		2.3	2.8	
Lost Time Adjust (s)		0.0	0.0					0.0		0.0	0.0	
Total Lost Time (s)		5.9	5.9					5.8		5.3	5.8	
Lead/Lag								Lag		Lead		
Lead-Lag Optimize?								Yes		Yes		
Recall Mode	None	None	None					C-Min		None	C-Min	
Act Effct Green (s)		23.7	23.7					39.3		65.1	64.6	
Actuated g/C Ratio		0.24	0.24					0.39		0.65	0.65	
v/c Ratio		0.78	0.32					0.43		0.73	0.24	
Control Delay		48.7	6.5					11.1		20.7	11.4	
Queue Delay		0.0	0.0					0.1		24.0	1.9	
Total Delay		48.7	6.5					11.3		44.7	13.3	
LOS		D	A					B		D	B	
Approach Delay		35.0						11.3			32.6	
Approach LOS		C						B			C	
Queue Length 50th (m)		56.5	0.0					14.7		45.8	23.8	
Queue Length 95th (m)		78.6	13.4					37.3		75.6	m48.3	
Internal Link Dist (m)		109.8			145.0			90.1			45.3	
Turn Bay Length (m)			75.0									
Base Capacity (vph)		440	496					1407		674	1186	
Starvation Cap Reductn		0	0					178		244	749	
Spillback Cap Reductn		0	0					1		0	0	
Storage Cap Reductn		0	0					0		0	0	
Reduced v/c Ratio		0.71	0.30					0.47		1.01	0.62	

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 29 (29%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 70
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 26.1

Intersection LOS: C

Intersection Capacity Utilization 119.8%

ICU Level of Service H

Analysis Period (min) 15

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

Splits and Phases: 23: Parkdale & 417 EB on/off



Lanes, Volumes, Timings
24: Parkdale & Sherwood

2028 PM Demand Rationalized Main Hospital SPA PEAK GEN

03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	72	8	7	0	7	117	5	408	7	72	372	68
Future Volume (vph)	72	8	7	0	7	117	5	408	7	72	372	68
Satd. Flow (prot)	0	1683	0	0	1493	0	0	1777	0	0	1726	0
Flt Permitted		0.717						0.995			0.894	
Satd. Flow (perm)	0	1254	0	0	1493	0	0	1769	0	0	1548	0
Satd. Flow (RTOR)		7			117			3			23	
Lane Group Flow (vph)	0	87	0	0	124	0	0	420	0	0	512	0
Turn Type	Perm	NA			NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	1.0	1.0		1.0	1.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	18.0	18.0		18.0	18.0		25.1	25.1		25.1	25.1	
Total Split (s)	18.0	18.0		18.0	18.0		37.0	37.0		37.0	37.0	
Total Split (%)	32.7%	32.7%		32.7%	32.7%		67.3%	67.3%		67.3%	67.3%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.0			4.0			5.6			5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Ped	Ped		Ped	Ped		C-Min	C-Min		C-Min	C-Min	
Act Effct Green (s)		14.0			14.0			31.4			31.4	
Actuated g/C Ratio		0.25			0.25			0.57			0.57	
v/c Ratio		0.27			0.27			0.42			0.57	
Control Delay		18.0			6.2			8.2			10.3	
Queue Delay		0.0			0.0			0.0			0.4	
Total Delay		18.0			6.2			8.2			10.8	
LOS		B			A			A			B	
Approach Delay		18.0			6.2			8.2			10.8	
Approach LOS		B			A			A			B	
Queue Length 50th (m)		6.3			0.5			20.3			26.8	
Queue Length 95th (m)		15.8			10.4			35.6			49.6	
Internal Link Dist (m)		221.3			335.0			289.1			90.1	
Turn Bay Length (m)												
Base Capacity (vph)		324			467			1011			893	
Starvation Cap Reductn		0			0			0			101	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.27			0.27			0.42			0.65	

Intersection Summary

Cycle Length: 55

Actuated Cycle Length: 55

Offset: 26 (47%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 50

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.57	
Intersection Signal Delay: 9.9	Intersection LOS: A
Intersection Capacity Utilization 92.1%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 24: Parkdale & Sherwood





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↖	↗			↕			↕	
Traffic Volume (vph)	27	29	9	21	33	43	3	216	12	56	243	10
Future Volume (vph)	27	29	9	21	33	43	3	216	12	56	243	10
Satd. Flow (prot)	0	1695	0	1695	1554	0	0	1762	0	0	1759	0
Flt Permitted		0.830		0.807				0.997			0.910	
Satd. Flow (perm)	0	1401	0	1353	1554	0	0	1759	0	0	1601	0
Satd. Flow (RTOR)		7			43			8			5	
Lane Group Flow (vph)	0	65	0	21	76	0	0	231	0	0	309	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	19.4	19.4		19.4	19.4		31.8	31.8		31.8	31.8	
Total Split (s)	20.0	20.0		20.0	20.0		75.0	75.0		75.0	75.0	
Total Split (%)	21.1%	21.1%		21.1%	21.1%		78.9%	78.9%		78.9%	78.9%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.4	2.4		2.4	2.4		2.8	2.8		2.8	2.8	
Lost Time Adjust (s)		0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)		5.4		5.4	5.4			5.8			5.8	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Min	C-Min		C-Min	C-Min	
Act Effct Green (s)		12.4		12.4	12.4			75.6			75.6	
Actuated g/C Ratio		0.13		0.13	0.13			0.80			0.80	
v/c Ratio		0.35		0.12	0.32			0.16			0.24	
Control Delay		38.9		37.2	22.7			3.5			4.0	
Queue Delay		0.0		0.0	0.0			0.0			0.0	
Total Delay		38.9		37.2	22.7			3.5			4.0	
LOS		D		D	C			A			A	
Approach Delay		38.9			25.9			3.5			4.0	
Approach LOS		D			C			A			A	
Queue Length 50th (m)		9.6		3.4	5.4			10.3			15.2	
Queue Length 95th (m)		21.8		9.9	17.8			17.1			24.1	
Internal Link Dist (m)		220.6			228.6			278.4			289.1	
Turn Bay Length (m)				40.0								
Base Capacity (vph)		221		207	275			1402			1275	
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		0.29		0.10	0.28			0.16			0.24	

Intersection Summary

Cycle Length: 95
 Actuated Cycle Length: 95
 Offset: 40 (42%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 55
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.35

Intersection Signal Delay: 10.1

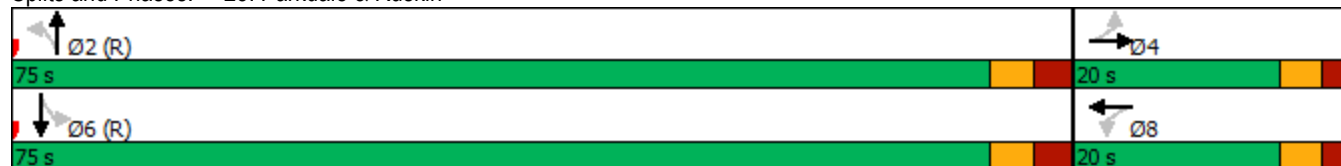
Intersection LOS: B

Intersection Capacity Utilization 68.7%

ICU Level of Service C

Analysis Period (min) 15

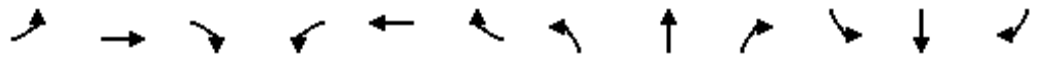
Splits and Phases: 25: Parkdale & Ruskin



Lanes, Volumes, Timings
30: Prince of Wales & Preston

2028 PM Demand Rationalized Main Hospital SPA PEAK GEN

03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	569	197	2	3	302	386	4	3	1	279	4	599
Future Volume (vph)	569	197	2	3	302	386	4	3	1	279	4	599
Satd. Flow (prot)	3288	1777	0	1695	1784	1517	0	1683	0	0	1700	1517
Flt Permitted	0.950			0.950				0.834			0.724	
Satd. Flow (perm)	3175	1777	0	1459	1784	1484	0	1313	0	0	1153	1357
Satd. Flow (RTOR)						227						
Lane Group Flow (vph)	569	199	0	3	302	386	0	8	0	0	283	599
Turn Type	Prot	NA		Prot	NA	Free	Perm	NA		custom	NA	custom
Protected Phases	5	2		1	6			8		11	4 11	5
Permitted Phases						Free	8			4		4
Detector Phase	5	2		1	6		8	8		11	4 11	5
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0		10.0		5.0
Minimum Split (s)	11.1	27.1		10.3	26.1		24.5	24.5		15.3		11.1
Total Split (s)	52.0	67.0		10.3	30.3		35.7	35.7		22.0		52.0
Total Split (%)	37.1%	47.9%		7.4%	21.6%		25.5%	25.5%		15.7%		37.1%
Yellow Time (s)	3.7	3.7		3.3	3.7		3.3	3.3		3.3		3.7
All-Red Time (s)	2.4	2.4		2.0	2.4		2.2	2.2		2.0		2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0				0.0
Total Lost Time (s)	6.1	6.1		5.3	6.1			5.5				6.1
Lead/Lag				Lead								
Lead-Lag Optimize?				Yes								
Recall Mode	None	C-Min		None	C-Min		None	None		None		None
Act Effct Green (s)	47.7	85.7		5.9	35.4	140.0		17.1			33.8	64.1
Actuated g/C Ratio	0.34	0.61		0.04	0.25	1.00		0.12			0.24	0.46
v/c Ratio	0.51	0.18		0.04	0.67	0.26		0.05			0.83	0.89
Control Delay	38.2	12.4		65.3	57.1	0.4		49.5			60.9	56.3
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0			0.0	0.7
Total Delay	38.2	12.4		65.3	57.1	0.4		49.5			60.9	57.0
LOS	D	B		E	E	A		D			E	E
Approach Delay		31.5			25.5			49.5			58.3	
Approach LOS		C			C			D			E	
Queue Length 50th (m)	55.6	19.1		0.8	73.9	0.0		2.0			82.3	171.2
Queue Length 95th (m)	82.2	34.6		4.1	#142.4	0.0		6.6			m93.8	m128.2
Internal Link Dist (m)		79.9			173.8			12.4			145.6	
Turn Bay Length (m)	45.0			30.0		45.0						
Base Capacity (vph)	1140	1087		71	450	1484		283			451	685
Starvation Cap Reductn	0	0		0	0	0		0			0	11
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	0.50	0.18		0.04	0.67	0.26		0.03			0.63	0.89

Intersection Summary

Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 105.9 (76%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 100
 Control Type: Actuated-Coordinated

Lane Group	Ø4	Ø9	Ø12
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Satd. Flow (RTOR)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	4	9	12
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	10.0	1.0	1.0
Minimum Split (s)	15.5	5.0	20.0
Total Split (s)	35.7	5.0	22.0
Total Split (%)	26%	4%	16%
Yellow Time (s)	3.3	2.0	2.0
All-Red Time (s)	2.2	0.0	0.0
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag		Lag	
Lead-Lag Optimize?		Yes	
Recall Mode	None	None	None
Act Effct Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
LOS			
Approach Delay			
Approach LOS			
Queue Length 50th (m)			
Queue Length 95th (m)			
Internal Link Dist (m)			
Turn Bay Length (m)			
Base Capacity (vph)			
Starvation Cap Reductn			
Spillback Cap Reductn			
Storage Cap Reductn			
Reduced v/c Ratio			
Intersection Summary			

Maximum v/c Ratio: 0.89

Intersection Signal Delay: 39.8

Intersection LOS: D

Intersection Capacity Utilization 88.7%

ICU Level of Service E

Analysis Period (min) 15

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.

Splits and Phases: 30: Prince of Wales & Preston

Ø1	Ø2 (R)	Ø11	Ø4
10.3 s	5 s 67 s	22 s	35.7 s
Ø5	Ø6 (R)	Ø12	Ø8
52 s	30.3 s	22 s	35.7 s

Lanes, Volumes, Timings 2028 PM Demand Rationalized Main Hospital SPA PEAK GEN
 31: Rochester & 417 WB on/Raymond 03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	120	170	115	182	337	0	0	151	192
Future Volume (vph)	0	0	0	120	170	115	182	337	0	0	151	192
Satd. Flow (prot)	0	0	0	1695	1636	0	1695	1784	0	0	1784	1517
Flt Permitted				0.950			0.546					
Satd. Flow (perm)	0	0	0	1685	1636	0	944	1784	0	0	1784	1414
Satd. Flow (RTOR)					56							192
Lane Group Flow (vph)	0	0	0	120	285	0	182	337	0	0	151	192
Turn Type				Perm	NA		pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8			2					6
Detector Phase				8	8		5	2			6	6
Switch Phase												
Minimum Initial (s)				10.0	10.0		5.0	10.0			10.0	10.0
Minimum Split (s)				32.0	32.0		10.9	27.3			24.9	24.9
Total Split (s)				32.0	32.0		13.0	38.0			25.0	25.0
Total Split (%)				45.7%	45.7%		18.6%	54.3%			35.7%	35.7%
Yellow Time (s)				3.3	3.3		3.3	3.3			3.3	3.3
All-Red Time (s)				2.4	2.4		2.6	2.6			2.6	2.6
Lost Time Adjust (s)				0.0	0.0		0.0	0.0			0.0	0.0
Total Lost Time (s)				5.7	5.7		5.9	5.9			5.9	5.9
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Recall Mode				None	None		None	C-Min			C-Min	C-Min
Act Effct Green (s)				15.7	15.7		42.7	42.7			28.0	28.0
Actuated g/C Ratio				0.22	0.22		0.61	0.61			0.40	0.40
v/c Ratio				0.32	0.70		0.27	0.31			0.21	0.28
Control Delay				23.4	28.4		12.9	14.0			17.3	4.6
Queue Delay				0.0	0.0		0.0	0.5			0.0	0.0
Total Delay				23.4	28.4		12.9	14.5			17.3	4.6
LOS				C	C		B	B			B	A
Approach Delay					26.9			13.9			10.2	
Approach LOS					C			B			B	
Queue Length 50th (m)				13.2	27.6		14.9	33.3			12.5	0.0
Queue Length 95th (m)				22.8	44.7		33.5	58.5			29.8	13.4
Internal Link Dist (m)		122.0			89.8			72.3			151.7	
Turn Bay Length (m)												35.0
Base Capacity (vph)				633	649		671	1087			714	681
Starvation Cap Reductn				0	0		0	395			0	0
Spillback Cap Reductn				0	0		0	0			0	0
Storage Cap Reductn				0	0		0	0			0	0
Reduced v/c Ratio				0.19	0.44		0.27	0.49			0.21	0.28

Intersection Summary
 Cycle Length: 70
 Actuated Cycle Length: 70
 Offset: 8 (11%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 70
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.70

Intersection Signal Delay: 17.1

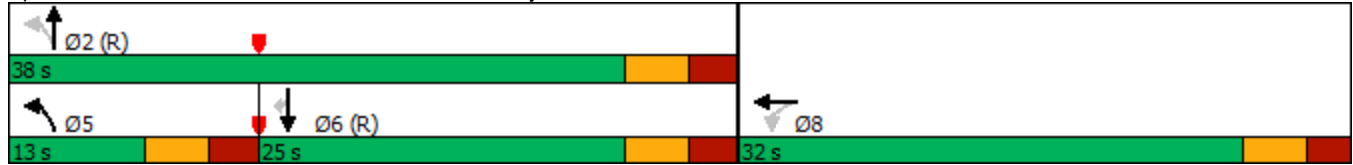
Intersection LOS: B

Intersection Capacity Utilization 58.7%

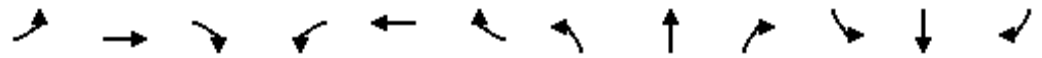
ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 31: Rochester & 417 WB on/Raymond



Lanes, Volumes, Timings 2028 PM Demand Rationalized Main Hospital SPA PEAK GEN
 32: Rochester & 417 EB off/Orangeville 03/20/2023

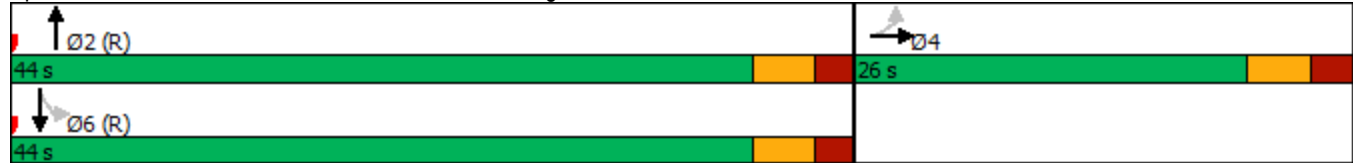


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕						↕↕			↕↕	
Traffic Volume (vph)	210	230	122	0	0	0	0	304	50	17	232	0
Future Volume (vph)	210	230	122	0	0	0	0	304	50	17	232	0
Satd. Flow (prot)	0	3195	0	0	0	0	0	3302	0	0	3380	0
Flt Permitted		0.982									0.925	
Satd. Flow (perm)	0	3188	0	0	0	0	0	3302	0	0	3133	0
Satd. Flow (RTOR)		51						42				
Lane Group Flow (vph)	0	562	0	0	0	0	0	354	0	0	249	0
Turn Type	Perm	NA						NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4									6		
Detector Phase	4	4						2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0						10.0		10.0	10.0	
Minimum Split (s)	26.0	26.0						25.1		25.1	25.1	
Total Split (s)	26.0	26.0						44.0		44.0	44.0	
Total Split (%)	37.1%	37.1%						62.9%		62.9%	62.9%	
Yellow Time (s)	3.3	3.3						3.3		3.3	3.3	
All-Red Time (s)	2.3	2.3						2.1		2.1	2.1	
Lost Time Adjust (s)		0.0						0.0			0.0	
Total Lost Time (s)		5.6						5.4			5.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None						C-Min		C-Min	C-Min	
Act Effct Green (s)		16.6						42.4			42.4	
Actuated g/C Ratio		0.24						0.61			0.61	
v/c Ratio		0.71						0.18			0.13	
Control Delay		26.9						6.2			9.2	
Queue Delay		0.0						0.0			0.0	
Total Delay		26.9						6.2			9.2	
LOS		C						A			A	
Approach Delay		26.9						6.2			9.2	
Approach LOS		C						A			A	
Queue Length 50th (m)		32.3						8.2			2.7	
Queue Length 95th (m)		43.2						16.4			28.0	
Internal Link Dist (m)		104.8			107.2			99.1			72.3	
Turn Bay Length (m)												
Base Capacity (vph)		977						2028			1909	
Starvation Cap Reductn		0						0			0	
Spillback Cap Reductn		0						0			0	
Storage Cap Reductn		0						0			0	
Reduced v/c Ratio		0.58						0.17			0.13	

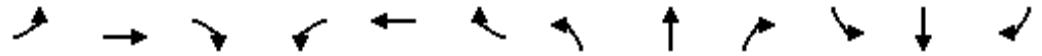
Intersection Summary
 Cycle Length: 70
 Actuated Cycle Length: 70
 Offset: 67 (96%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 55
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.71	
Intersection Signal Delay: 16.8	Intersection LOS: B
Intersection Capacity Utilization 50.6%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 32: Rochester & 417 EB off/Orangeville



Lanes, Volumes, Timings 2028 PM Demand Rationalized Main Hospital SPA PEAK GEN
 33: Bronson & Catherine 417 WB on 03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↖	↔		↖	↕			↕	↗
Traffic Volume (vph)	0	0	0	805	506	284	284	732	0	0	772	168
Future Volume (vph)	0	0	0	805	506	284	284	732	0	0	772	168
Satd. Flow (prot)	0	0	0	1458	4306	0	1695	3390	0	0	3248	0
Flt Permitted				0.950	0.988		0.116					
Satd. Flow (perm)	0	0	0	1458	4306	0	207	3390	0	0	3248	0
Satd. Flow (RTOR)					114						28	
Lane Group Flow (vph)	0	0	0	547	1048	0	284	732	0	0	940	0
Turn Type				Perm	NA		pm+pt	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases				8			2					
Detector Phase				8	8		5	2			6	
Switch Phase												
Minimum Initial (s)				10.0	10.0		5.0	10.0			10.0	
Minimum Split (s)				25.9	25.9		11.0	25.1			25.1	
Total Split (s)				42.0	42.0		18.0	53.0			35.0	
Total Split (%)				44.2%	44.2%		18.9%	55.8%			36.8%	
Yellow Time (s)				3.3	3.3		3.3	3.3			3.3	
All-Red Time (s)				2.6	2.6		2.7	2.8			2.8	
Lost Time Adjust (s)				0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)				5.9	5.9		6.0	6.1			6.1	
Lead/Lag							Lead				Lag	
Lead-Lag Optimize?							Yes				Yes	
Recall Mode				None	None		None	C-Min			C-Min	
Act Effct Green (s)				36.4	36.4		46.7	46.6			28.6	
Actuated g/C Ratio				0.38	0.38		0.49	0.49			0.30	
v/c Ratio				0.98	0.61		0.98	0.44			0.94	
Control Delay				64.5	22.7		76.8	24.9			49.7	
Queue Delay				39.3	0.2		0.0	3.4			45.0	
Total Delay				103.8	22.9		76.8	28.3			94.7	
LOS				F	C		E	C			F	
Approach Delay					50.6			41.9			94.7	
Approach LOS					D			D			F	
Queue Length 50th (m)				113.7	52.7		47.1	67.1			85.5	
Queue Length 95th (m)				#191.7	67.4		#88.0	77.4			#124.1	
Internal Link Dist (m)		151.3			165.9			71.3			237.2	
Turn Bay Length (m)												
Base Capacity (vph)				558	1718		289	1673			1007	
Starvation Cap Reductn				0	0		0	820			0	
Spillback Cap Reductn				123	126		0	0			170	
Storage Cap Reductn				0	0		0	0			0	
Reduced v/c Ratio				1.26	0.66		0.98	0.86			1.12	

Intersection Summary
 Cycle Length: 95
 Actuated Cycle Length: 95
 Offset: 59 (62%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.98

Intersection Signal Delay: 59.8

Intersection LOS: E

Intersection Capacity Utilization 116.5%

ICU Level of Service H

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 33: Bronson & Catherine 417 WB on





Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	144	408	0	915	1501	0
Future Volume (vph)	144	408	0	915	1501	0
Satd. Flow (prot)	1695	1517	0	3390	3390	0
Flt Permitted	0.950					
Satd. Flow (perm)	1695	1491	0	3390	3390	0
Satd. Flow (RTOR)	43					
Lane Group Flow (vph)	144	408	0	915	1501	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)	10.0	10.0		10.0	10.0	
Minimum Split (s)	25.1	25.1		34.3	34.3	
Total Split (s)	30.0	30.0		65.0	65.0	
Total Split (%)	31.6%	31.6%		68.4%	68.4%	
Yellow Time (s)	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.1	2.1		2.5	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.4	5.4		5.8	5.8	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None		C-Min	C-Min	
Act Effct Green (s)	27.9	27.9		55.9	55.9	
Actuated g/C Ratio	0.29	0.29		0.59	0.59	
v/c Ratio	0.29	0.87		0.46	0.75	
Control Delay	28.4	50.2		11.8	12.5	
Queue Delay	0.0	0.0		0.0	5.5	
Total Delay	28.4	50.2		11.9	18.1	
LOS	C	D		B	B	
Approach Delay	44.5			11.9	18.1	
Approach LOS	D			B	B	
Queue Length 50th (m)	18.9	59.6		52.1	108.5	
Queue Length 95th (m)	37.8	#126.6		53.8	m134.4	
Internal Link Dist (m)	81.4			50.7	71.3	
Turn Bay Length (m)	60.0					
Base Capacity (vph)	497	468		2112	2112	
Starvation Cap Reductn	0	0		0	548	
Spillback Cap Reductn	0	0		113	0	
Storage Cap Reductn	0	0		0	0	
Reduced v/c Ratio	0.29	0.87		0.46	0.96	

Intersection Summary

Cycle Length: 95
 Actuated Cycle Length: 95
 Offset: 91 (96%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 65
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 21.1 Intersection LOS: C

Intersection Capacity Utilization 116.5% ICU Level of Service H

Analysis Period (min) 15

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.

Splits and Phases: 34: Bronson & 417 EB off



Lanes, Volumes, Timings 39: 2028 PM Demand Rationalized Main Hospital SPA PEAK GEN Prince of Wales & Road B

03/20/2023

(Dual WBT)



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø9
Lane Configurations							
Traffic Volume (vph)	16	663	828	15	92	27	
Future Volume (vph)	16	663	828	15	92	27	
Satd. Flow (prot)	1695	1784	3377	0	1695	1517	
Flt Permitted	0.298				0.950		
Satd. Flow (perm)	532	1784	3377	0	1629	1424	
Satd. Flow (RTOR)						27	
Lane Group Flow (vph)	16	663	843	0	92	27	
Turn Type	pm+pt	NA	NA		Perm	Perm	
Protected Phases	5	2	6				9
Permitted Phases	2				4	4	
Detector Phase	5	2	6		4	4	
Switch Phase							
Minimum Initial (s)	5.0	10.0	10.0		10.0	10.0	1.0
Minimum Split (s)	10.3	23.3	23.3		23.3	23.3	15.0
Total Split (s)	12.0	97.0	85.0		28.0	28.0	15.0
Total Split (%)	8.6%	69.3%	60.7%		20.0%	20.0%	11%
Yellow Time (s)	3.3	3.3	3.3		3.3	3.3	2.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.3	5.3	5.3		5.3	5.3	
Lead/Lag	Lead		Lag				
Lead-Lag Optimize?	Yes		Yes				
Recall Mode	None	C-Min	C-Min		None	None	None
Act Effct Green (s)	112.8	112.8	108.2		13.6	13.6	
Actuated g/C Ratio	0.81	0.81	0.77		0.10	0.10	
v/c Ratio	0.03	0.46	0.32		0.58	0.17	
Control Delay	4.6	6.6	5.9		74.7	20.7	
Queue Delay	0.0	0.0	0.0		0.0	0.0	
Total Delay	4.6	6.6	5.9		74.7	20.7	
LOS	A	A	A		E	C	
Approach Delay		6.6	5.9		62.4		
Approach LOS		A	A		E		
Queue Length 50th (m)	0.6	39.7	3.6		24.9	0.0	
Queue Length 95th (m)	3.6	113.8	m91.2		41.8	9.0	
Internal Link Dist (m)		198.2	95.9		17.7		
Turn Bay Length (m)	45.0						
Base Capacity (vph)	484	1437	2609		264	253	
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	0.03	0.46	0.32		0.35	0.11	

Intersection Summary

Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
 Natural Cycle: 75
 Control Type: Actuated-Coordinated

Lanes, Volumes, Timings 39: 2028 PM Demand Rationalized Main Hospital SPA PEAK GEN
 Prince of Wales & Road B (Dual) 03/20/2023

WBT)

Maximum v/c Ratio: 0.58

Intersection Signal Delay: 10.3 Intersection LOS: B

Intersection Capacity Utilization 55.9% ICU Level of Service B

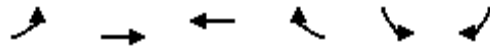
Analysis Period (min) 15

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

Splits and Phases: 39: Prince of Wales & Road B

 Ø2 (R)	 Ø9	 Ø4
97 s	15 s	28 s
 Ø5	 Ø6 (R)	
12 s	85 s	

Lanes, Volumes, Timings 2028 PM Demand Rationalized Main Hospital SPA PEAK GEN
 Prince of Wales & Road B (single WBT) 04/04/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø9
Lane Configurations	↶	↷	↷	↷	↶	↷	
Traffic Volume (vph)	16	663	828	15	92	27	
Future Volume (vph)	16	663	828	15	92	27	
Satd. Flow (prot)	1695	1784	1784	1517	1695	1517	
Flt Permitted	0.253				0.950		
Satd. Flow (perm)	451	1784	1784	1453	1629	1345	
Satd. Flow (RTOR)							27
Lane Group Flow (vph)	16	663	828	15	92	27	
Turn Type	pm+pt	NA	NA	Perm	Perm	Perm	
Protected Phases	5	2	6				9
Permitted Phases	2			6	4	4	
Detector Phase	5	2	6	6	4	4	
Switch Phase							
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	10.0	1.0
Minimum Split (s)	10.3	23.3	23.3	23.3	23.3	23.3	15.0
Total Split (s)	10.3	101.7	91.4	91.4	23.3	23.3	15.0
Total Split (%)	7.4%	72.6%	65.3%	65.3%	16.6%	16.6%	11%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	2.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.3	5.3	5.3	5.3	5.3	5.3	
Lead/Lag	Lead		Lag	Lag			
Lead-Lag Optimize?	Yes		Yes	Yes			
Recall Mode	None	C-Min	C-Min	C-Min	None	None	None
Act Effct Green (s)	112.8	112.8	108.2	108.2	13.6	13.6	
Actuated g/C Ratio	0.81	0.81	0.77	0.77	0.10	0.10	
v/c Ratio	0.04	0.46	0.60	0.01	0.58	0.17	
Control Delay	4.7	6.6	8.2	4.0	74.7	21.0	
Queue Delay	0.0	0.0	0.7	0.0	0.0	0.0	
Total Delay	4.7	6.6	8.9	4.0	74.7	21.0	
LOS	A	A	A	A	E	C	
Approach Delay		6.6	8.8		62.5		
Approach LOS		A	A		E		
Queue Length 50th (m)	0.6	39.7	18.2	0.3	24.9	0.0	
Queue Length 95th (m)	3.6	113.8	m154.5	m1.3	41.8	9.0	
Internal Link Dist (m)		198.2	95.9		17.7		
Turn Bay Length (m)	45.0			35.0			
Base Capacity (vph)	414	1438	1383	1126	210	197	
Starvation Cap Reductn	0	0	241	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	0.04	0.46	0.73	0.01	0.44	0.14	

Intersection Summary

Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 42 (30%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
 Natural Cycle: 100
 Control Type: Actuated-Coordinated

Lanes, Volumes, Timings 2028 PM Demand Rationalized Main Hospital SPA PEAK GEN
 Prince of Wales & Road B (single WBT) 04/04/2023

Maximum v/c Ratio: 0.60

Intersection Signal Delay: 11.8 Intersection LOS: B

Intersection Capacity Utilization 65.1% ICU Level of Service C

Analysis Period (min) 15

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

Splits and Phases: 39: Prince of Wales & Road B

 Ø2 (R)	 Ø9	 Ø4
101.7 s	15 s	23.3 s
 Ø5	 Ø6 (R)	
10.3 s	91.4 s	

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↑↑	↑↑	↗	↘	↘
Traffic Vol, veh/h	11	531	1230	14	6	17
Future Vol, veh/h	11	531	1230	14	6	17
Conflicting Peds, #/hr	42	0	0	42	4	8
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	25	-	-	20	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	531	1230	14	6	17

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	1286	0	-	0	1564 665
Stage 1	-	-	-	-	1272 -
Stage 2	-	-	-	-	292 -
Critical Hdwy	4.14	-	-	-	6.84 6.94
Critical Hdwy Stg 1	-	-	-	-	5.84 -
Critical Hdwy Stg 2	-	-	-	-	5.84 -
Follow-up Hdwy	2.22	-	-	-	3.52 3.32
Pot Cap-1 Maneuver	535	-	-	-	102 403
Stage 1	-	-	-	-	227 -
Stage 2	-	-	-	-	732 -
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	516	-	-	-	93 386
Mov Cap-2 Maneuver	-	-	-	-	93 -
Stage 1	-	-	-	-	214 -
Stage 2	-	-	-	-	706 -

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	24
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	516	-	-	-	212
HCM Lane V/C Ratio	0.021	-	-	-	0.108
HCM Control Delay (s)	12.1	-	-	-	24
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4

Intersection						
Int Delay, s/veh	11.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑	↑		↑
Traffic Vol, veh/h	0	817	875	70	0	287
Future Vol, veh/h	0	817	875	70	0	287
Conflicting Peds, #/hr	70	0	0	70	1	5
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	30	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	817	875	70	0	287

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	- 0 - 950
Stage 1	-	-	- - -
Stage 2	-	-	- - -
Critical Hdwy	-	-	- - 6.23
Critical Hdwy Stg 1	-	-	- - -
Critical Hdwy Stg 2	-	-	- - -
Follow-up Hdwy	-	-	- - 3.319
Pot Cap-1 Maneuver	0	-	- - 0 315
Stage 1	0	-	- - 0 -
Stage 2	0	-	- - 0 -
Platoon blocked, %	-	-	- - -
Mov Cap-1 Maneuver	-	-	- - 295
Mov Cap-2 Maneuver	-	-	- - -
Stage 1	-	-	- - -
Stage 2	-	-	- - -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	84.4
HCM LOS			F

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	295
HCM Lane V/C Ratio	-	-	-	0.973
HCM Control Delay (s)	-	-	-	84.4
HCM Lane LOS	-	-	-	F
HCM 95th %tile Q(veh)	-	-	-	9.9

Intersection												
Int Delay, s/veh	0.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↗			↖			↔				↗
Traffic Vol, veh/h	0	783	0	0	822	45	1	0	5	0	0	25
Future Vol, veh/h	0	783	0	0	822	45	1	0	5	0	0	25
Conflicting Peds, #/hr	8	0	6	6	0	8	1	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	783	0	0	822	45	1	0	5	0	0	25

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	-	-	0	1647	1664	789	-	-	854
Stage 1	-	-	-	-	-	-	789	789	-	-	-	-
Stage 2	-	-	-	-	-	-	858	875	-	-	-	-
Critical Hdwy	-	-	-	-	-	-	7.12	6.52	6.22	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	3.518	4.018	3.318	-	-	3.318
Pot Cap-1 Maneuver	0	-	-	0	-	-	79	97	391	0	0	358
Stage 1	0	-	-	0	-	-	384	402	-	0	0	-
Stage 2	0	-	-	0	-	-	352	367	-	0	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	-	73	96	389	-	-	355
Mov Cap-2 Maneuver	-	-	-	-	-	-	73	96	-	-	-	-
Stage 1	-	-	-	-	-	-	384	400	-	-	-	-
Stage 2	-	-	-	-	-	-	327	364	-	-	-	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			21.4			15.9		
HCM LOS							C			C		

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT	WBR	SBLn1
Capacity (veh/h)	226	-	-	-	-	355
HCM Lane V/C Ratio	0.027	-	-	-	-	0.07
HCM Control Delay (s)	21.4	-	-	-	-	15.9
HCM Lane LOS	C	-	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	-	0.2

Intersection						
Int Delay, s/veh	0.7					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗	↘	↕	↕	↗
Traffic Vol, veh/h	0	59	4	679	834	21
Future Vol, veh/h	0	59	4	679	834	21
Conflicting Peds, #/hr	0	0	10	0	0	10
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	50	-	-	50
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	7	6	25	2	2	14
Mvmt Flow	0	59	4	679	834	21

Major/Minor	Minor2	Major1	Major2		
Conflicting Flow All	-	844	865	0	0
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	6.26	4.35	-	-
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	3.354	2.425	-	-
Pot Cap-1 Maneuver	0	357	689	-	-
Stage 1	0	-	-	-	-
Stage 2	0	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	-	354	683	-	-
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.2	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	683	-	354	-	-
HCM Lane V/C Ratio	0.006	-	0.167	-	-
HCM Control Delay (s)	10.3	-	17.2	-	-
HCM Lane LOS	B	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.6	-	-

Intersection												
Int Delay, s/veh	6.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔↔			↔			↔	
Traffic Vol, veh/h	0	55	30	46	44	5	31	0	180	0	0	5
Future Vol, veh/h	0	55	30	46	44	5	31	0	180	0	0	5
Conflicting Peds, #/hr	10	0	10	10	0	10	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	55	30	46	44	5	31	0	180	0	0	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	59	0	0	95	0	0	194	231	53	177	244	35
Stage 1	-	-	-	-	-	-	80	80	-	149	149	-
Stage 2	-	-	-	-	-	-	114	151	-	28	95	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1543	-	-	1497	-	-	748	668	1003	769	657	1030
Stage 1	-	-	-	-	-	-	919	828	-	838	773	-
Stage 2	-	-	-	-	-	-	879	771	-	985	815	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1530	-	-	1484	-	-	720	637	995	609	626	1021
Mov Cap-2 Maneuver	-	-	-	-	-	-	720	637	-	609	626	-
Stage 1	-	-	-	-	-	-	912	821	-	831	742	-
Stage 2	-	-	-	-	-	-	847	740	-	807	808	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			3.6			9.9			8.5		
HCM LOS							A			A		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	942	1530	-	-	1484	-	-	1021
HCM Lane V/C Ratio	0.224	-	-	-	0.031	-	-	0.005
HCM Control Delay (s)	9.9	0	-	-	7.5	0	-	8.5
HCM Lane LOS	A	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.9	0	-	-	0.1	-	-	0

Intersection						
Int Delay, s/veh	7					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↘↗		↑	↗		↖↗
Traffic Vol, veh/h	95	43	14	15	24	23
Future Vol, veh/h	95	43	14	15	24	23
Conflicting Peds, #/hr	0	0	0	15	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	0	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	95	43	14	15	24	23

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	89	29	0	0	44
Stage 1	29	-	-	-	-
Stage 2	60	-	-	-	-
Critical Hdwy	6.63	6.23	-	-	4.13
Critical Hdwy Stg 1	5.43	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-
Follow-up Hdwy	3.519	3.319	-	-	2.219
Pot Cap-1 Maneuver	907	1045	-	-	1564
Stage 1	993	-	-	-	-
Stage 2	956	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	881	1032	-	-	1544
Mov Cap-2 Maneuver	881	-	-	-	-
Stage 1	980	-	-	-	-
Stage 2	941	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.6	0	3.8
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	923	1544
HCM Lane V/C Ratio	-	-	0.15	0.016
HCM Control Delay (s)	-	-	9.6	7.4
HCM Lane LOS	-	-	A	A
HCM 95th %tile Q(veh)	-	-	0.5	0

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Traffic Vol, veh/h	0	2	2	29	118	0
Future Vol, veh/h	0	2	2	29	118	0
Conflicting Peds, #/hr	0	0	5	0	0	5
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	100	100	100	2	2	100
Mvmt Flow	0	2	2	29	118	0

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	142	64	123	0	-
Stage 1	123	-	-	-	-
Stage 2	19	-	-	-	-
Critical Hdwy	8.8	8.9	6.1	-	-
Critical Hdwy Stg 1	7.8	-	-	-	-
Critical Hdwy Stg 2	7.8	-	-	-	-
Follow-up Hdwy	4.5	4.3	3.2	-	-
Pot Cap-1 Maneuver	617	742	964	-	-
Stage 1	661	-	-	-	-
Stage 2	777	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	611	739	960	-	-
Mov Cap-2 Maneuver	611	-	-	-	-
Stage 1	657	-	-	-	-
Stage 2	774	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.9	0.6	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	960	-	739	-	-
HCM Lane V/C Ratio	0.002	-	0.003	-	-
HCM Control Delay (s)	8.8	0	9.9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection						
Int Delay, s/veh	6.7					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	9	8	0	22	3
Future Vol, veh/h	0	9	8	0	22	3
Conflicting Peds, #/hr	0	10	10	0	10	10
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	9	8	0	22	3

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	19	0	41
Stage 1	-	-	-	-	15
Stage 2	-	-	-	-	26
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1597	-	970
Stage 1	-	-	-	-	1008
Stage 2	-	-	-	-	997
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1583	-	950
Mov Cap-2 Maneuver	-	-	-	-	950
Stage 1	-	-	-	-	1000
Stage 2	-	-	-	-	984

Approach	EB	WB	NB
HCM Control Delay, s	0	7.3	8.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	959	-	-	1583	-
HCM Lane V/C Ratio	0.026	-	-	0.005	-
HCM Control Delay (s)	8.9	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Intersection Delay, s/veh	8.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	27	48	10	2	94	112	1	8	0	63	86	35
Future Vol, veh/h	27	48	10	2	94	112	1	8	0	63	86	35
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	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	27	48	10	2	94	112	1	8	0	63	86	35
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.2	8.5	7.9	8.9
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	11%	32%	1%	34%
Vol Thru, %	89%	56%	45%	47%
Vol Right, %	0%	12%	54%	19%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	9	85	208	184
LT Vol	1	27	2	63
Through Vol	8	48	94	86
RT Vol	0	10	112	35
Lane Flow Rate	9	85	208	184
Geometry Grp	1	1	1	1
Degree of Util (X)	0.012	0.109	0.241	0.232
Departure Headway (Hd)	4.826	4.608	4.173	4.544
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	741	779	863	791
Service Time	2.859	2.63	2.19	2.568
HCM Lane V/C Ratio	0.012	0.109	0.241	0.233
HCM Control Delay	7.9	8.2	8.5	8.9
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0	0.4	0.9	0.9

Intersection	
Intersection Delay, s/veh	8.1
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	100	0	30	0	0	22	30	100	0	9	52	52
Future Vol, veh/h	100	0	30	0	0	22	30	100	0	9	52	52
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	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	100	0	30	0	0	22	30	100	0	9	52	52
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.4	7.2	8.3	7.8
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	23%	77%	0%	8%
Vol Thru, %	77%	0%	0%	46%
Vol Right, %	0%	23%	100%	46%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	130	130	22	113
LT Vol	30	100	0	9
Through Vol	100	0	0	52
RT Vol	0	30	22	52
Lane Flow Rate	130	130	22	113
Geometry Grp	1	1	1	1
Degree of Util (X)	0.161	0.163	0.025	0.131
Departure Headway (Hd)	4.451	4.516	4.027	4.171
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	809	797	890	862
Service Time	2.466	2.532	2.048	2.186
HCM Lane V/C Ratio	0.161	0.163	0.025	0.131
HCM Control Delay	8.3	8.4	7.2	7.8
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.6	0.6	0.1	0.5

Intersection	
Intersection Delay, s/veh	7.5
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↘	↑	↘	
Traffic Vol, veh/h	51	22	26	49	23	34
Future Vol, veh/h	51	22	26	49	23	34
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	51	22	26	49	23	34
Number of Lanes	2	0	1	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	2
HCM Control Delay	7.4	7.8	7.3
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2
Vol Left, %	40%	0%	0%	100%	0%
Vol Thru, %	0%	100%	44%	0%	100%
Vol Right, %	60%	0%	56%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	57	34	39	26	49
LT Vol	23	0	0	26	0
Through Vol	0	34	17	0	49
RT Vol	34	0	22	0	0
Lane Flow Rate	57	34	39	26	49
Geometry Grp	2	7	7	7	7
Degree of Util (X)	0.063	0.044	0.046	0.037	0.064
Departure Headway (Hd)	4.007	4.674	4.279	5.174	4.673
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	899	763	833	691	765
Service Time	2.007	2.419	2.023	2.913	2.412
HCM Lane V/C Ratio	0.063	0.045	0.047	0.038	0.064
HCM Control Delay	7.3	7.6	7.2	8.1	7.7
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.2	0.1	0.1	0.1	0.2

Lanes, Volumes, Timings
10: Carling & Parkdale

2048 AM Demand Rationalized Main Hospital SPA

03/20/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø10
Lane Configurations							
Traffic Volume (vph)	113	1019	483	97	132	91	
Future Volume (vph)	113	1019	483	97	132	91	
Satd. Flow (prot)	1695	3390	3390	1517	1619	0	
Flt Permitted	0.950				0.971		
Satd. Flow (perm)	1597	3390	3390	1273	1600	0	
Satd. Flow (RTOR)				97	29		
Lane Group Flow (vph)	113	1019	483	97	223	0	
Turn Type	Prot	NA	NA	Perm	Perm		
Protected Phases	5	2	6				10
Permitted Phases				6	4		
Detector Phase	5	2	6	6	4		
Switch Phase							
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0		1.0
Minimum Split (s)	11.1	26.7	26.7	26.7	37.2		5.0
Total Split (s)	40.0	73.0	33.0	33.0	47.0		5.0
Total Split (%)	32.0%	58.4%	26.4%	26.4%	37.6%		4%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.0		2.0
All-Red Time (s)	2.4	1.9	1.9	1.9	3.2		0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	6.1	5.6	5.6	5.6	6.2		
Lead/Lag	Lead		Lag	Lag			
Lead-Lag Optimize?	Yes		Yes	Yes			
Recall Mode	None	C-Min	C-Min	C-Min	None		Min
Act Effct Green (s)	13.7	84.8	65.0	65.0	20.9		
Actuated g/C Ratio	0.11	0.68	0.52	0.52	0.17		
v/c Ratio	0.61	0.44	0.27	0.14	0.77		
Control Delay	66.4	10.7	19.0	4.7	59.5		
Queue Delay	0.0	0.0	0.0	0.0	0.0		
Total Delay	66.4	10.7	19.0	4.7	59.5		
LOS	E	B	B	A	E		
Approach Delay		16.3	16.6		59.5		
Approach LOS		B	B		E		
Queue Length 50th (m)	26.9	55.4	33.7	0.0	46.3		
Queue Length 95th (m)	44.1	84.5	55.8	10.4	68.5		
Internal Link Dist (m)		207.1	170.5		278.4		
Turn Bay Length (m)	155.0			80.0			
Base Capacity (vph)	459	2299	1762	708	541		
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	0.25	0.44	0.27	0.14	0.41		

Intersection Summary

Cycle Length: 125
 Actuated Cycle Length: 125
 Offset: 106 (85%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 21.4

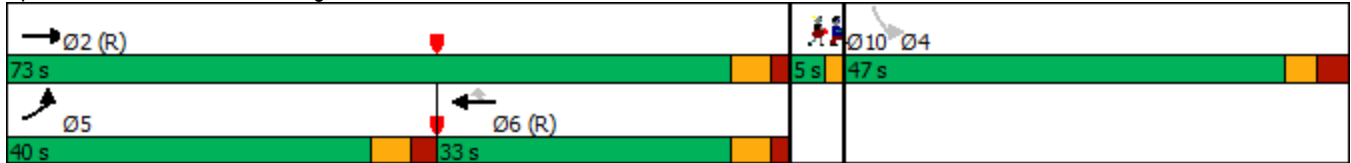
Intersection LOS: C

Intersection Capacity Utilization 57.5%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 10: Carling & Parkdale



Lanes, Volumes, Timings
11: Carling & Civic

2048 AM Demand Rationalized Main Hospital SPA

03/20/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	37	1102	595	13	22	10
Future Volume (vph)	37	1102	595	13	22	10
Satd. Flow (prot)	1695	3390	3390	1517	1626	0
Flt Permitted	0.427				0.967	
Satd. Flow (perm)	749	3390	3390	1411	1579	0
Satd. Flow (RTOR)				13	10	
Lane Group Flow (vph)	37	1102	595	13	32	0
Turn Type	Perm	NA	NA	Perm	Perm	
Protected Phases		2	6			
Permitted Phases	2			6	4	
Detector Phase	2	2	6	6	4	
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	31.3	31.3	31.3	31.3	23.3	
Total Split (s)	90.0	90.0	51.0	51.0	30.0	
Total Split (%)	75.0%	75.0%	42.5%	42.5%	25.0%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.3	
All-Red Time (s)	2.7	2.7	2.7	2.7	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.4	6.4	6.4	6.4	5.3	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Min	C-Min	C-Min	C-Min	None	
Act Effct Green (s)	105.4	105.4	105.4	105.4	11.6	
Actuated g/C Ratio	0.88	0.88	0.88	0.88	0.10	
v/c Ratio	0.06	0.37	0.20	0.01	0.20	
Control Delay	2.9	3.1	0.6	0.0	39.6	
Queue Delay	0.0	0.2	0.0	0.0	0.0	
Total Delay	2.9	3.2	0.6	0.0	39.6	
LOS	A	A	A	A	D	
Approach Delay		3.2	0.6		39.6	
Approach LOS		A	A		D	
Queue Length 50th (m)	1.3	28.5	2.3	0.0	4.9	
Queue Length 95th (m)	4.7	52.8	4.5	0.0	13.7	
Internal Link Dist (m)		170.5	180.8		39.9	
Turn Bay Length (m)	90.0			140.0		
Base Capacity (vph)	657	2976	2976	1240	332	
Starvation Cap Reductn	0	904	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.06	0.53	0.20	0.01	0.10	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
 Natural Cycle: 55
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.37

Intersection Signal Delay: 3.0

Intersection LOS: A

Intersection Capacity Utilization 53.9%

ICU Level of Service A

Analysis Period (min) 15

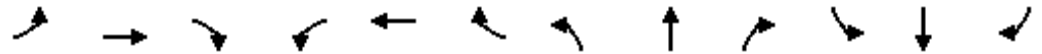
Splits and Phases: 11: Carling & Civic



Lanes, Volumes, Timings
13: Maple/Old Irvine & Carling

2048 AM Demand Rationalized Main Hospital SPA

03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘		↕			↕	
Traffic Volume (vph)	26	990	51	77	475	4	20	1	26	4	5	5
Future Volume (vph)	26	990	51	77	475	4	20	1	26	4	5	5
Satd. Flow (prot)	1695	3390	1517	1695	3390	1517	0	1587	0	0	1646	0
Flt Permitted	0.479			0.258				0.883			0.939	
Satd. Flow (perm)	825	3390	1323	453	3390	1361	0	1410	0	0	1559	0
Satd. Flow (RTOR)			40			40		26			5	
Lane Group Flow (vph)	26	990	51	77	475	4	0	47	0	0	14	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8				4
Permitted Phases	2		2	6		6	8			4		
Detector Phase	2	2	2	6	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	35.0	35.0	35.0	34.3	34.3	34.3	42.4	42.4		42.4	42.4	
Total Split (s)	77.0	77.0	77.0	77.0	77.0	77.0	43.0	43.0		43.0	43.0	
Total Split (%)	64.2%	64.2%	64.2%	64.2%	64.2%	64.2%	35.8%	35.8%		35.8%	35.8%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	4.4	4.4		4.4	4.4	
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	5.7	5.7	5.7	5.7		7.4			7.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Min	C-Min	C-Min	C-Min	C-Min	C-Min	None	None		None	None	
Act Effct Green (s)	86.5	86.5	86.5	86.5	86.5	86.5		25.0			25.0	
Actuated g/C Ratio	0.72	0.72	0.72	0.72	0.72	0.72		0.21			0.21	
v/c Ratio	0.04	0.41	0.05	0.24	0.19	0.00		0.15			0.04	
Control Delay	9.8	10.2	4.0	13.5	9.2	0.0		18.6			24.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0			0.0	
Total Delay	9.8	10.2	4.0	13.5	9.2	0.0		18.6			24.1	
LOS	A	B	A	B	A	A		B			C	
Approach Delay		9.9			9.7			18.6			24.1	
Approach LOS		A			A			B			C	
Queue Length 50th (m)	2.4	64.3	0.9	8.8	27.3	0.0		3.6			1.5	
Queue Length 95th (m)	6.2	79.2	5.8	18.8	36.6	m0.0		12.7			6.5	
Internal Link Dist (m)		236.1			191.5			174.3			220.8	
Turn Bay Length (m)	20.0		15.0	45.0		25.0						
Base Capacity (vph)	595	2444	965	326	2444	992		436			466	
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	0.04	0.41	0.05	0.24	0.19	0.00		0.11			0.03	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 75 (63%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.41

Intersection Signal Delay: 10.2

Intersection LOS: B

Intersection Capacity Utilization 75.6%

ICU Level of Service D

Analysis Period (min) 15

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

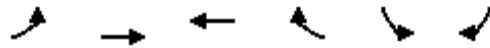
Splits and Phases: 13: Maple/Old Irvine & Carling



Lanes, Volumes, Timings
15: Carling & Sherwood

2048 AM Demand Rationalized Main Hospital SPA

03/20/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↗↗	↖↖	↖	↘	↘
Traffic Volume (vph)	31	931	574	154	184	5
Future Volume (vph)	31	931	574	154	184	5
Satd. Flow (prot)	1695	3390	3390	1517	1695	1517
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1504	3390	3390	1094	1668	1472
Satd. Flow (RTOR)				154		3
Lane Group Flow (vph)	31	931	574	154	184	5
Turn Type	Prot	NA	NA	Perm	Perm	Perm
Protected Phases	5	2	6			
Permitted Phases				6	4	4
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	10.3	25.1	25.1	25.1	25.1	25.1
Total Split (s)	13.0	79.0	66.0	66.0	41.0	41.0
Total Split (%)	10.8%	65.8%	55.0%	55.0%	34.2%	34.2%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.3	5.3	5.3	5.3	5.3	5.3
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Min	C-Min	C-Min	None	None
Act Effct Green (s)	7.7	90.8	82.3	82.3	18.6	18.6
Actuated g/C Ratio	0.06	0.76	0.69	0.69	0.16	0.16
v/c Ratio	0.29	0.36	0.25	0.19	0.71	0.02
Control Delay	64.7	4.8	7.0	1.1	62.6	29.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.7	4.8	7.0	1.1	62.6	29.6
LOS	E	A	A	A	E	C
Approach Delay		6.7	5.8		61.7	
Approach LOS		A	A		E	
Queue Length 50th (m)	7.3	24.4	25.2	0.3	41.7	0.4
Queue Length 95th (m)	17.1	38.8	28.5	2.2	61.5	3.8
Internal Link Dist (m)		118.3	141.7		152.1	
Turn Bay Length (m)	30.0			90.0		15.0
Base Capacity (vph)	118	2564	2323	798	496	440
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	0.26	0.36	0.25	0.19	0.37	0.01

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 112 (93%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 65
 Control Type: Actuated-Coordinated

Lanes, Volumes, Timings
 15: Carling & Sherwood

2048 AM Demand Rationalized Main Hospital SPA

03/20/2023

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 11.9

Intersection LOS: B

Intersection Capacity Utilization 47.9%

ICU Level of Service A

Analysis Period (min) 15

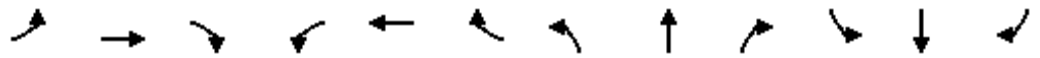
Splits and Phases: 15: Carling & Sherwood



Lanes, Volumes, Timings
16: Road A/Champagne & Carling

2048 AM Demand Rationalized Main Hospital SPA

03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Traffic Volume (vph)	110	753	237	237	624	47	90	0	94	176	0	90
Future Volume (vph)	110	753	237	237	624	47	90	0	94	176	0	90
Satd. Flow (prot)	1695	3390	1517	1695	3390	1517	1695	1414	0	1695	1456	0
Flt Permitted	0.950			0.950			0.699			0.695		
Satd. Flow (perm)	1503	3390	1370	1663	3390	1058	1218	1414	0	1180	1456	0
Satd. Flow (RTOR)						111					363	
Lane Group Flow (vph)	110	753	237	237	624	47	90	94	0	176	90	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8				4
Permitted Phases			2			6	8			4		
Detector Phase	5	2	2	1	6	6	8	8		4		4
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	10.3	26.3	26.3	10.3	26.3	26.3	18.3	18.3		32.9	32.9	
Total Split (s)	16.0	32.0	32.0	38.0	59.0	59.0	35.0	35.0		35.0	35.0	
Total Split (%)	13.3%	26.7%	26.7%	31.7%	49.2%	49.2%	29.2%	29.2%		29.2%	29.2%	
Yellow Time (s)	3.3	3.7	3.7	3.3	3.7	3.7	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.0	1.6	1.6	2.0	1.6	1.6	2.0	2.0		2.6	2.6	
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)	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3		5.9	5.9	
Lead/Lag	Lead			Lead								
Lead-Lag Optimize?	Yes			Yes								
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None		None	None	
Act Effct Green (s)	12.0	56.5	56.5	22.1	67.1	67.1	23.0	23.0		22.4	22.4	
Actuated g/C Ratio	0.10	0.47	0.47	0.18	0.56	0.56	0.19	0.19		0.19	0.19	
v/c Ratio	0.65	0.47	0.37	0.76	0.33	0.07	0.39	0.35		0.80	0.16	
Control Delay	63.8	29.5	30.2	64.0	7.9	0.9	45.6	43.9		71.3	0.6	
Queue Delay	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0		0.0	0.0	
Total Delay	63.8	29.5	30.2	64.1	8.1	0.9	45.6	43.9		71.3	0.6	
LOS	E	C	C	E	A	A	D	D		E	A	
Approach Delay		33.1			22.3			44.7				47.4
Approach LOS		C			C			D				D
Queue Length 50th (m)	24.3	66.4	38.3	43.7	14.2	0.1	18.5	19.2		39.7	0.0	
Queue Length 95th (m)	#53.2	116.4	80.8	44.5	66.1	2.5	32.3	32.8		61.6	0.0	
Internal Link Dist (m)		141.7			98.6			63.9				477.2
Turn Bay Length (m)	55.0		75.0	61.0		35.0				30.0		
Base Capacity (vph)	176	1596	645	461	1894	640	301	349		286	628	
Starvation Cap Reductn	0	0	0	9	454	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	0.63	0.47	0.37	0.52	0.43	0.07	0.30	0.27		0.62	0.14	

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated

Lane Group	Ø9	Ø10	Ø11
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Satd. Flow (RTOR)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	9	10	11
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	1.0	1.0	1.0
Minimum Split (s)	5.0	5.0	5.0
Total Split (s)	10.0	5.0	5.0
Total Split (%)	8%	4%	4%
Yellow Time (s)	2.0	2.0	2.0
All-Red Time (s)	0.0	0.0	0.0
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag	Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	
Recall Mode	None	None	None
Act Effct Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
LOS			
Approach Delay			
Approach LOS			
Queue Length 50th (m)			
Queue Length 95th (m)			
Internal Link Dist (m)			
Turn Bay Length (m)			
Base Capacity (vph)			
Starvation Cap Reductn			
Spillback Cap Reductn			
Storage Cap Reductn			
Reduced v/c Ratio			
Intersection Summary			

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 31.5

Intersection LOS: C

Intersection Capacity Utilization 69.2%

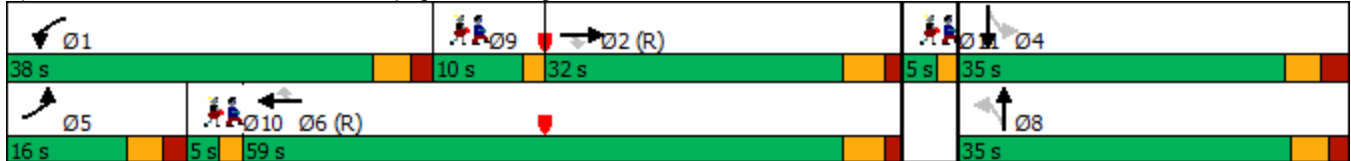
ICU Level of Service C

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 16: Road A/Champagne & Carling



Lanes, Volumes, Timings
17: Carling & Trillium MUP

2048 AM Demand Rationalized Main Hospital SPA

03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑							
Traffic Volume (vph)	0	942	0	0	996	0	0	0	0	0	0	0
Future Volume (vph)	0	942	0	0	996	0	0	0	0	0	0	0
Satd. Flow (prot)	0	3390	0	0	3390	0	0	0	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	3390	0	0	3390	0	0	0	0	0	0	0
Satd. Flow (RTOR)												
Lane Group Flow (vph)	0	942	0	0	996	0	0	0	0	0	0	0
Turn Type		NA			NA							
Protected Phases		2			6							
Permitted Phases												
Detector Phase		2			6							
Switch Phase												
Minimum Initial (s)		10.0			10.0							
Minimum Split (s)		31.3			31.3							
Total Split (s)		84.0			84.0							
Total Split (%)		70.0%			70.0%							
Yellow Time (s)		3.7			3.7							
All-Red Time (s)		1.4			1.4							
Lost Time Adjust (s)		0.0			0.0							
Total Lost Time (s)		5.1			5.1							
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		C-Min			C-Min							
Act Effct Green (s)		87.4			87.4							
Actuated g/C Ratio		0.73			0.73							
v/c Ratio		0.38			0.40							
Control Delay		7.3			9.0							
Queue Delay		0.1			0.7							
Total Delay		7.4			9.7							
LOS		A			A							
Approach Delay		7.4			9.7							
Approach LOS		A			A							
Queue Length 50th (m)		38.3			54.4							
Queue Length 95th (m)		43.0			67.2							
Internal Link Dist (m)		98.6			92.8			53.0			60.9	
Turn Bay Length (m)												
Base Capacity (vph)		2470			2470							
Starvation Cap Reductn		469			1039							
Spillback Cap Reductn		0			0							
Storage Cap Reductn		0			0							
Reduced v/c Ratio		0.47			0.70							
Intersection Summary												
Cycle Length: 120												
Actuated Cycle Length: 120												
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green												
Natural Cycle: 70												
Control Type: Actuated-Coordinated												

Lane Group	Ø4	Ø8
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	4	8
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	10.0	10.0
Minimum Split (s)	35.6	35.6
Total Split (s)	36.0	36.0
Total Split (%)	30%	30%
Yellow Time (s)	3.0	3.0
All-Red Time (s)	3.6	3.6
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag		
Lead-Lag Optimize?		
Recall Mode	None	None
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

Lanes, Volumes, Timings
 17: Carling & Trillium MUP

2048 AM Demand Rationalized Main Hospital SPA

03/20/2023

Maximum v/c Ratio: 0.40

Intersection Signal Delay: 8.6

Intersection LOS: A

Intersection Capacity Utilization 33.3%

ICU Level of Service A

Analysis Period (min) 15

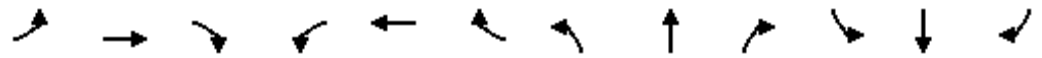
Splits and Phases: 17: Carling & Trillium MUP

 Ø2 (R) 84 s	 Ø4 36 s
 Ø6 (R) 84 s	 Ø8 36 s

Lanes, Volumes, Timings
18: Preston & Carling

2048 AM Demand Rationalized Main Hospital SPA

03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Traffic Volume (vph)	138	717	192	275	518	81	179	444	267	106	247	66
Future Volume (vph)	138	717	192	275	518	81	179	444	267	106	247	66
Satd. Flow (prot)	1695	3390	1517	1695	3390	1517	1695	3164	0	1695	1688	0
Flt Permitted	0.950			0.950			0.213			0.381		
Satd. Flow (perm)	1588	3390	1517	1646	3390	1272	371	3164	0	676	1688	0
Satd. Flow (RTOR)						193					10	
Lane Group Flow (vph)	138	717	192	275	518	81	179	711	0	106	313	0
Turn Type	Prot	NA	custom	Prot	NA	Perm	pm+pt	NA		Perm	NA	
Protected Phases	5	9 2	9 3	1	6		3	8				4
Permitted Phases						6	8			4		
Detector Phase	5	9 2	9 3	1	6	6	3	8		4		4
Switch Phase												
Minimum Initial (s)	5.0			5.0	10.0	10.0	5.0	10.0		10.0	10.0	
Minimum Split (s)	11.2			11.2	30.0	30.0	11.9	43.9		38.9	38.9	
Total Split (s)	23.5			31.0	41.6	41.6	16.0	54.9		38.9	38.9	
Total Split (%)	18.1%			23.8%	32.0%	32.0%	12.3%	42.2%		29.9%	29.9%	
Yellow Time (s)	3.7			3.7	3.7	3.7	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.5			2.5	2.3	2.3	3.6	3.6		3.6	3.6	
Lost Time Adjust (s)	0.0			0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.2			6.2	6.0	6.0	6.9	6.9		6.9	6.9	
Lead/Lag	Lead			Lead			Lead					
Lead-Lag Optimize?	Yes			Yes			Yes					
Recall Mode	None			None	C-Min	C-Min	None	None		None	None	
Act Effct Green (s)	14.7	37.8	19.5	23.6	41.8	41.8	49.5	45.5		29.5	29.5	
Actuated g/C Ratio	0.11	0.29	0.15	0.18	0.32	0.32	0.38	0.35		0.23	0.23	
v/c Ratio	0.72	0.73	0.85	0.90	0.48	0.15	0.77	0.64		0.69	0.80	
Control Delay	76.1	48.1	84.5	82.5	39.2	0.6	75.6	64.2		69.0	61.4	
Queue Delay	0.0	2.4	0.0	0.5	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	76.1	50.5	84.5	83.1	39.2	0.6	75.6	64.2		69.0	61.4	
LOS	E	D	F	F	D	A	E	E		E	E	
Approach Delay		60.1			49.4			66.5			63.3	
Approach LOS		E			D			E			E	
Queue Length 50th (m)	34.3	91.8	48.7	68.8	60.0	0.0	42.1	89.2		24.4	72.0	
Queue Length 95th (m)	55.8	115.3	#90.6	#114.6	78.1	0.0	#73.0	116.9		#49.4	105.4	
Internal Link Dist (m)		92.8			165.9			145.6			55.2	
Turn Bay Length (m)	70.0		90.0	120.0		95.0				35.0		
Base Capacity (vph)	225	985	227	323	1090	540	233	1168		166	423	
Starvation Cap Reductn	0	153	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	0	3	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.61	0.86	0.85	0.86	0.48	0.15	0.77	0.61		0.64	0.74	

Intersection Summary

Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 116 (89%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 115
 Control Type: Actuated-Coordinated

Lane Group	Ø2	Ø9	Ø10	Ø11	Ø12
Lane Configurations					
Traffic Volume (vph)					
Future Volume (vph)					
Satd. Flow (prot)					
Flt Permitted					
Satd. Flow (perm)					
Satd. Flow (RTOR)					
Lane Group Flow (vph)					
Turn Type					
Protected Phases	2	9	10	11	12
Permitted Phases					
Detector Phase					
Switch Phase					
Minimum Initial (s)	10.0	1.0	1.0	1.0	1.0
Minimum Split (s)	30.0	7.0	5.0	5.0	5.0
Total Split (s)	30.1	9.0	5.0	5.0	5.0
Total Split (%)	23%	7%	4%	4%	4%
Yellow Time (s)	3.7	3.7	2.0	2.0	2.0
All-Red Time (s)	2.3	2.3	0.0	0.0	0.0
Lost Time Adjust (s)					
Total Lost Time (s)					
Lead/Lag	Lag		Lag	Lag	
Lead-Lag Optimize?	Yes		Yes	Yes	
Recall Mode	C-Min	Min	None	None	None
Act Effct Green (s)					
Actuated g/C Ratio					
v/c Ratio					
Control Delay					
Queue Delay					
Total Delay					
LOS					
Approach Delay					
Approach LOS					
Queue Length 50th (m)					
Queue Length 95th (m)					
Internal Link Dist (m)					
Turn Bay Length (m)					
Base Capacity (vph)					
Starvation Cap Reductn					
Spillback Cap Reductn					
Storage Cap Reductn					
Reduced v/c Ratio					
Intersection Summary					

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 59.4

Intersection LOS: E

Intersection Capacity Utilization 94.3%

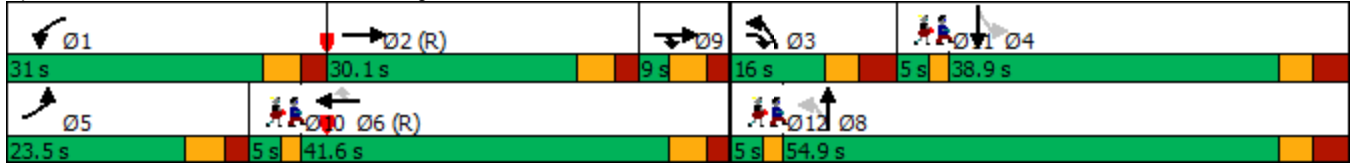
ICU Level of Service F

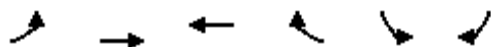
Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 18: Preston & Carling





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↶	↶↶	↶	↷	↶	↷
Traffic Volume (vph)	330	954	646	174	199	178
Future Volume (vph)	330	954	646	174	199	178
Satd. Flow (prot)	1695	3390	1784	1517	1695	1517
Flt Permitted	0.138				0.950	
Satd. Flow (perm)	246	3390	1784	1197	1658	1187
Satd. Flow (RTOR)				61		178
Lane Group Flow (vph)	330	954	646	174	199	178
Turn Type	pm+pt	NA	NA	Perm	Perm	Perm
Protected Phases	5	2	6			
Permitted Phases	2			6	4	4
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	10.9	29.7	29.7	29.7	39.0	39.0
Total Split (s)	34.0	81.0	47.0	47.0	39.0	39.0
Total Split (%)	28.3%	67.5%	39.2%	39.2%	32.5%	32.5%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.3	3.3
All-Red Time (s)	2.2	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)	5.9	5.7	5.7	5.7	6.0	6.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Min	C-Min	C-Min	None	None
Act Effct Green (s)	79.2	79.4	51.4	51.4	28.9	28.9
Actuated g/C Ratio	0.66	0.66	0.43	0.43	0.24	0.24
v/c Ratio	0.77	0.43	0.85	0.32	0.50	0.42
Control Delay	32.2	11.2	45.7	19.4	42.6	8.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.2	11.2	45.7	19.4	42.6	8.2
LOS	C	B	D	B	D	A
Approach Delay		16.6	40.1		26.4	
Approach LOS		B	D		C	
Queue Length 50th (m)	45.1	57.2	145.6	18.1	38.7	0.0
Queue Length 95th (m)	76.4	70.8	#235.7	39.0	60.8	17.0
Internal Link Dist (m)		100.4	299.3		220.7	
Turn Bay Length (m)	50.0			30.0		30.0
Base Capacity (vph)	501	2242	764	547	455	455
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	0.66	0.43	0.85	0.32	0.44	0.39

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 116 (97%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
 Natural Cycle: 100
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.85

Intersection Signal Delay: 25.9

Intersection LOS: C

Intersection Capacity Utilization 96.6%

ICU Level of Service F

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 20: Carling & Booth



Lanes, Volumes, Timings
21: Bronson & Carling/Glebe

2048 AM Demand Rationalized Main Hospital SPA

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	516	100	553	0	0	0	537	804	17	0	611	238
Future Volume (vph)	516	100	553	0	0	0	537	804	17	0	611	238
Satd. Flow (prot)	1610	1644	1517	0	0	0	3288	1773	0	0	3190	0
Flt Permitted	0.950	0.970					0.950					
Satd. Flow (perm)	1520	1587	1274	0	0	0	3201	1773	0	0	3190	0
Satd. Flow (RTOR)			187					2			53	
Lane Group Flow (vph)	356	260	553	0	0	0	537	821	0	0	849	0
Turn Type	Perm	NA	pm+ov				Prot	NA			NA	
Protected Phases		4	5				5	2			6	
Permitted Phases	4		4									
Detector Phase	4	4	5				5	2			6	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0				10.0	10.0			10.0	
Minimum Split (s)	31.0	31.0	16.0				16.0	25.1			33.0	
Total Split (s)	31.0	31.0	33.0				33.0	79.0			46.0	
Total Split (%)	26.5%	26.5%	28.2%				28.2%	67.5%			39.3%	
Yellow Time (s)	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			2.7	
Lost Time Adjust (s)	0.0	0.0	0.0				0.0	0.0			0.0	
Total Lost Time (s)	6.0	6.0	6.0				6.0	6.0			6.0	
Lead/Lag			Lead				Lead				Lag	
Lead-Lag Optimize?			Yes				Yes				Yes	
Recall Mode	None	None	None				None	C-Min			C-Min	
Act Effct Green (s)	30.5	30.5	54.5				24.0	67.1			37.1	
Actuated g/C Ratio	0.26	0.26	0.47				0.21	0.57			0.32	
v/c Ratio	0.90	0.63	0.74				0.80	0.81			0.81	
Control Delay	69.7	47.9	22.4				53.3	26.5			41.2	
Queue Delay	0.0	0.0	0.0				0.0	0.0			0.0	
Total Delay	69.7	47.9	22.4				53.3	26.5			41.2	
LOS	E	D	C				D	C			D	
Approach Delay		42.5						37.1			41.2	
Approach LOS		D						D			D	
Queue Length 50th (m)	84.0	56.2	57.4				60.0	139.2			89.0	
Queue Length 95th (m)	#157.0	#98.7	99.5				77.3	173.3			109.0	
Internal Link Dist (m)		74.7			115.0			394.4			328.4	
Turn Bay Length (m)	40.0						50.0					
Base Capacity (vph)	396	413	777				758	1106			1125	
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	0.90	0.63	0.71				0.71	0.74			0.75	

Intersection Summary

Cycle Length: 117
 Actuated Cycle Length: 117
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated

Lane Group	Ø10
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	10
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	7.0
Total Split (s)	7.0
Total Split (%)	6%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	Min
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 40.0

Intersection LOS: D

Intersection Capacity Utilization 82.5%

ICU Level of Service E

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 21: Bronson & Carling/Glebe



Lanes, Volumes, Timings
22: Parkdale & 417 WB on/off

2048 AM Demand Rationalized Main Hospital SPA

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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	0	232	0	488	171	315	0	0	406	214
Future Volume (vph)	0	0	0	232	0	488	171	315	0	0	406	214
Satd. Flow (prot)	0	0	0	1695	1481	0	1695	1784	0	0	1660	0
Flt Permitted				0.950			0.296					
Satd. Flow (perm)	0	0	0	1695	1481	0	528	1784	0	0	1660	0
Satd. Flow (RTOR)					497						35	
Lane Group Flow (vph)	0	0	0	232	488	0	171	315	0	0	620	0
Turn Type				Perm	NA		pm+pt	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases				8			2					
Detector Phase				8	8		5	2			6	
Switch Phase												
Minimum Initial (s)				10.0	10.0		5.0	10.0			10.0	
Minimum Split (s)				29.0	29.0		10.3	27.3			25.1	
Total Split (s)				34.0	34.0		14.0	66.0			52.0	
Total Split (%)				34.0%	34.0%		14.0%	66.0%			52.0%	
Yellow Time (s)				3.3	3.3		3.0	3.0			3.0	
All-Red Time (s)				2.2	2.2		2.2	3.3			3.3	
Lost Time Adjust (s)				0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)				5.5	5.5		5.2	6.3			6.3	
Lead/Lag							Lag				Lead	
Lead-Lag Optimize?							Yes				Yes	
Recall Mode				None	None		None	C-Min			C-Min	
Act Effct Green (s)				19.6	19.6		69.7	68.6			52.9	
Actuated g/C Ratio				0.20	0.20		0.70	0.69			0.53	
v/c Ratio				0.70	0.71		0.35	0.26			0.69	
Control Delay				48.2	9.0		12.7	7.6			23.3	
Queue Delay				0.0	0.0		3.8	1.3			0.9	
Total Delay				48.2	9.0		16.5	8.9			24.2	
LOS				D	A		B	A			C	
Approach Delay					21.6			11.6			24.2	
Approach LOS					C			B			C	
Queue Length 50th (m)				42.2	0.0		11.6	22.7			84.5	
Queue Length 95th (m)				61.0	23.2		23.8	41.1			138.1	
Internal Link Dist (m)		157.5			140.3			45.3			171.5	
Turn Bay Length (m)												
Base Capacity (vph)				483	777		498	1224			894	
Starvation Cap Reductn				0	0		245	691			0	
Spillback Cap Reductn				0	0		0	0			93	
Storage Cap Reductn				0	0		0	0			0	
Reduced v/c Ratio				0.48	0.63		0.68	0.59			0.77	

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 69 (69%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
 Natural Cycle: 75
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 19.8

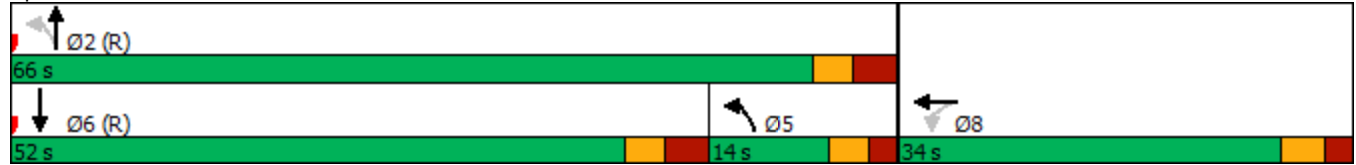
Intersection LOS: B

Intersection Capacity Utilization 114.3%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 22: Parkdale & 417 WB on/off



Lanes, Volumes, Timings
23: Parkdale & 417 EB on/off

2048 AM Demand Rationalized Main Hospital SPA

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗					↕↗		↗	↕	
Traffic Volume (vph)	199	0	163	0	0	0	0	290	362	395	247	0
Future Volume (vph)	199	0	163	0	0	0	0	290	362	395	247	0
Satd. Flow (prot)	0	1695	1517	0	0	0	0	2933	0	1695	1784	0
Flt Permitted		0.950								0.308		
Satd. Flow (perm)	0	1692	1474	0	0	0	0	2933	0	539	1784	0
Satd. Flow (RTOR)			163					341				
Lane Group Flow (vph)	0	199	163	0	0	0	0	652	0	395	247	0
Turn Type	Perm	NA	Perm					NA		pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		4							6		
Detector Phase	4	4	4					2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0					10.0		5.0	10.0	
Minimum Split (s)	25.1	25.1	25.1					25.1		10.3	25.1	
Total Split (s)	34.0	34.0	34.0					40.0		26.0	66.0	
Total Split (%)	34.0%	34.0%	34.0%					40.0%		26.0%	66.0%	
Yellow Time (s)	3.3	3.3	3.3					3.0		3.0	3.0	
All-Red Time (s)	2.6	2.6	2.6					2.8		2.3	2.8	
Lost Time Adjust (s)		0.0	0.0					0.0		0.0	0.0	
Total Lost Time (s)		5.9	5.9					5.8		5.3	5.8	
Lead/Lag								Lag		Lead		
Lead-Lag Optimize?								Yes		Yes		
Recall Mode	None	None	None					C-Min		None	C-Min	
Act Effct Green (s)		17.0	17.0					46.1		71.8	71.3	
Actuated g/C Ratio		0.17	0.17					0.46		0.72	0.71	
v/c Ratio		0.69	0.42					0.42		0.64	0.19	
Control Delay		51.0	8.8					12.9		17.5	7.9	
Queue Delay		0.0	0.0					0.2		56.6	2.0	
Total Delay		51.0	8.8					13.1		74.1	9.9	
LOS		D	A					B		E	A	
Approach Delay		32.0						13.1			49.4	
Approach LOS		C						B			D	
Queue Length 50th (m)		36.6	0.0					24.7		37.3	18.6	
Queue Length 95th (m)		55.2	15.5					46.2		71.5	m39.4	
Internal Link Dist (m)		109.8			145.0			90.1			45.3	
Turn Bay Length (m)			75.0									
Base Capacity (vph)		475	531					1540		646	1271	
Starvation Cap Reductn		0	0					267		287	866	
Spillback Cap Reductn		0	0					66		0	0	
Storage Cap Reductn		0	0					0		0	0	
Reduced v/c Ratio		0.42	0.31					0.51		1.10	0.61	

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 53 (53%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 70
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.69

Intersection Signal Delay: 31.3

Intersection LOS: C

Intersection Capacity Utilization 114.3%

ICU Level of Service H

Analysis Period (min) 15

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

Splits and Phases: 23: Parkdale & 417 EB on/off



Lanes, Volumes, Timings
24: Parkdale & Sherwood

2048 AM Demand Rationalized Main Hospital SPA

03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	91	2	8	0	0	139	8	369	12	116	328	61
Future Volume (vph)	91	2	8	0	0	139	8	369	12	116	328	61
Satd. Flow (prot)	0	1665	0	0	1441	0	0	1769	0	0	1722	0
Flt Permitted		0.553						0.991			0.822	
Satd. Flow (perm)	0	958	0	0	1441	0	0	1754	0	0	1413	0
Satd. Flow (RTOR)		4			561			5			21	
Lane Group Flow (vph)	0	101	0	0	139	0	0	389	0	0	505	0
Turn Type	Perm	NA			NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	1.0	1.0		1.0	1.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	18.0	18.0		18.0	18.0		25.1	25.1		25.1	25.1	
Total Split (s)	18.0	18.0		18.0	18.0		82.0	82.0		82.0	82.0	
Total Split (%)	18.0%	18.0%		18.0%	18.0%		82.0%	82.0%		82.0%	82.0%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.0			4.0			5.6			5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Ped	Ped		Ped	Ped		C-Min	C-Min		C-Min	C-Min	
Act Effct Green (s)		18.6			18.6			71.8			71.8	
Actuated g/C Ratio		0.19			0.19			0.72			0.72	
v/c Ratio		0.56			0.19			0.31			0.50	
Control Delay		46.6			0.6			6.4			7.9	
Queue Delay		0.0			0.0			0.0			0.4	
Total Delay		46.6			0.6			6.4			8.2	
LOS		D			A			A			A	
Approach Delay		46.6			0.6			6.4			8.2	
Approach LOS		D			A			A			A	
Queue Length 50th (m)		17.2			0.0			23.1			31.0	
Queue Length 95th (m)		31.9			0.0			43.7			41.7	
Internal Link Dist (m)		221.3			335.0			289.1			90.1	
Turn Bay Length (m)												
Base Capacity (vph)		181			724			1341			1084	
Starvation Cap Reductn		0			0			0			206	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.56			0.19			0.29			0.58	

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 25 (25%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 50
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.56

Intersection Signal Delay: 10.1

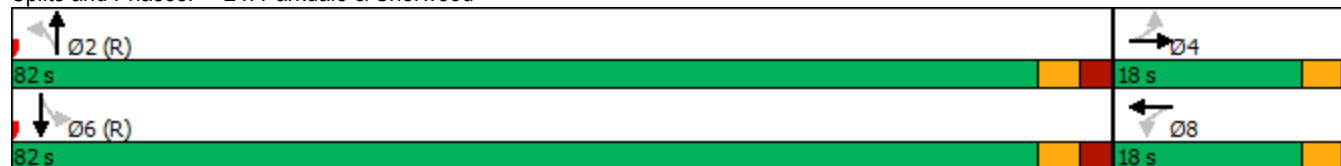
Intersection LOS: B

Intersection Capacity Utilization 90.1%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 24: Parkdale & Sherwood



Lanes, Volumes, Timings
25: Parkdale & Ruskin

2048 AM Demand Rationalized Main Hospital SPA

03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↖	↗			↕			↕	
Traffic Volume (vph)	24	63	11	7	9	75	5	268	7	16	221	21
Future Volume (vph)	24	63	11	7	9	75	5	268	7	16	221	21
Satd. Flow (prot)	0	1714	0	1695	1472	0	0	1775	0	0	1754	0
Flt Permitted		0.898		0.716				0.996			0.977	
Satd. Flow (perm)	0	1547	0	1184	1472	0	0	1769	0	0	1717	0
Satd. Flow (RTOR)		6			75			4			12	
Lane Group Flow (vph)	0	98	0	7	84	0	0	280	0	0	258	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	19.4	19.4		19.4	19.4		31.8	31.8		31.8	31.8	
Total Split (s)	20.0	20.0		20.0	20.0		65.0	65.0		65.0	65.0	
Total Split (%)	23.5%	23.5%		23.5%	23.5%		76.5%	76.5%		76.5%	76.5%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.4	2.4		2.4	2.4		2.8	2.8		2.8	2.8	
Lost Time Adjust (s)		0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)		5.4		5.4	5.4			5.8			5.8	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Min	C-Min		C-Min	C-Min	
Act Effct Green (s)		13.3		13.3	13.3			64.7			64.7	
Actuated g/C Ratio		0.16		0.16	0.16			0.76			0.76	
v/c Ratio		0.40		0.04	0.29			0.21			0.20	
Control Delay		34.9		30.3	12.3			4.5			4.3	
Queue Delay		0.0		0.0	0.0			0.0			0.0	
Total Delay		34.9		30.3	12.3			4.5			4.3	
LOS		C		C	B			A			A	
Approach Delay		34.9			13.6			4.5			4.3	
Approach LOS		C			B			A			A	
Queue Length 50th (m)		13.4		1.0	1.2			13.3			11.7	
Queue Length 95th (m)		27.4		4.5	12.9			22.2			20.1	
Internal Link Dist (m)		220.6			228.6			278.4			289.1	
Turn Bay Length (m)				40.0								
Base Capacity (vph)		270		203	314			1347			1310	
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		0.36		0.03	0.27			0.21			0.20	

Intersection Summary

Cycle Length: 85
 Actuated Cycle Length: 85
 Offset: 45 (53%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 55
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.40

Intersection Signal Delay: 9.7

Intersection LOS: A

Intersection Capacity Utilization 45.0%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 25: Parkdale & Ruskin



Lanes, Volumes, Timings
30: Prince of Wales & Preston

2048 AM Demand Rationalized Main Hospital SPA

03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↗↘	↑		↗	↑	↗		↕			↖	↗
Traffic Volume (vph)	723	263	1	0	229	301	0	2	1	229	1	614
Future Volume (vph)	723	263	1	0	229	301	0	2	1	229	1	614
Satd. Flow (prot)	3288	1782	0	1784	1784	1517	0	1633	0	0	1700	1517
Flt Permitted	0.950										0.726	
Satd. Flow (perm)	3219	1782	0	1784	1784	1483	0	1633	0	0	1203	1422
Satd. Flow (RTOR)						252						
Lane Group Flow (vph)	723	264	0	0	229	301	0	3	0	0	230	614
Turn Type	Prot	NA		Prot	NA	Free		NA		custom	NA	custom
Protected Phases	5	2		1	6			8		11	4 11	5
Permitted Phases						Free	8			4		4
Detector Phase	5	2		1	6		8	8		11	4 11	5
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0		10.0		5.0
Minimum Split (s)	11.1	27.1		10.3	26.1		23.5	23.5		20.0		11.1
Total Split (s)	56.0	69.9		10.3	29.2		24.8	24.8		20.0		56.0
Total Split (%)	43.1%	53.8%		7.9%	22.5%		19.1%	19.1%		15.4%		43.1%
Yellow Time (s)	3.7	3.7		3.3	3.7		3.3	3.3		2.0		3.7
All-Red Time (s)	2.4	2.4		2.0	2.4		2.2	2.2		0.0		2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0				0.0
Total Lost Time (s)	6.1	6.1		5.3	6.1			5.5				6.1
Lead/Lag				Lead								
Lead-Lag Optimize?				Yes								
Recall Mode	None	C-Min		None	C-Min		None	None		None		None
Act Effct Green (s)	47.1	83.8			32.1	130.0		13.5			27.6	59.9
Actuated g/C Ratio	0.36	0.64			0.25	1.00		0.10			0.21	0.46
v/c Ratio	0.61	0.23			0.52	0.20		0.02			0.74	0.89
Control Delay	38.4	12.5			50.8	0.3		49.0			59.8	31.6
Queue Delay	0.0	0.0			0.0	0.0		0.0			0.0	0.6
Total Delay	38.4	12.5			50.8	0.3		49.0			59.8	32.3
LOS	D	B			D	A		D			E	C
Approach Delay		31.5			22.1			49.0			39.8	
Approach LOS		C			C			D			D	
Queue Length 50th (m)	71.1	22.9			55.6	0.0		0.7			51.4	75.0
Queue Length 95th (m)	112.8	58.5			#88.1	0.0		3.6			m64.0	m86.8
Internal Link Dist (m)		79.9			173.8			12.4			145.6	
Turn Bay Length (m)	45.0					45.0						
Base Capacity (vph)	1299	1149			441	1483		242			374	740
Starvation Cap Reductn	0	0			0	0		0			0	19
Spillback Cap Reductn	0	0			0	0		0			0	0
Storage Cap Reductn	0	0			0	0		0			0	0
Reduced v/c Ratio	0.56	0.23			0.52	0.20		0.01			0.61	0.85

Intersection Summary

Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 100
 Control Type: Actuated-Coordinated

Lane Group	Ø4	Ø9	Ø12
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Satd. Flow (RTOR)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	4	9	12
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	10.0	1.0	1.0
Minimum Split (s)	15.5	5.0	20.0
Total Split (s)	24.8	5.0	20.0
Total Split (%)	19%	4%	15%
Yellow Time (s)	3.3	2.0	2.0
All-Red Time (s)	2.2	0.0	0.0
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag		Lag	
Lead-Lag Optimize?		Yes	
Recall Mode	None	None	None
Act Effct Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
LOS			
Approach Delay			
Approach LOS			
Queue Length 50th (m)			
Queue Length 95th (m)			
Internal Link Dist (m)			
Turn Bay Length (m)			
Base Capacity (vph)			
Starvation Cap Reductn			
Spillback Cap Reductn			
Storage Cap Reductn			
Reduced v/c Ratio			
Intersection Summary			

Maximum v/c Ratio: 0.89

Intersection Signal Delay: 32.4

Intersection LOS: C

Intersection Capacity Utilization 85.1%

ICU Level of Service E

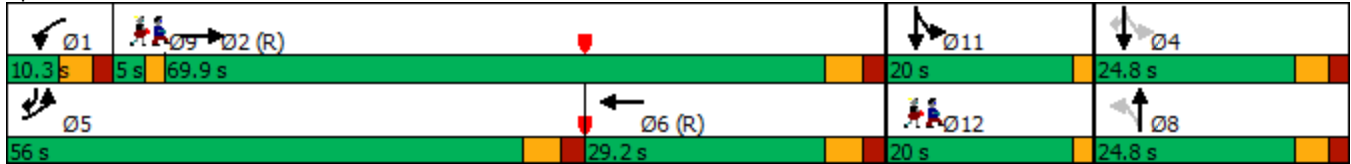
Analysis Period (min) 15

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.

Splits and Phases: 30: Prince of Wales & Preston



Lanes, Volumes, Timings
31: Rochester & 417 WB on/Raymond

2048 AM Demand Rationalized Main Hospital SPA

03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	202	124	97	164	306	0	0	142	221
Future Volume (vph)	0	0	0	202	124	97	164	306	0	0	142	221
Satd. Flow (prot)	0	0	0	1695	1621	0	1695	1784	0	0	1784	1517
Flt Permitted				0.950			0.533					
Satd. Flow (perm)	0	0	0	1678	1621	0	930	1784	0	0	1784	1436
Satd. Flow (RTOR)					68							221
Lane Group Flow (vph)	0	0	0	202	221	0	164	306	0	0	142	221
Turn Type				Perm	NA		pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8			2					6
Detector Phase				8	8		5	2			6	6
Switch Phase												
Minimum Initial (s)				10.0	10.0		5.0	10.0			10.0	10.0
Minimum Split (s)				23.7	23.7		10.9	27.3			24.9	24.9
Total Split (s)				24.0	24.0		11.0	36.0			25.0	25.0
Total Split (%)				40.0%	40.0%		18.3%	60.0%			41.7%	41.7%
Yellow Time (s)				3.3	3.3		3.3	3.3			3.3	3.3
All-Red Time (s)				2.4	2.4		2.6	2.6			2.6	2.6
Lost Time Adjust (s)				0.0	0.0		0.0	0.0			0.0	0.0
Total Lost Time (s)				5.7	5.7		5.9	5.9			5.9	5.9
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Recall Mode				None	None		None	C-Min			C-Min	C-Min
Act Effct Green (s)				13.0	13.0		35.4	35.4			24.7	24.7
Actuated g/C Ratio				0.22	0.22		0.59	0.59			0.41	0.41
v/c Ratio				0.55	0.55		0.26	0.29			0.19	0.31
Control Delay				26.3	18.9		5.9	5.8			14.9	4.0
Queue Delay				0.0	0.0		0.0	0.2			0.0	0.0
Total Delay				26.3	18.9		5.9	6.1			14.9	4.0
LOS				C	B		A	A			B	A
Approach Delay					22.4			6.0			8.3	
Approach LOS					C			A			A	
Queue Length 50th (m)				20.2	14.8		7.5	14.4			10.4	0.0
Queue Length 95th (m)				33.0	28.5		11.6	20.1			23.0	12.2
Internal Link Dist (m)		122.0			89.8			72.3			151.7	
Turn Bay Length (m)												35.0
Base Capacity (vph)				511	541		639	1051			736	722
Starvation Cap Reductn				0	0		0	271			0	0
Spillback Cap Reductn				0	0		0	0			0	0
Storage Cap Reductn				0	0		0	0			0	0
Reduced v/c Ratio				0.40	0.41		0.26	0.39			0.19	0.31

Intersection Summary

Cycle Length: 60
 Actuated Cycle Length: 60
 Offset: 53 (88%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated

Lanes, Volumes, Timings
31: Rochester & 417 WB on/Raymond

2048 AM Demand Rationalized Main Hospital SPA
03/20/2023

Maximum v/c Ratio: 0.55

Intersection Signal Delay: 12.2

Intersection LOS: B

Intersection Capacity Utilization 55.2%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 31: Rochester & 417 WB on/Raymond



Lanes, Volumes, Timings
32: Rochester & 417 EB off/Orangeville

2048 AM Demand Rationalized Main Hospital SPA

03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕						↕↕			↕↕	
Traffic Volume (vph)	156	210	301	0	0	0	0	310	45	18	318	0
Future Volume (vph)	156	210	301	0	0	0	0	310	45	18	318	0
Satd. Flow (prot)	0	3070	0	0	0	0	0	3311	0	0	3380	0
Flt Permitted		0.988									0.931	
Satd. Flow (perm)	0	3067	0	0	0	0	0	3311	0	0	3154	0
Satd. Flow (RTOR)		301						32				
Lane Group Flow (vph)	0	667	0	0	0	0	0	355	0	0	336	0
Turn Type	Perm	NA						NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4									6		
Detector Phase	4	4						2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0						10.0		10.0	10.0	
Minimum Split (s)	26.0	26.0						25.1		25.1	25.1	
Total Split (s)	30.0	30.0						30.0		30.0	30.0	
Total Split (%)	50.0%	50.0%						50.0%		50.0%	50.0%	
Yellow Time (s)	3.3	3.3						3.3		3.3	3.3	
All-Red Time (s)	2.3	2.3						2.1		2.1	2.1	
Lost Time Adjust (s)		0.0						0.0			0.0	
Total Lost Time (s)		5.6						5.4			5.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None						C-Min		C-Min	C-Min	
Act Effct Green (s)		14.0						35.0			35.0	
Actuated g/C Ratio		0.23						0.58			0.58	
v/c Ratio		0.71						0.18			0.18	
Control Delay		15.2						6.7			7.3	
Queue Delay		0.0						0.0			0.0	
Total Delay		15.2						6.7			7.3	
LOS		B						A			A	
Approach Delay		15.2						6.7			7.3	
Approach LOS		B						A			A	
Queue Length 50th (m)		18.8						14.1			13.5	
Queue Length 95th (m)		29.5						m18.5			21.4	
Internal Link Dist (m)		104.8			107.2			99.1			72.3	
Turn Bay Length (m)												
Base Capacity (vph)		1425						1946			1840	
Starvation Cap Reductn		0						0			0	
Spillback Cap Reductn		0						0			0	
Storage Cap Reductn		0						0			0	
Reduced v/c Ratio		0.47						0.18			0.18	

Intersection Summary

Cycle Length: 60
 Actuated Cycle Length: 60
 Offset: 52 (87%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 55
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 11.0

Intersection LOS: B

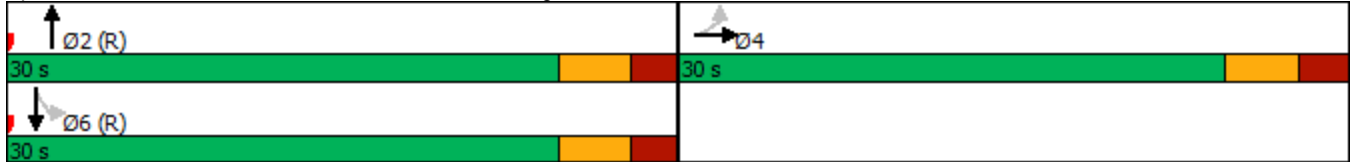
Intersection Capacity Utilization 58.2%

ICU Level of Service B

Analysis Period (min) 15

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

Splits and Phases: 32: Rochester & 417 EB off/Orangeville



Lanes, Volumes, Timings
33: Bronson & Catherine 417 WB on

2048 AM Demand Rationalized Main Hospital SPA
03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↶	↷		↶	↷			↷	↶
Traffic Volume (vph)	0	0	0	613	513	312	467	973	0	0	399	106
Future Volume (vph)	0	0	0	613	513	312	467	973	0	0	399	106
Satd. Flow (prot)	0	0	0	1458	4248	0	1695	3390	0	0	3243	0
Flt Permitted				0.950	0.990		0.270					
Satd. Flow (perm)	0	0	0	1458	4248	0	474	3390	0	0	3243	0
Satd. Flow (RTOR)					64						33	
Lane Group Flow (vph)	0	0	0	417	1021	0	467	973	0	0	505	0
Turn Type				Perm	NA		pm+pt	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases				8			2					
Detector Phase				8	8		5	2			6	
Switch Phase												
Minimum Initial (s)				10.0	10.0		5.0	10.0			10.0	
Minimum Split (s)				25.9	25.9		11.0	25.1			25.1	
Total Split (s)				41.0	41.0		26.0	54.0			28.0	
Total Split (%)				43.2%	43.2%		27.4%	56.8%			29.5%	
Yellow Time (s)				3.3	3.3		3.3	3.3			3.3	
All-Red Time (s)				2.6	2.6		2.7	2.8			2.8	
Lost Time Adjust (s)				0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)				5.9	5.9		6.0	6.1			6.1	
Lead/Lag							Lead				Lag	
Lead-Lag Optimize?							Yes				Yes	
Recall Mode				None	None		None	C-Min			C-Min	
Act Effct Green (s)				32.3	32.3		50.8	50.7			23.3	
Actuated g/C Ratio				0.34	0.34		0.53	0.53			0.25	
v/c Ratio				0.84	0.69		0.89	0.54			0.62	
Control Delay				45.0	27.5		42.4	19.6			34.4	
Queue Delay				3.5	0.1		13.6	2.6			0.0	
Total Delay				48.5	27.5		56.0	22.2			34.4	
LOS				D	C		E	C			C	
Approach Delay					33.6			33.2			34.4	
Approach LOS					C			C			C	
Queue Length 50th (m)				77.0	55.0		70.0	66.0			43.1	
Queue Length 95th (m)				#130.8	70.3		#115.8	101.2			58.4	
Internal Link Dist (m)		151.3			165.9			71.3			230.9	
Turn Bay Length (m)												
Base Capacity (vph)				541	1617		530	1815			850	
Starvation Cap Reductn				0	0		58	691			0	
Spillback Cap Reductn				62	61		0	0			1	
Storage Cap Reductn				0	0		0	0			0	
Reduced v/c Ratio				0.87	0.66		0.99	0.87			0.59	

Intersection Summary

Cycle Length: 95
 Actuated Cycle Length: 95
 Offset: 35 (37%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.89

Intersection Signal Delay: 33.6

Intersection LOS: C

Intersection Capacity Utilization 108.1%

ICU Level of Service G

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 33: Bronson & Catherine 417 WB on



Lanes, Volumes, Timings
34: Bronson & 417 EB off

2048 AM Demand Rationalized Main Hospital SPA

03/20/2023



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	292	363	0	1223	1056	0
Future Volume (vph)	292	363	0	1223	1056	0
Satd. Flow (prot)	1695	1517	0	3390	3390	0
Flt Permitted	0.950					
Satd. Flow (perm)	1695	1474	0	3390	3390	0
Satd. Flow (RTOR)	116					
Lane Group Flow (vph)	292	363	0	1223	1056	0
Turn Type	Perm	Perm		NA	NA	
Protected Phases				2	6	
Permitted Phases	4	4				
Detector Phase	4	4	2		6	
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0		10.0	
Minimum Split (s)	25.1	25.1	34.3		34.3	
Total Split (s)	30.0	30.0	65.0		65.0	
Total Split (%)	31.6%	31.6%	68.4%		68.4%	
Yellow Time (s)	3.3	3.3	3.3		3.3	
All-Red Time (s)	2.1	2.1	2.5		2.5	
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	
Total Lost Time (s)	5.4	5.4	5.8		5.8	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	C-Min		C-Min	
Act Effct Green (s)	22.9	22.9	60.9		60.9	
Actuated g/C Ratio	0.24	0.24	0.64		0.64	
v/c Ratio	0.71	0.82	0.56		0.49	
Control Delay	42.1	37.4	12.0		5.6	
Queue Delay	0.4	0.0	0.1		0.5	
Total Delay	42.6	37.4	12.1		6.0	
LOS	D	D	B		A	
Approach Delay	39.7		12.1		6.0	
Approach LOS	D		B		A	
Queue Length 50th (m)	49.1	43.7	60.1		3.6	
Queue Length 95th (m)	67.6	68.2	99.8		105.1	
Internal Link Dist (m)	81.4		50.7		71.3	
Turn Bay Length (m)	60.0					
Base Capacity (vph)	472	494	2238		2238	
Starvation Cap Reductn	0	0	0		665	
Spillback Cap Reductn	26	0	157		0	
Storage Cap Reductn	0	0	0		0	
Reduced v/c Ratio	0.65	0.73	0.59		0.67	

Intersection Summary

Cycle Length: 95
 Actuated Cycle Length: 95
 Offset: 72 (76%), 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: 16.1	Intersection LOS: B
Intersection Capacity Utilization 108.1%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 34: Bronson & 417 EB off

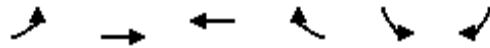


Lanes, Volumes, Timings 39:
Prince of Wales & Road B

2048 AM Demand Rationalized Main Hospital SPA

03/20/2023

(dual WBT)



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø9
Lane Configurations							
Traffic Volume (vph)	73	880	628	67	60	37	
Future Volume (vph)	73	880	628	67	60	37	
Satd. Flow (prot)	1695	1784	3330	0	1695	1517	
Flt Permitted	0.351				0.950		
Satd. Flow (perm)	623	1784	3330	0	1634	1419	
Satd. Flow (RTOR)						37	
Lane Group Flow (vph)	73	880	695	0	60	37	
Turn Type	pm+pt	NA	NA		Perm	Perm	
Protected Phases	5	2	6				9
Permitted Phases	2				4	4	
Detector Phase	5	2	6		4	4	
Switch Phase							
Minimum Initial (s)	5.0	10.0	10.0		10.0	10.0	1.0
Minimum Split (s)	10.3	23.3	23.3		23.3	23.3	15.0
Total Split (s)	10.4	91.7	81.3		23.3	23.3	15.0
Total Split (%)	8.0%	70.5%	62.5%		17.9%	17.9%	12%
Yellow Time (s)	3.3	3.3	3.3		3.3	3.3	2.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.3	5.3	5.3		5.3	5.3	
Lead/Lag	Lead		Lag				
Lead-Lag Optimize?	Yes		Yes				
Recall Mode	None	C-Min	C-Min		None	None	None
Act Effct Green (s)	107.5	108.5	98.6		12.0	12.0	
Actuated g/C Ratio	0.83	0.83	0.76		0.09	0.09	
v/c Ratio	0.13	0.59	0.28		0.40	0.23	
Control Delay	4.4	8.4	7.5		62.7	18.8	
Queue Delay	0.0	0.0	0.0		0.0	0.0	
Total Delay	4.4	8.4	7.5		62.7	18.8	
LOS	A	A	A		E	B	
Approach Delay		8.1	7.5		46.0		
Approach LOS		A	A		D		
Queue Length 50th (m)	2.4	54.0	11.5		15.0	0.0	
Queue Length 95th (m)	11.4	190.6	82.2		27.5	10.2	
Internal Link Dist (m)		198.2	95.9		17.7		
Turn Bay Length (m)	45.0						
Base Capacity (vph)	570	1489	2546		226	228	
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	0.13	0.59	0.27		0.27	0.16	

Intersection Summary

Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.59

Intersection Signal Delay: 9.9

Intersection LOS: A

Intersection Capacity Utilization 67.9%

ICU Level of Service C

Analysis Period (min) 15

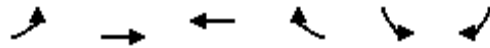
Splits and Phases: 39: Prince of Wales & Road B

 Ø2 (R)	 Ø9	 Ø4
91.7 s	15 s	23.3 s
 Ø5	 Ø6 (R)	
10.4 s	81.3 s	

Lanes, Volumes, Timings
 Prince of Wales & Road B (single WBT)

2048 AM Demand Rationalized Main Hospital SPA

04/04/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø9
Lane Configurations							
Traffic Volume (vph)	73	880	628	67	60	37	
Future Volume (vph)	73	880	628	67	60	37	
Satd. Flow (prot)	1695	1784	1784	1517	1695	1517	
Flt Permitted	0.343				0.950		
Satd. Flow (perm)	612	1784	1784	1455	1634	1354	
Satd. Flow (RTOR)						37	
Lane Group Flow (vph)	73	880	628	67	60	37	
Turn Type	pm+pt	NA	NA	Perm	Perm	Perm	
Protected Phases	5	2	6				9
Permitted Phases	2			6	4	4	
Detector Phase	5	2	6	6	4	4	
Switch Phase							
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	10.0	1.0
Minimum Split (s)	10.3	23.3	23.3	23.3	23.3	23.3	15.0
Total Split (s)	10.8	91.7	80.9	80.9	23.3	23.3	15.0
Total Split (%)	8.3%	70.5%	62.2%	62.2%	17.9%	17.9%	12%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	2.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.3	5.3	5.3	5.3	5.3	5.3	
Lead/Lag	Lead		Lag	Lag			
Lead-Lag Optimize?	Yes		Yes	Yes			
Recall Mode	None	C-Min	C-Min	C-Min	None	None	None
Act Effct Green (s)	107.5	108.5	98.6	98.6	12.0	12.0	
Actuated g/C Ratio	0.83	0.83	0.76	0.76	0.09	0.09	
v/c Ratio	0.13	0.59	0.46	0.06	0.40	0.23	
Control Delay	4.4	8.4	6.9	4.5	62.7	19.1	
Queue Delay	0.0	0.0	0.2	0.0	0.0	0.0	
Total Delay	4.4	8.4	7.1	4.5	62.7	19.1	
LOS	A	A	A	A	E	B	
Approach Delay		8.1	6.9		46.1		
Approach LOS		A	A		D		
Queue Length 50th (m)	2.4	54.0	49.5	4.9	15.0	0.0	
Queue Length 95th (m)	11.4	190.6	m98.4	m5.3	27.5	10.2	
Internal Link Dist (m)		198.2	95.9		17.7		
Turn Bay Length (m)	45.0			35.0			
Base Capacity (vph)	562	1489	1363	1111	226	219	
Starvation Cap Reductn	0	0	183	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	0.13	0.59	0.53	0.06	0.27	0.17	

Intersection Summary

Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 32 (25%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.59

Intersection Signal Delay: 9.7

Intersection LOS: A

Intersection Capacity Utilization 67.9%

ICU Level of Service C

Analysis Period (min) 15

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

Splits and Phases: 39: Prince of Wales & Road B

 Ø2 (R)	 Ø9	 Ø4
91.7 s	15 s	23.3 s
 Ø5	 Ø6 (R)	
10.8 s	80.9 s	

Intersection						
Int Delay, s/veh	0.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	18	1125	562	1	12	15
Future Vol, veh/h	18	1125	562	1	12	15
Conflicting Peds, #/hr	40	0	0	40	3	9
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	25	-	-	20	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	1125	562	1	12	15

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	603	0	-	0	1204 330
Stage 1	-	-	-	-	602 -
Stage 2	-	-	-	-	602 -
Critical Hdwy	4.14	-	-	-	6.84 6.94
Critical Hdwy Stg 1	-	-	-	-	5.84 -
Critical Hdwy Stg 2	-	-	-	-	5.84 -
Follow-up Hdwy	2.22	-	-	-	3.52 3.32
Pot Cap-1 Maneuver	971	-	-	-	177 666
Stage 1	-	-	-	-	510 -
Stage 2	-	-	-	-	510 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	938	-	-	-	162 639
Mov Cap-2 Maneuver	-	-	-	-	162 -
Stage 1	-	-	-	-	483 -
Stage 2	-	-	-	-	493 -

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	19.4
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	938	-	-	-	277
HCM Lane V/C Ratio	0.019	-	-	-	0.097
HCM Control Delay (s)	8.9	-	-	-	19.4
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3

Intersection						
Int Delay, s/veh	1.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑	↑		↑
Traffic Vol, veh/h	0	1181	646	245	0	172
Future Vol, veh/h	0	1181	646	245	0	172
Conflicting Peds, #/hr	36	0	0	36	1	2
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	30	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1181	646	245	0	172

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	-
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	-
Pot Cap-1 Maneuver	0	-	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	18.6
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	434
HCM Lane V/C Ratio	-	-	-	0.396
HCM Control Delay (s)	-	-	-	18.6
HCM Lane LOS	-	-	-	C
HCM 95th %tile Q(veh)	-	-	-	1.9

Intersection												
Int Delay, s/veh	0.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↻			↻			↻				↻
Traffic Vol, veh/h	0	928	4	3	706	89	0	0	1	0	0	7
Future Vol, veh/h	0	928	4	3	706	89	0	0	1	0	0	7
Conflicting Peds, #/hr	2	0	7	7	0	2	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	928	4	3	706	89	0	0	1	0	0	7

Major/Minor	Major1		Major2		Minor1			Minor2				
Conflicting Flow All	-	0	0	939	0	0	1697	1740	937	-	-	753
Stage 1	-	-	-	-	-	-	937	937	-	-	-	-
Stage 2	-	-	-	-	-	-	760	803	-	-	-	-
Critical Hdwy	-	-	-	4.12	-	-	7.12	6.52	6.22	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	-	-	-
Follow-up Hdwy	-	-	-	2.218	-	-	3.518	4.018	3.318	-	-	3.318
Pot Cap-1 Maneuver	0	-	-	730	-	-	73	87	321	0	0	410
Stage 1	0	-	-	-	-	-	318	343	-	0	0	-
Stage 2	0	-	-	-	-	-	398	396	-	0	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	726	-	-	71	86	319	-	-	409
Mov Cap-2 Maneuver	-	-	-	-	-	-	71	86	-	-	-	-
Stage 1	-	-	-	-	-	-	318	341	-	-	-	-
Stage 2	-	-	-	-	-	-	388	392	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	0		0		16.3		14	
HCM LOS					C		B	

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	319	-	-	726	-	-	409
HCM Lane V/C Ratio	0.003	-	-	0.004	-	-	0.017
HCM Control Delay (s)	16.3	-	-	10	0	-	14
HCM Lane LOS	C	-	-	A	A	-	B
HCM 95th %tile Q(veh)	0	-	-	0	-	-	0.1

Intersection						
Int Delay, s/veh	0.6					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗	↘	↑	↑	↗
Traffic Vol, veh/h	0	59	18	953	555	112
Future Vol, veh/h	0	59	18	953	555	112
Conflicting Peds, #/hr	0	0	10	0	0	10
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	50	-	-	50
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	7	6	6	2	2	27
Mvmt Flow	0	59	18	953	555	112

Major/Minor	Minor2	Major1	Major2		
Conflicting Flow All	-	565	677	0	0
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	6.26	4.16	-	-
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	3.354	2.254	-	-
Pot Cap-1 Maneuver	0	517	896	-	-
Stage 1	0	-	-	-	-
Stage 2	0	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	-	513	888	-	-
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.9	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	888	-	513	-	-
HCM Lane V/C Ratio	0.02	-	0.115	-	-
HCM Control Delay (s)	9.1	-	12.9	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.4	-	-

Lanes, Volumes, Timings 2:
Prince of Wales & Road E

2048 Road E - PoW AM Sigalized

03/20/2023

(as signalized)



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø9	Ø11
Lane Configurations								
Traffic Volume (vph)	41	18	18	912	555	112		
Future Volume (vph)	41	18	18	912	555	112		
Satd. Flow (prot)	1695	1517	1695	1784	1784	1517		
Flt Permitted	0.950		0.352					
Satd. Flow (perm)	1695	1517	628	1784	1784	1382		
Satd. Flow (RTOR)								
Lane Group Flow (vph)	41	18	18	912	555	112		
Turn Type	Perm	Perm	pm+pt	NA	NA	Perm		
Protected Phases			5	2	6		9	11
Permitted Phases	4	4	2			6		
Detector Phase	4	4	5	2	6	6		
Switch Phase								
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	10.0	1.0	1.0
Minimum Split (s)	23.3	23.3	15.3	23.3	23.3	23.3	5.0	5.0
Total Split (s)	24.0	24.0	16.0	86.0	70.0	70.0	5.0	5.0
Total Split (%)	20.0%	20.0%	13.3%	71.7%	58.3%	58.3%	4%	4%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	2.0	2.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	0.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	5.3	5.3	5.3	5.3	5.3	5.3		
Lead/Lag			Lead		Lag	Lag		
Lead-Lag Optimize?			Yes		Yes	Yes		
Recall Mode	None	None	None	Min	Min	Min	None	None
Act Effct Green (s)	12.8	12.8	48.9	52.5	51.2	51.2		
Actuated g/C Ratio	0.20	0.20	0.75	0.81	0.79	0.79		
v/c Ratio	0.12	0.06	0.03	0.63	0.40	0.10		
Control Delay	32.6	33.1	5.0	9.8	8.1	6.7		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay	32.6	33.1	5.0	9.8	8.1	6.7		
LOS	C	C	A	A	A	A		
Approach Delay	32.7			9.7	7.9			
Approach LOS	C			A	A			
Queue Length 50th (m)	4.5	1.9	0.6	57.7	24.9	3.8		
Queue Length 95th (m)	18.5	10.3	3.6	184.2	106.7	20.5		
Internal Link Dist (m)	165.3			385.8	63.5			
Turn Bay Length (m)	50.0		50.0			50.0		
Base Capacity (vph)	580	519	681	1675	1620	1255		
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	0.07	0.03	0.03	0.54	0.34	0.09		

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 65.1
 Natural Cycle: 90
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.63


Lanes, Volumes, Timings 2: Prince of
Wales & Road E (as signalized)

2048 Road E - PoW AM Signalized
03/20/2023

Intersection Signal Delay: 9.8
Intersection Capacity Utilization 67.8%
Analysis Period (min) 15

Intersection LOS: A
ICU Level of Service C

Splits and Phases: 2: Prince of Wales & Road E

  Ø9 Ø2 5 s 86 s	  Ø11 Ø4 5 s 24 s
 Ø5 16 s	 Ø6 70 s

Intersection												
Int Delay, s/veh	4.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔↔			↔			↔	
Traffic Vol, veh/h	0	45	164	237	237	5	26	0	138	0	0	5
Future Vol, veh/h	0	45	164	237	237	5	26	0	138	0	0	5
Conflicting Peds, #/hr	10	0	10	10	0	10	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	45	164	237	237	5	26	0	138	0	0	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	252	0	0	219	0	0	730	863	115	747	943	131
Stage 1	-	-	-	-	-	-	137	137	-	724	724	-
Stage 2	-	-	-	-	-	-	593	726	-	23	219	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1310	-	-	1348	-	-	310	291	916	301	261	894
Stage 1	-	-	-	-	-	-	852	782	-	383	429	-
Stage 2	-	-	-	-	-	-	459	428	-	992	721	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1299	-	-	1337	-	-	257	228	908	213	204	886
Mov Cap-2 Maneuver	-	-	-	-	-	-	257	228	-	213	204	-
Stage 1	-	-	-	-	-	-	845	776	-	380	338	-
Stage 2	-	-	-	-	-	-	363	338	-	841	715	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			4.2			12.4			9.1		
HCM LOS							B			A		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	648	1299	-	-	1337	-	-	886
HCM Lane V/C Ratio	0.253	-	-	-	0.177	-	-	0.006
HCM Control Delay (s)	12.4	0	-	-	8.3	0.3	-	9.1
HCM Lane LOS	B	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	1	0	-	-	0.6	-	-	0

Intersection						
Int Delay, s/veh	5.4					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↑	↑		↔
Traffic Vol, veh/h	61	35	74	63	131	32
Future Vol, veh/h	61	35	74	63	131	32
Conflicting Peds, #/hr	0	0	0	15	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	0	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	61	35	74	63	131	32

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	367	89	0	0	152
Stage 1	89	-	-	-	-
Stage 2	278	-	-	-	-
Critical Hdwy	6.63	6.23	-	-	4.13
Critical Hdwy Stg 1	5.43	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-
Follow-up Hdwy	3.519	3.319	-	-	2.219
Pot Cap-1 Maneuver	619	969	-	-	1428
Stage 1	934	-	-	-	-
Stage 2	745	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	553	957	-	-	1410
Mov Cap-2 Maneuver	553	-	-	-	-
Stage 1	922	-	-	-	-
Stage 2	674	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.4	0	6.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	654	1410
HCM Lane V/C Ratio	-	-	0.147	0.093
HCM Control Delay (s)	-	-	11.4	7.8
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.5	0.3

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Traffic Vol, veh/h	0	4	4	137	93	0
Future Vol, veh/h	0	4	4	137	93	0
Conflicting Peds, #/hr	0	0	5	0	0	5
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	100	100	100	2	2	100
Mvmt Flow	0	4	4	137	93	0

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	175	52	98	0	0
Stage 1	98	-	-	-	-
Stage 2	77	-	-	-	-
Critical Hdwy	8.8	8.9	6.1	-	-
Critical Hdwy Stg 1	7.8	-	-	-	-
Critical Hdwy Stg 2	7.8	-	-	-	-
Follow-up Hdwy	4.5	4.3	3.2	-	-
Pot Cap-1 Maneuver	581	759	995	-	-
Stage 1	687	-	-	-	-
Stage 2	710	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	574	756	991	-	-
Mov Cap-2 Maneuver	574	-	-	-	-
Stage 1	682	-	-	-	-
Stage 2	707	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.8	0.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	991	-	756	-	-
HCM Lane V/C Ratio	0.004	-	0.005	-	-
HCM Control Delay (s)	8.6	0	9.8	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection						
Int Delay, s/veh	4.5					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	37	6	0	18	16
Future Vol, veh/h	0	37	6	0	18	16
Conflicting Peds, #/hr	0	10	10	0	10	10
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	37	6	0	18	16

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	47	0	51
Stage 1	-	-	-	-	29
Stage 2	-	-	-	-	22
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1560	-	958
Stage 1	-	-	-	-	994
Stage 2	-	-	-	-	1001
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1547	-	939
Mov Cap-2 Maneuver	-	-	-	-	939
Stage 1	-	-	-	-	986
Stage 2	-	-	-	-	989

Approach	EB	WB	NB
HCM Control Delay, s	0	7.3	8.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	974	-	-	1547	-
HCM Lane V/C Ratio	0.035	-	-	0.004	-
HCM Control Delay (s)	8.8	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Intersection Delay, s/veh	8.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	42	120	16	2	85	80	3	5	2	66	65	20
Future Vol, veh/h	42	120	16	2	85	80	3	5	2	66	65	20
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	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	42	120	16	2	85	80	3	5	2	66	65	20
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.8	8.3	7.9	8.9
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	30%	24%	1%	44%
Vol Thru, %	50%	67%	51%	43%
Vol Right, %	20%	9%	48%	13%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	10	178	167	151
LT Vol	3	42	2	66
Through Vol	5	120	85	65
RT Vol	2	16	80	20
Lane Flow Rate	10	178	167	151
Geometry Grp	1	1	1	1
Degree of Util (X)	0.013	0.222	0.197	0.198
Departure Headway (Hd)	4.837	4.498	4.242	4.72
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	739	799	847	761
Service Time	2.874	2.522	2.265	2.747
HCM Lane V/C Ratio	0.014	0.223	0.197	0.198
HCM Control Delay	7.9	8.8	8.3	8.9
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0	0.8	0.7	0.7

Intersection	
Intersection Delay, s/veh	7.8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	32	0	30	0	0	18	30	32	0	37	72	73
Future Vol, veh/h	32	0	30	0	0	18	30	32	0	37	72	73
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	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	32	0	30	0	0	18	30	32	0	37	72	73
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.6	7	7.7	8
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	48%	52%	0%	20%
Vol Thru, %	52%	0%	0%	40%
Vol Right, %	0%	48%	100%	40%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	62	62	18	182
LT Vol	30	32	0	37
Through Vol	32	0	0	72
RT Vol	0	30	18	73
Lane Flow Rate	62	62	18	182
Geometry Grp	1	1	1	1
Degree of Util (X)	0.074	0.074	0.02	0.198
Departure Headway (Hd)	4.31	4.287	3.923	3.92
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	822	841	917	906
Service Time	2.388	2.288	1.925	1.982
HCM Lane V/C Ratio	0.075	0.074	0.02	0.201
HCM Control Delay	7.7	7.6	7	8
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.2	0.2	0.1	0.7

Intersection	
Intersection Delay, s/veh	8.7
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↖	↑	↗	
Traffic Vol, veh/h	132	24	139	124	32	76
Future Vol, veh/h	132	24	139	124	32	76
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	132	24	139	124	32	76
Number of Lanes	2	0	1	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	2
HCM Control Delay	8.3	9.1	8.3
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2
Vol Left, %	30%	0%	0%	100%	0%
Vol Thru, %	0%	100%	65%	0%	100%
Vol Right, %	70%	0%	35%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	108	88	68	139	124
LT Vol	32	0	0	139	0
Through Vol	0	88	44	0	124
RT Vol	76	0	24	0	0
Lane Flow Rate	108	88	68	139	124
Geometry Grp	2	7	7	7	7
Degree of Util (X)	0.136	0.123	0.09	0.209	0.169
Departure Headway (Hd)	4.544	5.033	4.784	5.422	4.92
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	791	713	749	663	730
Service Time	2.565	2.758	2.509	3.146	2.644
HCM Lane V/C Ratio	0.137	0.123	0.091	0.21	0.17
HCM Control Delay	8.3	8.5	8	9.6	8.6
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.5	0.4	0.3	0.8	0.6

Lanes, Volumes, Timings
10: Carling & Parkdale

2048 PM Demand Rationalized Main Hospital SPA

03/20/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø10
Lane Configurations							
Traffic Volume (vph)	87	625	1301	112	25	166	
Future Volume (vph)	87	625	1301	112	25	166	
Satd. Flow (prot)	1695	3390	3390	1517	1524	0	
Flt Permitted	0.950				0.993		
Satd. Flow (perm)	1652	3390	3390	1239	1522	0	
Satd. Flow (RTOR)				106	166		
Lane Group Flow (vph)	87	625	1301	112	191	0	
Turn Type	Prot	NA	NA	Perm	Perm		
Protected Phases	5	2	6				10
Permitted Phases				6	4		
Detector Phase	5	2	6	6	4		
Switch Phase							
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0		1.0
Minimum Split (s)	11.1	26.7	26.7	26.7	37.2		5.0
Total Split (s)	16.0	92.8	76.8	76.8	37.2		5.0
Total Split (%)	11.9%	68.7%	56.9%	56.9%	27.6%		4%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.0		2.0
All-Red Time (s)	2.4	1.9	1.9	1.9	3.2		0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	6.1	5.6	5.6	5.6	6.2		
Lead/Lag	Lead		Lag	Lag			
Lead-Lag Optimize?	Yes		Yes	Yes			
Recall Mode	None	C-Min	C-Min	C-Min	None		Min
Act Effct Green (s)	12.6	104.0	85.3	85.3	11.7		
Actuated g/C Ratio	0.09	0.77	0.63	0.63	0.09		
v/c Ratio	0.55	0.24	0.61	0.14	0.67		
Control Delay	70.9	4.8	17.2	3.0	24.5		
Queue Delay	0.0	0.0	1.1	0.0	0.0		
Total Delay	70.9	4.8	18.3	3.0	24.5		
LOS	E	A	B	A	C		
Approach Delay		12.9	17.1		24.5		
Approach LOS		B	B		C		
Queue Length 50th (m)	22.5	19.8	98.7	0.5	6.4		
Queue Length 95th (m)	38.6	32.5	149.5	9.1	29.6		
Internal Link Dist (m)		297.5	170.5		278.4		
Turn Bay Length (m)	155.0			80.0			
Base Capacity (vph)	163	2612	2141	821	477		
Starvation Cap Reductn	0	0	547	0	0		
Spillback Cap Reductn	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0		
Reduced v/c Ratio	0.53	0.24	0.82	0.14	0.40		

Intersection Summary

Cycle Length: 135
 Actuated Cycle Length: 135
 Offset: 66 (49%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.67

Intersection Signal Delay: 16.4

Intersection LOS: B

Intersection Capacity Utilization 76.1%

ICU Level of Service D

Analysis Period (min) 15

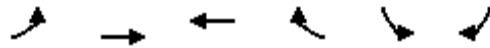
Splits and Phases: 10: Carling & Parkdale



Lanes, Volumes, Timings
11: Carling & Civic

2048 PM Demand Rationalized Main Hospital SPA

03/20/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↗↗	↖↖	↖	↘↘	
Traffic Volume (vph)	16	705	1546	42	16	16
Future Volume (vph)	16	705	1546	42	16	16
Satd. Flow (prot)	1695	3390	3390	1517	1587	0
Flt Permitted	0.950				0.976	
Satd. Flow (perm)	1685	3390	3390	1394	1575	0
Satd. Flow (RTOR)				42	16	
Lane Group Flow (vph)	16	705	1546	42	32	0
Turn Type	Prot	NA	NA	Perm	Perm	
Protected Phases	5	2	6			
Permitted Phases				6	4	
Detector Phase	5	2	6	6	4	
Switch Phase						
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	11.4	31.3	31.3	31.3	23.3	
Total Split (s)	12.5	106.7	94.2	94.2	23.3	
Total Split (%)	9.6%	82.1%	72.5%	72.5%	17.9%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.3	
All-Red Time (s)	2.7	2.7	2.7	2.7	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.4	6.4	6.4	6.4	5.3	
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Min	C-Min	C-Min	None	
Act Effct Green (s)	6.8	115.4	109.6	109.6	11.6	
Actuated g/C Ratio	0.05	0.89	0.84	0.84	0.09	
v/c Ratio	0.18	0.23	0.54	0.04	0.21	
Control Delay	62.9	2.3	5.7	1.7	35.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	62.9	2.3	5.7	1.7	35.6	
LOS	E	A	A	A	D	
Approach Delay		3.7	5.6		35.6	
Approach LOS		A	A		D	
Queue Length 50th (m)	4.0	15.5	44.5	0.0	3.9	
Queue Length 95th (m)	11.5	29.5	84.6	m2.2	13.2	
Internal Link Dist (m)		170.5	180.8		39.9	
Turn Bay Length (m)	90.0			140.0		
Base Capacity (vph)	91	3009	2871	1187	231	
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	0.18	0.23	0.54	0.04	0.14	

Intersection Summary

Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.54

Intersection Signal Delay: 5.4

Intersection LOS: A

Intersection Capacity Utilization 65.8%

ICU Level of Service C

Analysis Period (min) 15

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

Splits and Phases: 11: Carling & Civic



Lanes, Volumes, Timings
13: Maple/Old Irvine & Carling

2048 PM Demand Rationalized Main Hospital SPA

03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↘	↗	↘	↘	↗	↘		↕			↕	
Traffic Volume (vph)	38	623	57	54	1105	7	125	10	48	10	9	11
Future Volume (vph)	38	623	57	54	1105	7	125	10	48	10	9	11
Satd. Flow (prot)	1695	3390	1517	1695	3390	1517	0	1648	0	0	1652	0
Flt Permitted	0.223			0.403				0.777			0.891	
Satd. Flow (perm)	386	3390	1293	685	3390	1178	0	1312	0	0	1486	0
Satd. Flow (RTOR)			38			37		14			11	
Lane Group Flow (vph)	38	623	57	54	1105	7	0	183	0	0	30	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8				4
Permitted Phases	2		2	6		6	8			4		
Detector Phase	2	2	2	6	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	35.0	35.0	35.0	34.3	34.3	34.3	42.4	42.4		42.4	42.4	
Total Split (s)	87.0	87.0	87.0	87.0	87.0	87.0	43.0	43.0		43.0	43.0	
Total Split (%)	66.9%	66.9%	66.9%	66.9%	66.9%	66.9%	33.1%	33.1%		33.1%	33.1%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	4.4	4.4		4.4	4.4	
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	5.7	5.7	5.7	5.7		7.4			7.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Min	C-Min	C-Min	C-Min	C-Min	C-Min	None	None		None	None	
Act Effct Green (s)	92.1	92.1	92.1	92.1	92.1	92.1		24.8			24.8	
Actuated g/C Ratio	0.71	0.71	0.71	0.71	0.71	0.71		0.19			0.19	
v/c Ratio	0.14	0.26	0.06	0.11	0.46	0.01		0.70			0.10	
Control Delay	7.9	6.5	2.7	8.8	10.0	0.0		58.1			28.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0			0.0	
Total Delay	7.9	6.5	2.7	8.8	10.0	0.0		58.1			28.0	
LOS	A	A	A	A	A	A		E			C	
Approach Delay		6.3			9.9			58.1			28.0	
Approach LOS		A			A			E			C	
Queue Length 50th (m)	2.5	25.5	1.0	3.6	52.6	0.0		42.0			4.1	
Queue Length 95th (m)	5.2	24.7	3.1	m11.0	90.8	m0.0		60.4			11.3	
Internal Link Dist (m)		236.1			191.5			174.3			220.8	
Turn Bay Length (m)	20.0		15.0	45.0		25.0						
Base Capacity (vph)	273	2401	926	485	2401	845		369			414	
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	0.14	0.26	0.06	0.11	0.46	0.01		0.50			0.07	

Intersection Summary

Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 28 (22%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.70

Intersection Signal Delay: 13.1

Intersection LOS: B

Intersection Capacity Utilization 80.7%

ICU Level of Service D

Analysis Period (min) 15

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

Splits and Phases: 13: Maple/Old Irvine & Carling



Lanes, Volumes, Timings
15: Carling & Sherwood

2048 PM Demand Rationalized Main Hospital SPA

03/20/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↗	↗↗	↗↗	↗	↘	↘
Traffic Volume (vph)	65	637	1217	200	159	7
Future Volume (vph)	65	637	1217	200	159	7
Satd. Flow (prot)	1695	3390	3390	1517	1695	1517
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1610	3390	3390	1072	1669	1473
Satd. Flow (RTOR)				200		5
Lane Group Flow (vph)	65	637	1217	200	159	7
Turn Type	Prot	NA	NA	Perm	Perm	Perm
Protected Phases	5	2	6			
Permitted Phases				6	4	4
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	10.3	25.1	25.1	25.1	25.1	25.1
Total Split (s)	15.0	89.0	74.0	74.0	41.0	41.0
Total Split (%)	11.5%	68.5%	56.9%	56.9%	31.5%	31.5%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.3	5.3	5.3	5.3	5.3	5.3
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Min	C-Min	C-Min	None	None
Act Effct Green (s)	10.3	101.6	88.3	88.3	17.8	17.8
Actuated g/C Ratio	0.08	0.78	0.68	0.68	0.14	0.14
v/c Ratio	0.49	0.24	0.53	0.25	0.70	0.03
Control Delay	69.7	4.4	3.4	0.6	69.1	30.4
Queue Delay	0.0	0.0	0.2	0.0	0.0	0.0
Total Delay	69.7	4.4	3.6	0.6	69.1	30.4
LOS	E	A	A	A	E	C
Approach Delay		10.4	3.2		67.4	
Approach LOS		B	A		E	
Queue Length 50th (m)	16.3	19.1	17.0	0.2	39.4	0.5
Queue Length 95th (m)	30.6	31.2	18.7	0.0	59.3	4.7
Internal Link Dist (m)		118.3	141.7		152.1	
Turn Bay Length (m)	30.0			90.0		15.0
Base Capacity (vph)	146	2650	2303	792	458	408
Starvation Cap Reductn	0	0	393	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	0.45	0.24	0.64	0.25	0.35	0.02

Intersection Summary

Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 24 (18%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 65
 Control Type: Actuated-Coordinated

Lanes, Volumes, Timings
 15: Carling & Sherwood

2048 PM Demand Rationalized Main Hospital SPA

03/20/2023

Maximum v/c Ratio: 0.70

Intersection Signal Delay: 10.1

Intersection LOS: B

Intersection Capacity Utilization 63.6%

ICU Level of Service B

Analysis Period (min) 15

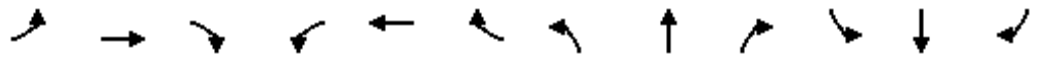
Splits and Phases: 15: Carling & Sherwood



Lanes, Volumes, Timings
16: Road A/Champagne & Carling

2048 PM Demand Rationalized Main Hospital SPA

03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Traffic Volume (vph)	88	581	70	70	1033	150	165	0	171	182	0	98
Future Volume (vph)	88	581	70	70	1033	150	165	0	171	182	0	98
Satd. Flow (prot)	1695	3390	1517	1695	3390	1517	1695	1402	0	1695	1417	0
Flt Permitted	0.950			0.950			0.531			0.649		
Satd. Flow (perm)	1577	3390	1356	1636	3390	1019	909	1402	0	1099	1417	0
Satd. Flow (RTOR)						147					295	
Lane Group Flow (vph)	88	581	70	70	1033	150	165	171	0	182	98	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA		Perm	NA	
Protected Phases	5	2		1	6		3	8				4
Permitted Phases			2			6	8			4		
Detector Phase	5	2	2	1	6	6	3	8		4		4
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	5.0	10.0		10.0	10.0	
Minimum Split (s)	15.3	26.3	26.3	15.3	26.3	26.3	10.3	23.3		37.9	37.9	
Total Split (s)	15.3	47.8	47.8	15.3	52.8	52.8	14.0	56.9		37.9	37.9	
Total Split (%)	11.8%	36.8%	36.8%	11.8%	40.6%	40.6%	10.8%	43.8%		29.2%	29.2%	
Yellow Time (s)	3.3	3.7	3.7	3.3	3.7	3.7	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.0	1.6	1.6	2.0	1.6	1.6	2.0	2.0		2.6	2.6	
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)	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3		5.9	5.9	
Lead/Lag	Lead			Lead			Lead					
Lead-Lag Optimize?	Yes			Yes			Yes					
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None		None	None	
Act Effct Green (s)	11.5	61.1	61.1	10.6	58.2	58.2	43.4	43.4		25.7	25.7	
Actuated g/C Ratio	0.09	0.47	0.47	0.08	0.45	0.45	0.33	0.33		0.20	0.20	
v/c Ratio	0.59	0.36	0.11	0.51	0.68	0.28	0.45	0.37		0.84	0.19	
Control Delay	71.5	24.3	22.7	70.5	33.1	5.9	34.9	33.9		80.1	0.8	
Queue Delay	0.0	0.0	0.0	0.0	12.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	71.5	24.3	22.7	70.5	45.1	5.9	34.9	33.9		80.1	0.8	
LOS	E	C	C	E	D	A	C	C		F	A	
Approach Delay		29.8			41.8			34.4			52.4	
Approach LOS		C			D			C			D	
Queue Length 50th (m)	18.9	59.1	12.2	17.5	114.6	0.5	29.7	31.6		44.7	0.0	
Queue Length 95th (m)	#47.5	85.2	26.4	33.3	153.8	14.9	44.4	47.9		69.2	0.0	
Internal Link Dist (m)		141.7			98.6			63.9			477.2	
Turn Bay Length (m)	55.0		75.0	61.0		35.0				30.0		
Base Capacity (vph)	149	1593	637	138	1517	537	369	556		270	571	
Starvation Cap Reductn	0	0	0	0	472	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	0.59	0.36	0.11	0.51	0.99	0.28	0.45	0.31		0.67	0.17	

Intersection Summary

Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 105
 Control Type: Actuated-Coordinated

Lane Group	Ø9	Ø10	Ø11
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Satd. Flow (RTOR)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	9	10	11
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	1.0	1.0	1.0
Minimum Split (s)	10.0	5.0	5.0
Total Split (s)	10.0	5.0	5.0
Total Split (%)	8%	4%	4%
Yellow Time (s)	2.0	2.0	2.0
All-Red Time (s)	0.0	0.0	0.0
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes
Recall Mode	None	None	None
Act Effct Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
LOS			
Approach Delay			
Approach LOS			
Queue Length 50th (m)			
Queue Length 95th (m)			
Internal Link Dist (m)			
Turn Bay Length (m)			
Base Capacity (vph)			
Starvation Cap Reductn			
Spillback Cap Reductn			
Storage Cap Reductn			
Reduced v/c Ratio			
Intersection Summary			

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 38.6

Intersection LOS: D

Intersection Capacity Utilization 89.3%

ICU Level of Service E

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.













Splits and Phases: 16: Road A/Champagne & Carling



Lanes, Volumes, Timings
17: Carling & Trillium MUP

2048 PM Demand Rationalized Main Hospital SPA

03/20/2023

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑							
Traffic Volume (vph)	0	930	0	0	1382	0	0	0	0	0	0	0
Future Volume (vph)	0	930	0	0	1382	0	0	0	0	0	0	0
Satd. Flow (prot)	0	3390	0	0	3390	0	0	0	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	3390	0	0	3390	0	0	0	0	0	0	0
Satd. Flow (RTOR)												
Lane Group Flow (vph)	0	930	0	0	1382	0	0	0	0	0	0	0
Turn Type		NA			NA							
Protected Phases		2			6							
Permitted Phases												
Detector Phase		2			6							
Switch Phase												
Minimum Initial (s)		10.0			10.0							
Minimum Split (s)		31.1			31.1							
Total Split (s)		35.0			35.0							
Total Split (%)		50.0%			50.0%							
Yellow Time (s)		3.7			3.7							
All-Red Time (s)		1.4			1.4							
Lost Time Adjust (s)		0.0			0.0							
Total Lost Time (s)		5.1			5.1							
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		C-Min			C-Min							
Act Effct Green (s)		62.0			62.0							
Actuated g/C Ratio		0.89			0.89							
v/c Ratio		0.31			0.46							
Control Delay		4.9			6.2							
Queue Delay		0.0			0.0							
Total Delay		4.9			6.2							
LOS		A			A							
Approach Delay		4.9			6.2							
Approach LOS		A			A							
Queue Length 50th (m)		0.0			2.0							
Queue Length 95th (m)		66.8			m#113.7							
Internal Link Dist (m)		98.6			92.8			53.0			60.9	
Turn Bay Length (m)												
Base Capacity (vph)		3002			3002							
Starvation Cap Reductn		45			29							
Spillback Cap Reductn		46			0							
Storage Cap Reductn		0			0							
Reduced v/c Ratio		0.31			0.46							
Intersection Summary												
Cycle Length: 70												
Actuated Cycle Length: 70												
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green												
Natural Cycle: 75												
Control Type: Actuated-Coordinated												

Lane Group	Ø4	Ø8
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	4	8
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	1.0
Minimum Split (s)	35.6	35.6
Total Split (s)	35.0	35.0
Total Split (%)	50%	50%
Yellow Time (s)	3.0	3.0
All-Red Time (s)	3.6	3.6
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag		
Lead-Lag Optimize?		
Recall Mode	None	None
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

Maximum v/c Ratio: 0.46

Intersection Signal Delay: 5.7

Intersection LOS: A

Intersection Capacity Utilization 44.6%

ICU Level of Service A

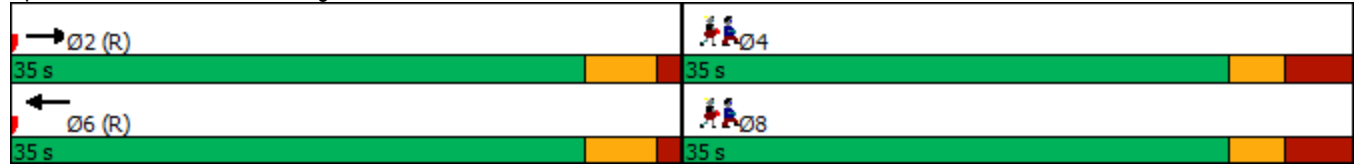
Analysis Period (min) 15

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.

Splits and Phases: 17: Carling & Trillium MUP



Lanes, Volumes, Timings
18: Preston & Carling

2048 PM Demand Rationalized Main Hospital SPA

03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Traffic Volume (vph)	124	550	273	330	983	52	267	356	204	91	274	88
Future Volume (vph)	124	550	273	330	983	52	267	356	204	91	274	88
Satd. Flow (prot)	1695	3390	1517	1695	3390	1517	1695	3072	0	1695	1665	0
Flt Permitted	0.950			0.950			0.139			0.442		
Satd. Flow (perm)	1628	3390	1517	1636	3390	1243	248	3072	0	753	1665	0
Satd. Flow (RTOR)						179					11	
Lane Group Flow (vph)	124	550	273	330	983	52	267	560	0	91	362	0
Turn Type	Prot	NA	custom	Prot	NA	Perm	pm+pt	NA		Perm	NA	
Protected Phases	5	9 2	9 3	1	6		3	8			4	
Permitted Phases						6	8			4		
Detector Phase	5	9 2	9 3	1	6	6	3	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0			5.0	10.0	10.0	5.0	10.0		10.0	10.0	
Minimum Split (s)	11.2			11.2	25.0	25.0	11.9	38.9		38.9	38.9	
Total Split (s)	20.2			37.0	47.1	47.1	23.8	61.7		38.9	38.9	
Total Split (%)	14.4%			26.4%	33.6%	33.6%	17.0%	44.1%		27.8%	27.8%	
Yellow Time (s)	3.7			3.7	3.7	3.7	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.5			2.5	2.3	2.3	3.6	3.6		3.6	3.6	
Lost Time Adjust (s)	0.0			0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.2			6.2	6.0	6.0	6.9	6.9		6.9	6.9	
Lead/Lag	Lead			Lead			Lead					
Lead-Lag Optimize?	Yes			Yes			Yes					
Recall Mode	None			None	C-Min	C-Min	None	None		None	None	
Act Effct Green (s)	13.2	34.0	28.0	29.6	44.6	44.6	59.1	54.3		31.3	31.3	
Actuated g/C Ratio	0.09	0.24	0.20	0.21	0.32	0.32	0.42	0.39		0.22	0.22	
v/c Ratio	0.78	0.67	0.90	0.92	0.91	0.10	0.96	0.47		0.54	0.95	
Control Delay	91.4	49.0	87.4	90.9	51.6	0.3	97.9	15.0		61.1	87.2	
Queue Delay	0.0	0.9	5.9	0.0	2.9	0.0	7.5	0.0		0.0	46.2	
Total Delay	91.4	49.9	93.4	90.9	54.4	0.3	105.4	15.0		61.1	133.4	
LOS	F	D	F	F	D	A	F	B		E	F	
Approach Delay		67.9			61.2			44.2			118.9	
Approach LOS		E			E			D			F	
Queue Length 50th (m)	33.9	75.1	75.8	85.9	134.9	0.0	56.3	24.4		22.3	96.4	
Queue Length 95th (m)	#65.4	84.8	#136.3 m	#103.3 m	#167.6 m	m0.0	#106.8	30.8		41.7	#155.8	
Internal Link Dist (m)		92.8			165.9			145.6			55.2	
Turn Bay Length (m)	70.0		90.0	120.0		95.0				35.0		
Base Capacity (vph)	169	795	302	372	1080	518	279	1202		172	389	
Starvation Cap Reductn	0	78	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	14	0	45	0	10	0		0	73	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.73	0.77	0.95	0.89	0.95	0.10	0.99	0.47		0.53	1.15	

Intersection Summary

Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 6 (4%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 120
 Control Type: Actuated-Coordinated

Lane Group	Ø2	Ø9	Ø10	Ø11	Ø12
Lane Configurations					
Traffic Volume (vph)					
Future Volume (vph)					
Satd. Flow (prot)					
Flt Permitted					
Satd. Flow (perm)					
Satd. Flow (RTOR)					
Lane Group Flow (vph)					
Turn Type					
Protected Phases	2	9	10	11	12
Permitted Phases					
Detector Phase					
Switch Phase					
Minimum Initial (s)	10.0	1.0	1.0	1.0	1.0
Minimum Split (s)	26.0	5.3	5.0	5.0	5.0
Total Split (s)	29.0	6.3	5.0	5.0	6.0
Total Split (%)	21%	5%	4%	4%	4%
Yellow Time (s)	2.0	2.0	2.0	2.0	2.0
All-Red Time (s)	0.0	2.3	0.0	0.0	0.0
Lost Time Adjust (s)					
Total Lost Time (s)					
Lead/Lag	Lag		Lag	Lag	
Lead-Lag Optimize?	Yes		Yes	Yes	
Recall Mode	C-Min	Min	None	None	None
Act Effct Green (s)					
Actuated g/C Ratio					
v/c Ratio					
Control Delay					
Queue Delay					
Total Delay					
LOS					
Approach Delay					
Approach LOS					
Queue Length 50th (m)					
Queue Length 95th (m)					
Internal Link Dist (m)					
Turn Bay Length (m)					
Base Capacity (vph)					
Starvation Cap Reductn					
Spillback Cap Reductn					
Storage Cap Reductn					
Reduced v/c Ratio					
Intersection Summary					

Maximum v/c Ratio: 0.96

Intersection Signal Delay: 66.3

Intersection LOS: E

Intersection Capacity Utilization 99.6%

ICU Level of Service F

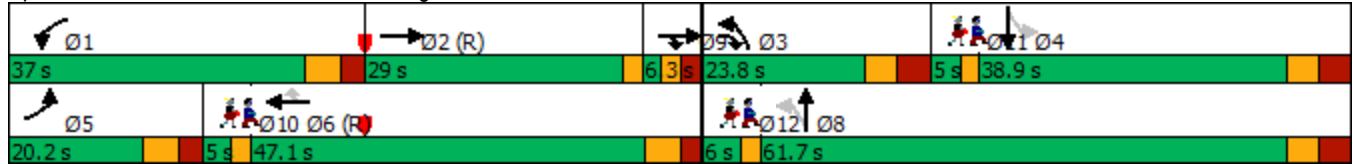
Analysis Period (min) 15

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.

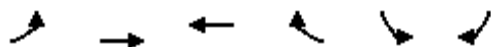
Splits and Phases: 18: Preston & Carling



Lanes, Volumes, Timings
20: Carling & Booth

2048 PM Demand Rationalized Main Hospital SPA

03/20/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	208	771	965	85	254	273
Future Volume (vph)	208	771	965	85	254	273
Satd. Flow (prot)	1695	3390	1784	1517	1695	1517
Flt Permitted	0.048				0.950	
Satd. Flow (perm)	86	3390	1784	1141	1663	1187
Satd. Flow (RTOR)				25		179
Lane Group Flow (vph)	208	771	965	85	254	273
Turn Type	pm+pt	NA	NA	Perm	Perm	Perm
Protected Phases	5	2	6			
Permitted Phases	2			6	4	4
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	10.9	29.7	29.7	29.7	39.0	39.0
Total Split (s)	19.2	101.0	81.8	81.8	39.0	39.0
Total Split (%)	13.7%	72.1%	58.4%	58.4%	27.9%	27.9%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.3	3.3
All-Red Time (s)	2.2	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)	5.9	5.7	5.7	5.7	6.0	6.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Min	C-Min	C-Min	None	None
Act Effct Green (s)	98.1	98.3	78.5	78.5	30.0	30.0
Actuated g/C Ratio	0.70	0.70	0.56	0.56	0.21	0.21
v/c Ratio	0.95	0.32	0.97	0.13	0.72	0.69
Control Delay	82.0	7.3	51.9	11.6	62.3	26.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	82.0	7.3	51.9	11.6	62.3	26.6
LOS	F	A	D	B	E	C
Approach Delay		23.1	48.6		43.8	
Approach LOS		C	D		D	
Queue Length 50th (m)	47.3	24.5	257.0	7.7	63.9	23.1
Queue Length 95th (m)	#93.4	52.0	#354.5	16.6	93.9	55.9
Internal Link Dist (m)		100.4	299.3		220.7	
Turn Bay Length (m)	50.0			30.0		30.0
Base Capacity (vph)	220	2380	999	650	391	416
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	0.95	0.32	0.97	0.13	0.65	0.66

Intersection Summary

Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 110 (79%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
 Natural Cycle: 120
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.97

Intersection Signal Delay: 37.9

Intersection LOS: D

Intersection Capacity Utilization 107.2%

ICU Level of Service G

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 20: Carling & Booth



Lanes, Volumes, Timings
21: Bronson & Carling/Glebe

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	462	102	492	0	0	0	535	604	13	0	1070	288
Future Volume (vph)	462	102	492	0	0	0	535	604	13	0	1070	288
Satd. Flow (prot)	1610	1648	1517	0	0	0	3288	1770	0	0	3232	0
Flt Permitted	0.950	0.972					0.950					
Satd. Flow (perm)	1511	1588	1413	0	0	0	3241	1770	0	0	3232	0
Satd. Flow (RTOR)			108					1			29	
Lane Group Flow (vph)	319	245	492	0	0	0	535	617	0	0	1358	0
Turn Type	Perm	NA	pm+ov				Prot	NA			NA	
Protected Phases		4	5				5	2			6	
Permitted Phases	4		4									
Detector Phase	4	4	5				5	2			6	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0				10.0	10.0			10.0	
Minimum Split (s)	31.0	31.0	16.0				16.0	25.1			33.0	
Total Split (s)	39.0	39.0	31.0				31.0	101.0			70.0	
Total Split (%)	26.5%	26.5%	21.1%				21.1%	68.7%			47.6%	
Yellow Time (s)	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			2.7	
Lost Time Adjust (s)	0.0	0.0	0.0				0.0	0.0			0.0	
Total Lost Time (s)	6.0	6.0	6.0				6.0	6.0			6.0	
Lead/Lag			Lead				Lead				Lag	
Lead-Lag Optimize?			Yes				Yes				Yes	
Recall Mode	None	None	None				None	C-Min			C-Min	
Act Effct Green (s)	32.4	32.4	57.5				25.1	95.5			64.4	
Actuated g/C Ratio	0.22	0.22	0.39				0.17	0.65			0.44	
v/c Ratio	0.96	0.70	0.77				0.95	0.54			0.95	
Control Delay	95.9	64.6	36.8				87.9	16.1			53.3	
Queue Delay	0.0	0.0	0.0				0.0	0.0			0.0	
Total Delay	95.9	64.6	36.8				87.9	16.1			53.3	
LOS	F	E	D				F	B			D	
Approach Delay		61.1						49.4			53.3	
Approach LOS		E						D			D	
Queue Length 50th (m)	97.0	69.4	90.3				80.6	91.8			195.8	
Queue Length 95th (m)	#157.8	101.8	132.6				#115.6	122.6			#245.6	
Internal Link Dist (m)		74.7			115.0			394.4			328.4	
Turn Bay Length (m)	40.0						50.0					
Base Capacity (vph)	339	356	636				561	1150			1432	
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	0.94	0.69	0.77				0.95	0.54			0.95	

Intersection Summary

Cycle Length: 147
 Actuated Cycle Length: 147
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated

Lane Group	Ø10
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	10
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	7.0
Total Split (s)	7.0
Total Split (%)	5%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	Min
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Maximum v/c Ratio: 0.96

Intersection Signal Delay: 54.4

Intersection LOS: D

Intersection Capacity Utilization 95.7%

ICU Level of Service F

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 21: Bronson & Carling/Glebe



Lanes, Volumes, Timings
22: Parkdale & 417 WB on/off

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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	0	266	22	426	101	516	0	0	531	197
Future Volume (vph)	0	0	0	266	22	426	101	516	0	0	531	197
Satd. Flow (prot)	0	0	0	1695	1474	0	1695	1784	0	0	1685	0
Flt Permitted				0.950			0.252					
Satd. Flow (perm)	0	0	0	1695	1474	0	450	1784	0	0	1685	0
Satd. Flow (RTOR)					351						29	
Lane Group Flow (vph)	0	0	0	266	448	0	101	516	0	0	728	0
Turn Type				Perm	NA		pm+pt	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases				8			2					
Detector Phase				8	8		5	2			6	
Switch Phase												
Minimum Initial (s)				10.0	10.0		5.0	10.0			10.0	
Minimum Split (s)				29.0	29.0		10.3	27.3			25.1	
Total Split (s)				29.0	29.0		11.0	71.0			60.0	
Total Split (%)				29.0%	29.0%		11.0%	71.0%			60.0%	
Yellow Time (s)				3.3	3.3		3.0	3.0			3.0	
All-Red Time (s)				2.2	2.2		2.2	3.3			3.3	
Lost Time Adjust (s)				0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)				5.5	5.5		5.2	6.3			6.3	
Lead/Lag							Lag				Lead	
Lead-Lag Optimize?							Yes				Yes	
Recall Mode				None	None		None	C-Min			C-Min	
Act Effct Green (s)				20.0	20.0		70.4	68.2			58.6	
Actuated g/C Ratio				0.20	0.20		0.70	0.68			0.59	
v/c Ratio				0.78	0.78		0.25	0.42			0.73	
Control Delay				54.1	18.9		5.8	6.1			21.8	
Queue Delay				0.0	0.0		1.3	1.3			1.3	
Total Delay				54.1	18.9		7.0	7.4			23.0	
LOS				D	B		A	A			C	
Approach Delay					32.0			7.3			23.0	
Approach LOS					C			A			C	
Queue Length 50th (m)				48.2	15.9		5.7	32.9			102.6	
Queue Length 95th (m)				74.0	52.2		m1.8	37.2			156.4	
Internal Link Dist (m)		157.5			140.3			45.3			171.5	
Turn Bay Length (m)												
Base Capacity (vph)				398	614		398	1216			1006	
Starvation Cap Reductn				0	0		163	473			0	
Spillback Cap Reductn				0	0		0	0			117	
Storage Cap Reductn				0	0		0	0			0	
Reduced v/c Ratio				0.67	0.73		0.43	0.69			0.82	

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 39 (39%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 21.4

Intersection LOS: C

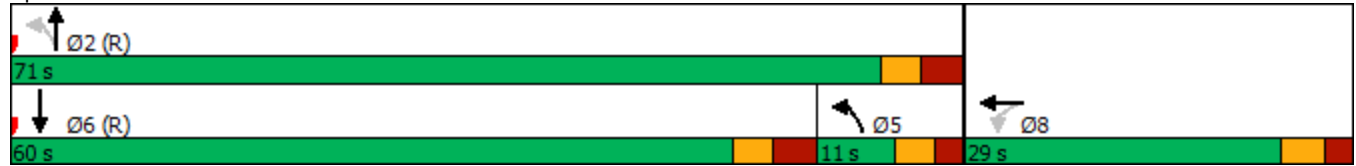
Intersection Capacity Utilization 118.4%

ICU Level of Service H

Analysis Period (min) 15

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

Splits and Phases: 22: Parkdale & 417 WB on/off



Lanes, Volumes, Timings
23: Parkdale & 417 EB on/off

2048 PM Demand Rationalized Main Hospital SPA

03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗					↕↗		↗	↕	
Traffic Volume (vph)	334	2	170	0	0	0	0	282	186	431	363	0
Future Volume (vph)	334	2	170	0	0	0	0	282	186	431	363	0
Satd. Flow (prot)	0	1700	1517	0	0	0	0	3068	0	1695	1784	0
Flt Permitted		0.953								0.383		
Satd. Flow (perm)	0	1700	1482	0	0	0	0	3068	0	666	1784	0
Satd. Flow (RTOR)			170					165				
Lane Group Flow (vph)	0	336	170	0	0	0	0	468	0	431	363	0
Turn Type	Perm	NA	Perm					NA		pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		4							6		
Detector Phase	4	4	4					2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0					10.0		5.0	10.0	
Minimum Split (s)	25.1	25.1	25.1					25.1		10.3	25.1	
Total Split (s)	30.0	30.0	30.0					38.0		32.0	70.0	
Total Split (%)	30.0%	30.0%	30.0%					38.0%		32.0%	70.0%	
Yellow Time (s)	3.3	3.3	3.3					3.0		3.0	3.0	
All-Red Time (s)	2.6	2.6	2.6					2.8		2.3	2.8	
Lost Time Adjust (s)		0.0	0.0					0.0		0.0	0.0	
Total Lost Time (s)		5.9	5.9					5.8		5.3	5.8	
Lead/Lag								Lag		Lead		
Lead-Lag Optimize?								Yes		Yes		
Recall Mode	None	None	None					C-Min		None	C-Min	
Act Effct Green (s)		25.2	25.2					38.9		63.6	63.1	
Actuated g/C Ratio		0.25	0.25					0.39		0.64	0.63	
v/c Ratio		0.78	0.34					0.36		0.70	0.32	
Control Delay		47.6	6.1					17.0		17.6	12.4	
Queue Delay		0.0	0.0					0.0		8.4	2.6	
Total Delay		47.6	6.1					17.0		26.1	15.0	
LOS		D	A					B		C	B	
Approach Delay		33.6						17.0			21.0	
Approach LOS		C						B			C	
Queue Length 50th (m)		60.5	0.0					20.3		43.7	36.1	
Queue Length 95th (m)		83.9	13.9					43.2		70.4	61.2	
Internal Link Dist (m)		109.8			145.0			90.1			45.3	
Turn Bay Length (m)			75.0									
Base Capacity (vph)		456	522					1352		701	1174	
Starvation Cap Reductn		0	0					0		229	675	
Spillback Cap Reductn		0	0					31		0	0	
Storage Cap Reductn		0	0					0		0	0	
Reduced v/c Ratio		0.74	0.33					0.35		0.91	0.73	

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 29 (29%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 70
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 23.6

Intersection LOS: C

Intersection Capacity Utilization 118.4%

ICU Level of Service H

Analysis Period (min) 15

Splits and Phases: 23: Parkdale & 417 EB on/off





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	72	8	7	0	7	154	5	400	7	76	357	68
Future Volume (vph)	72	8	7	0	7	154	5	400	7	76	357	68
Satd. Flow (prot)	0	1683	0	0	1489	0	0	1776	0	0	1724	0
Flt Permitted		0.697						0.995			0.887	
Satd. Flow (perm)	0	1219	0	0	1489	0	0	1769	0	0	1535	0
Satd. Flow (RTOR)		7			154			3			24	
Lane Group Flow (vph)	0	87	0	0	161	0	0	412	0	0	501	0
Turn Type	Perm	NA			NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	1.0	1.0		1.0	1.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	18.0	18.0		18.0	18.0		25.1	25.1		25.1	25.1	
Total Split (s)	18.0	18.0		18.0	18.0		37.0	37.0		37.0	37.0	
Total Split (%)	32.7%	32.7%		32.7%	32.7%		67.3%	67.3%		67.3%	67.3%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.0			4.0			5.6			5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Ped	Ped		Ped	Ped		C-Min	C-Min		C-Min	C-Min	
Act Effct Green (s)		14.0			14.0			31.4			31.4	
Actuated g/C Ratio		0.25			0.25			0.57			0.57	
v/c Ratio		0.28			0.33			0.41			0.57	
Control Delay		18.2			6.0			8.1			10.2	
Queue Delay		0.0			0.0			0.0			0.4	
Total Delay		18.2			6.0			8.1			10.6	
LOS		B			A			A			B	
Approach Delay		18.2			6.0			8.1			10.6	
Approach LOS		B			A			A			B	
Queue Length 50th (m)		6.3			0.5			19.8			25.8	
Queue Length 95th (m)		15.9			11.7			34.7			48.2	
Internal Link Dist (m)		221.3			335.0			289.1			90.1	
Turn Bay Length (m)												
Base Capacity (vph)		315			493			1011			886	
Starvation Cap Reductn		0			0			0			97	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.28			0.33			0.41			0.63	

Intersection Summary

Cycle Length: 55
 Actuated Cycle Length: 55
 Offset: 26 (47%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 50
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.57

Intersection Signal Delay: 9.6

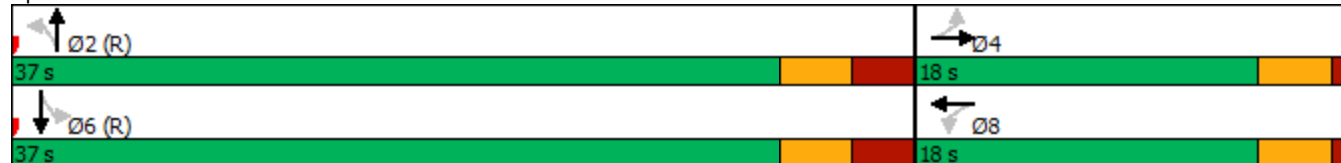
Intersection LOS: A

Intersection Capacity Utilization 91.1%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 24: Parkdale & Sherwood



Lanes, Volumes, Timings
25: Parkdale & Ruskin

2048 PM Demand Rationalized Main Hospital SPA

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↗	↘			↕			↕	
Traffic Volume (vph)	27	29	9	7	33	47	3	221	7	55	238	10
Future Volume (vph)	27	29	9	7	33	47	3	221	7	55	238	10
Satd. Flow (prot)	0	1695	0	1695	1546	0	0	1771	0	0	1759	0
Flt Permitted		0.829		0.807				0.997			0.911	
Satd. Flow (perm)	0	1399	0	1353	1546	0	0	1767	0	0	1603	0
Satd. Flow (RTOR)		7			47			4			5	
Lane Group Flow (vph)	0	65	0	7	80	0	0	231	0	0	303	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	19.4	19.4		19.4	19.4		31.8	31.8		31.8	31.8	
Total Split (s)	20.0	20.0		20.0	20.0		75.0	75.0		75.0	75.0	
Total Split (%)	21.1%	21.1%		21.1%	21.1%		78.9%	78.9%		78.9%	78.9%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.4	2.4		2.4	2.4		2.8	2.8		2.8	2.8	
Lost Time Adjust (s)		0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)		5.4		5.4	5.4			5.8			5.8	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Min	C-Min		C-Min	C-Min	
Act Effct Green (s)		12.4		12.4	12.4			75.6			75.6	
Actuated g/C Ratio		0.13		0.13	0.13			0.80			0.80	
v/c Ratio		0.35		0.04	0.33			0.16			0.24	
Control Delay		38.9		35.6	22.1			3.6			4.0	
Queue Delay		0.0		0.0	0.0			0.0			0.0	
Total Delay		38.9		35.6	22.1			3.6			4.0	
LOS		D		D	C			A			A	
Approach Delay		38.9			23.2			3.6			4.0	
Approach LOS		D			C			A			A	
Queue Length 50th (m)		9.6		1.1	5.4			10.6			14.8	
Queue Length 95th (m)		21.8		5.0	18.2			17.3			23.5	
Internal Link Dist (m)		220.6			228.6			278.4			289.1	
Turn Bay Length (m)				40.0								
Base Capacity (vph)		220		207	277			1407			1277	
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		0.30		0.03	0.29			0.16			0.24	

Intersection Summary

Cycle Length: 95
 Actuated Cycle Length: 95
 Offset: 40 (42%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 55
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.35

Intersection Signal Delay: 9.6

Intersection LOS: A

Intersection Capacity Utilization 68.7%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 25: Parkdale & Ruskin



Lanes, Volumes, Timings
30: Prince of Wales & Preston

2048 PM Demand Rationalized Main Hospital SPA

03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↗	↑		↖	↑	↗		↕			↖	↗
Traffic Volume (vph)	521	260	0	3	382	402	1	0	0	402	3	587
Future Volume (vph)	521	260	0	3	382	402	1	0	0	402	3	587
Satd. Flow (prot)	3288	1784	0	1695	1784	1517	0	1695	0	0	1700	1517
Flt Permitted	0.950			0.950				0.524			0.728	
Satd. Flow (perm)	3187	1784	0	1479	1784	1484	0	798	0	0	1157	1352
Satd. Flow (RTOR)						213						
Lane Group Flow (vph)	521	260	0	3	382	402	0	1	0	0	405	587
Turn Type	Prot	NA		Prot	NA	Free	Perm	NA		custom	NA	custom
Protected Phases	5	2		1	6			8		11	4 11	5
Permitted Phases						Free	8			4		4
Detector Phase	5	2		1	6		8	8		11	4 11	5
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0		10.0		5.0
Minimum Split (s)	11.1	27.1		10.3	26.1		24.5	24.5		15.3		11.1
Total Split (s)	52.0	67.0		10.3	30.3		32.7	32.7		25.0		52.0
Total Split (%)	37.1%	47.9%		7.4%	21.6%		23.4%	23.4%		17.9%		37.1%
Yellow Time (s)	3.7	3.7		3.3	3.7		3.3	3.3		3.3		3.7
All-Red Time (s)	2.4	2.4		2.0	2.4		2.2	2.2		2.0		2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0				0.0
Total Lost Time (s)	6.1	6.1		5.3	6.1			5.5				6.1
Lead/Lag				Lead								
Lead-Lag Optimize?				Yes								
Recall Mode	None	C-Min		None	C-Min		None	None		None		None
Act Effct Green (s)	41.3	77.0		5.2	32.6	140.0		23.3			42.8	64.1
Actuated g/C Ratio	0.30	0.55		0.04	0.23	1.00		0.17			0.31	0.46
v/c Ratio	0.54	0.27		0.05	0.92	0.27		0.01			0.94	0.88
Control Delay	41.8	18.5		67.0	80.6	0.5		46.0			76.9	46.8
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0			0.0	0.0
Total Delay	41.8	18.5		67.0	80.6	0.5		46.0			76.9	46.9
LOS	D	B		E	F	A		D			E	D
Approach Delay		34.0			39.6			46.0			59.1	
Approach LOS		C			D			D			E	
Queue Length 50th (m)	52.7	33.8		0.8	106.2	0.0		0.2			114.9	101.6
Queue Length 95th (m)	82.2	56.6		4.1	#193.5	0.0		1.8			m130.6	m104.7
Internal Link Dist (m)		79.9			173.8			12.4			145.6	
Turn Bay Length (m)	45.0			30.0		45.0						
Base Capacity (vph)	1077	981		62	415	1484		155			461	716
Starvation Cap Reductn	0	0		0	0	0		0			0	1
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	0.48	0.27		0.05	0.92	0.27		0.01			0.88	0.82

Intersection Summary

Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 105.9 (76%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 100
 Control Type: Actuated-Coordinated

Lane Group	Ø4	Ø9	Ø12
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Satd. Flow (RTOR)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	4	9	12
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	10.0	1.0	1.0
Minimum Split (s)	15.5	5.0	20.0
Total Split (s)	32.7	5.0	25.0
Total Split (%)	23%	4%	18%
Yellow Time (s)	3.3	2.0	2.0
All-Red Time (s)	2.2	0.0	0.0
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag		Lag	
Lead-Lag Optimize?		Yes	
Recall Mode	None	None	None
Act Effct Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
LOS			
Approach Delay			
Approach LOS			
Queue Length 50th (m)			
Queue Length 95th (m)			
Internal Link Dist (m)			
Turn Bay Length (m)			
Base Capacity (vph)			
Starvation Cap Reductn			
Spillback Cap Reductn			
Storage Cap Reductn			
Reduced v/c Ratio			
Intersection Summary			

Maximum v/c Ratio: 0.94

Intersection Signal Delay: 45.5

Intersection LOS: D

Intersection Capacity Utilization 92.3%

ICU Level of Service F

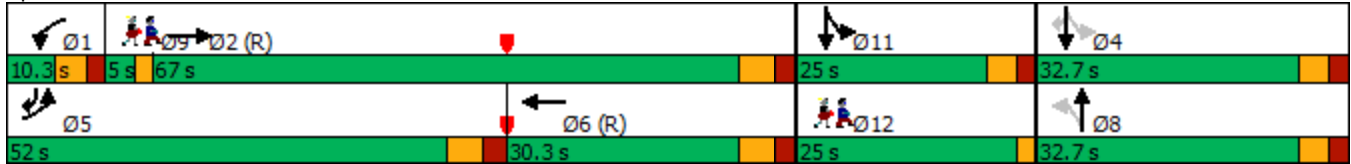
Analysis Period (min) 15

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.

Splits and Phases: 30: Prince of Wales & Preston



Lanes, Volumes, Timings
31: Rochester & 417 WB on/Raymond

2048 PM Demand Rationalized Main Hospital SPA

03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	190	177	121	194	373	0	0	195	128
Future Volume (vph)	0	0	0	190	177	121	194	373	0	0	195	128
Satd. Flow (prot)	0	0	0	1695	1636	0	1695	1784	0	0	1784	1517
Flt Permitted				0.950			0.523					
Satd. Flow (perm)	0	0	0	1685	1636	0	906	1784	0	0	1784	1414
Satd. Flow (RTOR)					56							134
Lane Group Flow (vph)	0	0	0	190	298	0	194	373	0	0	195	128
Turn Type				Perm	NA		pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8			2					6
Detector Phase				8	8		5	2			6	6
Switch Phase												
Minimum Initial (s)				10.0	10.0		5.0	10.0			10.0	10.0
Minimum Split (s)				32.0	32.0		10.9	27.3			24.9	24.9
Total Split (s)				32.0	32.0		13.0	38.0			25.0	25.0
Total Split (%)				45.7%	45.7%		18.6%	54.3%			35.7%	35.7%
Yellow Time (s)				3.3	3.3		3.3	3.3			3.3	3.3
All-Red Time (s)				2.4	2.4		2.6	2.6			2.6	2.6
Lost Time Adjust (s)				0.0	0.0		0.0	0.0			0.0	0.0
Total Lost Time (s)				5.7	5.7		5.9	5.9			5.9	5.9
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Recall Mode				None	None		None	C-Min			C-Min	C-Min
Act Effct Green (s)				16.4	16.4		42.0	42.0			27.4	27.4
Actuated g/C Ratio				0.23	0.23		0.60	0.60			0.39	0.39
v/c Ratio				0.48	0.70		0.30	0.35			0.28	0.20
Control Delay				26.1	28.2		12.3	13.7			18.3	4.7
Queue Delay				0.0	0.0		0.0	0.6			0.0	0.0
Total Delay				26.1	28.2		12.3	14.2			18.3	4.7
LOS				C	C		B	B			B	A
Approach Delay					27.4			13.5			12.9	
Approach LOS					C			B			B	
Queue Length 50th (m)				21.7	29.1		13.4	38.3			17.0	0.0
Queue Length 95th (m)				33.4	45.7		31.8	59.7			37.7	10.3
Internal Link Dist (m)		122.0			89.8			72.3			151.7	
Turn Bay Length (m)												35.0
Base Capacity (vph)				633	649		643	1071			699	636
Starvation Cap Reductn				0	0		0	356			0	0
Spillback Cap Reductn				0	0		0	0			0	0
Storage Cap Reductn				0	0		0	0			0	0
Reduced v/c Ratio				0.30	0.46		0.30	0.52			0.28	0.20

Intersection Summary
 Cycle Length: 70
 Actuated Cycle Length: 70
 Offset: 8 (11%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 70
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.70

Intersection Signal Delay: 18.3

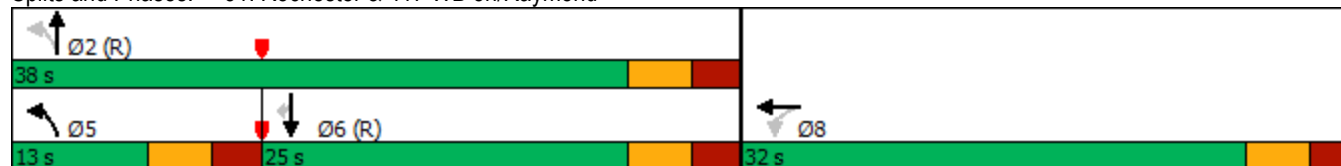
Intersection LOS: B

Intersection Capacity Utilization 60.2%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 31: Rochester & 417 WB on/Raymond



Lanes, Volumes, Timings
32: Rochester & 417 EB off/Orangeville

2048 PM Demand Rationalized Main Hospital SPA

03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕						↕↕			↕↕	
Traffic Volume (vph)	223	268	153	0	0	0	0	348	78	29	343	0
Future Volume (vph)	223	268	153	0	0	0	0	348	78	29	343	0
Satd. Flow (prot)	0	3186	0	0	0	0	0	3277	0	0	3377	0
Flt Permitted		0.983									0.905	
Satd. Flow (perm)	0	3180	0	0	0	0	0	3277	0	0	3065	0
Satd. Flow (RTOR)		60						61				
Lane Group Flow (vph)	0	644	0	0	0	0	0	426	0	0	372	0
Turn Type	Perm	NA						NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4									6		
Detector Phase	4	4						2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0						10.0		10.0	10.0	
Minimum Split (s)	26.0	26.0						25.1		25.1	25.1	
Total Split (s)	26.0	26.0						44.0		44.0	44.0	
Total Split (%)	37.1%	37.1%						62.9%		62.9%	62.9%	
Yellow Time (s)	3.3	3.3						3.3		3.3	3.3	
All-Red Time (s)	2.3	2.3						2.1		2.1	2.1	
Lost Time Adjust (s)		0.0						0.0			0.0	
Total Lost Time (s)		5.6						5.4			5.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None						C-Min		C-Min	C-Min	
Act Effct Green (s)		18.3						40.7			40.7	
Actuated g/C Ratio		0.26						0.58			0.58	
v/c Ratio		0.74						0.22			0.21	
Control Delay		26.4						6.9			11.0	
Queue Delay		0.0						0.0			0.0	
Total Delay		26.4						6.9			11.0	
LOS		C						A			B	
Approach Delay		26.4						6.9			11.0	
Approach LOS		C						A			B	
Queue Length 50th (m)		36.8						10.8			3.8	
Queue Length 95th (m)		48.1						m18.6			39.2	
Internal Link Dist (m)		104.8			107.2			99.1			72.3	
Turn Bay Length (m)												
Base Capacity (vph)		998						1962			1811	
Starvation Cap Reductn		0						0			0	
Spillback Cap Reductn		0						0			0	
Storage Cap Reductn		0						0			0	
Reduced v/c Ratio		0.65						0.22			0.21	

Intersection Summary

Cycle Length: 70
 Actuated Cycle Length: 70
 Offset: 67 (96%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 55
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 16.6

Intersection LOS: B

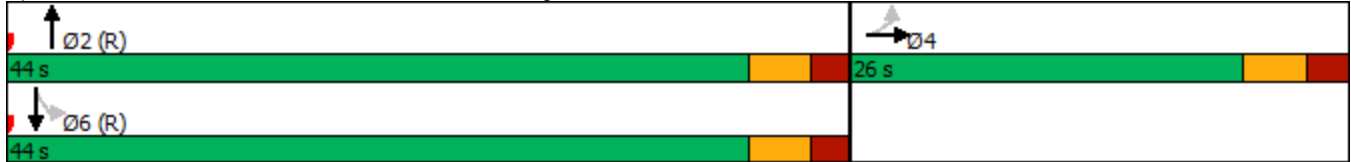
Intersection Capacity Utilization 65.6%

ICU Level of Service C

Analysis Period (min) 15

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

Splits and Phases: 32: Rochester & 417 EB off/Orangeville



Lanes, Volumes, Timings
33: Bronson & Catherine 417 WB on

2048 PM Demand Rationalized Main Hospital SPA

03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↖	↔		↗	↕			↕	↗
Traffic Volume (vph)	0	0	0	783	539	242	262	722	0	0	752	149
Future Volume (vph)	0	0	0	783	539	242	262	722	0	0	752	149
Satd. Flow (prot)	0	0	0	1458	4341	0	1695	3390	0	0	3258	0
Flt Permitted				0.950	0.988		0.115					
Satd. Flow (perm)	0	0	0	1458	4341	0	205	3390	0	0	3258	0
Satd. Flow (RTOR)					94						25	
Lane Group Flow (vph)	0	0	0	532	1032	0	262	722	0	0	901	0
Turn Type				Perm	NA		pm+pt	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases				8			2					
Detector Phase				8	8		5	2			6	
Switch Phase												
Minimum Initial (s)				10.0	10.0		5.0	10.0			10.0	
Minimum Split (s)				25.9	25.9		11.0	25.1			25.1	
Total Split (s)				42.0	42.0		18.0	53.0			35.0	
Total Split (%)				44.2%	44.2%		18.9%	55.8%			36.8%	
Yellow Time (s)				3.3	3.3		3.3	3.3			3.3	
All-Red Time (s)				2.6	2.6		2.7	2.8			2.8	
Lost Time Adjust (s)				0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)				5.9	5.9		6.0	6.1			6.1	
Lead/Lag							Lead				Lag	
Lead-Lag Optimize?							Yes				Yes	
Recall Mode				None	None		None	C-Min			C-Min	
Act Effct Green (s)				36.0	36.0		47.1	47.0			28.9	
Actuated g/C Ratio				0.38	0.38		0.50	0.49			0.30	
v/c Ratio				0.96	0.61		0.90	0.43			0.89	
Control Delay				61.0	23.2		61.9	21.6			43.3	
Queue Delay				22.7	0.1		0.0	1.8			37.3	
Total Delay				83.7	23.3		61.9	23.4			80.6	
LOS				F	C		E	C			F	
Approach Delay					43.8			33.6			80.6	
Approach LOS					D			C			F	
Queue Length 50th (m)				108.8	52.6		42.0	44.3			80.6	
Queue Length 95th (m)				#184.1	67.2		#77.8	76.5			#116.0	
Internal Link Dist (m)		151.3			165.9			71.3			237.2	
Turn Bay Length (m)												
Base Capacity (vph)				554	1707		291	1678			1009	
Starvation Cap Reductn				0	0		0	750			0	
Spillback Cap Reductn				47	48		0	0			171	
Storage Cap Reductn				0	0		0	0			0	
Reduced v/c Ratio				1.05	0.62		0.90	0.78			1.08	

Intersection Summary

Cycle Length: 95
 Actuated Cycle Length: 95
 Offset: 59 (62%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.96

Intersection Signal Delay: 50.5

Intersection LOS: D

Intersection Capacity Utilization 110.0%

ICU Level of Service H

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 33: Bronson & Catherine 417 WB on



Lanes, Volumes, Timings
34: Bronson & 417 EB off

2048 PM Demand Rationalized Main Hospital SPA

03/20/2023



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	137	357	0	874	1426	0
Future Volume (vph)	137	357	0	874	1426	0
Satd. Flow (prot)	1695	1517	0	3390	3390	0
Flt Permitted	0.950					
Satd. Flow (perm)	1695	1491	0	3390	3390	0
Satd. Flow (RTOR)	51					
Lane Group Flow (vph)	137	357	0	874	1426	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)	10.0	10.0		10.0	10.0	
Minimum Split (s)	25.1	25.1		34.3	34.3	
Total Split (s)	30.0	30.0		65.0	65.0	
Total Split (%)	31.6%	31.6%		68.4%	68.4%	
Yellow Time (s)	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.1	2.1		2.5	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.4	5.4		5.8	5.8	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None		C-Min	C-Min	
Act Effct Green (s)	24.2	24.2		59.6	59.6	
Actuated g/C Ratio	0.25	0.25		0.63	0.63	
v/c Ratio	0.32	0.86		0.41	0.67	
Control Delay	30.1	48.9		10.1	8.9	
Queue Delay	0.0	0.0		0.0	3.6	
Total Delay	30.1	48.9		10.1	12.5	
LOS	C	D		B	B	
Approach Delay	43.7			10.1	12.5	
Approach LOS	D			B	B	
Queue Length 50th (m)	19.7	52.1		41.6	57.6	
Queue Length 95th (m)	36.2	#101.1		50.7	m126.4	
Internal Link Dist (m)	81.4			50.7	71.3	
Turn Bay Length (m)	60.0					
Base Capacity (vph)	463	444		2176	2176	
Starvation Cap Reductn	0	0		0	640	
Spillback Cap Reductn	0	0		107	0	
Storage Cap Reductn	0	0		0	0	
Reduced v/c Ratio	0.30	0.80		0.42	0.93	

Intersection Summary

Cycle Length: 95
 Actuated Cycle Length: 95
 Offset: 91 (96%), 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: 17.3

Intersection LOS: B

Intersection Capacity Utilization 110.0%

ICU Level of Service H

Analysis Period (min) 15

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.

Splits and Phases: 34: Bronson & 417 EB off

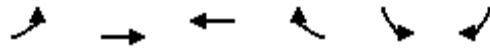


Lanes, Volumes, Timings 39:
Prince of Wales & Road B

2048 PM Demand Rationalized Main Hospital SPA

03/20/2023

(dual WBT)



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø9
Lane Configurations							
Traffic Volume (vph)	28	692	960	21	129	42	
Future Volume (vph)	28	692	960	21	129	42	
Satd. Flow (prot)	1695	1784	3377	0	1695	1517	
Flt Permitted	0.246				0.950		
Satd. Flow (perm)	439	1784	3377	0	1629	1424	
Satd. Flow (RTOR)						42	
Lane Group Flow (vph)	28	692	981	0	129	42	
Turn Type	pm+pt	NA	NA		Perm	Perm	
Protected Phases	5	2	6				9
Permitted Phases	2				4	4	
Detector Phase	5	2	6		4	4	
Switch Phase							
Minimum Initial (s)	5.0	10.0	10.0		10.0	10.0	1.0
Minimum Split (s)	10.3	23.3	23.3		23.3	23.3	15.0
Total Split (s)	12.0	97.0	85.0		28.0	28.0	15.0
Total Split (%)	8.6%	69.3%	60.7%		20.0%	20.0%	11%
Yellow Time (s)	3.3	3.3	3.3		3.3	3.3	2.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.3	5.3	5.3		5.3	5.3	
Lead/Lag	Lead		Lag				
Lead-Lag Optimize?	Yes		Yes				
Recall Mode	None	C-Min	C-Min		None	None	None
Act Effct Green (s)	110.1	110.1	103.0		16.3	16.3	
Actuated g/C Ratio	0.79	0.79	0.74		0.12	0.12	
v/c Ratio	0.07	0.49	0.39		0.68	0.21	
Control Delay	5.6	8.2	8.6		76.6	16.8	
Queue Delay	0.0	0.0	0.0		0.0	0.0	
Total Delay	5.6	8.2	8.6		76.6	16.8	
LOS	A	A	A		E	B	
Approach Delay		8.1	8.6		61.9		
Approach LOS		A	A		E		
Queue Length 50th (m)	1.3	50.1	40.7		34.8	0.0	
Queue Length 95th (m)	6.0	135.1	m117.5		54.3	10.7	
Internal Link Dist (m)		198.2	95.9		17.7		
Turn Bay Length (m)	45.0						
Base Capacity (vph)	406	1403	2486		264	266	
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	0.07	0.49	0.39		0.49	0.16	

Intersection Summary

Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.68

Intersection Signal Delay: 13.3

Intersection LOS: B

Intersection Capacity Utilization 57.5%

ICU Level of Service B

Analysis Period (min) 15

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

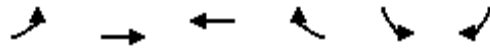
Splits and Phases: 39: Prince of Wales & Road B

 Ø2 (R)	 Ø9	 Ø4
97 s	15 s	28 s
 Ø5	 Ø6 (R)	
12 s	85 s	

Lanes, Volumes, Timings
 Prince of Wales & Road B (single WBT)

2048 PM Demand Rationalized Main Hospital SPA

04/04/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø9
Lane Configurations							
Traffic Volume (vph)	28	692	960	21	129	42	
Future Volume (vph)	28	692	960	21	129	42	
Satd. Flow (prot)	1695	1784	1784	1517	1695	1517	
Flt Permitted	0.180				0.950		
Satd. Flow (perm)	321	1784	1784	1453	1629	1345	
Satd. Flow (RTOR)						42	
Lane Group Flow (vph)	28	692	960	21	129	42	
Turn Type	pm+pt	NA	NA	Perm	Perm	Perm	
Protected Phases	5	2	6				9
Permitted Phases	2			6	4	4	
Detector Phase	5	2	6	6	4	4	
Switch Phase							
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	10.0	1.0
Minimum Split (s)	10.3	23.3	23.3	23.3	23.3	23.3	15.0
Total Split (s)	10.3	101.7	91.4	91.4	23.3	23.3	15.0
Total Split (%)	7.4%	72.6%	65.3%	65.3%	16.6%	16.6%	11%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	2.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.3	5.3	5.3	5.3	5.3	5.3	
Lead/Lag	Lead		Lag	Lag			
Lead-Lag Optimize?	Yes		Yes	Yes			
Recall Mode	None	C-Min	C-Min	C-Min	None	None	None
Act Effct Green (s)	111.0	111.0	104.4	104.4	15.4	15.4	
Actuated g/C Ratio	0.79	0.79	0.75	0.75	0.11	0.11	
v/c Ratio	0.09	0.49	0.72	0.02	0.72	0.23	
Control Delay	5.2	7.4	11.1	4.9	82.2	18.1	
Queue Delay	0.0	0.0	0.7	0.0	0.0	0.0	
Total Delay	5.2	7.4	11.8	4.9	82.2	18.1	
LOS	A	A	B	A	F	B	
Approach Delay		7.3	11.7		66.4		
Approach LOS		A	B		E		
Queue Length 50th (m)	1.3	50.1	85.5	1.8	34.8	0.0	
Queue Length 95th (m)	5.4	120.6	m195.7	m1.5	56.5	11.1	
Internal Link Dist (m)		198.2	95.9		17.7		
Turn Bay Length (m)	45.0			35.0			
Base Capacity (vph)	310	1414	1330	1083	211	210	
Starvation Cap Reductn	0	0	133	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	0.09	0.49	0.80	0.02	0.61	0.20	

Intersection Summary

Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 41 (29%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.72

Intersection Signal Delay: 15.0

Intersection LOS: B

Intersection Capacity Utilization 72.4%

ICU Level of Service C

Analysis Period (min) 15

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

Splits and Phases: 39: Prince of Wales & Road B

 Ø2 (R)	 Ø9	 Ø4
101.7 s	15 s	23.3 s
 Ø5	 Ø6 (R)	
10.3 s	91.4 s	

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↗	↗	↘	↘	↗
Traffic Vol, veh/h	23	771	1449	13	3	8
Future Vol, veh/h	23	771	1449	13	3	8
Conflicting Peds, #/hr	42	0	0	42	4	8
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	25	-	-	20	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	23	771	1449	13	3	8

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	1504	0	-	0	1927 775
Stage 1	-	-	-	-	1491 -
Stage 2	-	-	-	-	436 -
Critical Hdwy	4.14	-	-	-	6.84 6.94
Critical Hdwy Stg 1	-	-	-	-	5.84 -
Critical Hdwy Stg 2	-	-	-	-	5.84 -
Follow-up Hdwy	2.22	-	-	-	3.52 3.32
Pot Cap-1 Maneuver	441	-	-	-	58 341
Stage 1	-	-	-	-	173 -
Stage 2	-	-	-	-	619 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	425	-	-	-	51 327
Mov Cap-2 Maneuver	-	-	-	-	51 -
Stage 1	-	-	-	-	158 -
Stage 2	-	-	-	-	597 -

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0	34.7
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	425	-	-	-	132
HCM Lane V/C Ratio	0.054	-	-	-	0.083
HCM Control Delay (s)	14	-	-	-	34.7
HCM Lane LOS	B	-	-	-	D
HCM 95th %tile Q(veh)	0.2	-	-	-	0.3

Intersection						
Int Delay, s/veh	21.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑	↑		↑
Traffic Vol, veh/h	0	894	1100	70	0	269
Future Vol, veh/h	0	894	1100	70	0	269
Conflicting Peds, #/hr	70	0	0	70	1	5
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	30	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	894	1100	70	0	269

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	- 0 - 1175
Stage 1	-	-	- - -
Stage 2	-	-	- - -
Critical Hdwy	-	-	- - 6.23
Critical Hdwy Stg 1	-	-	- - -
Critical Hdwy Stg 2	-	-	- - -
Follow-up Hdwy	-	-	- - 3.319
Pot Cap-1 Maneuver	0	-	- - 0 ~ 232
Stage 1	0	-	- - 0 -
Stage 2	0	-	- - 0 -
Platoon blocked, %	-	-	- - -
Mov Cap-1 Maneuver	-	-	- - ~ 217
Mov Cap-2 Maneuver	-	-	- - -
Stage 1	-	-	- - -
Stage 2	-	-	- - -

Approach	EB	WB	SB
HCM Control Delay, s	0	0	185.8
HCM LOS			F

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	217
HCM Lane V/C Ratio	-	-	-	1.24
HCM Control Delay (s)	-	-	-	185.8
HCM Lane LOS	-	-	-	F
HCM 95th %tile Q(veh)	-	-	-	13.8

Notes
 ~: Volume exceeds capacity \$: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection												
Int Delay, s/veh	0.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↻			↑			↻				↻
Traffic Vol, veh/h	0	820	1	1	939	38	3	0	6	0	0	33
Future Vol, veh/h	0	820	1	1	939	38	3	0	6	0	0	33
Conflicting Peds, #/hr	8	0	6	6	0	8	1	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	820	1	1	939	38	3	0	6	0	0	33

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	827	0	0	1805	1814	827	-	-	967
Stage 1	-	-	-	-	-	-	827	827	-	-	-	-
Stage 2	-	-	-	-	-	-	978	987	-	-	-	-
Critical Hdwy	-	-	-	4.12	-	-	7.12	6.52	6.22	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	-	-	-
Follow-up Hdwy	-	-	-	2.218	-	-	3.518	4.018	3.318	-	-	3.318
Pot Cap-1 Maneuver	0	-	-	804	-	-	61	78	371	0	0	308
Stage 1	0	-	-	-	-	-	366	386	-	0	0	-
Stage 2	0	-	-	-	-	-	301	325	-	0	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	800	-	-	54	77	369	-	-	306
Mov Cap-2 Maneuver	-	-	-	-	-	-	54	77	-	-	-	-
Stage 1	-	-	-	-	-	-	366	384	-	-	-	-
Stage 2	-	-	-	-	-	-	268	322	-	-	-	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			0			36			18.2		
HCM LOS							E			C		

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	125	-	-	800	-	-	306
HCM Lane V/C Ratio	0.072	-	-	0.001	-	-	0.108
HCM Control Delay (s)	36	-	-	9.5	-	-	18.2
HCM Lane LOS	E	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	0	-	-	0.4

Intersection						
Int Delay, s/veh	1.4					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗	↘	↑	↑	↗
Traffic Vol, veh/h	0	103	7	720	962	37
Future Vol, veh/h	0	103	7	720	962	37
Conflicting Peds, #/hr	0	0	10	0	0	10
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	50	-	-	50
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	11	6	40	2	2	30
Mvmt Flow	0	103	7	720	962	37

Major/Minor	Minor2	Major1	Major2		
Conflicting Flow All	-	972	1009	0	0
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-
Critical Hdwy	-	6.26	4.5	-	-
Critical Hdwy Stg 1	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-
Follow-up Hdwy	-	3.354	2.56	-	-
Pot Cap-1 Maneuver	0	301	558	-	-
Stage 1	0	-	-	-	-
Stage 2	0	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	-	298	553	-	-
Mov Cap-2 Maneuver	-	-	-	-	-
Stage 1	-	-	-	-	-
Stage 2	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	23.3	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	553	-	298	-	-
HCM Lane V/C Ratio	0.013	-	0.346	-	-
HCM Control Delay (s)	11.6	-	23.3	-	-
HCM Lane LOS	B	-	C	-	-
HCM 95th %tile Q(veh)	0	-	1.5	-	-

Lanes, Volumes, Timings 2:
Prince of Wales & Road E

2048 Road E - PoW PM Signalized

03/20/2023

(as signalized)



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø10
Lane Configurations							
Traffic Volume (vph)	71	32	7	649	962	37	
Future Volume (vph)	71	32	7	649	962	37	
Satd. Flow (prot)	1695	1517	1695	1784	1784	1517	
Flt Permitted	0.950		0.950				
Satd. Flow (perm)	1695	1517	1671	1784	1784	1379	
Satd. Flow (RTOR)							
Lane Group Flow (vph)	71	32	7	649	962	37	
Turn Type	Perm	Perm	Prot	NA	NA	Perm	
Protected Phases			5	2	6		10
Permitted Phases	4	4				6	
Detector Phase	4	4	5	2	6	6	
Switch Phase							
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	10.0	1.0
Minimum Split (s)	23.3	23.3	10.3	23.3	23.3	23.3	10.0
Total Split (s)	26.0	26.0	10.3	94.0	83.7	83.7	10.0
Total Split (%)	20.0%	20.0%	7.9%	72.3%	64.4%	64.4%	8%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	2.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.3	5.3	5.3	5.3	5.3	5.3	
Lead/Lag			Lead		Lag	Lag	
Lead-Lag Optimize?			Yes		Yes	Yes	
Recall Mode	None	None	None	Min	Min	Min	None
Act Effct Green (s)	12.8	12.8	5.9	55.6	54.4	54.4	
Actuated g/C Ratio	0.17	0.17	0.08	0.76	0.74	0.74	
v/c Ratio	0.24	0.12	0.05	0.48	0.73	0.04	
Control Delay	37.1	36.5	45.7	7.3	14.8	6.1	
Queue Delay	0.0	0.0	0.0	0.0	0.6	0.0	
Total Delay	37.1	36.5	45.7	7.3	15.4	6.1	
LOS	D	D	D	A	B	A	
Approach Delay	36.9			7.7	15.0		
Approach LOS	D			A	B		
Queue Length 50th (m)	7.9	3.5	0.8	31.5	64.7	1.2	
Queue Length 95th (m)	31.0	16.7	6.7	96.7	#273.8	7.8	
Internal Link Dist (m)	165.3			455.5	63.5		
Turn Bay Length (m)	50.0		50.0			50.0	
Base Capacity (vph)	558	499	135	1676	1647	1273	
Starvation Cap Reductn	0	0	0	0	319	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.13	0.06	0.05	0.39	0.72	0.03	

Intersection Summary

Cycle Length: 130
 Actuated Cycle Length: 73.6
 Natural Cycle: 100
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.73

Lanes, Volumes, Timings 2: Prince of
Wales & Road E (as signalized)

Intersection Signal Delay: 13.6 Intersection LOS: B
 Intersection Capacity Utilization 70.6% ICU Level of Service C
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 2: Prince of Wales & Road E



Intersection												
Int Delay, s/veh	6.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔↔			↔↔			↔			↔	
Traffic Vol, veh/h	0	83	48	70	70	5	47	0	254	0	0	5
Future Vol, veh/h	0	83	48	70	70	5	47	0	254	0	0	5
Conflicting Peds, #/hr	10	0	10	10	0	10	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	83	48	70	70	5	47	0	254	0	0	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	85	0	0	141	0	0	292	342	76	265	364	48
Stage 1	-	-	-	-	-	-	117	117	-	223	223	-
Stage 2	-	-	-	-	-	-	175	225	-	42	141	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1509	-	-	1440	-	-	638	579	970	666	563	1011
Stage 1	-	-	-	-	-	-	875	798	-	759	718	-
Stage 2	-	-	-	-	-	-	810	716	-	967	779	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1496	-	-	1428	-	-	605	541	962	467	526	1002
Mov Cap-2 Maneuver	-	-	-	-	-	-	605	541	-	467	526	-
Stage 1	-	-	-	-	-	-	868	792	-	753	676	-
Stage 2	-	-	-	-	-	-	765	674	-	712	773	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			3.7			11.2			8.6		
HCM LOS							B			A		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	881	1496	-	-	1428	-	-	1002
HCM Lane V/C Ratio	0.342	-	-	-	0.049	-	-	0.005
HCM Control Delay (s)	11.2	0	-	-	7.7	0.1	-	8.6
HCM Lane LOS	B	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	1.5	0	-	-	0.2	-	-	0

Intersection						
Int Delay, s/veh	7.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↑	↗		↖
Traffic Vol, veh/h	133	65	22	24	39	35
Future Vol, veh/h	133	65	22	24	39	35
Conflicting Peds, #/hr	0	0	0	15	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	0	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	133	65	22	24	39	35

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	133	37	0	0	61	0
Stage 1	37	-	-	-	-	-
Stage 2	96	-	-	-	-	-
Critical Hdwy	6.63	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	-	-	2.219	-
Pot Cap-1 Maneuver	854	1035	-	-	1541	-
Stage 1	985	-	-	-	-	-
Stage 2	917	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	821	1022	-	-	1521	-
Mov Cap-2 Maneuver	821	-	-	-	-	-
Stage 1	972	-	-	-	-	-
Stage 2	893	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.3	0	3.9
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	878	1521
HCM Lane V/C Ratio	-	-	0.226	0.026
HCM Control Delay (s)	-	-	10.3	7.4
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.9	0.1

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	T			T		
Traffic Vol, veh/h	0	4	4	46	168	0
Future Vol, veh/h	0	4	4	46	168	0
Conflicting Peds, #/hr	0	0	5	0	0	5
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	100	100	100	2	2	100
Mvmt Flow	0	4	4	46	168	0

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	204	89	173	0	0
Stage 1	173	-	-	-	-
Stage 2	31	-	-	-	-
Critical Hdwy	8.8	8.9	6.1	-	-
Critical Hdwy Stg 1	7.8	-	-	-	-
Critical Hdwy Stg 2	7.8	-	-	-	-
Follow-up Hdwy	4.5	4.3	3.2	-	-
Pot Cap-1 Maneuver	550	708	905	-	-
Stage 1	612	-	-	-	-
Stage 2	763	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	543	705	901	-	-
Mov Cap-2 Maneuver	543	-	-	-	-
Stage 1	606	-	-	-	-
Stage 2	760	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.1	0.7	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	901	-	705	-	-
HCM Lane V/C Ratio	0.004	-	0.006	-	-
HCM Control Delay (s)	9	0	10.1	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection						
Int Delay, s/veh	5.8					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	19	12	0	24	5
Future Vol, veh/h	0	19	12	0	24	5
Conflicting Peds, #/hr	0	10	10	0	10	10
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	19	12	0	24	5

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	29	0	54
Stage 1	-	-	-	-	20
Stage 2	-	-	-	-	34
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1584	-	954
Stage 1	-	-	-	-	1003
Stage 2	-	-	-	-	988
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1571	-	931
Mov Cap-2 Maneuver	-	-	-	-	931
Stage 1	-	-	-	-	995
Stage 2	-	-	-	-	972

Approach	EB	WB	NB
HCM Control Delay, s	0	7.3	8.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	946	-	-	1571	-
HCM Lane V/C Ratio	0.031	-	-	0.008	-
HCM Control Delay (s)	8.9	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Intersection Delay, s/veh	10.4
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	30	72	4	1	120	101	0	7	2	109	181	47
Future Vol, veh/h	30	72	4	1	120	101	0	7	2	109	181	47
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	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	30	72	4	1	120	101	0	7	2	109	181	47
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	9.1	9.6	8.2	11.4
HCM LOS	A	A	A	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	28%	0%	32%
Vol Thru, %	78%	68%	54%	54%
Vol Right, %	22%	4%	45%	14%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	9	106	222	337
LT Vol	0	30	1	109
Through Vol	7	72	120	181
RT Vol	2	4	101	47
Lane Flow Rate	9	106	222	337
Geometry Grp	1	1	1	1
Degree of Util (X)	0.013	0.15	0.286	0.44
Departure Headway (Hd)	5.012	5.085	4.645	4.701
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	707	701	770	762
Service Time	3.093	3.149	2.699	2.754
HCM Lane V/C Ratio	0.013	0.151	0.288	0.442
HCM Control Delay	8.2	9.1	9.6	11.4
HCM Lane LOS	A	A	A	B
HCM 95th-tile Q	0	0.5	1.2	2.3

Intersection	
Intersection Delay, s/veh	8.2
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	100	0	30	0	0	24	30	100	0	19	52	52
Future Vol, veh/h	100	0	30	0	0	24	30	100	0	19	52	52
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	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	100	0	30	0	0	24	30	100	0	19	52	52
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.5	7.2	8.3	7.9
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	23%	77%	0%	15%
Vol Thru, %	77%	0%	0%	42%
Vol Right, %	0%	23%	100%	42%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	130	130	24	123
LT Vol	30	100	0	19
Through Vol	100	0	0	52
RT Vol	0	30	24	52
Lane Flow Rate	130	130	24	123
Geometry Grp	1	1	1	1
Degree of Util (X)	0.161	0.164	0.027	0.144
Departure Headway (Hd)	4.468	4.54	4.052	4.214
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	805	792	884	852
Service Time	2.484	2.558	2.074	2.23
HCM Lane V/C Ratio	0.161	0.164	0.027	0.144
HCM Control Delay	8.3	8.5	7.2	7.9
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.6	0.6	0.1	0.5

Intersection	
Intersection Delay, s/veh	7.9
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↖	↑	↘	
Traffic Vol, veh/h	78	32	41	76	35	52
Future Vol, veh/h	78	32	41	76	35	52
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	78	32	41	76	35	52
Number of Lanes	2	0	1	1	1	0

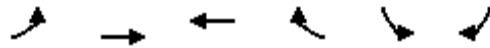
Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	2
HCM Control Delay	7.7	8.2	7.7
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2
Vol Left, %	40%	0%	0%	100%	0%
Vol Thru, %	0%	100%	45%	0%	100%
Vol Right, %	60%	0%	55%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	87	52	58	41	76
LT Vol	35	0	0	41	0
Through Vol	0	52	26	0	76
RT Vol	52	0	32	0	0
Lane Flow Rate	87	52	58	41	76
Geometry Grp	2	7	7	7	7
Degree of Util (X)	0.101	0.069	0.07	0.06	0.1
Departure Headway (Hd)	4.192	4.75	4.363	5.247	4.746
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	860	745	810	677	748
Service Time	2.192	2.535	2.147	3.023	2.522
HCM Lane V/C Ratio	0.101	0.07	0.072	0.061	0.102
HCM Control Delay	7.7	7.9	7.5	8.4	8.1
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.3	0.2	0.2	0.2	0.3

Lanes, Volumes, Timings
10: Carling & Parkdale

2048 PM Demand Rationalized Main Hospital SPA PEAK GEN

03/20/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø10
Lane Configurations							
Traffic Volume (vph)	85	590	1112	141	19	129	
Future Volume (vph)	85	590	1112	141	19	129	
Satd. Flow (prot)	1695	3390	3390	1517	1524	0	
Flt Permitted	0.950				0.994		
Satd. Flow (perm)	1639	3390	3390	1239	1521	0	
Satd. Flow (RTOR)				141	129		
Lane Group Flow (vph)	85	590	1112	141	148	0	
Turn Type	Prot	NA	NA	Perm	Perm		
Protected Phases	5	2	6				10
Permitted Phases				6	4		
Detector Phase	5	2	6	6	4		
Switch Phase							
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0		1.0
Minimum Split (s)	11.1	26.7	26.7	26.7	37.2		5.0
Total Split (s)	16.0	92.8	76.8	76.8	37.2		5.0
Total Split (%)	11.9%	68.7%	56.9%	56.9%	27.6%		4%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.0		2.0
All-Red Time (s)	2.4	1.9	1.9	1.9	3.2		0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	6.1	5.6	5.6	5.6	6.2		
Lead/Lag	Lead		Lag	Lag			
Lead-Lag Optimize?	Yes		Yes	Yes			
Recall Mode	None	C-Min	C-Min	C-Min	None		Min
Act Effct Green (s)	12.4	104.6	86.1	86.1	11.1		
Actuated g/C Ratio	0.09	0.77	0.64	0.64	0.08		
v/c Ratio	0.55	0.22	0.51	0.17	0.61		
Control Delay	71.0	4.5	14.9	2.3	24.3		
Queue Delay	0.0	0.0	0.6	0.0	0.0		
Total Delay	71.0	4.5	15.5	2.3	24.3		
LOS	E	A	B	A	C		
Approach Delay		12.9	14.0		24.3		
Approach LOS		B	B		C		
Queue Length 50th (m)	22.0	18.5	77.0	0.0	4.8		
Queue Length 95th (m)	38.1	28.5	113.5	8.9	25.5		
Internal Link Dist (m)		297.5	170.5		278.4		
Turn Bay Length (m)	155.0			80.0			
Base Capacity (vph)	161	2627	2162	841	448		
Starvation Cap Reductn	0	0	612	0	0		
Spillback Cap Reductn	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0		
Reduced v/c Ratio	0.53	0.22	0.72	0.17	0.33		

Intersection Summary

Cycle Length: 135
 Actuated Cycle Length: 135
 Offset: 66 (49%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.61

Intersection Signal Delay: 14.4

Intersection LOS: B

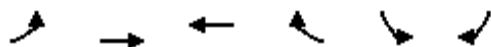
Intersection Capacity Utilization 68.7%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 10: Carling & Parkdale





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↗↗	↖↖	↗	↘↘	
Traffic Volume (vph)	75	556	1247	21	11	12
Future Volume (vph)	75	556	1247	21	11	12
Satd. Flow (prot)	1695	3390	3390	1517	1584	0
Flt Permitted	0.950				0.977	
Satd. Flow (perm)	1680	3390	3390	1394	1573	0
Satd. Flow (RTOR)				21	12	
Lane Group Flow (vph)	75	556	1247	21	23	0
Turn Type	Prot	NA	NA	Perm	Perm	
Protected Phases	5	2	6			
Permitted Phases				6	4	
Detector Phase	5	2	6	6	4	
Switch Phase						
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	11.4	31.3	31.3	31.3	23.3	
Total Split (s)	12.5	106.7	94.2	94.2	23.3	
Total Split (%)	9.6%	82.1%	72.5%	72.5%	17.9%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.3	
All-Red Time (s)	2.7	2.7	2.7	2.7	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	6.4	6.4	6.4	6.4	5.3	
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Min	C-Min	C-Min	None	
Act Effct Green (s)	12.8	115.4	93.6	93.6	11.6	
Actuated g/C Ratio	0.10	0.89	0.72	0.72	0.09	
v/c Ratio	0.45	0.18	0.51	0.02	0.15	
Control Delay	63.6	2.2	9.4	3.7	35.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	63.6	2.2	9.4	3.7	35.1	
LOS	E	A	A	A	D	
Approach Delay		9.5	9.3		35.1	
Approach LOS		A	A		D	
Queue Length 50th (m)	18.4	11.5	61.5	0.0	2.7	
Queue Length 95th (m)	33.6	22.6	81.3	m2.4	10.9	
Internal Link Dist (m)		170.5	180.8		39.9	
Turn Bay Length (m)	90.0			140.0		
Base Capacity (vph)	167	3009	2489	1029	228	
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	0.45	0.18	0.50	0.02	0.10	

Intersection Summary

Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 70
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.51

Intersection Signal Delay: 9.6

Intersection LOS: A

Intersection Capacity Utilization 66.8%

ICU Level of Service C

Analysis Period (min) 15

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

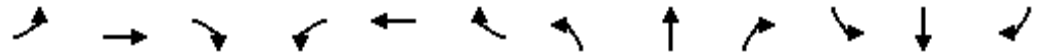
Splits and Phases: 11: Carling & Civic



Lanes, Volumes, Timings
13: Maple/Old Irvine & Carling

2048 PM Demand Rationalized Main Hospital SPA PEAK GEN

03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘		↕			↕	
Traffic Volume (vph)	40	450	47	39	1045	7	73	20	48	6	4	14
Future Volume (vph)	40	450	47	39	1045	7	73	20	48	6	4	14
Satd. Flow (prot)	1695	3390	1517	1695	3390	1517	0	1637	0	0	1599	0
Flt Permitted	0.246			0.492				0.825			0.920	
Satd. Flow (perm)	424	3390	1293	821	3390	1178	0	1376	0	0	1481	0
Satd. Flow (RTOR)			44			37		20			14	
Lane Group Flow (vph)	40	450	47	39	1045	7	0	141	0	0	24	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		2			6			8				4
Permitted Phases	2		2	6		6	8			4		
Detector Phase	2	2	2	6	6	6	8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	35.0	35.0	35.0	34.3	34.3	34.3	42.4	42.4		42.4	42.4	
Total Split (s)	87.0	87.0	87.0	87.0	87.0	87.0	43.0	43.0		43.0	43.0	
Total Split (%)	66.9%	66.9%	66.9%	66.9%	66.9%	66.9%	33.1%	33.1%		33.1%	33.1%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	4.4	4.4		4.4	4.4	
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	5.7	5.7	5.7	5.7		7.4			7.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Min	C-Min	C-Min	C-Min	C-Min	C-Min	None	None		None	None	
Act Effct Green (s)	94.7	94.7	94.7	94.7	94.7	94.7		22.2			22.2	
Actuated g/C Ratio	0.73	0.73	0.73	0.73	0.73	0.73		0.17			0.17	
v/c Ratio	0.13	0.18	0.05	0.07	0.42	0.01		0.56			0.09	
Control Delay	7.1	5.4	1.7	7.7	8.6	0.0		48.5			23.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0			0.0	
Total Delay	7.1	5.4	1.7	7.7	8.6	0.0		48.5			23.0	
LOS	A	A	A	A	A	A		D			C	
Approach Delay		5.2			8.5			48.5			23.0	
Approach LOS		A			A			D			C	
Queue Length 50th (m)	1.2	7.3	0.1	2.0	39.0	0.0		30.2			2.3	
Queue Length 95th (m)	9.8	30.1	0.9	7.9	79.3	m0.0		44.5			8.7	
Internal Link Dist (m)		236.1			191.5			174.3			220.8	
Turn Bay Length (m)	20.0		15.0	45.0		25.0						
Base Capacity (vph)	309	2470	954	598	2470	868		391			415	
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	0.13	0.18	0.05	0.07	0.42	0.01		0.36			0.06	

Intersection Summary

Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 28 (22%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.56

Intersection Signal Delay: 10.8

Intersection LOS: B

Intersection Capacity Utilization 69.4%

ICU Level of Service C

Analysis Period (min) 15

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

Splits and Phases: 13: Maple/Old Irvine & Carling



Lanes, Volumes, Timings
15: Carling & Sherwood

2048 PM Demand Rationalized Main Hospital SPA PEAK GEN

03/20/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	43	507	942	233	155	9
Future Volume (vph)	43	507	942	233	155	9
Satd. Flow (prot)	1695	3390	3390	1517	1695	1517
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1571	3390	3390	1072	1669	1473
Satd. Flow (RTOR)				233		7
Lane Group Flow (vph)	43	507	942	233	155	9
Turn Type	Prot	NA	NA	Perm	Perm	Perm
Protected Phases	5	2	6			
Permitted Phases				6	4	4
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	10.3	25.1	25.1	25.1	25.1	25.1
Total Split (s)	15.0	89.0	74.0	74.0	41.0	41.0
Total Split (%)	11.5%	68.5%	56.9%	56.9%	31.5%	31.5%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.3	5.3	5.3	5.3	5.3	5.3
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Min	C-Min	C-Min	None	None
Act Effct Green (s)	8.7	102.0	90.1	90.1	17.4	17.4
Actuated g/C Ratio	0.07	0.78	0.69	0.69	0.13	0.13
v/c Ratio	0.38	0.19	0.40	0.29	0.69	0.04
Control Delay	66.7	4.1	3.3	0.8	69.2	27.8
Queue Delay	0.0	0.0	0.1	0.0	0.0	0.0
Total Delay	66.7	4.1	3.5	0.8	69.2	27.8
LOS	E	A	A	A	E	C
Approach Delay		9.0	2.9		66.9	
Approach LOS		A	A		E	
Queue Length 50th (m)	10.7	14.6	12.0	0.0	38.5	0.5
Queue Length 95th (m)	22.5	24.6	21.7	0.0	58.3	5.4
Internal Link Dist (m)		118.3	141.7		152.1	
Turn Bay Length (m)	30.0			90.0		15.0
Base Capacity (vph)	133	2658	2350	814	458	409
Starvation Cap Reductn	0	0	429	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	0.32	0.19	0.49	0.29	0.34	0.02

Intersection Summary

Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 24 (18%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 65
 Control Type: Actuated-Coordinated

Lanes, Volumes, Timings
 15: Carling & Sherwood

2048 PM Demand Rationalized Main Hospital SPA PEAK GEN

03/20/2023

Maximum v/c Ratio: 0.69

Intersection Signal Delay: 10.3

Intersection LOS: B

Intersection Capacity Utilization 55.4%

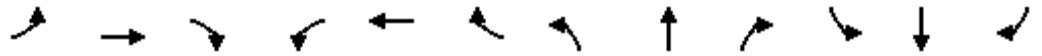
ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 15: Carling & Sherwood



Lanes, Volumes, Timings 2048 PM Demand Rationalized Main Hospital SPA PEAK GEN
 16: Road A/Champagne & Carling 03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Traffic Volume (vph)	65	492	77	77	843	139	203	0	210	118	0	129
Future Volume (vph)	65	492	77	77	843	139	203	0	210	118	0	129
Satd. Flow (prot)	1695	3390	1517	1695	3390	1517	1695	1402	0	1695	1417	0
Flt Permitted	0.950			0.950			0.430			0.626		
Satd. Flow (perm)	1541	3390	1350	1628	3390	1015	739	1402	0	1063	1417	0
Satd. Flow (RTOR)						147					282	
Lane Group Flow (vph)	65	492	77	77	843	139	203	210	0	118	129	0
Turn Type	Prot	NA	Perm	Prot	NA	Perm	pm+pt	NA		Perm	NA	
Protected Phases	5	2		1	6		3	8				4
Permitted Phases			2			6	8			4		
Detector Phase	5	2	2	1	6	6	3	8		4		4
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	5.0	10.0		10.0	10.0	
Minimum Split (s)	15.3	26.3	26.3	15.3	26.3	26.3	10.3	23.3		37.9	37.9	
Total Split (s)	15.3	40.0	40.0	18.0	47.7	47.7	19.0	62.0		38.0	38.0	
Total Split (%)	11.8%	30.8%	30.8%	13.8%	36.7%	36.7%	14.6%	47.7%		29.2%	29.2%	
Yellow Time (s)	3.3	3.7	3.7	3.3	3.7	3.7	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.0	1.6	1.6	2.0	1.6	1.6	2.0	2.0		2.6	2.6	
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)	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3		5.9	5.9	
Lead/Lag	Lead			Lead			Lead					
Lead-Lag Optimize?	Yes			Yes			Yes					
Recall Mode	None	C-Min	C-Min	None	C-Min	C-Min	None	None		None	None	
Act Effct Green (s)	10.5	61.2	61.2	11.4	63.1	63.1	42.6	42.6		20.4	20.4	
Actuated g/C Ratio	0.08	0.47	0.47	0.09	0.49	0.49	0.33	0.33		0.16	0.16	
v/c Ratio	0.48	0.31	0.12	0.52	0.51	0.24	0.57	0.46		0.71	0.28	
Control Delay	64.8	25.3	25.7	69.2	27.9	5.2	38.3	36.1		72.7	1.5	
Queue Delay	0.0	0.0	0.0	0.0	1.4	0.0	0.0	0.0		0.0	0.0	
Total Delay	64.8	25.3	25.7	69.2	29.3	5.2	38.3	36.1		72.7	1.5	
LOS	E	C	C	E	C	A	D	D		E	A	
Approach Delay		29.4			29.0			37.2				35.5
Approach LOS		C			C			D				D
Queue Length 50th (m)	17.5	48.7	13.1	19.2	78.1	0.0	39.7	42.6		29.2	0.0	
Queue Length 95th (m)	26.2	78.6	31.3	35.3	125.9	13.0	50.5	54.8		45.2	0.0	
Internal Link Dist (m)		141.7			98.6			63.9				477.2
Turn Bay Length (m)	55.0		75.0	61.0		35.0				30.0		
Base Capacity (vph)	136	1594	635	166	1644	568	357	611		262	562	
Starvation Cap Reductn	0	0	0	0	569	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	0.48	0.31	0.12	0.46	0.78	0.24	0.57	0.34		0.45	0.23	

Intersection Summary
 Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 105
 Control Type: Actuated-Coordinated

Lane Group	Ø9	Ø10	Ø11
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Satd. Flow (RTOR)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	9	10	11
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	1.0	1.0	1.0
Minimum Split (s)	10.0	5.0	5.0
Total Split (s)	10.0	5.0	5.0
Total Split (%)	8%	4%	4%
Yellow Time (s)	2.0	2.0	2.0
All-Red Time (s)	0.0	0.0	0.0
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes
Recall Mode	None	None	None
Act Effct Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
LOS			
Approach Delay			
Approach LOS			
Queue Length 50th (m)			
Queue Length 95th (m)			
Internal Link Dist (m)			
Turn Bay Length (m)			
Base Capacity (vph)			
Starvation Cap Reductn			
Spillback Cap Reductn			
Storage Cap Reductn			
Reduced v/c Ratio			
Intersection Summary			

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 31.2

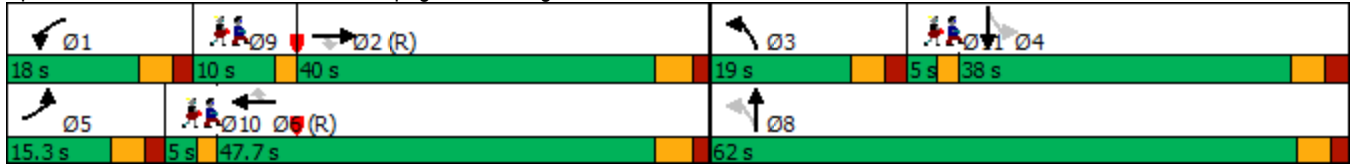
Intersection LOS: C

Intersection Capacity Utilization 86.4%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 16: Road A/Champagne & Carling



Lanes, Volumes, Timings
17: Carling & Trillium MUP

2048 PM Demand Rationalized Main Hospital SPA PEAK GEN

03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑			↑↑							
Traffic Volume (vph)	0	824	0	0	1050	0	0	0	0	0	0	0
Future Volume (vph)	0	824	0	0	1050	0	0	0	0	0	0	0
Satd. Flow (prot)	0	3390	0	0	3390	0	0	0	0	0	0	0
Flt Permitted												
Satd. Flow (perm)	0	3390	0	0	3390	0	0	0	0	0	0	0
Satd. Flow (RTOR)												
Lane Group Flow (vph)	0	824	0	0	1050	0	0	0	0	0	0	0
Turn Type		NA			NA							
Protected Phases		2			6							
Permitted Phases												
Detector Phase		2			6							
Switch Phase												
Minimum Initial (s)		10.0			10.0							
Minimum Split (s)		31.1			31.1							
Total Split (s)		35.0			35.0							
Total Split (%)		50.0%			50.0%							
Yellow Time (s)		3.7			3.7							
All-Red Time (s)		1.4			1.4							
Lost Time Adjust (s)		0.0			0.0							
Total Lost Time (s)		5.1			5.1							
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode		C-Min			C-Min							
Act Effct Green (s)		62.0			62.0							
Actuated g/C Ratio		0.89			0.89							
v/c Ratio		0.27			0.35							
Control Delay		4.7			3.4							
Queue Delay		0.0			0.0							
Total Delay		4.7			3.4							
LOS		A			A							
Approach Delay		4.7			3.4							
Approach LOS		A			A							
Queue Length 50th (m)		0.0			0.0							
Queue Length 95th (m)		57.4			m69.1							
Internal Link Dist (m)		98.6			92.8			53.0			60.9	
Turn Bay Length (m)												
Base Capacity (vph)		3002			3002							
Starvation Cap Reductn		0			32							
Spillback Cap Reductn		16			0							
Storage Cap Reductn		0			0							
Reduced v/c Ratio		0.28			0.35							
Intersection Summary												
Cycle Length: 70												
Actuated Cycle Length: 70												
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green												
Natural Cycle: 70												
Control Type: Actuated-Coordinated												

Lane Group	Ø4	Ø8
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Satd. Flow (RTOR)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	4	8
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	1.0	1.0
Minimum Split (s)	35.6	35.6
Total Split (s)	35.0	35.0
Total Split (%)	50%	50%
Yellow Time (s)	3.0	3.0
All-Red Time (s)	3.6	3.6
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag		
Lead-Lag Optimize?		
Recall Mode	None	None
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

Maximum v/c Ratio: 0.35

Intersection Signal Delay: 4.0

Intersection LOS: A

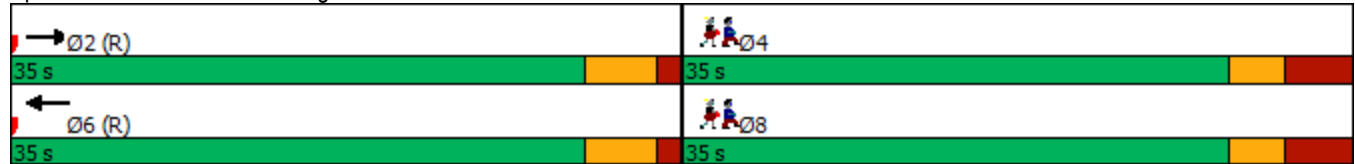
Intersection Capacity Utilization 34.9%

ICU Level of Service A

Analysis Period (min) 15

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

Splits and Phases: 17: Carling & Trillium MUP



Lanes, Volumes, Timings
18: Preston & Carling

2048 PM Demand Rationalized Main Hospital SPA PEAK GEN

03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗	↘	↖	↗	↘	↖	↗	↘	↖	↗	↘
Traffic Volume (vph)	143	506	176	308	734	65	264	397	206	106	290	60
Future Volume (vph)	143	506	176	308	734	65	264	397	206	106	290	60
Satd. Flow (prot)	1695	3390	1517	1695	3390	1517	1695	3093	0	1695	1699	0
Flt Permitted	0.950			0.950			0.148			0.424		
Satd. Flow (perm)	1600	3390	1517	1632	3390	1243	255	3093	0	724	1699	0
Satd. Flow (RTOR)						179					7	
Lane Group Flow (vph)	143	506	176	308	734	65	264	603	0	106	350	0
Turn Type	Prot	NA	custom	Prot	NA	Perm	pm+pt	NA		Perm	NA	
Protected Phases	5	9 2	9 3	1	6		3	8				4
Permitted Phases						6	8			4		
Detector Phase	5	9 2	9 3	1	6	6	3	8		4		4
Switch Phase												
Minimum Initial (s)	5.0			5.0	10.0	10.0	5.0	10.0		10.0	10.0	
Minimum Split (s)	11.2			11.2	25.0	25.0	11.9	38.9		38.9	38.9	
Total Split (s)	20.2			37.0	47.1	47.1	23.8	61.7		38.9	38.9	
Total Split (%)	14.4%			26.4%	33.6%	33.6%	17.0%	44.1%		27.8%	27.8%	
Yellow Time (s)	3.7			3.7	3.7	3.7	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.5			2.5	2.3	2.3	3.6	3.6		3.6	3.6	
Lost Time Adjust (s)	0.0			0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.2			6.2	6.0	6.0	6.9	6.9		6.9	6.9	
Lead/Lag	Lead			Lead			Lead					
Lead-Lag Optimize?	Yes			Yes			Yes					
Recall Mode	None			None	C-Min	C-Min	None	None		None	None	
Act Effct Green (s)	13.7	35.5	28.8	28.5	44.7	44.7	58.6	53.8		30.8	30.8	
Actuated g/C Ratio	0.10	0.25	0.21	0.20	0.32	0.32	0.42	0.38		0.22	0.22	
v/c Ratio	0.87	0.59	0.57	0.90	0.68	0.13	0.94	0.51		0.67	0.93	
Control Delay	103.1	46.1	61.1	82.1	46.3	0.5	80.7	14.4		71.0	82.9	
Queue Delay	0.0	0.4	1.9	0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay	103.1	46.5	63.0	82.1	46.3	0.5	80.7	14.4		71.0	82.9	
LOS	F	D	E	F	D	A	F	B		E	F	
Approach Delay		59.8			53.6			34.6				80.1
Approach LOS		E			D			C				F
Queue Length 50th (m)	39.6	68.1	44.5	82.0	96.6	0.0	33.8	21.3		26.8	93.0	
Queue Length 95th (m)	#79.3	79.1	76.1	#127.9	119.7	0.0	#103.8	30.5		#51.9	#147.2	
Internal Link Dist (m)		92.8			165.9			145.6				55.2
Turn Bay Length (m)	70.0		90.0	120.0		95.0				35.0		
Base Capacity (vph)	169	851	311	372	1081	518	280	1210		165	393	
Starvation Cap Reductn	0	79	0	0	0	0	0	0		0	0	
Spillback Cap Reductn	0	0	50	0	0	0	0	0		0	0	
Storage Cap Reductn	0	0	0	0	0	0	0	0		0	0	
Reduced v/c Ratio	0.85	0.66	0.67	0.83	0.68	0.13	0.94	0.50		0.64	0.89	

Intersection Summary

Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 6 (4%), Referenced to phase 2:EBT and 6:WBT, Start of Green
 Natural Cycle: 120
 Control Type: Actuated-Coordinated

Lane Group	Ø2	Ø9	Ø10	Ø11	Ø12
Lane Configurations					
Traffic Volume (vph)					
Future Volume (vph)					
Satd. Flow (prot)					
Flt Permitted					
Satd. Flow (perm)					
Satd. Flow (RTOR)					
Lane Group Flow (vph)					
Turn Type					
Protected Phases	2	9	10	11	12
Permitted Phases					
Detector Phase					
Switch Phase					
Minimum Initial (s)	10.0	1.0	1.0	1.0	1.0
Minimum Split (s)	26.0	5.3	5.0	5.0	5.0
Total Split (s)	29.0	6.3	5.0	5.0	6.0
Total Split (%)	21%	5%	4%	4%	4%
Yellow Time (s)	2.0	2.0	2.0	2.0	2.0
All-Red Time (s)	0.0	2.3	0.0	0.0	0.0
Lost Time Adjust (s)					
Total Lost Time (s)					
Lead/Lag	Lag		Lag	Lag	
Lead-Lag Optimize?	Yes		Yes	Yes	
Recall Mode	C-Min	Min	None	None	None
Act Effct Green (s)					
Actuated g/C Ratio					
v/c Ratio					
Control Delay					
Queue Delay					
Total Delay					
LOS					
Approach Delay					
Approach LOS					
Queue Length 50th (m)					
Queue Length 95th (m)					
Internal Link Dist (m)					
Turn Bay Length (m)					
Base Capacity (vph)					
Starvation Cap Reductn					
Spillback Cap Reductn					
Storage Cap Reductn					
Reduced v/c Ratio					
Intersection Summary					

Maximum v/c Ratio: 0.94

Intersection Signal Delay: 53.8

Intersection LOS: D

Intersection Capacity Utilization 94.7%

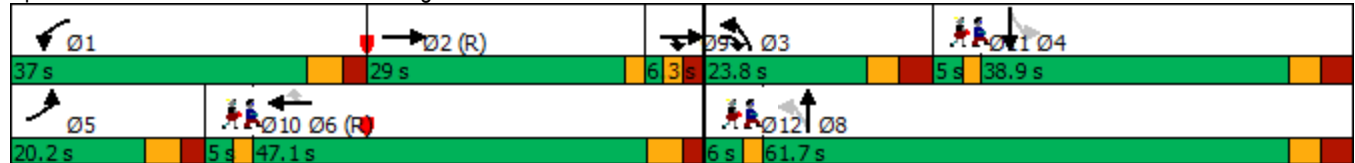
ICU Level of Service F

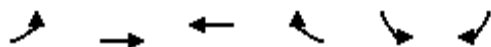
Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 18: Preston & Carling





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↖	↗↗	↖	↗	↘	↘
Traffic Volume (vph)	192	759	699	104	244	250
Future Volume (vph)	192	759	699	104	244	250
Satd. Flow (prot)	1695	3390	1784	1517	1695	1517
Flt Permitted	0.206				0.950	
Satd. Flow (perm)	368	3390	1784	1161	1665	1209
Satd. Flow (RTOR)				39		190
Lane Group Flow (vph)	192	759	699	104	244	250
Turn Type	pm+pt	NA	NA	Perm	Perm	Perm
Protected Phases	5	2	6			
Permitted Phases	2			6	4	4
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	10.9	29.7	29.7	29.7	39.0	39.0
Total Split (s)	23.0	90.0	67.0	67.0	40.0	40.0
Total Split (%)	17.7%	69.2%	51.5%	51.5%	30.8%	30.8%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.3	3.3
All-Red Time (s)	2.2	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)	5.9	5.7	5.7	5.7	6.0	6.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Min	C-Min	C-Min	None	None
Act Effct Green (s)	88.5	88.7	71.3	71.3	29.6	29.6
Actuated g/C Ratio	0.68	0.68	0.55	0.55	0.23	0.23
v/c Ratio	0.52	0.33	0.71	0.16	0.64	0.59
Control Delay	13.6	9.5	29.0	11.5	53.0	17.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.6	9.5	29.0	11.5	53.0	17.5
LOS	B	A	C	B	D	B
Approach Delay		10.4	26.7		35.0	
Approach LOS		B	C		D	
Queue Length 50th (m)	17.8	42.0	135.6	8.1	54.9	12.1
Queue Length 95th (m)	27.7	52.4	202.3	19.7	82.4	39.3
Internal Link Dist (m)		100.4	299.3		220.7	
Turn Bay Length (m)	50.0			30.0		30.0
Base Capacity (vph)	425	2312	978	654	435	456
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	0.45	0.33	0.71	0.16	0.56	0.55

Intersection Summary

Cycle Length: 130
 Actuated Cycle Length: 130
 Offset: 110 (85%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 21.6

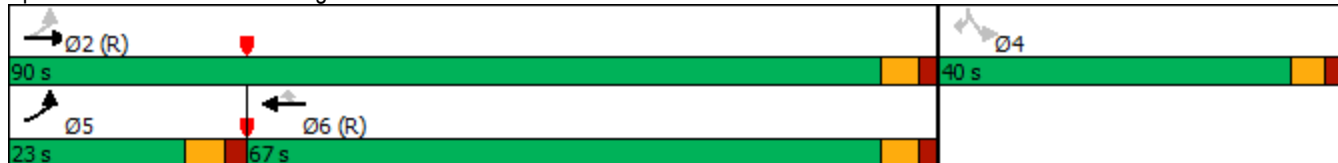
Intersection LOS: C

Intersection Capacity Utilization 91.4%

ICU Level of Service F

Analysis Period (min) 15

Splits and Phases: 20: Carling & Booth



Lanes, Volumes, Timings
21: Bronson & Carling/Glebe

2048 PM Demand Rationalized Main Hospital SPA PEAK GEN

03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	503	92	410	0	0	0	454	676	18	0	1021	265
Future Volume (vph)	503	92	410	0	0	0	454	676	18	0	1021	265
Satd. Flow (prot)	1610	1644	1517	0	0	0	3288	1767	0	0	3237	0
Flt Permitted	0.950	0.970					0.950					
Satd. Flow (perm)	1511	1580	1415	0	0	0	3236	1767	0	0	3237	0
Satd. Flow (RTOR)			110					2			26	
Lane Group Flow (vph)	347	248	410	0	0	0	454	694	0	0	1286	0
Turn Type	Perm	NA	pm+ov				Prot	NA			NA	
Protected Phases		4	5				5	2			6	
Permitted Phases	4		4									
Detector Phase	4	4	5				5	2			6	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0				10.0	10.0			10.0	
Minimum Split (s)	31.0	31.0	16.0				16.0	25.1			33.0	
Total Split (s)	47.0	47.0	29.0				29.0	93.0			64.0	
Total Split (%)	32.0%	32.0%	19.7%				19.7%	63.3%			43.5%	
Yellow Time (s)	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			2.7	
Lost Time Adjust (s)	0.0	0.0	0.0				0.0	0.0			0.0	
Total Lost Time (s)	6.0	6.0	6.0				6.0	6.0			6.0	
Lead/Lag			Lead				Lead				Lag	
Lead-Lag Optimize?			Yes				Yes				Yes	
Recall Mode	None	None	None				None	C-Min			C-Min	
Act Effct Green (s)	37.2	37.2	60.1				23.0	90.7			61.8	
Actuated g/C Ratio	0.25	0.25	0.41				0.16	0.62			0.42	
v/c Ratio	0.91	0.62	0.62				0.88	0.64			0.94	
Control Delay	80.8	55.4	25.5				80.1	21.8			53.6	
Queue Delay	0.0	0.0	0.0				0.0	0.0			0.0	
Total Delay	80.8	55.4	25.5				80.1	21.8			53.6	
LOS	F	E	C				F	C			D	
Approach Delay		52.0						44.9			53.6	
Approach LOS		D						D			D	
Queue Length 50th (m)	101.3	66.2	59.7				66.8	126.9			192.5	
Queue Length 95th (m)	#151.4	95.5	90.8				#95.5	172.8			#243.8	
Internal Link Dist (m)		74.7			115.0			394.4			328.4	
Turn Bay Length (m)	40.0						50.0					
Base Capacity (vph)	421	440	664				524	1091			1374	
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	0.82	0.56	0.62				0.87	0.64			0.94	

Intersection Summary

Cycle Length: 147
 Actuated Cycle Length: 147
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 100
 Control Type: Actuated-Coordinated

Lane Group	Ø10
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Satd. Flow (RTOR)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	10
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	7.0
Total Split (s)	7.0
Total Split (%)	5%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	Min
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Maximum v/c Ratio: 0.94

Intersection Signal Delay: 50.2

Intersection LOS: D

Intersection Capacity Utilization 91.9%

ICU Level of Service F

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 21: Bronson & Carling/Glebe



Lanes, Volumes, Timings
22: Parkdale & 417 WB on/off

2048 PM Demand Rationalized Main Hospital SPA PEAK GEN

03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	217	8	416	147	450	0	0	531	191
Future Volume (vph)	0	0	0	217	8	416	147	450	0	0	531	191
Satd. Flow (prot)	0	0	0	1695	1465	0	1695	1784	0	0	1687	0
Flt Permitted				0.950			0.250					
Satd. Flow (perm)	0	0	0	1695	1465	0	446	1784	0	0	1687	0
Satd. Flow (RTOR)					402						28	
Lane Group Flow (vph)	0	0	0	217	424	0	147	450	0	0	722	0
Turn Type				Perm	NA		pm+pt	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases				8			2					
Detector Phase				8	8		5	2			6	
Switch Phase												
Minimum Initial (s)				10.0	10.0		5.0	10.0			10.0	
Minimum Split (s)				29.0	29.0		10.3	27.3			25.1	
Total Split (s)				29.0	29.0		11.0	71.0			60.0	
Total Split (%)				29.0%	29.0%		11.0%	71.0%			60.0%	
Yellow Time (s)				3.3	3.3		3.0	3.0			3.0	
All-Red Time (s)				2.2	2.2		2.2	3.3			3.3	
Lost Time Adjust (s)				0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)				5.5	5.5		5.2	6.3			6.3	
Lead/Lag							Lag				Lead	
Lead-Lag Optimize?							Yes				Yes	
Recall Mode				None	None		None	C-Min			C-Min	
Act Effct Green (s)				17.9	17.9		71.4	70.3			56.7	
Actuated g/C Ratio				0.18	0.18		0.71	0.70			0.57	
v/c Ratio				0.71	0.72		0.35	0.36			0.75	
Control Delay				51.3	12.0		7.7	4.9			22.9	
Queue Delay				0.0	0.0		2.6	1.3			1.3	
Total Delay				51.3	12.0		10.3	6.2			24.2	
LOS				D	B		B	A			C	
Approach Delay					25.3			7.2			24.2	
Approach LOS					C			A			C	
Queue Length 50th (m)				39.9	3.6		6.5	22.3			99.7	
Queue Length 95th (m)				60.1	31.0		m9.3	39.9			153.9	
Internal Link Dist (m)		157.5			140.3			45.3			171.5	
Turn Bay Length (m)												
Base Capacity (vph)				398	651		422	1253			980	
Starvation Cap Reductn				0	0		178	572			0	
Spillback Cap Reductn				0	0		0	0			106	
Storage Cap Reductn				0	0		0	0			0	
Reduced v/c Ratio				0.55	0.65		0.60	0.66			0.83	

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 39 (39%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.75

Intersection Signal Delay: 19.4

Intersection LOS: B

Intersection Capacity Utilization 117.6%

ICU Level of Service H

Analysis Period (min) 15

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

Splits and Phases: 22: Parkdale & 417 WB on/off



Lanes, Volumes, Timings
23: Parkdale & 417 EB on/off

2048 PM Demand Rationalized Main Hospital SPA PEAK GEN

03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕	↗					↕↗		↖	↖	
Traffic Volume (vph)	295	0	147	0	0	0	0	244	306	410	248	0
Future Volume (vph)	295	0	147	0	0	0	0	244	306	410	248	0
Satd. Flow (prot)	0	1695	1517	0	0	0	0	2947	0	1695	1784	0
Flt Permitted		0.950								0.349		
Satd. Flow (perm)	0	1695	1482	0	0	0	0	2947	0	610	1784	0
Satd. Flow (RTOR)			147					306				
Lane Group Flow (vph)	0	295	147	0	0	0	0	550	0	410	248	0
Turn Type	Perm	NA	Perm					NA		pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4		4							6		
Detector Phase	4	4	4					2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0					10.0		5.0	10.0	
Minimum Split (s)	25.1	25.1	25.1					25.1		10.3	25.1	
Total Split (s)	30.0	30.0	30.0					38.0		32.0	70.0	
Total Split (%)	30.0%	30.0%	30.0%					38.0%		32.0%	70.0%	
Yellow Time (s)	3.3	3.3	3.3					3.0		3.0	3.0	
All-Red Time (s)	2.6	2.6	2.6					2.8		2.3	2.8	
Lost Time Adjust (s)		0.0	0.0					0.0		0.0	0.0	
Total Lost Time (s)		5.9	5.9					5.8		5.3	5.8	
Lead/Lag								Lag		Lead		
Lead-Lag Optimize?								Yes		Yes		
Recall Mode	None	None	None					C-Min		None	C-Min	
Act Effct Green (s)		22.5	22.5					42.8		66.3	65.8	
Actuated g/C Ratio		0.22	0.22					0.43		0.66	0.66	
v/c Ratio		0.78	0.33					0.38		0.69	0.21	
Control Delay		50.1	6.9					11.0		17.6	10.8	
Queue Delay		0.0	0.0					0.1		7.9	1.9	
Total Delay		50.1	6.9					11.1		25.5	12.7	
LOS		D	A					B		C	B	
Approach Delay		35.7						11.1			20.7	
Approach LOS		D						B			C	
Queue Length 50th (m)		53.8	0.0					15.1		41.4	22.1	
Queue Length 95th (m)		76.2	13.6					36.5		73.5	m44.2	
Internal Link Dist (m)		109.8			145.0			90.1			45.3	
Turn Bay Length (m)			75.0									
Base Capacity (vph)		430	486					1465		695	1198	
Starvation Cap Reductn		0	0					254		240	791	
Spillback Cap Reductn		0	0					38		0	0	
Storage Cap Reductn		0	0					0		0	0	
Reduced v/c Ratio		0.69	0.30					0.45		0.90	0.61	

Intersection Summary

Cycle Length: 100
 Actuated Cycle Length: 100
 Offset: 29 (29%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 65
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.78

Intersection Signal Delay: 21.5

Intersection LOS: C

Intersection Capacity Utilization 117.6%

ICU Level of Service H

Analysis Period (min) 15

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

Splits and Phases: 23: Parkdale & 417 EB on/off





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	72	8	7	0	7	134	5	383	7	77	342	68
Future Volume (vph)	72	8	7	0	7	134	5	383	7	77	342	68
Satd. Flow (prot)	0	1683	0	0	1491	0	0	1776	0	0	1722	0
Flt Permitted		0.707						0.995			0.885	
Satd. Flow (perm)	0	1236	0	0	1491	0	0	1769	0	0	1529	0
Satd. Flow (RTOR)		7			134			3			25	
Lane Group Flow (vph)	0	87	0	0	141	0	0	395	0	0	487	0
Turn Type	Perm	NA			NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	1.0	1.0		1.0	1.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	18.0	18.0		18.0	18.0		25.1	25.1		25.1	25.1	
Total Split (s)	18.0	18.0		18.0	18.0		37.0	37.0		37.0	37.0	
Total Split (%)	32.7%	32.7%		32.7%	32.7%		67.3%	67.3%		67.3%	67.3%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		2.6	2.6		2.6	2.6	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.0			4.0			5.6			5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Ped	Ped		Ped	Ped		C-Min	C-Min		C-Min	C-Min	
Act Effct Green (s)		14.0			14.0			31.4			31.4	
Actuated g/C Ratio		0.25			0.25			0.57			0.57	
v/c Ratio		0.27			0.29			0.39			0.55	
Control Delay		18.1			6.1			7.9			9.9	
Queue Delay		0.0			0.0			0.0			0.4	
Total Delay		18.1			6.1			7.9			10.3	
LOS		B			A			A			B	
Approach Delay		18.1			6.1			7.9			10.3	
Approach LOS		B			A			A			B	
Queue Length 50th (m)		6.3			0.5			18.8			24.7	
Queue Length 95th (m)		15.9			11.0			33.0			46.2	
Internal Link Dist (m)		221.3			335.0			289.1			90.1	
Turn Bay Length (m)												
Base Capacity (vph)		319			479			1011			883	
Starvation Cap Reductn		0			0			0			96	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.27			0.29			0.39			0.62	

Intersection Summary

Cycle Length: 55
 Actuated Cycle Length: 55
 Offset: 26 (47%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
 Natural Cycle: 45
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.55

Intersection Signal Delay: 9.5

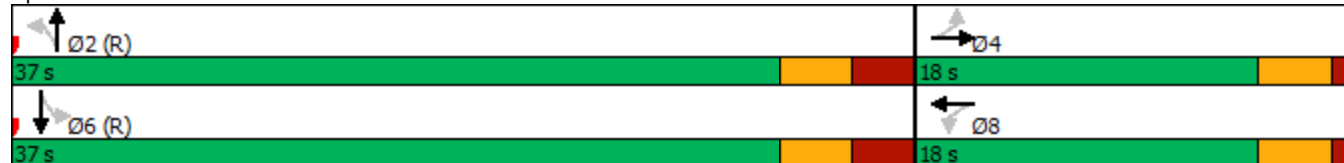
Intersection LOS: A

Intersection Capacity Utilization 89.4%

ICU Level of Service E

Analysis Period (min) 15

Splits and Phases: 24: Parkdale & Sherwood



Lanes, Volumes, Timings
25: Parkdale & Ruskin

2048 PM Demand Rationalized Main Hospital SPA PEAK GEN

03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕		↖	↗			↕			↕	
Traffic Volume (vph)	27	29	9	7	33	20	3	231	7	38	240	10
Future Volume (vph)	27	29	9	7	33	20	3	231	7	38	240	10
Satd. Flow (prot)	0	1695	0	1695	1628	0	0	1771	0	0	1760	0
Flt Permitted		0.841		0.807				0.997			0.939	
Satd. Flow (perm)	0	1418	0	1353	1628	0	0	1767	0	0	1655	0
Satd. Flow (RTOR)		7			20			4			5	
Lane Group Flow (vph)	0	65	0	7	53	0	0	241	0	0	288	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	19.4	19.4		19.4	19.4		31.8	31.8		31.8	31.8	
Total Split (s)	20.0	20.0		20.0	20.0		75.0	75.0		75.0	75.0	
Total Split (%)	21.1%	21.1%		21.1%	21.1%		78.9%	78.9%		78.9%	78.9%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.4	2.4		2.4	2.4		2.8	2.8		2.8	2.8	
Lost Time Adjust (s)		0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)		5.4		5.4	5.4			5.8			5.8	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Min	C-Min		C-Min	C-Min	
Act Effct Green (s)		12.4		12.4	12.4			75.6			75.6	
Actuated g/C Ratio		0.13		0.13	0.13			0.80			0.80	
v/c Ratio		0.34		0.04	0.23			0.17			0.22	
Control Delay		38.7		35.6	27.8			3.6			3.9	
Queue Delay		0.0		0.0	0.0			0.0			0.0	
Total Delay		38.7		35.6	27.8			3.6			3.9	
LOS		D		D	C			A			A	
Approach Delay		38.7			28.7			3.6			3.9	
Approach LOS		D			C			A			A	
Queue Length 50th (m)		9.6		1.1	5.3			11.1			13.9	
Queue Length 95th (m)		21.7		5.0	15.8			18.0			22.1	
Internal Link Dist (m)		220.6			228.6			278.4			289.1	
Turn Bay Length (m)				40.0								
Base Capacity (vph)		223		207	267			1407			1318	
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		0.29		0.03	0.20			0.17			0.22	

Intersection Summary

Cycle Length: 95
 Actuated Cycle Length: 95
 Offset: 40 (42%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 55
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.34

Intersection Signal Delay: 9.5

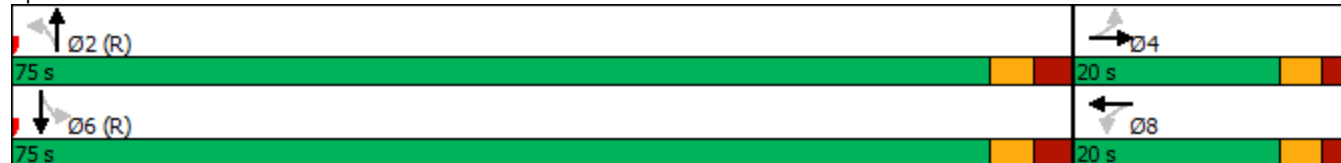
Intersection LOS: A

Intersection Capacity Utilization 60.2%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 25: Parkdale & Ruskin



Lanes, Volumes, Timings
30: Prince of Wales & Preston

2048 PM Demand Rationalized Main Hospital SPA PEAK GEN

03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖↖	↑		↗	↑	↗		↕			↖	↗
Traffic Volume (vph)	614	223	2	3	295	363	4	3	1	260	4	597
Future Volume (vph)	614	223	2	3	295	363	4	3	1	260	4	597
Satd. Flow (prot)	3288	1779	0	1695	1784	1517	0	1683	0	0	1700	1517
Flt Permitted	0.950			0.950				0.831			0.724	
Satd. Flow (perm)	3174	1779	0	1468	1784	1484	0	1305	0	0	1153	1357
Satd. Flow (RTOR)						219						
Lane Group Flow (vph)	614	225	0	3	295	363	0	8	0	0	264	597
Turn Type	Prot	NA		Prot	NA	Free	Perm	NA		custom	NA	custom
Protected Phases	5	2		1	6			8		11	4 11	5
Permitted Phases						Free	8			4		4
Detector Phase	5	2		1	6		8	8		11	4 11	5
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0		10.0		5.0
Minimum Split (s)	11.1	27.1		10.3	26.1		24.5	24.5		15.3		11.1
Total Split (s)	52.0	67.0		10.3	30.3		35.7	35.7		22.0		52.0
Total Split (%)	37.1%	47.9%		7.4%	21.6%		25.5%	25.5%		15.7%		37.1%
Yellow Time (s)	3.7	3.7		3.3	3.7		3.3	3.3		3.3		3.7
All-Red Time (s)	2.4	2.4		2.0	2.4		2.2	2.2		2.0		2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0				0.0
Total Lost Time (s)	6.1	6.1		5.3	6.1			5.5				6.1
Lead/Lag				Lead								
Lead-Lag Optimize?				Yes								
Recall Mode	None	C-Min		None	C-Min		None	None		None		None
Act Effct Green (s)	49.3	86.9		5.9	35.4	140.0		15.7			32.1	64.4
Actuated g/C Ratio	0.35	0.62		0.04	0.25	1.00		0.11			0.23	0.46
v/c Ratio	0.53	0.20		0.04	0.65	0.24		0.05			0.80	0.88
Control Delay	35.2	14.5		65.3	56.7	0.4		51.4			61.5	54.2
Queue Delay	0.0	0.0		0.0	0.0	0.0		0.0			0.0	1.2
Total Delay	35.2	14.5		65.3	56.7	0.4		51.4			61.5	55.4
LOS	D	B		E	E	A		D			E	E
Approach Delay		29.6			25.8			51.4			57.3	
Approach LOS		C			C			D			E	
Queue Length 50th (m)	58.1	17.0		0.8	72.8	0.0		2.1			77.0	159.6
Queue Length 95th (m)	92.1	49.3		4.1	#137.8	0.0		6.8			m93.9	m131.1
Internal Link Dist (m)		79.9			173.8			12.4			145.6	
Turn Bay Length (m)	45.0			30.0		45.0						
Base Capacity (vph)	1182	1104		71	451	1484		281			449	691
Starvation Cap Reductn	0	0		0	0	0		0			0	20
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	0.52	0.20		0.04	0.65	0.24		0.03			0.59	0.89

Intersection Summary

Cycle Length: 140

Actuated Cycle Length: 140

Offset: 105.9 (76%), Referenced to phase 2:EBT and 6:WBT, Start of Green

Natural Cycle: 100

Control Type: Actuated-Coordinated

Lane Group	Ø4	Ø9	Ø12
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Satd. Flow (RTOR)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	4	9	12
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	10.0	1.0	1.0
Minimum Split (s)	15.5	5.0	20.0
Total Split (s)	35.7	5.0	22.0
Total Split (%)	26%	4%	16%
Yellow Time (s)	3.3	2.0	2.0
All-Red Time (s)	2.2	0.0	0.0
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag		Lag	
Lead-Lag Optimize?		Yes	
Recall Mode	None	None	None
Act Effct Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay			
Queue Delay			
Total Delay			
LOS			
Approach Delay			
Approach LOS			
Queue Length 50th (m)			
Queue Length 95th (m)			
Internal Link Dist (m)			
Turn Bay Length (m)			
Base Capacity (vph)			
Starvation Cap Reductn			
Spillback Cap Reductn			
Storage Cap Reductn			
Reduced v/c Ratio			
Intersection Summary			

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 38.7

Intersection LOS: D

Intersection Capacity Utilization 88.4%

ICU Level of Service E

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

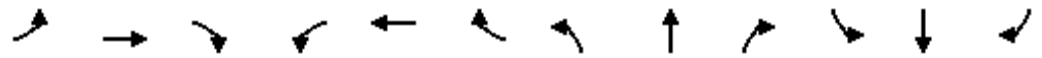
Queue shown is maximum after two cycles.

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

Splits and Phases: 30: Prince of Wales & Preston

Ø1	Ø9 Ø2 (R)	Ø11	Ø4
10.3 s	5 s 67 s	22 s	35.7 s
Ø5	Ø6 (R)	Ø12	Ø8
52 s	30.3 s	22 s	35.7 s

Lanes, Volumes, Timings 2048 PM Demand Rationalized Main Hospital SPA PEAK GEN
 31: Rochester & 417 WB on/Raymond 03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	120	161	109	191	321	0	0	149	182
Future Volume (vph)	0	0	0	120	161	109	191	321	0	0	149	182
Satd. Flow (prot)	0	0	0	1695	1636	0	1695	1784	0	0	1784	1517
Flt Permitted				0.950			0.548					
Satd. Flow (perm)	0	0	0	1685	1636	0	947	1784	0	0	1784	1414
Satd. Flow (RTOR)					56							182
Lane Group Flow (vph)	0	0	0	120	270	0	191	321	0	0	149	182
Turn Type				Perm	NA		pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8			2					6
Detector Phase				8	8		5	2			6	6
Switch Phase												
Minimum Initial (s)				10.0	10.0		5.0	10.0			10.0	10.0
Minimum Split (s)				32.0	32.0		10.9	27.3			24.9	24.9
Total Split (s)				32.0	32.0		13.0	38.0			25.0	25.0
Total Split (%)				45.7%	45.7%		18.6%	54.3%			35.7%	35.7%
Yellow Time (s)				3.3	3.3		3.3	3.3			3.3	3.3
All-Red Time (s)				2.4	2.4		2.6	2.6			2.6	2.6
Lost Time Adjust (s)				0.0	0.0		0.0	0.0			0.0	0.0
Total Lost Time (s)				5.7	5.7		5.9	5.9			5.9	5.9
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Recall Mode				None	None		None	C-Min			C-Min	C-Min
Act Effct Green (s)				15.2	15.2		43.2	43.2			28.3	28.3
Actuated g/C Ratio				0.22	0.22		0.62	0.62			0.40	0.40
v/c Ratio				0.33	0.68		0.28	0.29			0.21	0.27
Control Delay				24.2	27.9		12.2	13.0			17.1	4.6
Queue Delay				0.0	0.0		0.0	0.5			0.0	0.0
Total Delay				24.2	27.9		12.2	13.5			17.1	4.6
LOS				C	C		B	B			B	A
Approach Delay					26.8			13.0			10.2	
Approach LOS					C			B			B	
Queue Length 50th (m)				13.4	25.8		14.8	30.4			12.1	0.0
Queue Length 95th (m)				23.2	42.8		34.3	54.7			29.5	13.0
Internal Link Dist (m)		122.0			89.8			72.3			151.7	
Turn Bay Length (m)												35.0
Base Capacity (vph)				633	649		682	1101			721	680
Starvation Cap Reductn				0	0		0	412			0	0
Spillback Cap Reductn				0	0		0	0			0	0
Storage Cap Reductn				0	0		0	0			0	0
Reduced v/c Ratio				0.19	0.42		0.28	0.47			0.21	0.27

Intersection Summary
 Cycle Length: 70
 Actuated Cycle Length: 70
 Offset: 8 (11%), Referenced to phase 2:NBT and 6:SBT, Start of Green
 Natural Cycle: 70
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.68

Intersection Signal Delay: 16.6

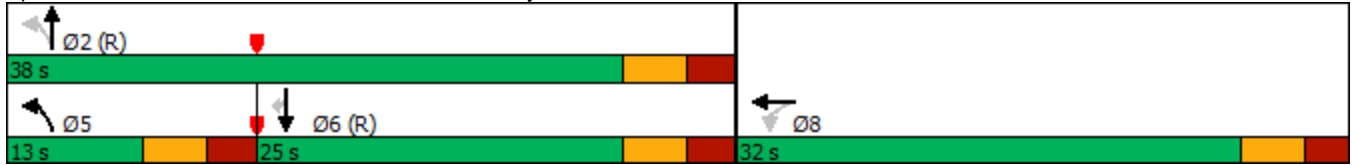
Intersection LOS: B

Intersection Capacity Utilization 58.3%

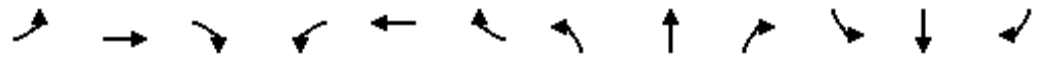
ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 31: Rochester & 417 WB on/Raymond



Lanes, Volumes, Timings 2048 PM Demand Rationalized Main Hospital SPA PEAK GEN
 32: Rochester & 417 EB off/Orangeville 03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕↕						↕↕			↕↕	
Traffic Volume (vph)	199	218	123	0	0	0	0	308	48	16	232	0
Future Volume (vph)	199	218	123	0	0	0	0	308	48	16	232	0
Satd. Flow (prot)	0	3190	0	0	0	0	0	3306	0	0	3380	0
Flt Permitted		0.982									0.927	
Satd. Flow (perm)	0	3184	0	0	0	0	0	3306	0	0	3140	0
Satd. Flow (RTOR)		55						40				
Lane Group Flow (vph)	0	540	0	0	0	0	0	356	0	0	248	0
Turn Type	Perm	NA						NA		Perm	NA	
Protected Phases		4						2			6	
Permitted Phases	4									6		
Detector Phase	4	4						2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0						10.0		10.0	10.0	
Minimum Split (s)	26.0	26.0						25.1		25.1	25.1	
Total Split (s)	26.0	26.0						44.0		44.0	44.0	
Total Split (%)	37.1%	37.1%						62.9%		62.9%	62.9%	
Yellow Time (s)	3.3	3.3						3.3		3.3	3.3	
All-Red Time (s)	2.3	2.3						2.1		2.1	2.1	
Lost Time Adjust (s)		0.0						0.0			0.0	
Total Lost Time (s)		5.6						5.4			5.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None						C-Min		C-Min	C-Min	
Act Effct Green (s)		16.1						42.9			42.9	
Actuated g/C Ratio		0.23						0.61			0.61	
v/c Ratio		0.70						0.17			0.13	
Control Delay		26.8						6.0			8.5	
Queue Delay		0.0						0.0			0.0	
Total Delay		26.8						6.0			8.5	
LOS		C						A			A	
Approach Delay		26.8						6.0			8.5	
Approach LOS		C						A			A	
Queue Length 50th (m)		30.7						8.1			2.7	
Queue Length 95th (m)		41.5						16.3			27.8	
Internal Link Dist (m)		104.8			107.2			99.1			72.3	
Turn Bay Length (m)												
Base Capacity (vph)		972						2049			1932	
Starvation Cap Reductn		0						0			0	
Spillback Cap Reductn		0						0			0	
Storage Cap Reductn		0						0			0	
Reduced v/c Ratio		0.56						0.17			0.13	

Intersection Summary
 Cycle Length: 70
 Actuated Cycle Length: 70
 Offset: 67 (96%), Referenced to phase 2:NBT and 6:SBTL, Start of Green
 Natural Cycle: 55
 Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.70

Intersection Signal Delay: 16.4

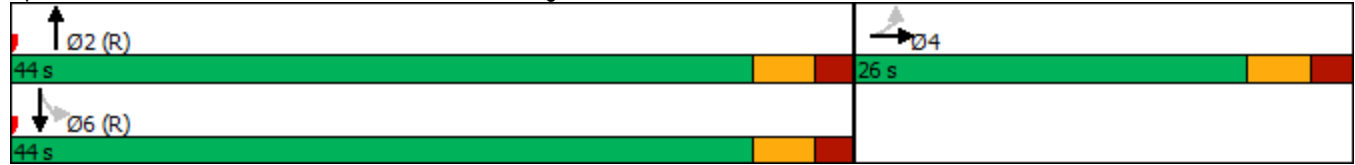
Intersection LOS: B

Intersection Capacity Utilization 49.1%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 32: Rochester & 417 EB off/Orangeville



Lanes, Volumes, Timings 2048 PM Demand Rationalized Main Hospital SPA PEAK GEN
 33: Bronson & Catherine 417 WB on 03/20/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations				↖	↔		↖	↕			↕	↗
Traffic Volume (vph)	0	0	0	792	492	269	269	707	0	0	734	159
Future Volume (vph)	0	0	0	792	492	269	269	707	0	0	734	159
Satd. Flow (prot)	0	0	0	1458	4312	0	1695	3390	0	0	3248	0
Flt Permitted				0.950	0.988		0.116					
Satd. Flow (perm)	0	0	0	1458	4312	0	207	3390	0	0	3248	0
Satd. Flow (RTOR)					110						28	
Lane Group Flow (vph)	0	0	0	539	1014	0	269	707	0	0	893	0
Turn Type				Perm	NA		pm+pt	NA			NA	
Protected Phases					8		5	2			6	
Permitted Phases				8			2					
Detector Phase				8	8		5	2			6	
Switch Phase												
Minimum Initial (s)				10.0	10.0		5.0	10.0			10.0	
Minimum Split (s)				25.9	25.9		11.0	25.1			25.1	
Total Split (s)				42.0	42.0		18.0	53.0			35.0	
Total Split (%)				44.2%	44.2%		18.9%	55.8%			36.8%	
Yellow Time (s)				3.3	3.3		3.3	3.3			3.3	
All-Red Time (s)				2.6	2.6		2.7	2.8			2.8	
Lost Time Adjust (s)				0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)				5.9	5.9		6.0	6.1			6.1	
Lead/Lag							Lead				Lag	
Lead-Lag Optimize?							Yes				Yes	
Recall Mode				None	None		None	C-Min			C-Min	
Act Effct Green (s)				36.3	36.3		46.8	46.7			28.3	
Actuated g/C Ratio				0.38	0.38		0.49	0.49			0.30	
v/c Ratio				0.97	0.59		0.91	0.42			0.90	
Control Delay				61.3	22.4		63.6	23.5			44.7	
Queue Delay				23.7	0.0		0.0	3.3			37.3	
Total Delay				85.0	22.4		63.6	26.8			82.0	
LOS				F	C		E	C			F	
Approach Delay					44.1			37.0			82.0	
Approach LOS					D			D			F	
Queue Length 50th (m)				111.0	50.5		46.8	64.6			79.4	
Queue Length 95th (m)				#187.7	64.7		#81.0	74.7			#114.0	
Internal Link Dist (m)		151.3			165.9			71.3			237.2	
Turn Bay Length (m)												
Base Capacity (vph)				558	1717		294	1673			1007	
Starvation Cap Reductn				0	0		0	843			0	
Spillback Cap Reductn				47	50		0	0			176	
Storage Cap Reductn				0	0		0	0			0	
Reduced v/c Ratio				1.05	0.61		0.91	0.85			1.07	

Intersection Summary
 Cycle Length: 95
 Actuated Cycle Length: 95
 Offset: 59 (62%), 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: 52.0

Intersection LOS: D

Intersection Capacity Utilization 112.0%

ICU Level of Service H

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 33: Bronson & Catherine 417 WB on





Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	136	387	0	880	1455	0
Future Volume (vph)	136	387	0	880	1455	0
Satd. Flow (prot)	1695	1517	0	3390	3390	0
Flt Permitted	0.950					
Satd. Flow (perm)	1695	1491	0	3390	3390	0
Satd. Flow (RTOR)	47					
Lane Group Flow (vph)	136	387	0	880	1455	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)	10.0	10.0		10.0	10.0	
Minimum Split (s)	25.1	25.1		34.3	34.3	
Total Split (s)	30.0	30.0		65.0	65.0	
Total Split (%)	31.6%	31.6%		68.4%	68.4%	
Yellow Time (s)	3.3	3.3		3.3	3.3	
All-Red Time (s)	2.1	2.1		2.5	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.4	5.4		5.8	5.8	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None		C-Min	C-Min	
Act Effct Green (s)	26.4	26.4		57.4	57.4	
Actuated g/C Ratio	0.28	0.28		0.60	0.60	
v/c Ratio	0.29	0.86		0.43	0.71	
Control Delay	28.6	49.0		11.1	10.5	
Queue Delay	0.0	0.0		0.0	2.1	
Total Delay	28.6	49.0		11.1	12.5	
LOS	C	D		B	B	
Approach Delay	43.7			11.1	12.5	
Approach LOS	D			B	B	
Queue Length 50th (m)	18.5	56.5		46.4	76.5	
Queue Length 95th (m)	36.0	#115.6		51.2	m133.7	
Internal Link Dist (m)	81.4			50.7	71.3	
Turn Bay Length (m)	60.0					
Base Capacity (vph)	483	458		2136	2136	
Starvation Cap Reductn	0	0		0	505	
Spillback Cap Reductn	14	0		95	0	
Storage Cap Reductn	0	0		0	0	
Reduced v/c Ratio	0.29	0.84		0.43	0.89	

Intersection Summary

Cycle Length: 95
 Actuated Cycle Length: 95
 Offset: 91 (96%), 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: 17.8

Intersection LOS: B

Intersection Capacity Utilization 112.0%

ICU Level of Service H

Analysis Period (min) 15

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.

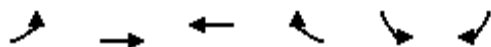
Splits and Phases: 34: Bronson & 417 EB off



Lanes, Volumes, Timings 39: 2048 PM Demand Rationalized Main Hospital SPA PEAK GEN
 Prince of Wales & Road B

03/20/2023

(dual WBT)



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø9
Lane Configurations							
Traffic Volume (vph)	26	675	810	23	153	50	
Future Volume (vph)	26	675	810	23	153	50	
Satd. Flow (prot)	1695	1784	3373	0	1695	1517	
Flt Permitted	0.293				0.950		
Satd. Flow (perm)	523	1784	3373	0	1629	1424	
Satd. Flow (RTOR)						50	
Lane Group Flow (vph)	26	675	833	0	153	50	
Turn Type	pm+pt	NA	NA		Perm	Perm	
Protected Phases	5	2	6				9
Permitted Phases	2				4	4	
Detector Phase	5	2	6		4	4	
Switch Phase							
Minimum Initial (s)	5.0	10.0	10.0		10.0	10.0	1.0
Minimum Split (s)	10.3	23.3	23.3		23.3	23.3	15.0
Total Split (s)	12.0	97.0	85.0		28.0	28.0	15.0
Total Split (%)	8.6%	69.3%	60.7%		20.0%	20.0%	11%
Yellow Time (s)	3.3	3.3	3.3		3.3	3.3	2.0
All-Red Time (s)	2.0	2.0	2.0		2.0	2.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.3	5.3	5.3		5.3	5.3	
Lead/Lag	Lead		Lag				
Lead-Lag Optimize?	Yes		Yes				
Recall Mode	None	C-Min	C-Min		None	None	None
Act Effct Green (s)	108.1	108.1	101.0		18.3	18.3	
Actuated g/C Ratio	0.77	0.77	0.72		0.13	0.13	
v/c Ratio	0.06	0.49	0.34		0.72	0.22	
Control Delay	6.2	8.9	9.3		76.4	15.0	
Queue Delay	0.0	0.0	0.0		0.0	0.0	
Total Delay	6.2	8.9	9.3		76.4	15.0	
LOS	A	A	A		E	B	
Approach Delay		8.8	9.3		61.3		
Approach LOS		A	A		E		
Queue Length 50th (m)	1.3	52.8	41.8		41.2	0.0	
Queue Length 95th (m)	6.1	137.7	m101.8		61.7	11.4	
Internal Link Dist (m)		198.2	95.9		17.7		
Turn Bay Length (m)	45.0						
Base Capacity (vph)	460	1383	2447		269	277	
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	0.06	0.49	0.34		0.57	0.18	

Intersection Summary

Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
 Natural Cycle: 75
 Control Type: Actuated-Coordinated

Lanes, Volumes, Timings 39: 2048 PM Demand Rationalized Main Hospital SPA PEAK GEN
 Prince of Wales & Road B 03/20/2023

(dual WBT)

Maximum V/C Ratio: 0.72

Intersection Signal Delay: 15.2 Intersection LOS: B

Intersection Capacity Utilization 57.0% ICU Level of Service B

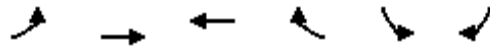
Analysis Period (min) 15

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

Splits and Phases: 39: Prince of Wales & Road B

 Ø2 (R)	 Ø9	 Ø4
97 s	15 s	28 s
 Ø5	 Ø6 (R)	
12 s	85 s	

Lanes, Volumes, Timings 2048 PM Demand Rationalized Main Hospital SPA PEAK GEN
 Prince of Wales & Road B (single WBT) 04/04/2023



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø9
Lane Configurations							
Traffic Volume (vph)	26	675	810	23	153	50	
Future Volume (vph)	26	675	810	23	153	50	
Satd. Flow (prot)	1695	1784	1784	1517	1695	1517	
Flt Permitted	0.242				0.950		
Satd. Flow (perm)	432	1784	1784	1453	1629	1359	
Satd. Flow (RTOR)						50	
Lane Group Flow (vph)	26	675	810	23	153	50	
Turn Type	pm+pt	NA	NA	Perm	Perm	Perm	
Protected Phases	5	2	6				9
Permitted Phases	2			6	4	4	
Detector Phase	5	2	6	6	4	4	
Switch Phase							
Minimum Initial (s)	5.0	10.0	10.0	10.0	10.0	10.0	1.0
Minimum Split (s)	10.3	23.3	23.3	23.3	23.3	23.3	15.0
Total Split (s)	10.3	98.0	87.7	87.7	27.0	27.0	15.0
Total Split (%)	7.4%	70.0%	62.6%	62.6%	19.3%	19.3%	11%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	2.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.3	5.3	5.3	5.3	5.3	5.3	
Lead/Lag	Lead		Lag	Lag			
Lead-Lag Optimize?	Yes		Yes	Yes			
Recall Mode	None	C-Min	C-Min	C-Min	None	None	None
Act Effct Green (s)	108.7	108.7	102.1	102.1	17.7	17.7	
Actuated g/C Ratio	0.78	0.78	0.73	0.73	0.13	0.13	
v/c Ratio	0.07	0.49	0.62	0.02	0.75	0.23	
Control Delay	5.8	8.4	11.5	6.6	80.1	15.9	
Queue Delay	0.0	0.0	0.3	0.0	0.0	0.0	
Total Delay	5.8	8.4	11.8	6.6	80.1	15.9	
LOS	A	A	B	A	F	B	
Approach Delay		8.3	11.6		64.3		
Approach LOS		A	B		E		
Queue Length 50th (m)	1.3	52.8	81.8	2.3	41.2	0.0	
Queue Length 95th (m)	5.6	127.6	m168.5	m2.0	63.5	11.8	
Internal Link Dist (m)		198.2	95.9		17.7		
Turn Bay Length (m)	45.0			35.0			
Base Capacity (vph)	386	1385	1301	1059	252	252	
Starvation Cap Reductn	0	0	122	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	0.07	0.49	0.69	0.02	0.61	0.20	

Intersection Summary

Cycle Length: 140
 Actuated Cycle Length: 140
 Offset: 38 (27%), Referenced to phase 2:EBTL and 6:WBT, Start of Green
 Natural Cycle: 100
 Control Type: Actuated-Coordinated

Lanes, Volumes, Timings 2048 PM Demand Rationalized Main Hospital SPA PEAK GEN
 Prince of Wales & Road B (single WBT) 04/04/2023

Maximum v/c Ratio: 0.75

Intersection Signal Delay: 16.4 Intersection LOS: B

Intersection Capacity Utilization 64.5% ICU Level of Service C

Analysis Period (min) 15

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

Splits and Phases: 39: Prince of Wales & Road B

Ø2 (R)	Ø9	Ø4
98 s	15 s	27 s
Ø5	Ø6 (R)	
10.3 s	87.7 s	

Intersection						
Int Delay, s/veh	0.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↘	↑↑	↑↑	↗	↘	↘
Traffic Vol, veh/h	8	517	1204	10	3	10
Future Vol, veh/h	8	517	1204	10	3	10
Conflicting Peds, #/hr	42	0	0	42	4	8
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	25	-	-	20	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	8	517	1204	10	3	10

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	1256	0	-	0	1525 652
Stage 1	-	-	-	-	1246 -
Stage 2	-	-	-	-	279 -
Critical Hdwy	4.14	-	-	-	6.84 6.94
Critical Hdwy Stg 1	-	-	-	-	5.84 -
Critical Hdwy Stg 2	-	-	-	-	5.84 -
Follow-up Hdwy	2.22	-	-	-	3.52 3.32
Pot Cap-1 Maneuver	550	-	-	-	109 411
Stage 1	-	-	-	-	234 -
Stage 2	-	-	-	-	743 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	530	-	-	-	100 394
Mov Cap-2 Maneuver	-	-	-	-	100 -
Stage 1	-	-	-	-	222 -
Stage 2	-	-	-	-	716 -

Approach	EB	WB	SB
HCM Control Delay, s	0.2	0	21.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	530	-	-	-	235
HCM Lane V/C Ratio	0.015	-	-	-	0.055
HCM Control Delay (s)	11.9	-	-	-	21.2
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection						
Int Delay, s/veh	10.8					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑	↑		↑
Traffic Vol, veh/h	0	872	865	67	0	285
Future Vol, veh/h	0	872	865	67	0	285
Conflicting Peds, #/hr	70	0	0	70	1	5
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	30	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	872	865	67	0	285

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	-	0	-
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	-	-
Pot Cap-1 Maneuver	0	-	-
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	-	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	79.1
HCM LOS			F

Minor Lane/Major Mvmt	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	-	-	-	299
HCM Lane V/C Ratio	-	-	-	0.953
HCM Control Delay (s)	-	-	-	79.1
HCM Lane LOS	-	-	-	F
HCM 95th %tile Q(veh)	-	-	-	9.5

Intersection												
Int Delay, s/veh	0.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↗			↑			↔				↖
Traffic Vol, veh/h	0	854	0	0	807	54	1	0	5	0	0	31
Future Vol, veh/h	0	854	0	0	807	54	1	0	5	0	0	31
Conflicting Peds, #/hr	8	0	6	6	0	8	1	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	854	0	0	807	54	1	0	5	0	0	31

Major/Minor	Major1		Major2		Minor1			Minor2				
Conflicting Flow All	-	0	0	-	-	0	1711	1729	860	-	-	843
Stage 1	-	-	-	-	-	-	860	860	-	-	-	-
Stage 2	-	-	-	-	-	-	851	869	-	-	-	-
Critical Hdwy	-	-	-	-	-	-	7.12	6.52	6.22	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	3.518	4.018	3.318	-	-	3.318
Pot Cap-1 Maneuver	0	-	-	0	-	-	71	88	356	0	0	364
Stage 1	0	-	-	0	-	-	351	373	-	0	0	-
Stage 2	0	-	-	0	-	-	355	369	-	0	0	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	-	-	-	-	65	87	354	-	-	361
Mov Cap-2 Maneuver	-	-	-	-	-	-	65	87	-	-	-	-
Stage 1	-	-	-	-	-	-	351	371	-	-	-	-
Stage 2	-	-	-	-	-	-	324	366	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	0		0		23.3		15.9	
HCM LOS					C		C	

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT	WBR	SBLn1
Capacity (veh/h)	203	-	-	-	-	361
HCM Lane V/C Ratio	0.03	-	-	-	-	0.086
HCM Control Delay (s)	23.3	-	-	-	-	15.9
HCM Lane LOS	C	-	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	-	0.3

Intersection

Int Delay, s/veh 1.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations		↗	↘	↕	↕	↗
Traffic Vol, veh/h	0	124	7	701	818	41
Future Vol, veh/h	0	124	7	701	818	41
Conflicting Peds, #/hr	0	0	10	0	0	10
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	50	-	-	50
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	9	5	29	2	2	20
Mvmt Flow	0	124	7	701	818	41

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	-	828	869
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	-	6.25	4.39
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	-	3.345	2.461
Pot Cap-1 Maneuver	0	366	672
Stage 1	0	-	-
Stage 2	0	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	-	363	666
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	20	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	666	-	363	-	-
HCM Lane V/C Ratio	0.011	-	0.342	-	-
HCM Control Delay (s)	10.5	-	20	-	-
HCM Lane LOS	B	-	C	-	-
HCM 95th %tile Q(veh)	0	-	1.5	-	-

Lanes, Volumes, Timings 2:
Prince of Wales & Road E

2048 Road E - PoW Gen Signalized

03/20/2023

(as signalized)



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø10
Lane Configurations							
Traffic Volume (vph)	86	38	7	615	818	41	
Future Volume (vph)	86	38	7	615	818	41	
Satd. Flow (prot)	1695	1517	1695	1784	1784	1517	
Flt Permitted	0.950		0.950				
Satd. Flow (perm)	1695	1517	1666	1784	1784	1379	
Satd. Flow (RTOR)							
Lane Group Flow (vph)	86	38	7	615	818	41	
Turn Type	Perm	Perm	Prot	NA	NA	Perm	
Protected Phases			5	2	6		10
Permitted Phases	4	4				6	
Detector Phase	4	4	5	2	6	6	
Switch Phase							
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	10.0	1.0
Minimum Split (s)	23.3	23.3	10.3	23.3	23.3	23.3	10.0
Total Split (s)	26.0	26.0	10.3	94.0	83.7	83.7	10.0
Total Split (%)	20.0%	20.0%	7.9%	72.3%	64.4%	64.4%	8%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	2.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.3	5.3	5.3	5.3	5.3	5.3	
Lead/Lag			Lead		Lag	Lag	
Lead-Lag Optimize?			Yes		Yes	Yes	
Recall Mode	None	None	None	Min	Min	Min	None
Act Effct Green (s)	12.7	12.7	5.8	46.5	45.4	45.4	
Actuated g/C Ratio	0.19	0.19	0.09	0.71	0.69	0.69	
v/c Ratio	0.26	0.13	0.05	0.49	0.66	0.04	
Control Delay	32.2	31.4	40.9	8.1	13.3	6.8	
Queue Delay	0.0	0.0	0.0	0.0	0.1	0.0	
Total Delay	32.2	31.4	40.9	8.1	13.3	6.8	
LOS	C	C	D	A	B	A	
Approach Delay	31.9			8.5	13.0		
Approach LOS	C			A	B		
Queue Length 50th (m)	6.8	3.0	0.6	29.0	46.7	1.3	
Queue Length 95th (m)	34.9	18.7	6.5	89.6	190.6	8.5	
Internal Link Dist (m)	165.3			455.5	63.5		
Turn Bay Length (m)	50.0		50.0			50.0	
Base Capacity (vph)	622	557	150	1683	1653	1278	
Starvation Cap Reductn	0	0	0	0	98	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.14	0.07	0.05	0.37	0.53	0.03	

Intersection Summary

Cycle Length: 130
 Actuated Cycle Length: 65.5
 Natural Cycle: 90
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.66

Lanes, Volumes, Timings 2: Prince of
Wales & Road E (as signalized)

2048 Road E - PoW Gen Signalized
03/20/2023

Intersection Signal Delay: 12.7
Intersection Capacity Utilization 62.6%
Analysis Period (min) 15

Intersection LOS: B
ICU Level of Service B

Splits and Phases: 2: Prince of Wales & Road E



Intersection												
Int Delay, s/veh	7.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔			↔			↔	
Traffic Vol, veh/h	0	101	53	77	77	5	58	0	311	0	0	5
Future Vol, veh/h	0	101	53	77	77	5	58	0	311	0	0	5
Conflicting Peds, #/hr	10	0	10	10	0	10	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	101	53	77	77	5	58	0	311	0	0	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	92	0	0	164	0	0	331	384	87	295	408	51
Stage 1	-	-	-	-	-	-	138	138	-	244	244	-
Stage 2	-	-	-	-	-	-	193	246	-	51	164	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1501	-	-	1412	-	-	599	548	954	635	531	1006
Stage 1	-	-	-	-	-	-	851	781	-	738	703	-
Stage 2	-	-	-	-	-	-	790	701	-	956	761	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	1488	-	-	1400	-	-	565	508	946	404	492	997
Mov Cap-2 Maneuver	-	-	-	-	-	-	565	508	-	404	492	-
Stage 1	-	-	-	-	-	-	844	775	-	732	657	-
Stage 2	-	-	-	-	-	-	740	655	-	642	755	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0			3.8			12.4			8.6		
HCM LOS							B			A		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	855	1488	-	-	1400	-	-	997
HCM Lane V/C Ratio	0.432	-	-	-	0.055	-	-	0.005
HCM Control Delay (s)	12.4	0	-	-	7.7	0.1	-	8.6
HCM Lane LOS	B	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	2.2	0	-	-	0.2	-	-	0

Intersection						
Int Delay, s/veh	7.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↔		↑	↗		↖↑
Traffic Vol, veh/h	159	80	24	22	43	41
Future Vol, veh/h	159	80	24	22	43	41
Conflicting Peds, #/hr	0	0	0	15	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	0	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	159	80	24	22	43	41

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	146	39	0	0	61	0
Stage 1	39	-	-	-	-	-
Stage 2	107	-	-	-	-	-
Critical Hdwy	6.63	6.23	-	-	4.13	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	-	-	2.219	-
Pot Cap-1 Maneuver	839	1032	-	-	1541	-
Stage 1	983	-	-	-	-	-
Stage 2	906	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	804	1019	-	-	1521	-
Mov Cap-2 Maneuver	804	-	-	-	-	-
Stage 1	970	-	-	-	-	-
Stage 2	880	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.7	0	3.8
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	865	1521
HCM Lane V/C Ratio	-	-	0.276	0.028
HCM Control Delay (s)	-	-	10.7	7.4
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	1.1	0.1

Intersection						
Int Delay, s/veh	0.3					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	↘↗			↔↔	↔↔	
Traffic Vol, veh/h	0	4	4	46	200	0
Future Vol, veh/h	0	4	4	46	200	0
Conflicting Peds, #/hr	0	0	5	0	0	5
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	100	100	100	2	2	100
Mvmt Flow	0	4	4	46	200	0

Major/Minor	Minor2	Major1		Major2	
Conflicting Flow All	236	105	205	0	0
Stage 1	205	-	-	-	-
Stage 2	31	-	-	-	-
Critical Hdwy	8.8	8.9	6.1	-	-
Critical Hdwy Stg 1	7.8	-	-	-	-
Critical Hdwy Stg 2	7.8	-	-	-	-
Follow-up Hdwy	4.5	4.3	3.2	-	-
Pot Cap-1 Maneuver	519	687	869	-	-
Stage 1	582	-	-	-	-
Stage 2	763	-	-	-	-
Platoon blocked, %				-	-
Mov Cap-1 Maneuver	512	684	865	-	-
Mov Cap-2 Maneuver	512	-	-	-	-
Stage 1	577	-	-	-	-
Stage 2	760	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.3	0.7	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	865	-	684	-	-
HCM Lane V/C Ratio	0.005	-	0.006	-	-
HCM Control Delay (s)	9.2	0	10.3	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection						
Int Delay, s/veh	5.9					
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	20	14	0	26	5
Future Vol, veh/h	0	20	14	0	26	5
Conflicting Peds, #/hr	0	10	10	0	10	10
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	20	14	0	26	5

Major/Minor	Major1	Major2	Minor1		
Conflicting Flow All	0	0	30	0	58
Stage 1	-	-	-	-	20
Stage 2	-	-	-	-	38
Critical Hdwy	-	-	4.12	-	6.42
Critical Hdwy Stg 1	-	-	-	-	5.42
Critical Hdwy Stg 2	-	-	-	-	5.42
Follow-up Hdwy	-	-	2.218	-	3.518
Pot Cap-1 Maneuver	-	-	1583	-	949
Stage 1	-	-	-	-	1003
Stage 2	-	-	-	-	984
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	-	-	1570	-	925
Mov Cap-2 Maneuver	-	-	-	-	925
Stage 1	-	-	-	-	995
Stage 2	-	-	-	-	967

Approach	EB	WB	NB
HCM Control Delay, s	0	7.3	9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	940	-	-	1570	-
HCM Lane V/C Ratio	0.033	-	-	0.009	-
HCM Control Delay (s)	9	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Intersection Delay, s/veh	8.8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	27	51	10	2	118	112	1	8	0	63	86	35
Future Vol, veh/h	27	51	10	2	118	112	1	8	0	63	86	35
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	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	27	51	10	2	118	112	1	8	0	63	86	35
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.3	8.8	8	9.1
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	11%	31%	1%	34%
Vol Thru, %	89%	58%	51%	47%
Vol Right, %	0%	11%	48%	19%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	9	88	232	184
LT Vol	1	27	2	63
Through Vol	8	51	118	86
RT Vol	0	10	112	35
Lane Flow Rate	9	88	232	184
Geometry Grp	1	1	1	1
Degree of Util (X)	0.012	0.113	0.272	0.235
Departure Headway (Hd)	4.894	4.639	4.214	4.606
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	730	773	854	780
Service Time	2.932	2.666	2.233	2.634
HCM Lane V/C Ratio	0.012	0.114	0.272	0.236
HCM Control Delay	8	8.3	8.8	9.1
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0	0.4	1.1	0.9

Intersection	
Intersection Delay, s/veh	8.2
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	100	0	30	0	0	26	30	100	0	20	52	52
Future Vol, veh/h	100	0	30	0	0	26	30	100	0	20	52	52
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	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	100	0	30	0	0	26	30	100	0	20	52	52
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.5	7.2	8.4	8
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	23%	77%	0%	16%
Vol Thru, %	77%	0%	0%	42%
Vol Right, %	0%	23%	100%	42%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	130	130	26	124
LT Vol	30	100	0	20
Through Vol	100	0	0	52
RT Vol	0	30	26	52
Lane Flow Rate	130	130	26	124
Geometry Grp	1	1	1	1
Degree of Util (X)	0.162	0.164	0.029	0.145
Departure Headway (Hd)	4.473	4.546	4.055	4.221
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	803	790	883	852
Service Time	2.489	2.564	2.078	2.238
HCM Lane V/C Ratio	0.162	0.165	0.029	0.146
HCM Control Delay	8.4	8.5	7.2	8
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.6	0.6	0.1	0.5

Intersection	
Intersection Delay, s/veh	8
Intersection LOS	A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑		↙	↑	↘	
Traffic Vol, veh/h	93	39	45	90	41	62
Future Vol, veh/h	93	39	45	90	41	62
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	93	39	45	90	41	62
Number of Lanes	2	0	1	1	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	
Opposing Lanes	2	2	0
Conflicting Approach Left		NB	EB
Conflicting Lanes Left	0	1	2
Conflicting Approach Right	NB		WB
Conflicting Lanes Right	1	0	2
HCM Control Delay	7.8	8.4	7.9
HCM LOS	A	A	A

Lane	NBLn1	EBLn1	EBLn2	WBLn1	WBLn2
Vol Left, %	40%	0%	0%	100%	0%
Vol Thru, %	0%	100%	44%	0%	100%
Vol Right, %	60%	0%	56%	0%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	103	62	70	45	90
LT Vol	41	0	0	45	0
Through Vol	0	62	31	0	90
RT Vol	62	0	39	0	0
Lane Flow Rate	103	62	70	45	90
Geometry Grp	2	7	7	7	7
Degree of Util (X)	0.123	0.084	0.088	0.066	0.12
Departure Headway (Hd)	4.282	4.898	4.507	5.391	4.889
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	842	736	800	668	738
Service Time	2.287	2.598	2.207	3.091	2.589
HCM Lane V/C Ratio	0.122	0.084	0.087	0.067	0.122
HCM Control Delay	7.9	8	7.6	8.5	8.3
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.4	0.3	0.3	0.2	0.4

**Appendix L:
Summary Queueing Analysis and SimTraffic Outputs**

Critical Movements Queue Length Summary from SimTraffic and Synchro Softwares

Intersection			Weekday AM Peak (PM Peak of Street) [PM Peak of Generator]						
			Capacity (meters)	2028 Opening Day			2048 Full Buildout		
				SimTraffic 50 th %	SimTraffic 95 th %	Synchro 95 th % ₂	SimTraffic 50 th %	SimTraffic 95 th %	Synchro 95 th %
Signalized Intersections									
Road A/Champagne /Carling ₁	WBL	75 m	36 (16) [12]	62 (48) [33]	46 (24) [24]	46 (19) [23]	72 (49) [52]	45 (33) [35]	
Preston/Carling ₁	WBL	120 m	45 (68) [72]	76 (104) [118]	#89 (m#108) [#138]	57 (70) [59]	94 (105) [96]	#115 (m#103) [#128]	
	NBL	130 m	50 (48) [55]	95 (84) [96]	#44 (#117) [#103]	46 (49) [46]	87 (86) [78]	#33 (#98) [#96]	
	NBTR	130 m	84 (32) [43]	127 (61) [88]	112 (91) [77]	79 (37) [38]	124 (75) [73]	102 (34) [89]	
Preston/Prince of Wales	EBL	75 m	81 (64) [77]	107 (99) [106]	102 (69) [62]	79 (71) [77]	108 (104) [106]	80 (73) [72]	
	SBR	130 m	46 (74) [88]	88 (109) [124]	m134 (m167) [m148]	54 (78) [81]	97 (114) [122]	m148 (m137) [m162]	
	SBTL	130 m	40 (83) [41]	71 (122) [76]	m70 (m#118) [m73]	40 (63) [50]	65 (102) [84]	m57 (m#139) [m68]	
Road B/Prince of Wales	Dual Receiving WBT	190 m ₃	21 (23) [22]	48 (52) [49]	69 (m95) [m91]	24 (26) [26]	52 (56) [56]	82 (m118) [m102]	
	Single Receiving WBT	190 m	31 (80) [60]	91 (155) [121]	m123 (m197) [m155]	47 (88) [74]	120 (172) [148]	m98 (m196) [m169]	

1. Road A/Champagne/Carling and Preston/Carling were both modelled with a time separated bi-directional cycling crossing of the south leg and the addition of an eastbound right-turn lane. This scenario is more conservative than a scenario that assumes uni-directional cross-rides only.
2. m = Volume for 95th percentile queue is metered by upstream signal; # = 95th percentile volume exceeds capacity, queue may be longer
3. 190 meters measured to Carling/Preston. Acknowledged that Navy/RIRO is between, but low implication of spillback to there.

2028 Peak AM SimTraffic Results

Queuing and Blocking Report
Baseline

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Intersection: 10: Carling & Parkdale

Movement	EB	EB	EB	WB	WB	WB	SB
Directions Served	L	T	T	T	T	R	LR
Maximum Queue (m)	62.8	214.6	206.9	64.9	62.5	33.3	226.1
Average Queue (m)	25.7	99.0	91.4	26.8	25.6	8.6	94.0
95th Queue (m)	56.6	230.1	225.5	54.2	55.4	22.6	245.0
Link Distance (m)		225.6	225.6	174.6	174.6		272.5
Upstream Blk Time (%)		25	18				16
Queuing Penalty (veh)		0	0				38
Storage Bay Dist (m)	155.0					80.0	
Storage Blk Time (%)		26			0		
Queuing Penalty (veh)		37			0		

Intersection: 11: Carling & Civic

Movement	EB	EB	EB	WB	WB	SB
Directions Served	L	T	T	T	T	LR
Maximum Queue (m)	25.5	168.0	167.1	39.6	42.9	43.4
Average Queue (m)	5.1	76.6	77.2	16.5	18.3	18.1
95th Queue (m)	17.9	190.8	190.7	34.0	39.2	45.9
Link Distance (m)		174.6	174.6	189.4	189.4	49.6
Upstream Blk Time (%)		29	29			17
Queuing Penalty (veh)		174	175			0
Storage Bay Dist (m)	90.0					
Storage Blk Time (%)		31				
Queuing Penalty (veh)		16				

Intersection: 12: Carling & Melrose

Movement	EB	EB	EB	WB	WB	SB
Directions Served	L	T	T	T	T	LR
Maximum Queue (m)	9.6	175.0	173.4	10.2	9.3	74.2
Average Queue (m)	1.4	71.3	71.4	0.5	0.7	20.1
95th Queue (m)	6.7	219.4	219.2	4.7	5.5	62.7
Link Distance (m)		189.4	189.4	239.5	239.5	211.1
Upstream Blk Time (%)		33	32			
Queuing Penalty (veh)		191	183			
Storage Bay Dist (m)	25.0					
Storage Blk Time (%)		37			0	
Queuing Penalty (veh)		9			0	

Queuing and Blocking Report
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Intersection: 13: Maple/Old Irvine & Carling

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	SB
Directions Served	L	T	T	R	L	T	T	R	LTR	LTR
Maximum Queue (m)	18.9	225.4	226.8	22.0	27.8	53.2	38.8	2.4	106.5	23.8
Average Queue (m)	3.2	125.5	128.2	3.1	8.9	20.2	15.5	0.2	38.0	5.2
95th Queue (m)	14.0	284.4	284.1	14.4	21.9	40.9	33.2	1.4	124.3	21.2
Link Distance (m)		239.5	239.5			191.1	191.1		166.9	225.8
Upstream Blk Time (%)		38	38						8	
Queuing Penalty (veh)		217	218						6	
Storage Bay Dist (m)	20.0			15.0	45.0			25.0		
Storage Blk Time (%)	0	54	55	0	0	0	2			
Queuing Penalty (veh)	0	15	27	1	1	0	0			

Intersection: 14: Carling & Bayswater

Movement	EB	EB	WB
Directions Served	T	T	T
Maximum Queue (m)	194.0	189.4	1.8
Average Queue (m)	109.1	97.6	0.1
95th Queue (m)	244.4	245.7	1.3
Link Distance (m)	191.1	191.1	114.2
Upstream Blk Time (%)	44	43	
Queuing Penalty (veh)	226	219	
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 15: Carling & Sherwood

Movement	EB	EB	EB	WB	WB	WB	SB	SB
Directions Served	L	T	T	T	T	R	L	R
Maximum Queue (m)	34.7	115.9	101.2	27.4	31.3	16.6	71.6	19.5
Average Queue (m)	34.1	107.1	65.6	10.3	12.9	6.2	34.9	2.6
95th Queue (m)	39.9	139.2	156.0	22.4	27.0	15.0	60.1	13.4
Link Distance (m)		114.2	114.2	143.4	143.4		138.3	
Upstream Blk Time (%)		82	50					
Queuing Penalty (veh)		62	38					
Storage Bay Dist (m)	30.0					90.0		15.0
Storage Blk Time (%)	98	0					42	0
Queuing Penalty (veh)	455	0					2	0

Intersection: 16: Road A/Champagne & Carling

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	T	R	L	TR	L	TR
Maximum Queue (m)	35.2	50.3	51.5	35.6	66.8	79.5	66.1	35.5	27.8	30.0	37.2	90.1
Average Queue (m)	5.5	15.4	16.1	7.8	36.2	17.4	19.0	5.5	12.7	13.0	31.4	27.2
95th Queue (m)	19.8	35.1	36.4	23.7	62.3	50.1	50.8	21.1	25.0	26.4	42.0	72.6
Link Distance (m)		143.4	143.4			103.7	103.7		58.9	58.9		481.7
Upstream Blk Time (%)						0	0					
Queuing Penalty (veh)						0	0					
Storage Bay Dist (m)	55.0			75.0	61.0			35.0			30.0	
Storage Blk Time (%)	0	0	0		3	0	4	0			21	0
Queuing Penalty (veh)	1	0	0		11	0	3	0			19	0

Intersection: 17: Carling & Trillium MUP

Movement	EB	EB	WB	WB
Directions Served	T	T	T	T
Maximum Queue (m)	61.4	60.2	78.0	78.3
Average Queue (m)	22.9	21.0	39.2	40.4
95th Queue (m)	49.2	47.2	70.4	72.3
Link Distance (m)	103.7	103.7	93.8	93.8
Upstream Blk Time (%)	0	0	0	0
Queuing Penalty (veh)	2	2	0	0
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

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Intersection: 18: Preston & Carling

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	R	L	T	T	R	L	T	TR	L
Maximum Queue (m)	60.7	82.7	73.9	62.8	83.6	58.2	61.0	21.7	98.7	123.8	139.1	42.3
Average Queue (m)	16.7	36.3	29.6	24.5	45.2	31.4	34.3	8.2	50.3	83.9	82.9	37.8
95th Queue (m)	38.2	68.2	62.5	51.6	76.4	51.8	55.4	17.6	94.8	126.5	142.4	52.3
Link Distance (m)		93.8	93.8			165.0	165.0		129.7	129.7	129.7	
Upstream Blk Time (%)		1	1	0					0	1	2	
Queuing Penalty (veh)		7	6	0					0	5	9	
Storage Bay Dist (m)	70.0			90.0	120.0			95.0				35.0
Storage Blk Time (%)		2	1	0								37
Queuing Penalty (veh)		3	3	0								119

Intersection: 18: Preston & Carling

Movement	SB	B57
Directions Served	TR	T
Maximum Queue (m)	78.9	316.9
Average Queue (m)	69.6	169.3
95th Queue (m)	84.1	411.4
Link Distance (m)	50.0	416.8
Upstream Blk Time (%)	66	12
Queuing Penalty (veh)	0	0
Storage Bay Dist (m)		
Storage Blk Time (%)	50	
Queuing Penalty (veh)	55	

Intersection: 19: Carling & Rochester

Movement	EB	EB	WB	WB	SB
Directions Served	T	T	T	R	R
Maximum Queue (m)	26.2	22.2	11.3	18.6	29.5
Average Queue (m)	4.2	3.8	0.5	1.9	12.2
95th Queue (m)	44.2	43.1	5.8	10.0	22.2
Link Distance (m)	165.0	165.0	104.1		396.1
Upstream Blk Time (%)	2	2			
Queuing Penalty (veh)	10	10			
Storage Bay Dist (m)				30.0	
Storage Blk Time (%)			0	0	
Queuing Penalty (veh)			0	0	

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Intersection: 20: Carling & Booth

Movement	EB	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	T	R	L	R
Maximum Queue (m)	56.4	86.8	73.7	146.6	37.5	107.6	37.5
Average Queue (m)	33.3	32.3	30.8	83.9	20.7	49.5	25.8
95th Queue (m)	56.4	68.1	63.9	147.8	45.2	104.1	46.0
Link Distance (m)		104.1	104.1	302.7		229.2	
Upstream Blk Time (%)		3	2			2	
Queuing Penalty (veh)		15	15			0	
Storage Bay Dist (m)	50.0				30.0		30.0
Storage Blk Time (%)	3	3		32	0	22	2
Queuing Penalty (veh)	16	12		60	2	37	3

Intersection: 21: Bronson & Carling/Glebe

Movement	EB	EB	EB	B1	B1	NB	NB	NB	SB	SB
Directions Served	L	LT	R	T	T	L	L	TR	T	TR
Maximum Queue (m)	47.8	99.1	88.2	182.9	164.8	57.4	401.5	407.3	100.2	109.8
Average Queue (m)	43.2	75.2	42.8	54.8	36.0	55.9	393.0	391.3	62.6	71.8
95th Queue (m)	55.6	111.9	79.7	195.6	178.1	70.1	405.9	430.6	95.1	106.0
Link Distance (m)		71.5	71.5	302.7	302.7		390.8	390.8	332.5	332.5
Upstream Blk Time (%)		37	2	4	3		34	26		
Queuing Penalty (veh)		219	14	21	19		306	234		
Storage Bay Dist (m)	40.0					50.0				
Storage Blk Time (%)	27	54				78	2			
Queuing Penalty (veh)	95	135				223	5			

Intersection: 22: Parkdale & 417 WB on/off

Movement	WB	WB	NB	NB	SB
Directions Served	L	TR	L	T	TR
Maximum Queue (m)	114.2	127.4	59.4	49.7	196.2
Average Queue (m)	52.0	48.8	30.8	18.9	177.2
95th Queue (m)	101.7	97.8	56.4	40.2	227.0
Link Distance (m)	152.4	152.4	55.6	55.6	183.6
Upstream Blk Time (%)	4	2	2	0	58
Queuing Penalty (veh)	0	0	5	0	0
Storage Bay Dist (m)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 23: Parkdale & 417 EB on/off

Movement	EB	EB	NB	NB	SB	SB
Directions Served	LT	R	T	TR	L	T
Maximum Queue (m)	98.1	66.7	96.4	37.5	60.7	51.8
Average Queue (m)	40.8	20.1	69.8	35.1	50.4	21.4
95th Queue (m)	81.5	51.1	121.5	45.9	77.2	48.5
Link Distance (m)	121.0		90.9		55.6	55.6
Upstream Blk Time (%)	4		11		15	7
Queuing Penalty (veh)	0		70		52	23
Storage Bay Dist (m)		75.0		30.0		
Storage Blk Time (%)	1	5	1	39		
Queuing Penalty (veh)	1	10	4	57		

Intersection: 24: Parkdale & Sherwood

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	97.1	45.9	98.3	88.8
Average Queue (m)	32.8	16.3	34.4	47.7
95th Queue (m)	87.8	36.0	76.0	85.7
Link Distance (m)	236.5	344.4	294.1	90.9
Upstream Blk Time (%)				8
Queuing Penalty (veh)				34
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 25: Parkdale & Ruskin

Movement	EB	WB	WB	NB	SB
Directions Served	LTR	L	TR	LTR	LTR
Maximum Queue (m)	73.3	15.1	23.6	54.1	178.7
Average Queue (m)	25.6	3.8	10.6	17.3	53.9
95th Queue (m)	94.2	13.7	19.0	41.2	194.9
Link Distance (m)	236.1		243.9	272.5	294.1
Upstream Blk Time (%)	3				9
Queuing Penalty (veh)	0				33
Storage Bay Dist (m)		40.0			
Storage Blk Time (%)					
Queuing Penalty (veh)					

Queuing and Blocking Report
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Intersection: 27: Bayswater & Sherwood

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	20.5	16.8	7.0	18.8
Average Queue (m)	9.7	4.9	2.1	9.6
95th Queue (m)	17.7	11.1	7.4	15.9
Link Distance (m)	602.2	138.3		93.6
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 29: Navy/Navy Parking Access & Prince of Wales

Movement	EB	WB	NB	SB
Directions Served	TR	LTR	LTR	R
Maximum Queue (m)	96.0	48.7	6.4	8.5
Average Queue (m)	44.3	2.9	0.2	1.3
95th Queue (m)	109.9	25.3	2.5	6.2
Link Distance (m)	92.6	85.9	39.1	34.1
Upstream Blk Time (%)	5	0		
Queuing Penalty (veh)	44	3		
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 30: Prince of Wales & Preston

Movement	EB	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	L	TR	T	R	LTR	LT	R
Maximum Queue (m)	52.4	92.9	49.4	154.3	52.5	8.4	83.7	104.3
Average Queue (m)	40.2	80.7	14.3	63.2	21.8	0.8	39.7	46.3
95th Queue (m)	67.8	107.3	35.9	131.8	64.2	4.7	70.8	88.2
Link Distance (m)		85.9	85.9	178.4		18.1	129.7	129.7
Upstream Blk Time (%)		18		1		0		0
Queuing Penalty (veh)		86		0		0		0
Storage Bay Dist (m)	45.0				45.0			
Storage Blk Time (%)	3	35		33	2			
Queuing Penalty (veh)	10	131		105	3			

Intersection: 31: Rochester & 417 WB on/Raymond

Movement	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	T	T	R
Maximum Queue (m)	52.3	48.9	40.4	41.8	35.3	35.2
Average Queue (m)	26.2	22.6	15.5	17.5	14.4	16.2
95th Queue (m)	44.6	39.6	29.3	34.6	28.2	28.7
Link Distance (m)	102.6	102.6	82.9	82.9	166.0	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)						35.0
Storage Blk Time (%)					0	0
Queuing Penalty (veh)					1	0

Intersection: 32: Rochester & 417 EB off/Orangeville

Movement	EB	EB	NB	NB	SB	SB
Directions Served	LT	TR	T	TR	LT	T
Maximum Queue (m)	63.9	54.7	30.5	42.1	56.0	40.0
Average Queue (m)	33.4	24.9	9.0	18.5	30.2	5.9
95th Queue (m)	52.7	43.6	22.1	35.4	48.1	22.9
Link Distance (m)	116.5	116.5	101.7	101.7	82.9	82.9
Upstream Blk Time (%)					0	
Queuing Penalty (veh)					0	
Storage Bay Dist (m)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 33: Bronson & Catherine 417 WB on

Movement	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	LT	T	TR	L	T	T	T	TR
Maximum Queue (m)	111.0	106.2	93.1	77.7	85.2	73.4	73.8	86.7	84.5
Average Queue (m)	64.6	67.8	45.9	34.0	51.9	44.9	45.4	48.0	42.8
95th Queue (m)	104.2	103.9	83.0	62.9	87.8	70.5	71.7	94.5	89.6
Link Distance (m)	174.4	174.4	174.4	174.4	81.8	81.8	81.8	236.0	236.0
Upstream Blk Time (%)	2	2	0	0	2	0	0	1	1
Queuing Penalty (veh)	0	0	0	0	11	0	0	0	0
Storage Bay Dist (m)									
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 34: Bronson & 417 EB off

Movement	EB	EB	NB	NB	SB	SB
Directions Served	L	R	T	T	T	T
Maximum Queue (m)	98.8	67.5	67.9	67.5	82.5	81.8
Average Queue (m)	59.5	48.3	35.3	49.0	42.4	39.5
95th Queue (m)	101.2	77.2	69.4	77.6	80.2	79.3
Link Distance (m)	91.1		57.4	57.4	81.8	81.8
Upstream Blk Time (%)	7		3	8	4	3
Queuing Penalty (veh)	0		19	50	19	13
Storage Bay Dist (m)		60.0				
Storage Blk Time (%)	6	7				
Queuing Penalty (veh)	22	23				

Intersection: 35: Bronson & Plymouth/Imperial Chamberlain

Movement	NB	NB	SB	SB	SB
Directions Served	LT	TR	L	T	TR
Maximum Queue (m)	337.3	341.3	37.1	57.6	35.2
Average Queue (m)	270.9	292.6	24.1	8.3	3.4
95th Queue (m)	357.0	364.8	39.6	41.2	24.0
Link Distance (m)	332.5	332.5		57.4	57.4
Upstream Blk Time (%)	6	12		5	2
Queuing Penalty (veh)	43	80		39	17
Storage Bay Dist (m)			30.0		
Storage Blk Time (%)			12		
Queuing Penalty (veh)			60		

Intersection: 36: Bronson & Madawaska/Fifth

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	LT	TR	LT	TR
Maximum Queue (m)	35.4	82.8	210.7	213.2	86.7	87.1
Average Queue (m)	10.3	34.9	196.4	196.9	36.4	39.0
95th Queue (m)	30.0	69.9	239.5	239.1	74.6	76.7
Link Distance (m)	182.2	118.1	195.0	195.0	390.8	390.8
Upstream Blk Time (%)		2	82	83		
Queuing Penalty (veh)		0	0	0		
Storage Bay Dist (m)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Queuing and Blocking Report
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Intersection: 37: Road L & Road M/Road A

Movement	EB	NB
Directions Served	T	R
Maximum Queue (m)	2.2	1.4
Average Queue (m)	0.1	0.1
95th Queue (m)	1.3	1.1
Link Distance (m)	34.2	24.1
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 38: Maple & Winding/Road D

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	33.2	6.6	37.4	20.1
Average Queue (m)	9.0	2.1	10.8	10.0
95th Queue (m)	30.7	6.4	38.3	16.6
Link Distance (m)	183.3	13.9	131.4	166.9
Upstream Blk Time (%)		1	1	
Queuing Penalty (veh)		0	0	
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 39: Prince of Wales & Road B

Movement	EB	EB	B86	WB	WB	SB	SB
Directions Served	L	T	T	T	TR	L	R
Maximum Queue (m)	48.7	185.4	20.4	61.2	42.4	21.2	13.5
Average Queue (m)	10.8	60.8	1.6	21.2	12.0	8.8	4.6
95th Queue (m)	33.2	141.2	19.0	47.9	36.9	19.6	12.6
Link Distance (m)		205.7	72.5	92.6		20.9	20.9
Upstream Blk Time (%)		1	1	0		3	0
Queuing Penalty (veh)		14	6	0		1	0
Storage Bay Dist (m)	45.0				35.0		
Storage Blk Time (%)	0	10		2	0		
Queuing Penalty (veh)	0	6		8	1		

Queuing and Blocking Report
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Intersection: 40: Prince of Wales & Road E

Movement	EB	NB	NB	SB
Directions Served	R	L	T	R
Maximum Queue (m)	15.2	10.2	43.8	3.8
Average Queue (m)	4.7	1.5	2.2	0.1
95th Queue (m)	12.0	7.0	37.7	2.3
Link Distance (m)	167.0		583.3	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)		50.0		50.0
Storage Blk Time (%)			1	
Queuing Penalty (veh)			0	

Intersection: 41: Road B & Road A

Movement	EB	EB	WB	WB	NB
Directions Served	T	TR	L	T	LR
Maximum Queue (m)	10.4	19.2	23.1	18.8	15.0
Average Queue (m)	2.4	10.3	9.3	8.6	8.8
95th Queue (m)	9.1	16.6	18.0	16.2	13.5
Link Distance (m)	51.4	51.4	40.4	40.4	45.7
Upstream Blk Time (%)			0		
Queuing Penalty (veh)			0		
Storage Bay Dist (m)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 42: A Parking Access & Road A

Movement	EB	WB	NB	SB
Directions Served	TR	LT	LTR	LTR
Maximum Queue (m)	6.5	36.7	21.2	8.5
Average Queue (m)	0.4	6.5	11.3	1.2
95th Queue (m)	3.2	22.5	18.6	6.1
Link Distance (m)	40.4	58.9	36.6	41.4
Upstream Blk Time (%)		0		
Queuing Penalty (veh)		0		
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 43: Road B & B Parking Access

Movement	WB	NB	SB	SB
Directions Served	LR	R	LT	T
Maximum Queue (m)	16.4	3.5	15.6	0.9
Average Queue (m)	7.2	0.1	2.6	0.0
95th Queue (m)	13.3	1.8	10.3	0.9
Link Distance (m)	32.1	46.2	45.7	45.7
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 44: Road B & Road F

Movement	EB	NB	NB	SB
Directions Served	LR	LT	T	T
Maximum Queue (m)	16.1	4.4	1.3	8.9
Average Queue (m)	1.6	0.1	0.0	0.4
95th Queue (m)	9.3	2.5	1.3	4.7
Link Distance (m)	105.3	20.9	20.9	46.2
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 45: Road E & Road D

Movement	EB	NB
Directions Served	TR	LR
Maximum Queue (m)	1.8	8.2
Average Queue (m)	0.1	3.9
95th Queue (m)	1.3	9.6
Link Distance (m)	13.9	199.2
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	0	
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 57: Bend

Movement	NB	NB
Directions Served	T	
Maximum Queue (m)	1.2	0.7
Average Queue (m)	0.0	0.0
95th Queue (m)	0.9	0.7
Link Distance (m)	50.0	50.0
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 5113

Intersection: 29: Navy/Navy Parking Access & Prince of Wales

Movement	EB	WB	NB	SB
Directions Served	TR	LTR	LTR	R
Maximum Queue (m)	95.8	47.0	5.6	9.9
Average Queue (m)	29.3	2.7	0.4	1.5
95th Queue (m)	88.5	23.5	3.3	6.8
Link Distance (m)	92.6	86.0	39.1	34.1
Upstream Blk Time (%)	2	0		
Queuing Penalty (veh)	15	2		
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 30: Prince of Wales & Preston

Movement	EB	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	L	TR	T	R	LTR	LT	R
Maximum Queue (m)	52.5	93.1	54.2	138.9	52.5	9.2	84.4	153.7
Average Queue (m)	48.6	76.9	20.9	61.2	21.1	1.0	43.2	77.9
95th Queue (m)	60.7	107.6	44.4	119.8	63.3	5.5	73.2	128.8
Link Distance (m)		86.0	86.0	354.7		18.6	290.7	290.7
Upstream Blk Time (%)		12				0		
Queuing Penalty (veh)		57				0		
Storage Bay Dist (m)	45.0				45.0			
Storage Blk Time (%)	7	28		31	0			
Queuing Penalty (veh)	27	102		100	0			

Intersection: 39: Prince of Wales & Road B

Movement	EB	EB	B86	WB	WB	SB	SB
Directions Served	L	T	T	T	R	L	R
Maximum Queue (m)	51.8	151.4	1.2	82.7	39.3	20.8	13.6
Average Queue (m)	10.5	53.2	0.0	28.2	4.5	7.5	3.7
95th Queue (m)	29.4	114.3	1.2	67.0	21.7	17.5	10.0
Link Distance (m)		204.7	66.1	92.6		20.7	20.7
Upstream Blk Time (%)		0		0		2	0
Queuing Penalty (veh)		1		1		1	0
Storage Bay Dist (m)	45.0				35.0		
Storage Blk Time (%)		7		4	0		
Queuing Penalty (veh)		4		2	0		

Intersection: 40: Prince of Wales & Road E

Movement	EB	NB	SB
Directions Served	R	L	R
Maximum Queue (m)	18.9	11.6	3.0
Average Queue (m)	5.5	1.7	0.1
95th Queue (m)	13.6	7.8	1.9
Link Distance (m)	355.8		
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)		50.0	50.0
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 44: Road B & Road F

Movement	EB	NB	SB
Directions Served	LR	LT	T
Maximum Queue (m)	16.2	1.5	7.1
Average Queue (m)	1.3	0.0	0.3
95th Queue (m)	8.6	1.4	3.0
Link Distance (m)	105.2	20.7	297.4
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 312

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Intersection: 10: Carling & Parkdale

Movement	EB	EB	EB	WB	WB	WB	SB
Directions Served	L	T	T	T	T	R	LR
Maximum Queue (m)	54.6	58.5	50.0	163.0	165.7	87.5	84.1
Average Queue (m)	25.4	29.2	19.6	83.1	84.9	23.9	38.3
95th Queue (m)	45.6	53.8	43.5	159.6	163.1	78.7	69.2
Link Distance (m)		316.0	316.0	174.6	174.6		272.5
Upstream Blk Time (%)				0	0		
Queuing Penalty (veh)				2	3		
Storage Bay Dist (m)	155.0					80.0	
Storage Blk Time (%)					10	0	
Queuing Penalty (veh)					10	0	

Intersection: 11: Carling & Civic

Movement	EB	EB	EB	WB	WB	WB	SB
Directions Served	L	T	T	T	T	R	LR
Maximum Queue (m)	20.0	51.2	55.3	115.8	114.3	14.7	27.1
Average Queue (m)	6.4	17.3	14.6	41.3	41.3	0.5	10.5
95th Queue (m)	17.0	41.6	39.0	88.6	89.9	14.5	22.6
Link Distance (m)		174.6	174.6	189.4	189.4		49.6
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (m)	90.0					140.0	
Storage Blk Time (%)					0		
Queuing Penalty (veh)					0		

Intersection: 12: Carling & Melrose

Movement	EB	EB	EB	WB	WB	WB	SB
Directions Served	L	T	T	T	T	R	LR
Maximum Queue (m)	17.4	13.4	19.8	22.2	23.1	2.7	13.0
Average Queue (m)	5.5	1.4	1.4	2.7	2.3	0.1	3.9
95th Queue (m)	14.3	7.3	9.2	13.3	13.3	1.3	10.7
Link Distance (m)		189.4	189.4	239.5	239.5		211.1
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (m)	25.0					20.0	
Storage Blk Time (%)	0				0		
Queuing Penalty (veh)	0				0		

Queuing and Blocking Report
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Intersection: 13: Maple/Old Irvine & Carling

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	SB
Directions Served	L	T	T	R	L	T	T	R	LTR	LTR
Maximum Queue (m)	27.2	58.8	62.0	22.5	52.2	98.8	90.2	8.6	66.2	20.5
Average Queue (m)	8.6	24.8	25.8	5.7	10.4	56.1	42.7	0.4	31.1	6.0
95th Queue (m)	21.2	48.5	52.2	19.6	32.6	92.7	74.3	4.8	54.9	15.7
Link Distance (m)		239.5	239.5						166.9	225.8
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (m)	20.0			15.0	45.0			25.0		
Storage Blk Time (%)	1	9	13	0	0	10	13	0		
Queuing Penalty (veh)	4	3	7	0	0	6	1	0		

Intersection: 14: Carling & Bayswater

Movement
Directions Served
Maximum Queue (m)
Average Queue (m)
95th Queue (m)
Link Distance (m)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (m)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 15: Carling & Sherwood

Movement	EB	EB	EB	WB	WB	WB	SB	SB
Directions Served	L	T	T	T	T	R	L	R
Maximum Queue (m)	36.6	58.7	49.1	87.2	89.9	34.0	83.4	20.5
Average Queue (m)	17.2	24.2	17.5	27.5	28.0	7.3	38.5	3.8
95th Queue (m)	32.3	50.3	39.2	63.3	66.2	24.9	72.5	16.0
Link Distance (m)		114.2	114.2	143.4	143.4		138.3	
Upstream Blk Time (%)							1	
Queuing Penalty (veh)							1	
Storage Bay Dist (m)	30.0					90.0		15.0
Storage Blk Time (%)	4	4		0	0		52	0
Queuing Penalty (veh)	12	3		0	0		4	0

Intersection: 16: Road A/Champagne & Carling

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	T	R	L	TR	L	TR
Maximum Queue (m)	59.6	115.3	114.2	53.7	68.2	108.7	110.3	42.5	41.7	51.3	37.3	144.9
Average Queue (m)	25.1	52.6	58.8	12.7	16.0	72.6	78.1	23.8	15.7	20.6	32.8	49.1
95th Queue (m)	52.1	101.1	114.0	49.7	48.3	114.7	118.0	52.3	31.9	40.8	42.9	122.7
Link Distance (m)		143.4	143.4			103.7	103.7		58.9	58.9		481.7
Upstream Blk Time (%)		0	2			2	3		0	1		
Queuing Penalty (veh)		1	10			16	22		0	1		
Storage Bay Dist (m)	55.0			75.0	61.0			35.0				30.0
Storage Blk Time (%)	0	6	11	0	0	16	31	0			35	1
Queuing Penalty (veh)	1	6	5	0	0	7	46	1			39	2

Intersection: 17: Carling & Trillium MUP

Movement	EB	EB	WB	WB
Directions Served	T	T	T	T
Maximum Queue (m)	111.4	111.1	95.6	97.0
Average Queue (m)	63.7	77.7	54.8	59.5
95th Queue (m)	120.2	133.1	89.7	92.5
Link Distance (m)	103.7	103.7	93.8	93.8
Upstream Blk Time (%)	2	18	1	1
Queuing Penalty (veh)	9	83	6	8
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Queuing and Blocking Report
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Intersection: 18: Preston & Carling

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	R	L	T	T	R	L	T	TR	L
Maximum Queue (m)	77.3	99.3	109.6	93.8	116.1	111.5	117.1	77.2	96.9	82.6	76.8	42.4
Average Queue (m)	36.2	66.2	95.2	89.3	67.9	76.2	83.1	10.3	48.2	32.1	18.1	31.1
95th Queue (m)	73.2	104.4	123.0	102.4	103.5	104.7	110.5	40.7	83.9	61.4	49.5	56.5
Link Distance (m)		93.8	93.8			165.0	165.0		129.7	129.7	129.7	
Upstream Blk Time (%)		2	44	29					0	0	0	
Queuing Penalty (veh)		9	208	0					0	0	1	
Storage Bay Dist (m)	70.0			90.0	120.0			95.0				35.0
Storage Blk Time (%)	1	6	43	42	0	0	4	0				7
Queuing Penalty (veh)	4	8	128	113	1	0	2	0				29

Intersection: 18: Preston & Carling

Movement	SB	B57
Directions Served	TR	T
Maximum Queue (m)	81.2	416.0
Average Queue (m)	72.3	341.3
95th Queue (m)	76.0	531.3
Link Distance (m)	50.0	416.8
Upstream Blk Time (%)	80	48
Queuing Penalty (veh)	0	0
Storage Bay Dist (m)		
Storage Blk Time (%)	78	
Queuing Penalty (veh)	74	

Intersection: 19: Carling & Rochester

Movement	EB	EB	WB	WB	SB	B66
Directions Served	T	T	T	R	R	T
Maximum Queue (m)	39.9	36.8	34.1	2.8	69.8	12.0
Average Queue (m)	5.4	4.4	2.3	0.2	30.9	0.4
95th Queue (m)	34.8	31.1	15.2	2.1	60.0	11.8
Link Distance (m)	165.0	165.0	104.1		396.1	101.7
Upstream Blk Time (%)		0				0
Queuing Penalty (veh)		0				0
Storage Bay Dist (m)				30.0		
Storage Blk Time (%)			0			
Queuing Penalty (veh)			0			

Queuing and Blocking Report
Baseline

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Intersection: 20: Carling & Booth

Movement	EB	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	T	R	L	R
Maximum Queue (m)	57.3	103.4	93.3	221.4	37.5	237.1	37.5
Average Queue (m)	44.4	48.7	41.0	144.5	10.3	164.1	32.8
95th Queue (m)	66.4	102.0	88.3	231.7	33.6	267.0	49.5
Link Distance (m)		104.1	104.1	302.7		229.2	
Upstream Blk Time (%)		4	3			23	
Queuing Penalty (veh)		18	11			0	
Storage Bay Dist (m)	50.0				30.0		30.0
Storage Blk Time (%)	13	10		39	0	58	16
Queuing Penalty (veh)	48	21		35	0	163	42

Intersection: 21: Bronson & Carling/Glebe

Movement	EB	EB	EB	B1	B1	NB	NB	NB	SB	SB
Directions Served	L	LT	R	T	T	L	L	TR	T	TR
Maximum Queue (m)	47.9	99.5	94.2	270.8	268.8	57.4	399.2	408.5	310.4	313.4
Average Queue (m)	46.1	91.8	70.9	167.0	141.1	57.1	393.5	386.4	238.5	246.5
95th Queue (m)	51.7	104.2	107.0	344.3	350.6	58.4	398.8	439.3	367.8	372.2
Link Distance (m)		71.5	71.5	302.7	302.7		390.8	390.8	332.5	332.5
Upstream Blk Time (%)		68	17	7	8		58	37	3	4
Queuing Penalty (veh)		342	87	37	40		381	244	23	35
Storage Bay Dist (m)	40.0					50.0				
Storage Blk Time (%)	31	74				85	2			
Queuing Penalty (veh)	97	149				238	5			

Intersection: 22: Parkdale & 417 WB on/off

Movement	WB	WB	NB	NB	SB
Directions Served	L	TR	L	T	TR
Maximum Queue (m)	109.4	131.8	45.0	57.3	197.1
Average Queue (m)	52.9	62.5	17.8	26.3	188.8
95th Queue (m)	89.2	115.9	34.9	52.7	199.4
Link Distance (m)	152.4	152.4	55.6	55.6	183.6
Upstream Blk Time (%)	0	1	0	0	71
Queuing Penalty (veh)	0	0	0	1	0
Storage Bay Dist (m)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Queuing and Blocking Report
Baseline

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Intersection: 23: Parkdale & 417 EB on/off

Movement	EB	EB	NB	NB	SB	SB
Directions Served	LT	R	T	TR	L	T
Maximum Queue (m)	127.5	82.5	96.6	37.5	60.9	59.2
Average Queue (m)	65.8	28.6	60.5	35.5	53.9	30.8
95th Queue (m)	111.2	71.9	118.0	42.4	68.8	57.5
Link Distance (m)	121.0		90.9		55.6	55.6
Upstream Blk Time (%)	2		8		15	1
Queuing Penalty (veh)	0		48		63	5
Storage Bay Dist (m)		75.0		30.0		
Storage Blk Time (%)	8	0	0	33		
Queuing Penalty (veh)	14	0	2	45		

Intersection: 24: Parkdale & Sherwood

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	39.9	37.1	94.3	91.4
Average Queue (m)	15.1	16.2	38.9	43.8
95th Queue (m)	30.5	29.9	82.6	79.1
Link Distance (m)	236.5	344.4	294.1	90.9
Upstream Blk Time (%)				1
Queuing Penalty (veh)				5
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 25: Parkdale & Ruskin

Movement	EB	WB	WB	NB	SB
Directions Served	LTR	L	TR	LTR	LTR
Maximum Queue (m)	29.5	14.5	30.9	45.9	53.0
Average Queue (m)	11.2	4.6	12.4	16.3	22.2
95th Queue (m)	23.2	12.9	24.4	35.9	43.9
Link Distance (m)	236.1		243.9	272.5	294.1
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)		40.0			
Storage Blk Time (%)			0		
Queuing Penalty (veh)			0		

Queuing and Blocking Report
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Intersection: 27: Bayswater & Sherwood

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	17.6	25.0	7.1	39.0
Average Queue (m)	7.6	8.8	2.0	16.7
95th Queue (m)	14.9	17.8	7.2	31.1
Link Distance (m)	602.2	138.3		93.6
Upstream Blk Time (%)				0
Queuing Penalty (veh)				0
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 29: Navy/Navy Parking Access & Prince of Wales

Movement	EB	WB	NB	SB
Directions Served	TR	LTR	LTR	R
Maximum Queue (m)	72.3	11.6	11.1	18.9
Average Queue (m)	11.2	0.4	2.7	6.1
95th Queue (m)	49.1	6.1	9.3	14.7
Link Distance (m)	92.6	85.9	39.1	34.1
Upstream Blk Time (%)	0			
Queuing Penalty (veh)	2			
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 30: Prince of Wales & Preston

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	L	T	L	T	R	LTR	LT	R
Maximum Queue (m)	52.4	92.1	57.0	15.4	193.2	52.5	3.9	126.4	116.5
Average Queue (m)	37.9	63.9	24.0	0.9	183.9	46.7	0.7	82.5	73.6
95th Queue (m)	63.5	99.2	47.6	8.4	189.2	73.3	4.0	121.9	108.8
Link Distance (m)		85.9	85.9		178.4		18.1	129.7	129.7
Upstream Blk Time (%)		5			71		0	0	0
Queuing Penalty (veh)		20			0		0	1	1
Storage Bay Dist (m)	45.0			30.0		45.0			
Storage Blk Time (%)	3	24			71	0			
Queuing Penalty (veh)	7	58			304	1			

Intersection: 31: Rochester & 417 WB on/Raymond

Movement	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	T	T	R
Maximum Queue (m)	53.1	74.2	38.3	72.2	54.3	40.8
Average Queue (m)	25.5	35.4	17.0	29.2	23.1	14.1
95th Queue (m)	44.1	61.9	31.1	52.3	43.3	29.8
Link Distance (m)	102.6	102.6	82.9	82.9	166.0	
Upstream Blk Time (%)		0		0		
Queuing Penalty (veh)		0		0		
Storage Bay Dist (m)						35.0
Storage Blk Time (%)					2	0
Queuing Penalty (veh)					3	0

Intersection: 32: Rochester & 417 EB off/Orangeville

Movement	EB	EB	NB	NB	SB	SB
Directions Served	LT	TR	T	TR	LT	T
Maximum Queue (m)	80.2	63.8	33.5	55.9	71.4	56.7
Average Queue (m)	48.2	25.5	11.6	27.7	35.9	9.9
95th Queue (m)	72.9	50.4	25.1	49.9	59.6	32.6
Link Distance (m)	116.5	116.5	101.7	101.7	82.9	82.9
Upstream Blk Time (%)					0	0
Queuing Penalty (veh)					0	0
Storage Bay Dist (m)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 33: Bronson & Catherine 417 WB on

Movement	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	LT	T	TR	L	T	T	T	TR
Maximum Queue (m)	132.1	129.8	109.6	64.0	81.2	62.3	59.8	218.4	216.2
Average Queue (m)	87.8	87.5	64.3	31.2	41.1	35.4	35.0	145.9	142.4
95th Queue (m)	129.0	124.0	104.3	56.7	70.1	56.7	56.5	244.8	239.6
Link Distance (m)	174.4	174.4	174.4	174.4	81.8	81.8	81.8	242.3	242.3
Upstream Blk Time (%)	0	0	0		1			4	4
Queuing Penalty (veh)	0	0	0		3			0	0
Storage Bay Dist (m)									
Storage Blk Time (%)									
Queuing Penalty (veh)									

Queuing and Blocking Report
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Intersection: 34: Bronson & 417 EB off

Movement	EB	EB	NB	NB	SB	SB
Directions Served	L	R	T	T	T	T
Maximum Queue (m)	98.7	67.5	63.2	65.4	87.0	86.8
Average Queue (m)	48.5	53.9	21.3	41.6	62.7	62.5
95th Queue (m)	104.8	78.1	50.3	69.8	95.4	94.5
Link Distance (m)	91.1		57.4	57.4	81.8	81.8
Upstream Blk Time (%)	11		1	3	3	2
Queuing Penalty (veh)	0		3	13	21	18
Storage Bay Dist (m)		60.0				
Storage Blk Time (%)	1	19				
Queuing Penalty (veh)	2	27				

Intersection: 35: Bronson & Plymouth/Imperial Chamberlain

Movement	NB	NB	SB	SB	SB
Directions Served	LT	TR	L	T	TR
Maximum Queue (m)	296.1	308.7	37.3	64.2	62.4
Average Queue (m)	192.4	220.6	26.3	15.6	14.4
95th Queue (m)	324.9	335.3	40.1	55.9	52.8
Link Distance (m)	332.5	332.5		57.4	57.4
Upstream Blk Time (%)	0	1		1	2
Queuing Penalty (veh)	1	5		13	16
Storage Bay Dist (m)			30.0		
Storage Blk Time (%)			7	3	
Queuing Penalty (veh)			58	9	

Intersection: 36: Bronson & Madawaska/Fifth

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	LT	TR	LT	TR
Maximum Queue (m)	93.6	126.8	246.8	248.2	177.2	177.5
Average Queue (m)	31.0	88.4	227.9	228.3	76.2	79.8
95th Queue (m)	88.8	148.1	289.5	288.4	150.8	153.8
Link Distance (m)	182.2	118.1	232.0	232.0	390.8	390.8
Upstream Blk Time (%)	1	40	85	87		
Queuing Penalty (veh)	0	0	0	0		
Storage Bay Dist (m)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Queuing and Blocking Report
Baseline

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Intersection: 37: Road L & Road M/Road A

Movement	EB	NB
Directions Served	T	R
Maximum Queue (m)	0.6	0.6
Average Queue (m)	0.0	0.0
95th Queue (m)	0.6	0.6
Link Distance (m)	34.2	24.1
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 38: Maple & Winding/Road D

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	18.7	4.7	19.5	17.1
Average Queue (m)	8.7	1.8	9.2	9.3
95th Queue (m)	14.8	5.4	15.1	14.0
Link Distance (m)	183.3	13.9	131.4	166.9
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 39: Prince of Wales & Road B

Movement	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	TR	L	R
Maximum Queue (m)	27.5	85.1	64.3	42.5	22.7	17.1
Average Queue (m)	5.1	34.9	22.8	13.7	15.1	4.8
95th Queue (m)	19.0	66.2	51.7	42.7	25.0	13.2
Link Distance (m)		205.7	92.6		20.9	20.9
Upstream Blk Time (%)					9	0
Queuing Penalty (veh)					5	0
Storage Bay Dist (m)	45.0			35.0		
Storage Blk Time (%)		3	2	0		
Queuing Penalty (veh)		1	10	1		

Intersection: 40: Prince of Wales & Road E

Movement	EB	NB
Directions Served	R	L
Maximum Queue (m)	22.5	10.1
Average Queue (m)	8.5	0.6
95th Queue (m)	17.2	4.8
Link Distance (m)	167.1	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		50.0
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 41: Road B & Road A

Movement	EB	EB	WB	WB	NB
Directions Served	T	TR	L	T	LR
Maximum Queue (m)	9.3	17.0	13.0	17.7	17.2
Average Queue (m)	3.0	8.2	5.0	7.6	7.7
95th Queue (m)	10.1	14.6	12.8	15.2	14.8
Link Distance (m)	51.4	51.4	40.4	40.4	45.7
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 42: A Parking Access & Road A

Movement	EB	WB	NB	SB
Directions Served	TR	LT	LTR	LTR
Maximum Queue (m)	0.5	11.0	26.3	8.5
Average Queue (m)	0.0	1.0	14.1	1.3
95th Queue (m)	0.5	6.0	22.4	6.4
Link Distance (m)	40.4	58.9	36.6	41.4
Upstream Blk Time (%)			0	
Queuing Penalty (veh)			0	
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Queuing and Blocking Report

Baseline

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Intersection: 43: Road B & B Parking Access

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (m)	20.7	8.7
Average Queue (m)	9.4	0.3
95th Queue (m)	16.9	3.1
Link Distance (m)	32.1	45.7
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	0	
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 44: Road B & Road F

Movement	EB	NB	SB
Directions Served	LR	LT	T
Maximum Queue (m)	14.2	2.5	18.8
Average Queue (m)	0.7	0.1	2.7
95th Queue (m)	6.4	2.3	12.5
Link Distance (m)	105.3	20.9	46.2
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 45: Road E & Road D

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (m)	0.9	1.9	7.1
Average Queue (m)	0.0	0.1	3.1
95th Queue (m)	0.9	1.6	8.7
Link Distance (m)	13.9	131.9	199.2
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 3702

Intersection: 29: Navy/Navy Parking Access & Prince of Wales

Movement	EB	WB	NB	SB
Directions Served	TR	LTR	LTR	R
Maximum Queue (m)	68.8	66.0	12.5	20.9
Average Queue (m)	10.4	11.5	2.7	6.3
95th Queue (m)	47.6	43.0	9.5	16.1
Link Distance (m)	92.6	86.0	39.1	34.1
Upstream Blk Time (%)	0	0		0
Queuing Penalty (veh)	2	0		0
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 30: Prince of Wales & Preston

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	L	T	L	T	R	LTR	LT	R
Maximum Queue (m)	52.4	92.2	72.2	12.7	307.8	52.5	6.1	218.3	224.5
Average Queue (m)	45.5	64.2	33.3	0.8	297.7	45.6	1.1	108.8	154.8
95th Queue (m)	61.7	97.6	61.5	6.6	315.9	74.3	5.6	213.7	243.3
Link Distance (m)		86.0	86.0		293.0		18.3	223.9	223.9
Upstream Blk Time (%)		4	0		72		0	6	11
Queuing Penalty (veh)		17	0		0		0	0	0
Storage Bay Dist (m)	45.0			30.0		45.0			
Storage Blk Time (%)	3	19			67	0			
Queuing Penalty (veh)	7	47			289	1			

Intersection: 39: Prince of Wales & Road B

Movement	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	R	L	R
Maximum Queue (m)	19.0	87.0	99.4	38.7	24.4	15.5
Average Queue (m)	4.4	32.5	68.0	2.4	16.4	3.6
95th Queue (m)	14.0	66.6	111.7	16.3	26.7	10.7
Link Distance (m)		204.7	92.6		20.7	20.7
Upstream Blk Time (%)			3		21	0
Queuing Penalty (veh)			25		11	0
Storage Bay Dist (m)	45.0			35.0		
Storage Blk Time (%)		2	13	0		
Queuing Penalty (veh)		0	2	0		

Intersection: 40: Prince of Wales & Road E

Movement	EB	NB
Directions Served	R	L
Maximum Queue (m)	26.0	9.5
Average Queue (m)	8.8	0.7
95th Queue (m)	18.9	4.9
Link Distance (m)	454.1	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		50.0
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 44: Road B & Road F

Movement	EB	NB	SB
Directions Served	LR	LT	T
Maximum Queue (m)	15.4	2.0	31.4
Average Queue (m)	1.1	0.1	5.9
95th Queue (m)	8.8	2.0	21.1
Link Distance (m)	105.2	20.7	243.1
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		0	
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 403

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Intersection: 10: Carling & Parkdale

Movement	EB	EB	EB	WB	WB	WB	SB
Directions Served	L	T	T	T	T	R	LR
Maximum Queue (m)	58.0	57.6	47.3	143.2	144.5	87.4	70.4
Average Queue (m)	26.0	26.4	16.4	62.6	64.6	20.7	30.0
95th Queue (m)	48.8	49.7	37.5	123.2	126.0	69.9	57.4
Link Distance (m)		316.0	316.0	174.6	174.6		272.5
Upstream Blk Time (%)				0			
Queuing Penalty (veh)				0			
Storage Bay Dist (m)	155.0					80.0	
Storage Blk Time (%)					7	0	
Queuing Penalty (veh)					8	0	

Intersection: 11: Carling & Civic

Movement	EB	EB	EB	WB	WB	WB	SB
Directions Served	L	T	T	T	T	R	LR
Maximum Queue (m)	51.9	34.6	36.8	107.2	101.1	1.6	21.3
Average Queue (m)	22.1	11.4	9.7	43.6	44.8	0.1	8.2
95th Queue (m)	41.5	28.7	27.8	86.9	88.3	1.6	17.9
Link Distance (m)		174.6	174.6	189.4	189.4		49.6
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (m)	90.0					140.0	
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 12: Carling & Melrose

Movement	EB	EB	EB	WB	WB	WB	SB
Directions Served	L	T	T	T	T	R	LR
Maximum Queue (m)	9.0	10.0	10.8	17.2	17.1	1.7	16.7
Average Queue (m)	1.9	0.6	0.6	1.5	1.3	0.1	4.5
95th Queue (m)	7.6	4.9	4.7	9.1	8.3	1.2	12.2
Link Distance (m)		189.4	189.4	239.5	239.5		211.1
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (m)	25.0					20.0	
Storage Blk Time (%)					0		
Queuing Penalty (veh)					0		

Intersection: 13: Maple/Old Irvine & Carling

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	SB
Directions Served	L	T	T	R	L	T	T	R	LTR	LTR
Maximum Queue (m)	24.5	45.1	49.9	22.5	34.8	94.7	79.2	8.4	57.6	13.6
Average Queue (m)	8.4	15.5	17.1	4.3	5.6	47.2	33.6	0.4	25.4	3.7
95th Queue (m)	19.3	34.4	39.7	16.2	20.8	80.1	64.0	4.9	47.6	11.3
Link Distance (m)		239.5	239.5			191.1	191.1		166.9	225.8
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (m)	20.0			15.0	45.0			25.0		
Storage Blk Time (%)	2	4	9	0		7	9			
Queuing Penalty (veh)	4	1	4	0		3	1			

Intersection: 14: Carling & Bayswater

Movement
Directions Served
Maximum Queue (m)
Average Queue (m)
95th Queue (m)
Link Distance (m)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (m)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 15: Carling & Sherwood

Movement	EB	EB	EB	WB	WB	WB	SB	SB
Directions Served	L	T	T	T	T	R	L	R
Maximum Queue (m)	35.5	53.8	8.0	57.8	59.1	29.4	58.3	20.0
Average Queue (m)	35.4	50.3	0.4	17.5	20.1	8.2	29.7	3.6
95th Queue (m)	36.5	77.8	5.9	43.7	44.9	20.8	52.5	15.5
Link Distance (m)				143.4	143.4		138.3	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (m)	30.0					90.0		15.0
Storage Blk Time (%)	100	0					36	0
Queuing Penalty (veh)	263	0					3	0

Intersection: 16: Road A/Champagne & Carling

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	T	R	L	TR	L	TR
Maximum Queue (m)	18.1	33.4	30.9	14.3	45.4	100.6	106.4	42.5	44.8	52.4	37.0	75.5
Average Queue (m)	4.1	11.1	10.8	2.4	12.2	47.8	55.3	21.0	19.7	22.1	24.4	20.5
95th Queue (m)	12.6	26.5	26.3	9.8	33.0	89.0	99.3	48.4	37.5	43.7	39.4	50.4
Link Distance (m)		143.4	143.4			103.7	103.7		58.9	58.9		481.7
Upstream Blk Time (%)						0	1			0		
Queuing Penalty (veh)						1	3			0		
Storage Bay Dist (m)	55.0			75.0	61.0			35.0			30.0	
Storage Blk Time (%)						6	19	0			9	1
Queuing Penalty (veh)						3	26	1			13	1

Intersection: 17: Carling & Trillium MUP

Movement	EB	EB	WB	WB
Directions Served	T	T	T	T
Maximum Queue (m)	49.2	49.5	77.0	85.7
Average Queue (m)	18.2	17.4	31.5	40.4
95th Queue (m)	40.9	39.0	62.1	71.6
Link Distance (m)	103.7	103.7	93.8	93.8
Upstream Blk Time (%)			0	0
Queuing Penalty (veh)			0	0
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 18: Preston & Carling

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	R	L	T	T	R	L	T	TR	L
Maximum Queue (m)	46.1	57.4	49.3	56.8	120.3	119.7	111.1	44.8	101.3	99.2	87.1	42.4
Average Queue (m)	20.1	21.4	18.5	24.3	72.4	62.0	66.2	7.9	54.9	42.9	25.3	35.4
95th Queue (m)	41.6	44.3	39.0	48.2	118.0	111.6	96.9	25.5	96.4	88.2	70.9	54.5
Link Distance (m)		93.8	93.8			165.0	165.0		129.7	129.7	129.7	
Upstream Blk Time (%)		0	0	0		1			0	0	0	
Queuing Penalty (veh)		1	0	0		3			0	1	1	
Storage Bay Dist (m)	70.0			90.0	120.0			95.0				35.0
Storage Blk Time (%)	0	0	0	0	4	0	1	0				18
Queuing Penalty (veh)	0	0	0	0	16	0	1	0				65

Intersection: 18: Preston & Carling

Movement	SB	B57
Directions Served	TR	T
Maximum Queue (m)	80.3	379.1
Average Queue (m)	71.6	250.4
95th Queue (m)	80.2	492.3
Link Distance (m)	50.0	416.8
Upstream Blk Time (%)	72	22
Queuing Penalty (veh)	0	0
Storage Bay Dist (m)		
Storage Blk Time (%)	68	
Queuing Penalty (veh)	76	

Intersection: 19: Carling & Rochester

Movement	EB	EB	WB	WB	SB
Directions Served	T	T	T	R	R
Maximum Queue (m)	8.3	6.9	32.2	6.8	64.5
Average Queue (m)	0.4	0.3	2.1	0.2	27.8
95th Queue (m)	4.0	3.4	19.2	4.0	54.6
Link Distance (m)	165.0	165.0	104.1		396.1
Upstream Blk Time (%)			0		
Queuing Penalty (veh)			0		
Storage Bay Dist (m)				30.0	
Storage Blk Time (%)			0		
Queuing Penalty (veh)			0		

Intersection: 20: Carling & Booth

Movement	EB	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	T	R	L	R
Maximum Queue (m)	55.3	61.6	57.7	182.2	37.5	141.4	37.5
Average Queue (m)	22.1	27.3	25.4	94.8	13.2	71.1	33.4
95th Queue (m)	41.4	51.5	48.1	171.0	37.3	125.3	46.3
Link Distance (m)		104.1	104.1	302.7		229.2	
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (m)	50.0				30.0		30.0
Storage Blk Time (%)	1	1		30	0	29	9
Queuing Penalty (veh)	2	2		33	0	73	24

Intersection: 21: Bronson & Carling/Glebe

Movement	EB	EB	EB	B1	B1	NB	NB	NB	SB	SB
Directions Served	L	LT	R	T	T	L	L	TR	T	TR
Maximum Queue (m)	47.5	96.3	82.2	68.6	19.6	57.4	397.9	406.6	342.6	345.0
Average Queue (m)	41.8	67.2	33.9	9.8	0.7	57.1	383.4	369.8	300.9	304.9
95th Queue (m)	55.6	103.7	63.9	46.8	16.2	58.0	442.9	489.4	401.8	399.9
Link Distance (m)		71.5	71.5	302.7	302.7		390.8	390.8	332.5	332.5
Upstream Blk Time (%)		15	1				43	29	14	19
Queuing Penalty (veh)		72	5				287	196	104	140
Storage Bay Dist (m)	40.0					50.0				
Storage Blk Time (%)	15	36				84	1			
Queuing Penalty (veh)	47	77				201	3			

Intersection: 22: Parkdale & 417 WB on/off

Movement	WB	WB	NB	NB	SB
Directions Served	L	TR	L	T	TR
Maximum Queue (m)	73.4	93.8	48.9	52.7	199.2
Average Queue (m)	36.7	43.1	21.5	17.2	171.7
95th Queue (m)	61.6	76.8	40.7	39.1	234.9
Link Distance (m)	152.4	152.4	55.6	55.6	183.6
Upstream Blk Time (%)			0	0	51
Queuing Penalty (veh)			0	1	0
Storage Bay Dist (m)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 23: Parkdale & 417 EB on/off

Movement	EB	EB	NB	NB	SB	SB
Directions Served	LT	R	T	TR	L	T
Maximum Queue (m)	105.4	77.2	96.5	37.5	61.0	53.4
Average Queue (m)	57.4	19.4	70.5	35.8	55.6	21.8
95th Queue (m)	93.0	51.6	121.1	43.3	68.8	45.7
Link Distance (m)	121.0		90.9		55.6	55.6
Upstream Blk Time (%)	0		11		20	0
Queuing Penalty (veh)	0		66		74	1
Storage Bay Dist (m)		75.0		30.0		
Storage Blk Time (%)	3	0	0	40		
Queuing Penalty (veh)	4	0	0	45		

Intersection: 24: Parkdale & Sherwood

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	37.8	32.8	112.4	77.2
Average Queue (m)	14.3	13.2	45.2	40.0
95th Queue (m)	28.8	26.7	106.6	69.0
Link Distance (m)	236.5	344.4	294.1	90.9
Upstream Blk Time (%)				0
Queuing Penalty (veh)				0
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 25: Parkdale & Ruskin

Movement	EB	WB	WB	NB	SB
Directions Served	LTR	L	TR	LTR	LTR
Maximum Queue (m)	28.4	16.6	26.3	53.0	50.2
Average Queue (m)	11.3	4.9	10.3	16.7	22.5
95th Queue (m)	23.9	13.4	20.9	40.2	43.7
Link Distance (m)	236.1		243.9	272.5	294.1
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)		40.0			
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 27: Bayswater & Sherwood

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	16.4	20.0	7.8	21.0
Average Queue (m)	6.8	6.6	1.6	10.6
95th Queue (m)	13.3	14.9	6.5	17.2
Link Distance (m)	602.2	138.3		93.6
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 29: Navy/Navy Parking Access & Prince of Wales

Movement	EB	WB	NB	SB
Directions Served	TR	TR	LTR	R
Maximum Queue (m)	95.4	2.5	8.4	14.8
Average Queue (m)	26.6	0.1	2.1	5.4
95th Queue (m)	81.7	1.9	8.0	13.1
Link Distance (m)	92.6	85.9	39.1	34.1
Upstream Blk Time (%)	1			
Queuing Penalty (veh)	7			
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 30: Prince of Wales & Preston

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	L	TR	L	T	R	LTR	LT	R
Maximum Queue (m)	52.4	92.9	48.1	13.5	192.1	52.5	18.2	90.5	128.5
Average Queue (m)	43.0	76.6	18.4	1.2	170.1	45.5	7.0	41.0	87.5
95th Queue (m)	65.2	106.2	39.6	10.1	224.8	74.6	18.4	75.7	123.6
Link Distance (m)		85.9	85.9		178.4		18.1	129.7	129.7
Upstream Blk Time (%)		13			48		20		0
Queuing Penalty (veh)		51			0		0		2
Storage Bay Dist (m)	45.0			30.0		45.0			
Storage Blk Time (%)	4	34			65	0			
Queuing Penalty (veh)	11	98			254	1			

Intersection: 31: Rochester & 417 WB on/Raymond

Movement	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	T	T	R
Maximum Queue (m)	35.1	67.4	37.6	59.3	38.2	35.1
Average Queue (m)	17.1	33.0	16.8	27.2	17.0	14.7
95th Queue (m)	31.6	57.1	30.4	50.4	32.1	26.5
Link Distance (m)	102.6	102.6	82.9	82.9	166.0	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)						35.0
Storage Blk Time (%)					1	0
Queuing Penalty (veh)					1	0

Intersection: 32: Rochester & 417 EB off/Orangeville

Movement	EB	EB	NB	NB	SB	SB
Directions Served	LT	TR	T	TR	LT	T
Maximum Queue (m)	75.6	59.6	28.2	49.6	48.3	34.8
Average Queue (m)	45.7	23.8	9.8	20.4	22.5	3.9
95th Queue (m)	68.5	49.4	22.0	38.7	40.0	18.6
Link Distance (m)	116.5	116.5	101.7	101.7	82.9	82.9
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 33: Bronson & Catherine 417 WB on

Movement	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	LT	T	TR	L	T	T	T	TR
Maximum Queue (m)	169.6	167.2	146.1	89.6	82.3	62.4	64.4	231.4	231.4
Average Queue (m)	109.3	106.3	80.3	36.5	40.6	40.1	40.7	176.8	173.8
95th Queue (m)	173.2	166.5	141.4	78.0	71.5	60.3	61.6	291.6	289.5
Link Distance (m)	174.4	174.4	174.4	174.4	81.8	81.8	81.8	242.3	242.3
Upstream Blk Time (%)	5	4	1	0	1			26	26
Queuing Penalty (veh)	0	0	0	0	2			0	0
Storage Bay Dist (m)									
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 34: Bronson & 417 EB off

Movement	EB	EB	NB	NB	SB	SB
Directions Served	L	R	T	T	T	T
Maximum Queue (m)	101.4	67.5	63.0	65.9	90.7	90.4
Average Queue (m)	70.3	62.1	21.9	43.6	74.1	73.3
95th Queue (m)	127.2	79.2	50.0	71.5	100.1	100.5
Link Distance (m)	91.1		57.4	57.4	81.8	81.8
Upstream Blk Time (%)	33		1	4	7	7
Queuing Penalty (veh)	0		3	17	57	54
Storage Bay Dist (m)		60.0				
Storage Blk Time (%)	0	46				
Queuing Penalty (veh)	1	66				

Intersection: 35: Bronson & Plymouth/Imperial Chamberlain

Movement	NB	NB	SB	SB	SB
Directions Served	LT	TR	L	T	TR
Maximum Queue (m)	345.1	346.1	37.4	69.2	70.2
Average Queue (m)	285.1	303.5	30.9	41.0	39.9
95th Queue (m)	395.0	394.9	45.5	85.0	85.6
Link Distance (m)	332.5	332.5		57.4	57.4
Upstream Blk Time (%)	6	20		6	9
Queuing Penalty (veh)	32	112		62	87
Storage Bay Dist (m)			30.0		
Storage Blk Time (%)			10	16	
Queuing Penalty (veh)			75	45	

Intersection: 36: Bronson & Madawaska/Fifth

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	LT	TR	LT	TR
Maximum Queue (m)	67.3	107.7	248.0	248.0	132.2	135.3
Average Queue (m)	23.5	56.3	200.0	201.5	56.6	60.0
95th Queue (m)	62.9	112.6	321.4	318.9	116.0	121.8
Link Distance (m)	182.2	118.1	232.0	232.0	390.8	390.8
Upstream Blk Time (%)		8	66	69		
Queuing Penalty (veh)		0	0	0		
Storage Bay Dist (m)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 37: Road L & Road M/Road A

Movement	NB
Directions Served	R
Maximum Queue (m)	0.6
Average Queue (m)	0.0
95th Queue (m)	0.6
Link Distance (m)	24.1
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 38: Maple & Winding/Road D

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	19.0	5.4	19.8	20.7
Average Queue (m)	8.4	2.3	9.6	9.8
95th Queue (m)	14.2	6.1	16.0	16.0
Link Distance (m)	183.3	13.9	131.4	166.9
Upstream Blk Time (%)		0		
Queuing Penalty (veh)		0		
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 39: Prince of Wales & Road B

Movement	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	TR	L	R
Maximum Queue (m)	16.0	81.8	62.8	42.4	22.0	15.4
Average Queue (m)	3.3	34.0	22.0	11.8	15.4	5.1
95th Queue (m)	11.9	65.6	49.3	38.5	25.3	13.2
Link Distance (m)		205.7	92.6		20.9	20.9
Upstream Blk Time (%)			0		10	0
Queuing Penalty (veh)			0		6	0
Storage Bay Dist (m)	45.0			35.0		
Storage Blk Time (%)		3	2	0		
Queuing Penalty (veh)		0	8	1		

Intersection: 40: Prince of Wales & Road E

Movement	EB	NB
Directions Served	R	L
Maximum Queue (m)	24.7	10.2
Average Queue (m)	7.5	0.5
95th Queue (m)	16.8	4.4
Link Distance (m)	167.0	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		50.0
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 41: Road B & Road A

Movement	EB	EB	WB	WB	NB
Directions Served	T	TR	L	T	LR
Maximum Queue (m)	10.0	17.2	11.9	14.1	16.4
Average Queue (m)	3.7	8.5	4.8	6.7	8.1
95th Queue (m)	11.1	14.6	12.6	14.3	14.3
Link Distance (m)	51.4	51.4	40.4	40.4	45.7
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 42: A Parking Access & Road A

Movement	EB	WB	NB	SB
Directions Served	TR	LT	LTR	LTR
Maximum Queue (m)	0.5	9.9	30.3	9.3
Average Queue (m)	0.0	0.8	15.1	1.2
95th Queue (m)	0.5	5.5	24.3	6.1
Link Distance (m)	40.4	58.9	36.6	41.4
Upstream Blk Time (%)			0	
Queuing Penalty (veh)			0	
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 43: Road B & B Parking Access

Movement	WB	NB	SB
Directions Served	LR	R	LT
Maximum Queue (m)	21.7	0.8	7.9
Average Queue (m)	9.6	0.0	0.4
95th Queue (m)	17.4	0.8	3.5
Link Distance (m)	32.1	46.2	45.7
Upstream Blk Time (%)	0		
Queuing Penalty (veh)	0		
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 44: Road B & Road F

Movement	EB	NB	SB
Directions Served	LR	LT	T
Maximum Queue (m)	11.5	3.4	20.5
Average Queue (m)	0.8	0.1	2.5
95th Queue (m)	6.4	2.5	11.9
Link Distance (m)	105.3	20.9	46.2
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		0	
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 45: Road E & Road D

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (m)	3.7	8.4
Average Queue (m)	0.2	3.6
95th Queue (m)	2.1	9.3
Link Distance (m)	131.9	199.2
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 3013

Intersection: 29: Navy/Navy Parking Access & Prince of Wales

Movement	EB	WB	NB	SB
Directions Served	TR	TR	LTR	R
Maximum Queue (m)	80.8	45.1	8.0	15.8
Average Queue (m)	12.0	3.9	1.6	5.9
95th Queue (m)	51.0	23.2	6.9	14.3
Link Distance (m)	92.6	86.0	39.1	34.1
Upstream Blk Time (%)	0			
Queuing Penalty (veh)	1			
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 30: Prince of Wales & Preston

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	L	TR	L	T	R	LTR	LT	R
Maximum Queue (m)	52.4	92.6	54.4	12.1	314.0	52.5	22.6	124.9	213.2
Average Queue (m)	47.1	70.1	24.3	0.7	216.7	46.4	11.0	51.8	118.0
95th Queue (m)	61.1	101.0	46.1	6.2	364.0	73.5	23.0	95.3	195.8
Link Distance (m)		86.0	86.0		305.2		18.4	281.5	281.5
Upstream Blk Time (%)		5			20		45	0	0
Queuing Penalty (veh)		20			0		0	0	0
Storage Bay Dist (m)	45.0			30.0		45.0			
Storage Blk Time (%)	4	22			62	0			
Queuing Penalty (veh)	10	63			243	1			

Intersection: 39: Prince of Wales & Road B

Movement	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	R	L	R
Maximum Queue (m)	16.8	71.0	98.1	28.7	23.7	15.0
Average Queue (m)	3.9	29.1	55.6	1.9	15.6	3.8
95th Queue (m)	12.8	57.3	97.3	13.5	25.8	10.9
Link Distance (m)		204.7	92.6		20.7	20.7
Upstream Blk Time (%)			1		18	0
Queuing Penalty (veh)			7		11	0
Storage Bay Dist (m)	45.0			35.0		
Storage Blk Time (%)		2	10	0		
Queuing Penalty (veh)		0	2	0		

Intersection: 40: Prince of Wales & Road E

Movement	EB	NB	SB
Directions Served	R	L	R
Maximum Queue (m)	21.7	11.7	0.7
Average Queue (m)	7.7	0.7	0.0
95th Queue (m)	16.4	5.3	0.7
Link Distance (m)	362.3		
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)		50.0	50.0
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 44: Road B & Road F

Movement	EB	NB	SB
Directions Served	LR	LT	T
Maximum Queue (m)	15.3	6.6	32.4
Average Queue (m)	1.2	0.2	6.1
95th Queue (m)	8.0	3.4	23.3
Link Distance (m)	105.2	20.7	232.0
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		0	
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 356

2048 Peak AM SimTraffic Results

Intersection: 10: Carling & Parkdale

Movement	EB	EB	EB	WB	WB	WB	SB
Directions Served	L	T	T	T	T	R	LR
Maximum Queue (m)	82.3	230.1	227.3	54.9	56.2	23.4	267.7
Average Queue (m)	20.0	119.3	112.7	22.9	22.1	7.8	119.8
95th Queue (m)	55.0	261.0	258.3	46.5	48.0	18.7	288.7
Link Distance (m)		225.6	225.6	174.6	174.6		272.5
Upstream Blk Time (%)		35	30				24
Queuing Penalty (veh)		0	0				58
Storage Bay Dist (m)	155.0					80.0	
Storage Blk Time (%)		37			0		
Queuing Penalty (veh)		41			0		

Intersection: 11: Carling & Civic

Movement	EB	EB	EB	WB	WB	SB
Directions Served	L	T	T	T	T	LR
Maximum Queue (m)	23.8	176.6	176.2	37.0	41.9	47.5
Average Queue (m)	3.4	92.5	93.0	15.8	17.6	20.3
95th Queue (m)	15.6	214.2	213.6	32.2	37.5	50.0
Link Distance (m)		174.6	174.6	189.4	189.4	49.6
Upstream Blk Time (%)		41	40			20
Queuing Penalty (veh)		234	231			0
Storage Bay Dist (m)	90.0					
Storage Blk Time (%)		43				
Queuing Penalty (veh)		16				

Intersection: 12: Carling & Melrose

Movement	EB	EB	EB	WB	WB	SB
Directions Served	L	T	T	T	T	LR
Maximum Queue (m)	11.4	192.3	192.1	11.5	10.0	92.1
Average Queue (m)	1.1	92.5	92.4	0.6	0.6	27.3
95th Queue (m)	6.7	245.3	245.5	5.4	5.1	86.3
Link Distance (m)		189.4	189.4	239.5	239.5	211.1
Upstream Blk Time (%)		45	45			
Queuing Penalty (veh)		250	251			
Storage Bay Dist (m)	25.0					
Storage Blk Time (%)		48			0	
Queuing Penalty (veh)		9			0	

Intersection: 13: Maple/Old Irvine & Carling

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	SB
Directions Served	L	T	T	R	L	T	T	R	LTR	LTR
Maximum Queue (m)	22.2	241.7	241.8	20.9	32.0	44.3	40.0	2.9	156.7	36.8
Average Queue (m)	2.4	149.1	150.7	2.7	10.3	19.1	13.8	0.2	56.3	10.0
95th Queue (m)	11.1	309.6	308.8	13.4	24.8	37.0	31.5	1.5	160.5	34.4
Link Distance (m)		239.5	239.5			191.1	191.1		166.9	225.8
Upstream Blk Time (%)		49	49						16	
Queuing Penalty (veh)		280	280						13	
Storage Bay Dist (m)	20.0			15.0	45.0			25.0		
Storage Blk Time (%)	0	64	64	0	0	0	2			
Queuing Penalty (veh)	1	17	33	0	0	0	0			

Intersection: 14: Carling & Bayswater

Movement	EB	EB	WB	WB
Directions Served	T	T	T	T
Maximum Queue (m)	194.4	194.0	8.5	11.3
Average Queue (m)	126.2	117.4	1.5	1.6
95th Queue (m)	262.2	263.9	13.2	15.2
Link Distance (m)	191.1	191.1	114.2	114.2
Upstream Blk Time (%)	55	55		
Queuing Penalty (veh)	282	279		
Storage Bay Dist (m)				
Storage Blk Time (%)				2
Queuing Penalty (veh)				0

Intersection: 15: Carling & Sherwood

Movement	EB	EB	EB	WB	WB	WB	SB	SB
Directions Served	L	T	T	T	T	R	L	R
Maximum Queue (m)	35.4	116.2	93.7	30.2	37.0	19.0	71.0	20.6
Average Queue (m)	35.1	108.1	56.9	10.6	14.2	6.5	36.7	2.7
95th Queue (m)	38.3	136.3	146.6	24.4	29.3	16.1	62.7	13.3
Link Distance (m)		114.2	114.2	143.4	143.4		138.3	
Upstream Blk Time (%)		81	44					
Queuing Penalty (veh)		82	44					
Storage Bay Dist (m)	30.0					90.0		15.0
Storage Blk Time (%)	100	0					44	0
Queuing Penalty (veh)	464	0					2	0

Intersection: 16: Road A/Champagne & Carling

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	T	R	L	TR	L	TR
Maximum Queue (m)	26.3	52.0	51.4	48.7	68.3	106.7	97.5	36.7	40.2	42.6	37.2	84.7
Average Queue (m)	5.0	15.5	16.9	11.9	45.7	25.3	22.2	4.7	17.8	19.6	31.9	27.1
95th Queue (m)	16.5	38.1	38.1	32.7	72.4	78.9	63.0	19.4	33.6	36.1	41.3	69.7
Link Distance (m)		143.4	143.4			103.7	103.7		58.9	58.9		481.7
Upstream Blk Time (%)						1	0					
Queuing Penalty (veh)						4	0					
Storage Bay Dist (m)	55.0			75.0	61.0			35.0			30.0	
Storage Blk Time (%)		0	0	0	8	0	4	0			21	0
Queuing Penalty (veh)		0	0	0	25	1	2	0			19	0

Intersection: 17: Carling & Trillium MUP

Movement	EB	EB	WB	WB
Directions Served	T	T	T	T
Maximum Queue (m)	52.3	50.7	80.9	85.5
Average Queue (m)	21.2	20.5	41.3	40.6
95th Queue (m)	43.2	42.4	73.9	77.3
Link Distance (m)	103.7	103.7	93.8	93.8
Upstream Blk Time (%)			0	0
Queuing Penalty (veh)			0	0
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 18: Preston & Carling

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	R	L	T	T	R	L	T	TR	L
Maximum Queue (m)	44.6	74.1	70.1	63.1	101.9	72.1	67.0	22.1	94.6	126.1	134.7	42.4
Average Queue (m)	15.7	37.4	30.5	24.5	57.2	34.2	35.1	8.2	45.5	78.5	72.4	36.1
95th Queue (m)	34.5	65.3	59.8	51.6	94.0	59.3	58.2	17.3	86.7	120.2	123.7	53.5
Link Distance (m)		93.8	93.8			165.0	165.0		129.7	129.7	129.7	
Upstream Blk Time (%)		0	0	0						0	0	
Queuing Penalty (veh)		0	0	0						1	2	
Storage Bay Dist (m)	70.0			90.0	120.0			95.0				35.0
Storage Blk Time (%)		1	0	0	0							27
Queuing Penalty (veh)		1	0	0	1							83

Intersection: 18: Preston & Carling

Movement	SB	B57
Directions Served	TR	T
Maximum Queue (m)	77.1	221.6
Average Queue (m)	66.7	114.5
95th Queue (m)	86.4	324.6
Link Distance (m)	50.0	416.8
Upstream Blk Time (%)	54	5
Queuing Penalty (veh)	0	0
Storage Bay Dist (m)		
Storage Blk Time (%)	49	
Queuing Penalty (veh)	52	

Intersection: 19: Carling & Rochester

Movement	EB	EB	WB	WB	SB
Directions Served	T	T	T	R	R
Maximum Queue (m)	28.9	19.9	17.1	16.9	27.8
Average Queue (m)	3.2	2.0	0.8	1.4	13.2
95th Queue (m)	24.6	17.9	7.9	8.5	22.6
Link Distance (m)	165.0	165.0	104.1		396.1
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)				30.0	
Storage Blk Time (%)			0		
Queuing Penalty (veh)			0		

Intersection: 20: Carling & Booth

Movement	EB	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	T	R	L	R
Maximum Queue (m)	57.3	99.6	86.1	183.6	37.5	155.9	37.5
Average Queue (m)	39.8	45.0	39.1	100.9	21.9	77.9	28.4
95th Queue (m)	64.5	94.9	82.4	176.8	47.1	188.8	48.5
Link Distance (m)		104.1	104.1	302.7		229.2	
Upstream Blk Time (%)		2	1			11	
Queuing Penalty (veh)		14	6			0	
Storage Bay Dist (m)	50.0				30.0		30.0
Storage Blk Time (%)	6	9		39	0	34	4
Queuing Penalty (veh)	30	31		68	1	60	7

Intersection: 21: Bronson & Carling/Glebe

Movement	EB	EB	EB	B1	B1	NB	NB	NB	SB	SB
Directions Served	L	LT	R	T	T	L	L	TR	T	TR
Maximum Queue (m)	47.4	101.2	90.5	218.9	195.2	57.4	402.4	409.5	109.1	123.8
Average Queue (m)	46.3	89.9	44.0	148.4	120.8	57.3	390.1	388.5	66.4	78.1
95th Queue (m)	51.0	109.6	81.9	345.5	349.0	57.6	430.4	455.8	98.3	110.8
Link Distance (m)		71.5	71.5	302.7	302.7		390.8	390.8	332.5	332.5
Upstream Blk Time (%)		64	3	10	8		33	23		
Queuing Penalty (veh)		369	20	60	48		282	190		
Storage Bay Dist (m)	40.0					50.0				
Storage Blk Time (%)	40	71				80	2			
Queuing Penalty (veh)	141	184				214	4			

Intersection: 22: Parkdale & 417 WB on/off

Movement	WB	WB	NB	NB	SB
Directions Served	L	TR	L	T	TR
Maximum Queue (m)	109.1	92.7	57.5	54.7	193.0
Average Queue (m)	48.2	44.2	30.6	21.6	121.2
95th Queue (m)	104.2	91.5	54.4	43.7	215.2
Link Distance (m)	152.4	152.4	55.6	55.6	183.6
Upstream Blk Time (%)	6	4	2	0	20
Queuing Penalty (veh)	0	0	4	1	0
Storage Bay Dist (m)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 23: Parkdale & 417 EB on/off

Movement	EB	EB	NB	NB	SB	SB
Directions Served	LT	R	T	TR	L	T
Maximum Queue (m)	100.6	68.3	94.4	37.5	60.8	50.0
Average Queue (m)	43.7	21.8	51.9	33.1	44.2	20.1
95th Queue (m)	92.0	58.2	106.1	46.6	74.8	48.1
Link Distance (m)	121.0		90.9		55.6	55.6
Upstream Blk Time (%)	8		3		8	11
Queuing Penalty (veh)	0		18		26	34
Storage Bay Dist (m)		75.0		30.0		
Storage Blk Time (%)	0	9	1	26		
Queuing Penalty (veh)	1	19	4	37		

Intersection: 24: Parkdale & Sherwood

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	76.7	29.4	64.5	86.0
Average Queue (m)	21.5	13.4	25.1	46.9
95th Queue (m)	60.9	23.6	52.4	85.8
Link Distance (m)	236.5	344.4	294.1	90.9
Upstream Blk Time (%)				12
Queuing Penalty (veh)				50
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 25: Parkdale & Ruskin

Movement	EB	WB	WB	NB	SB
Directions Served	LTR	L	TR	LTR	LTR
Maximum Queue (m)	104.4	13.2	22.6	54.3	222.7
Average Queue (m)	27.8	2.9	9.9	16.3	69.4
95th Queue (m)	92.6	10.9	19.5	39.4	237.0
Link Distance (m)	236.1		243.9	272.5	294.1
Upstream Blk Time (%)	0				13
Queuing Penalty (veh)	0				44
Storage Bay Dist (m)		40.0			
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 27: Bayswater & Sherwood

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	21.8	16.1	7.0	20.0
Average Queue (m)	10.3	5.2	1.9	10.1
95th Queue (m)	18.7	11.8	7.1	16.6
Link Distance (m)	602.2	138.3		93.6
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 29: Navy/Navy Parking Access & Prince of Wales

Movement	EB	WB	NB	SB
Directions Served	TR	LTR	LTR	R
Maximum Queue (m)	95.5	45.2	7.5	8.5
Average Queue (m)	37.9	3.1	0.4	1.8
95th Queue (m)	100.9	23.6	3.6	7.4
Link Distance (m)	92.6	85.9	39.1	34.1
Upstream Blk Time (%)	3	0		
Queuing Penalty (veh)	29	0		
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 30: Prince of Wales & Preston

Movement	EB	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	L	TR	T	R	LTR	LT	R
Maximum Queue (m)	52.4	93.0	44.6	142.3	52.5	6.9	71.7	115.8
Average Queue (m)	40.2	79.0	13.3	56.6	19.9	0.5	39.6	53.7
95th Queue (m)	68.4	107.8	32.8	114.8	61.7	3.5	64.7	96.8
Link Distance (m)		85.9	85.9	178.4		18.1	129.7	129.7
Upstream Blk Time (%)		14		0				0
Queuing Penalty (veh)		67		0				0
Storage Bay Dist (m)	45.0				45.0			
Storage Blk Time (%)	2	33		30	1			
Queuing Penalty (veh)	8	118		89	1			

Intersection: 31: Rochester & 417 WB on/Raymond

Movement	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	T	T	R
Maximum Queue (m)	51.4	51.1	31.7	50.7	33.6	33.9
Average Queue (m)	26.5	21.9	13.9	18.6	14.3	15.3
95th Queue (m)	43.6	39.9	25.8	37.0	28.1	27.1
Link Distance (m)	102.6	102.6	82.9	82.9	166.0	
Upstream Blk Time (%)				0		
Queuing Penalty (veh)				0		
Storage Bay Dist (m)						35.0
Storage Blk Time (%)					0	0
Queuing Penalty (veh)					0	0

Intersection: 32: Rochester & 417 EB off/Orangeville

Movement	EB	EB	NB	NB	SB	SB
Directions Served	LT	TR	T	TR	LT	T
Maximum Queue (m)	61.1	53.1	30.7	46.7	51.5	34.8
Average Queue (m)	33.5	24.7	10.5	19.5	29.4	6.3
95th Queue (m)	52.7	43.0	23.4	37.8	47.7	22.2
Link Distance (m)	116.5	116.5	101.7	101.7	82.9	82.9
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 33: Bronson & Catherine 417 WB on

Movement	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	LT	T	TR	L	T	T	T	TR
Maximum Queue (m)	96.0	109.0	90.8	64.1	84.1	68.1	69.1	69.4	67.9
Average Queue (m)	61.2	68.3	47.5	31.1	54.2	45.0	45.2	42.4	37.6
95th Queue (m)	88.2	94.3	79.1	53.9	85.6	65.1	66.0	62.2	60.2
Link Distance (m)	174.4	174.4	174.4	174.4	81.8	81.8	81.8	236.0	236.0
Upstream Blk Time (%)						1			
Queuing Penalty (veh)						7			
Storage Bay Dist (m)									
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 34: Bronson & 417 EB off

Movement	EB	EB	NB	NB	SB	SB
Directions Served	L	R	T	T	T	T
Maximum Queue (m)	95.7	67.5	66.7	68.5	80.7	78.6
Average Queue (m)	52.7	45.6	33.9	50.4	36.4	33.9
95th Queue (m)	92.4	76.4	65.0	73.8	71.3	70.0
Link Distance (m)	91.1		57.4	57.4	81.8	81.8
Upstream Blk Time (%)	2		2	7	0	0
Queuing Penalty (veh)	0		15	44	1	1
Storage Bay Dist (m)		60.0				
Storage Blk Time (%)	5	3				
Queuing Penalty (veh)	17	9				

Intersection: 35: Bronson & Plymouth/Imperial Chamberlain

Movement	NB	NB	SB	SB	SB
Directions Served	LT	TR	L	T	TR
Maximum Queue (m)	342.2	345.2	36.7	49.9	42.8
Average Queue (m)	283.1	301.7	22.0	4.7	2.8
95th Queue (m)	369.5	372.1	36.2	29.4	20.8
Link Distance (m)	332.5	332.5		57.4	57.4
Upstream Blk Time (%)	3	12		0	0
Queuing Penalty (veh)	20	77		3	0
Storage Bay Dist (m)			30.0		
Storage Blk Time (%)			6	0	
Queuing Penalty (veh)			30	0	

Intersection: 36: Bronson & Madawaska/Fifth

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	LT	TR	LT	TR
Maximum Queue (m)	38.8	93.1	211.4	210.8	82.8	86.2
Average Queue (m)	11.0	35.7	192.3	192.3	35.1	37.6
95th Queue (m)	30.8	71.6	247.8	247.8	71.9	75.0
Link Distance (m)	182.2	118.1	195.0	195.0	390.8	390.8
Upstream Blk Time (%)		0	78	79		
Queuing Penalty (veh)		0	0	0		
Storage Bay Dist (m)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 37: Road L & Road M/Road A

Movement	EB	NB
Directions Served	T	R
Maximum Queue (m)	1.5	4.3
Average Queue (m)	0.1	0.1
95th Queue (m)	1.2	2.1
Link Distance (m)	34.2	24.1
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 38: Maple & Winding/Road D

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	63.8	8.4	51.2	21.3
Average Queue (m)	13.7	2.2	12.6	10.8
95th Queue (m)	51.3	8.1	42.7	17.7
Link Distance (m)	183.3	13.9	131.4	166.9
Upstream Blk Time (%)		5	0	
Queuing Penalty (veh)		1	0	
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 39: Prince of Wales & Road B

Movement	EB	EB	B86	WB	WB	SB	SB
Directions Served	L	T	T	T	TR	L	R
Maximum Queue (m)	48.7	176.5	9.5	78.4	42.5	22.2	16.3
Average Queue (m)	13.2	58.7	0.3	23.6	14.4	12.5	6.2
95th Queue (m)	35.9	135.9	6.9	52.1	40.5	23.4	14.2
Link Distance (m)		205.7	72.5	92.6		20.9	20.9
Upstream Blk Time (%)		0		0		5	0
Queuing Penalty (veh)		4		1		2	0
Storage Bay Dist (m)	45.0				35.0		
Storage Blk Time (%)	0	9		3	0		
Queuing Penalty (veh)	0	6		10	1		

Intersection: 40: Prince of Wales & Road E

Movement	EB	NB	SB
Directions Served	R	L	R
Maximum Queue (m)	19.4	12.9	4.5
Average Queue (m)	6.8	2.0	0.2
95th Queue (m)	14.6	8.7	2.7
Link Distance (m)	167.0		
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)	50.0	50.0	
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 41: Road B & Road A

Movement	EB	EB	WB	WB	NB
Directions Served	T	TR	L	T	LR
Maximum Queue (m)	10.0	23.5	24.6	18.8	19.6
Average Queue (m)	3.5	11.8	11.7	9.8	9.8
95th Queue (m)	10.8	18.8	20.4	16.4	15.6
Link Distance (m)	51.4	51.4	40.4	40.4	45.7
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 42: A Parking Access & Road A

Movement	EB	WB	NB	SB
Directions Served	TR	LT	LTR	LTR
Maximum Queue (m)	8.8	49.5	29.1	8.4
Average Queue (m)	0.9	12.6	14.4	1.1
95th Queue (m)	4.7	34.3	23.8	5.8
Link Distance (m)	40.4	58.9	36.6	41.4
Upstream Blk Time (%)		0	0	
Queuing Penalty (veh)		0	0	
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 43: Road B & B Parking Access

Movement	WB	NB	SB
Directions Served	LR	R	LT
Maximum Queue (m)	20.0	4.2	17.9
Average Queue (m)	8.4	0.1	3.9
95th Queue (m)	15.3	1.8	12.9
Link Distance (m)	32.1	46.2	45.7
Upstream Blk Time (%)	0		
Queuing Penalty (veh)	0		
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 44: Road B & Road F

Movement	EB	NB	SB
Directions Served	LR	LT	T
Maximum Queue (m)	16.5	6.5	12.3
Average Queue (m)	1.5	0.2	0.9
95th Queue (m)	9.1	3.3	6.4
Link Distance (m)	105.3	20.9	46.2
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		0	
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 45: Road E & Road D

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (m)	0.9	2.7	10.2
Average Queue (m)	0.1	0.1	4.2
95th Queue (m)	1.1	1.8	9.9
Link Distance (m)	13.9	131.9	199.2
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 5589

Intersection: 29: Navy/Navy Parking Access & Prince of Wales

Movement	EB	WB	NB	SB
Directions Served	TR	LTR	LTR	R
Maximum Queue (m)	88.3	64.1	5.5	10.6
Average Queue (m)	17.9	5.9	0.3	2.0
95th Queue (m)	68.1	36.2	2.6	8.3
Link Distance (m)	92.6	86.0	39.1	34.1
Upstream Blk Time (%)	1	0		
Queuing Penalty (veh)	6	4		
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 30: Prince of Wales & Preston

Movement	EB	EB	EB	WB	WB	NB	SB	SB
Directions Served	L	L	TR	T	R	LTR	LT	R
Maximum Queue (m)	52.4	92.6	58.1	131.6	52.5	7.8	100.9	189.6
Average Queue (m)	45.0	67.0	21.7	62.4	23.9	0.9	44.2	93.3
95th Queue (m)	64.2	104.2	47.8	115.4	66.7	4.9	86.6	166.3
Link Distance (m)		86.0	86.0	354.7		18.6	290.7	290.7
Upstream Blk Time (%)		6	0			0	0	0
Queuing Penalty (veh)		26	0			0	0	0
Storage Bay Dist (m)	45.0				45.0			
Storage Blk Time (%)	4	18		34	0			
Queuing Penalty (veh)	14	66		101	0			

Intersection: 39: Prince of Wales & Road B

Movement	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	R	L	R
Maximum Queue (m)	45.6	112.0	96.2	42.2	21.9	14.4
Average Queue (m)	12.2	44.9	40.9	8.0	11.2	4.7
95th Queue (m)	31.6	88.5	83.6	30.5	22.3	11.2
Link Distance (m)		204.7	92.6		20.7	20.7
Upstream Blk Time (%)			1		5	0
Queuing Penalty (veh)			4		3	0
Storage Bay Dist (m)	45.0			35.0		
Storage Blk Time (%)		5	7	0		
Queuing Penalty (veh)		4	5	0		

Intersection: 40: Prince of Wales & Road E

Movement	EB	NB	SB	SB
Directions Served	R	L	T	R
Maximum Queue (m)	20.0	12.7	1.8	9.1
Average Queue (m)	7.6	2.7	0.1	0.4
95th Queue (m)	16.1	9.6	1.8	3.9
Link Distance (m)	355.8		66.1	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)		50.0		50.0
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 44: Road B & Road F

Movement	EB	NB	SB
Directions Served	LR	LT	T
Maximum Queue (m)	17.7	3.1	12.2
Average Queue (m)	1.6	0.1	1.2
95th Queue (m)	9.5	2.6	7.1
Link Distance (m)	105.2	20.7	297.4
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		0	
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 233

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Intersection: 10: Carling & Parkdale

Movement	EB	EB	EB	WB	WB	WB	SB
Directions Served	L	T	T	T	T	R	LR
Maximum Queue (m)	51.1	59.7	53.3	163.8	164.9	87.5	73.6
Average Queue (m)	24.6	25.2	17.2	71.3	74.7	22.5	33.9
95th Queue (m)	44.7	51.3	41.3	141.0	146.3	74.8	62.9
Link Distance (m)		316.0	316.0	174.6	174.6		272.5
Upstream Blk Time (%)				0	0		
Queuing Penalty (veh)				1	2		
Storage Bay Dist (m)	155.0					80.0	
Storage Blk Time (%)					8	0	
Queuing Penalty (veh)					9	0	

Intersection: 11: Carling & Civic

Movement	EB	EB	EB	WB	WB	SB
Directions Served	L	T	T	T	T	LR
Maximum Queue (m)	17.8	52.1	52.3	102.4	103.7	25.4
Average Queue (m)	5.6	14.5	12.3	38.6	38.9	8.0
95th Queue (m)	14.8	37.3	35.0	81.8	84.6	19.3
Link Distance (m)		174.6	174.6	189.4	189.4	49.6
Upstream Blk Time (%)						0
Queuing Penalty (veh)						0
Storage Bay Dist (m)	90.0					
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 12: Carling & Melrose

Movement	EB	EB	EB	WB	WB	WB	SB
Directions Served	L	T	T	T	T	R	LR
Maximum Queue (m)	16.3	10.8	16.5	22.8	25.4	4.0	11.5
Average Queue (m)	4.9	1.0	1.1	2.3	2.2	0.1	3.0
95th Queue (m)	13.6	6.1	8.0	12.7	13.0	2.9	9.3
Link Distance (m)		189.4	189.4	239.5	239.5		211.1
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (m)	25.0					20.0	
Storage Blk Time (%)	0				0		
Queuing Penalty (veh)	0				0		

Intersection: 13: Maple/Old Irvine & Carling

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	SB
Directions Served	L	T	T	R	L	T	T	R	LTR	LTR
Maximum Queue (m)	26.3	60.9	62.5	22.5	46.9	94.1	74.9	20.3	69.7	15.8
Average Queue (m)	8.2	22.0	23.3	6.3	10.7	49.5	37.1	1.0	32.4	5.6
95th Queue (m)	20.2	45.8	50.1	20.1	32.2	84.1	67.1	9.4	56.6	13.9
Link Distance (m)		239.5	239.5			191.1	191.1		166.9	225.8
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (m)	20.0			15.0	45.0			25.0		
Storage Blk Time (%)	2	8	13	0	0	8	11	0		
Queuing Penalty (veh)	5	3	7	0	0	4	1	0		

Intersection: 14: Carling & Bayswater

Movement	EB	EB
Directions Served	T	T
Maximum Queue (m)	22.3	14.2
Average Queue (m)	7.0	3.8
95th Queue (m)	34.0	24.4
Link Distance (m)	191.1	191.1
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 15: Carling & Sherwood

Movement	EB	EB	EB	WB	WB	WB	SB	SB
Directions Served	L	T	T	T	T	R	L	R
Maximum Queue (m)	35.4	109.6	46.3	68.6	73.1	34.0	63.3	19.5
Average Queue (m)	35.4	93.1	21.8	21.1	21.5	7.1	29.7	3.2
95th Queue (m)	36.1	121.6	90.8	47.6	49.9	22.6	52.4	14.3
Link Distance (m)		114.2	114.2	143.4	143.4		138.3	
Upstream Blk Time (%)		27	11					
Queuing Penalty (veh)		4	2					
Storage Bay Dist (m)	30.0					90.0		15.0
Storage Blk Time (%)	100			0	0	38	0	0
Queuing Penalty (veh)	318			0	0	3	0	0

Intersection: 16: Road A/Champagne & Carling

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	T	R	L	TR	L	TR
Maximum Queue (m)	18.1	30.4	35.8	16.9	68.3	107.7	108.7	42.5	51.0	60.3	37.3	89.0
Average Queue (m)	4.6	10.1	12.7	3.4	19.0	65.2	71.0	20.6	24.7	29.9	30.8	29.4
95th Queue (m)	13.9	24.1	28.9	11.7	48.8	112.7	116.7	49.2	44.3	54.3	42.9	73.0
Link Distance (m)		143.4	143.4			103.7	103.7		58.9	58.9		481.7
Upstream Blk Time (%)						2	2		0	1		
Queuing Penalty (veh)						11	16		0	1		
Storage Bay Dist (m)	55.0			75.0	61.0			35.0			30.0	
Storage Blk Time (%)						12	26	0			21	0
Queuing Penalty (veh)						8	40	1			20	0

Intersection: 17: Carling & Trillium MUP

Movement	EB	EB	WB	WB
Directions Served	T	T	T	T
Maximum Queue (m)	56.2	61.1	89.9	91.1
Average Queue (m)	18.7	22.1	46.2	51.5
95th Queue (m)	46.2	49.7	82.4	85.6
Link Distance (m)	103.7	103.7	93.8	93.8
Upstream Blk Time (%)			0	1
Queuing Penalty (veh)			3	5
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 18: Preston & Carling

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	R	L	T	T	R	L	T	TR	L
Maximum Queue (m)	41.3	56.6	55.1	65.9	115.3	102.8	104.6	23.9	93.0	94.5	76.3	42.4
Average Queue (m)	16.0	27.1	23.0	36.9	69.9	59.0	68.4	5.9	48.7	36.8	25.4	33.2
95th Queue (m)	32.8	50.1	45.6	61.7	104.8	89.1	97.3	17.9	86.4	75.0	63.1	55.8
Link Distance (m)		93.8	93.8			165.0	165.0		129.7	129.7	129.7	
Upstream Blk Time (%)									0	0	0	
Queuing Penalty (veh)									0	0	1	
Storage Bay Dist (m)	70.0			90.0	120.0			95.0				35.0
Storage Blk Time (%)		0			0		1					11
Queuing Penalty (veh)		0			1		1					40

Intersection: 18: Preston & Carling

Movement	SB	B57
Directions Served	TR	T
Maximum Queue (m)	77.7	345.6
Average Queue (m)	71.4	214.6
95th Queue (m)	77.8	456.1
Link Distance (m)	50.0	416.8
Upstream Blk Time (%)	71	16
Queuing Penalty (veh)	0	0
Storage Bay Dist (m)		
Storage Blk Time (%)	70	
Queuing Penalty (veh)	64	

Intersection: 19: Carling & Rochester

Movement	EB	EB	WB	WB	SB	B66
Directions Served	T	T	T	R	R	T
Maximum Queue (m)	15.4	7.0	25.1	3.6	80.5	11.0
Average Queue (m)	0.7	0.3	1.8	0.1	31.9	0.4
95th Queue (m)	6.1	3.2	11.8	2.0	63.5	10.8
Link Distance (m)	165.0	165.0	104.1		396.1	101.7
Upstream Blk Time (%)						0
Queuing Penalty (veh)						0
Storage Bay Dist (m)				30.0		
Storage Blk Time (%)			0			
Queuing Penalty (veh)			0			

Intersection: 20: Carling & Booth

Movement	EB	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	T	R	L	R
Maximum Queue (m)	56.1	77.2	66.3	223.2	37.5	218.7	37.5
Average Queue (m)	31.2	29.5	26.4	143.6	10.2	127.7	34.5
95th Queue (m)	54.5	63.1	55.0	221.6	34.2	227.3	45.9
Link Distance (m)		104.1	104.1	302.7		229.2	
Upstream Blk Time (%)		0				6	
Queuing Penalty (veh)		0				0	
Storage Bay Dist (m)	50.0				30.0		30.0
Storage Blk Time (%)	1	2		41	0	42	20
Queuing Penalty (veh)	6	4		35	0	114	52

Intersection: 21: Bronson & Carling/Glebe

Movement	EB	EB	EB	B1	B1	NB	NB	NB	SB	SB
Directions Served	L	LT	R	T	T	L	L	TR	T	TR
Maximum Queue (m)	47.5	100.9	88.6	125.5	67.9	57.4	398.6	407.5	302.9	303.7
Average Queue (m)	44.5	79.1	43.4	44.0	15.9	57.1	393.6	391.0	214.5	223.6
95th Queue (m)	54.5	111.9	79.2	145.9	101.0	58.1	399.6	419.0	352.3	354.9
Link Distance (m)		71.5	71.5	302.7	302.7		390.8	390.8	332.5	332.5
Upstream Blk Time (%)		34	3				58	40	4	5
Queuing Penalty (veh)		175	15				364	247	27	40
Storage Bay Dist (m)	40.0					50.0				
Storage Blk Time (%)	23	54				84	2			
Queuing Penalty (veh)	76	125				225	5			

Intersection: 22: Parkdale & 417 WB on/off

Movement	WB	WB	NB	NB	SB
Directions Served	L	TR	L	T	TR
Maximum Queue (m)	105.6	127.6	49.5	60.5	193.8
Average Queue (m)	45.9	57.6	22.5	28.1	152.2
95th Queue (m)	81.0	106.8	42.0	57.2	239.5
Link Distance (m)	152.4	152.4	55.6	55.6	183.6
Upstream Blk Time (%)	0	0	0	2	37
Queuing Penalty (veh)	0	0	0	5	0
Storage Bay Dist (m)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 23: Parkdale & 417 EB on/off

Movement	EB	EB	NB	NB	SB	SB
Directions Served	LT	R	T	TR	L	T
Maximum Queue (m)	117.2	77.7	95.6	37.5	60.8	57.0
Average Queue (m)	60.7	25.3	54.8	34.1	53.2	31.0
95th Queue (m)	104.5	65.4	113.4	44.0	68.7	56.0
Link Distance (m)	121.0		90.9		55.6	55.6
Upstream Blk Time (%)	1		4		11	1
Queuing Penalty (veh)	0		28		46	3
Storage Bay Dist (m)		75.0		30.0		
Storage Blk Time (%)	5	0	0	28		
Queuing Penalty (veh)	9	0	1	39		

Intersection: 24: Parkdale & Sherwood

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	31.8	32.2	80.7	86.4
Average Queue (m)	13.6	14.8	31.2	40.6
95th Queue (m)	26.9	26.7	62.5	73.3
Link Distance (m)	236.5	344.4	294.1	90.9
Upstream Blk Time (%)				1
Queuing Penalty (veh)				4
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 25: Parkdale & Ruskin

Movement	EB	WB	WB	NB	SB
Directions Served	LTR	L	TR	LTR	LTR
Maximum Queue (m)	29.6	10.2	29.0	46.6	46.9
Average Queue (m)	11.3	2.0	11.7	16.3	21.0
95th Queue (m)	23.0	8.0	23.1	36.2	40.8
Link Distance (m)	236.1		243.9	272.5	294.1
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)		40.0			
Storage Blk Time (%)			0		
Queuing Penalty (veh)			0		

Intersection: 27: Bayswater & Sherwood

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	20.4	19.4	7.1	37.3
Average Queue (m)	8.0	6.4	1.5	15.9
95th Queue (m)	15.9	14.1	6.2	27.6
Link Distance (m)	602.2	138.3		93.6
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 29: Navy/Navy Parking Access & Prince of Wales

Movement	EB	WB	NB	SB
Directions Served	TR	LTR	LTR	R
Maximum Queue (m)	89.2	32.1	10.6	22.9
Average Queue (m)	17.8	1.5	2.5	7.0
95th Queue (m)	66.7	17.0	8.7	15.9
Link Distance (m)	92.6	85.9	39.1	34.1
Upstream Blk Time (%)	0	0		0
Queuing Penalty (veh)	3	1		0
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 30: Prince of Wales & Preston

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	L	T	L	T	R	LTR	LT	R
Maximum Queue (m)	52.4	92.5	61.3	4.0	192.6	52.5	5.2	117.9	122.8
Average Queue (m)	40.3	70.8	24.1	0.3	183.9	45.5	1.9	62.8	78.3
95th Queue (m)	64.7	103.5	48.3	2.3	191.4	74.5	9.9	102.1	114.0
Link Distance (m)		85.9	85.9		178.4		18.1	129.7	129.7
Upstream Blk Time (%)		8			69		9	0	0
Queuing Penalty (veh)		35			0		0	0	1
Storage Bay Dist (m)	45.0			30.0		45.0			
Storage Blk Time (%)	3	28			69	1			
Queuing Penalty (veh)	7	74			278	3			

Intersection: 31: Rochester & 417 WB on/Raymond

Movement	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	T	T	R
Maximum Queue (m)	57.7	75.7	41.2	57.2	52.8	37.3
Average Queue (m)	26.2	34.3	18.7	28.2	20.6	13.2
95th Queue (m)	44.9	58.8	33.3	48.6	39.6	27.7
Link Distance (m)	102.6	102.6	82.9	82.9	166.0	
Upstream Blk Time (%)		0				
Queuing Penalty (veh)		0				
Storage Bay Dist (m)						35.0
Storage Blk Time (%)					2	0
Queuing Penalty (veh)					2	0

Intersection: 32: Rochester & 417 EB off/Orangeville

Movement	EB	EB	NB	NB	SB	SB
Directions Served	LT	TR	T	TR	LT	T
Maximum Queue (m)	82.1	61.2	29.0	55.5	68.2	63.6
Average Queue (m)	49.1	26.4	11.0	25.4	33.7	10.0
95th Queue (m)	72.3	51.4	23.5	46.5	56.1	35.5
Link Distance (m)	116.5	116.5	101.7	101.7	82.9	82.9
Upstream Blk Time (%)					0	0
Queuing Penalty (veh)					0	0
Storage Bay Dist (m)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 33: Bronson & Catherine 417 WB on

Movement	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	LT	T	TR	L	T	T	T	TR
Maximum Queue (m)	139.7	132.6	114.4	68.2	70.3	58.8	56.8	169.0	167.6
Average Queue (m)	86.4	87.6	65.1	29.9	34.6	31.5	31.1	101.4	99.0
95th Queue (m)	135.7	132.1	116.3	69.5	60.7	53.4	53.1	186.8	184.8
Link Distance (m)	174.4	174.4	174.4	174.4	81.8	81.8	81.8	242.3	242.3
Upstream Blk Time (%)	2	2	1	0	0			3	4
Queuing Penalty (veh)	0	0	0	0	1			0	0
Storage Bay Dist (m)									
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 34: Bronson & 417 EB off

Movement	EB	EB	NB	NB	SB	SB
Directions Served	L	R	T	T	T	T
Maximum Queue (m)	96.9	67.5	58.1	64.7	88.3	90.9
Average Queue (m)	39.0	49.6	19.5	38.2	65.4	63.6
95th Queue (m)	89.6	74.4	45.4	66.0	96.7	95.8
Link Distance (m)	91.1		57.4	57.4	81.8	81.8
Upstream Blk Time (%)	6		0	2	3	3
Queuing Penalty (veh)	0		2	11	23	22
Storage Bay Dist (m)		60.0				
Storage Blk Time (%)	0	12				
Queuing Penalty (veh)	0	17				

Intersection: 35: Bronson & Plymouth/Imperial Chamberlain

Movement	NB	NB	SB	SB	SB
Directions Served	LT	TR	L	T	TR
Maximum Queue (m)	319.9	327.3	37.2	58.9	54.5
Average Queue (m)	223.0	250.8	25.2	15.1	14.5
95th Queue (m)	341.0	354.0	40.6	56.7	56.0
Link Distance (m)	332.5	332.5		57.4	57.4
Upstream Blk Time (%)	1	2		1	2
Queuing Penalty (veh)	4	12		13	21
Storage Bay Dist (m)			30.0		
Storage Blk Time (%)			6	5	
Queuing Penalty (veh)			43	12	

Intersection: 36: Bronson & Madawaska/Fifth

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	LT	TR	LT	TR
Maximum Queue (m)	72.7	127.7	246.4	247.5	150.1	153.4
Average Queue (m)	26.8	92.8	224.7	224.7	67.4	72.8
95th Queue (m)	67.7	151.9	291.6	291.0	129.8	137.3
Link Distance (m)	182.2	118.1	232.0	232.0	390.8	390.8
Upstream Blk Time (%)		47	81	84		
Queuing Penalty (veh)		0	0	0		
Storage Bay Dist (m)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 37: Road L & Road M/Road A

Movement	NB
Directions Served	R
Maximum Queue (m)	5.4
Average Queue (m)	0.2
95th Queue (m)	2.6
Link Distance (m)	24.1
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 38: Maple & Winding/Road D

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	17.7	5.2	16.9	17.6
Average Queue (m)	8.9	2.0	9.0	9.8
95th Queue (m)	14.9	5.8	14.7	15.0
Link Distance (m)	183.3	13.9	131.4	166.9
Upstream Blk Time (%)		0		
Queuing Penalty (veh)		0		
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 39: Prince of Wales & Road B

Movement	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	TR	L	R
Maximum Queue (m)	32.0	106.4	69.3	42.5	22.8	15.9
Average Queue (m)	6.5	40.6	26.0	14.1	18.8	6.9
95th Queue (m)	19.9	81.6	55.7	42.1	26.2	14.5
Link Distance (m)		205.7	92.6		20.9	20.9
Upstream Blk Time (%)			0		19	0
Queuing Penalty (veh)			1		16	0
Storage Bay Dist (m)	45.0			35.0		
Storage Blk Time (%)		4	3	0		
Queuing Penalty (veh)		1	13	2		

Intersection: 40: Prince of Wales & Road E

Movement	EB	NB	SB
Directions Served	R	L	R
Maximum Queue (m)	34.5	16.8	0.7
Average Queue (m)	12.9	1.8	0.0
95th Queue (m)	25.5	9.5	0.7
Link Distance (m)	167.1		
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)		50.0	50.0
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 41: Road B & Road A

Movement	EB	EB	WB	WB	NB
Directions Served	T	TR	L	T	LR
Maximum Queue (m)	11.4	22.3	15.6	18.6	19.1
Average Queue (m)	4.4	9.9	6.2	8.3	9.5
95th Queue (m)	12.3	17.2	14.4	15.5	14.8
Link Distance (m)	51.4	51.4	40.4	40.4	45.7
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 42: A Parking Access & Road A

Movement	EB	WB	NB	SB
Directions Served	TR	LT	LTR	LTR
Maximum Queue (m)	2.1	14.2	40.4	8.4
Average Queue (m)	0.1	1.9	19.9	1.3
95th Queue (m)	1.3	8.6	32.4	6.3
Link Distance (m)	40.4	58.9	36.6	41.4
Upstream Blk Time (%)			0	
Queuing Penalty (veh)			0	
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 43: Road B & B Parking Access

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (m)	27.0	6.4
Average Queue (m)	13.1	0.7
95th Queue (m)	23.2	4.8
Link Distance (m)	32.1	45.7
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	0	
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 44: Road B & Road F

Movement	EB	NB	SB
Directions Served	LR	LT	T
Maximum Queue (m)	20.0	6.5	35.7
Average Queue (m)	2.2	0.3	7.5
95th Queue (m)	11.6	4.1	24.0
Link Distance (m)	105.3	20.9	46.2
Upstream Blk Time (%)		0	0
Queuing Penalty (veh)		0	0
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 45: Road E & Road D

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (m)	0.8	4.4	7.6
Average Queue (m)	0.0	0.2	3.8
95th Queue (m)	0.8	2.2	9.3
Link Distance (m)	13.9	131.9	199.2
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 2835

Intersection: 29: Navy/Navy Parking Access & Prince of Wales

Movement	EB	WB	NB	SB
Directions Served	TR	LTR	LTR	R
Maximum Queue (m)	84.6	74.6	11.4	24.2
Average Queue (m)	16.8	16.7	2.4	7.4
95th Queue (m)	65.2	56.6	8.8	17.6
Link Distance (m)	92.6	86.0	39.1	34.1
Upstream Blk Time (%)	1	0		0
Queuing Penalty (veh)	6	0		0
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 30: Prince of Wales & Preston

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	L	T	L	T	R	LTR	LT	R
Maximum Queue (m)	52.4	92.5	66.4	21.4	381.5	52.5	6.8	171.6	251.8
Average Queue (m)	46.3	69.7	30.4	1.2	359.9	43.4	2.0	80.3	142.3
95th Queue (m)	61.6	103.7	55.9	10.0	430.0	75.8	8.5	139.4	249.3
Link Distance (m)		86.0	86.0		365.4		18.4	368.9	368.9
Upstream Blk Time (%)		7			70		2		
Queuing Penalty (veh)		31			0		0		
Storage Bay Dist (m)	45.0			30.0		45.0			
Storage Blk Time (%)	3	23		0	67	0			
Queuing Penalty (veh)	9	60		0	273	1			

Intersection: 39: Prince of Wales & Road B

Movement	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	R	L	R
Maximum Queue (m)	45.4	100.4	100.3	36.2	25.2	18.5
Average Queue (m)	6.8	38.1	71.5	3.2	19.4	5.7
95th Queue (m)	22.5	80.4	115.2	19.1	26.9	14.1
Link Distance (m)		204.7	92.6		20.7	20.7
Upstream Blk Time (%)			4		35	0
Queuing Penalty (veh)			35		30	0
Storage Bay Dist (m)	45.0			35.0		
Storage Blk Time (%)		4	15	0		
Queuing Penalty (veh)		1	3	0		

Intersection: 40: Prince of Wales & Road E

Movement	EB	NB	SB	SB
Directions Served	R	L	T	R
Maximum Queue (m)	43.0	17.7	2.9	1.6
Average Queue (m)	15.5	2.2	0.1	0.1
95th Queue (m)	31.6	10.4	1.8	1.1
Link Distance (m)	349.3		67.6	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)		50.0		50.0
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 44: Road B & Road F

Movement	EB	NB	SB	SB
Directions Served	LR	LT	T	TR
Maximum Queue (m)	21.0	6.7	48.5	6.1
Average Queue (m)	2.6	0.3	14.8	0.2
95th Queue (m)	13.1	4.1	37.5	4.5
Link Distance (m)	105.2	20.7	207.1	207.1
Upstream Blk Time (%)		0		
Queuing Penalty (veh)		0		
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 450

2048 Peak PM of Generator SimTraffic Results

Intersection: 10: Carling & Parkdale

Movement	EB	EB	EB	WB	WB	WB	SB
Directions Served	L	T	T	T	T	R	LR
Maximum Queue (m)	50.4	56.6	42.0	135.1	139.3	80.4	60.1
Average Queue (m)	22.2	23.9	13.6	58.9	61.7	17.3	23.5
95th Queue (m)	39.8	48.0	33.1	116.2	122.0	59.1	45.3
Link Distance (m)		316.0	316.0	174.6	174.6		272.5
Upstream Blk Time (%)				0	0		
Queuing Penalty (veh)				0	0		
Storage Bay Dist (m)	155.0					80.0	
Storage Blk Time (%)					5	0	
Queuing Penalty (veh)					6	0	

Intersection: 11: Carling & Civic

Movement	EB	EB	EB	WB	WB	SB
Directions Served	L	T	T	T	T	LR
Maximum Queue (m)	43.7	41.6	42.0	99.1	104.1	16.4
Average Queue (m)	17.6	10.9	9.3	37.1	38.0	6.0
95th Queue (m)	35.2	31.0	29.9	77.1	80.7	14.4
Link Distance (m)		174.6	174.6	189.4	189.4	49.6
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)	90.0					
Storage Blk Time (%)					0	
Queuing Penalty (veh)					0	

Intersection: 12: Carling & Melrose

Movement	EB	EB	EB	WB	WB	WB	SB
Directions Served	L	T	T	T	T	R	LR
Maximum Queue (m)	8.9	5.5	7.0	19.0	17.1	1.6	9.0
Average Queue (m)	1.4	0.3	0.3	1.2	1.1	0.1	2.6
95th Queue (m)	6.5	3.0	3.2	8.9	8.4	1.1	8.4
Link Distance (m)		189.4	189.4	239.5	239.5		211.1
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (m)	25.0					20.0	
Storage Blk Time (%)					0		
Queuing Penalty (veh)					0		

Intersection: 13: Maple/Old Irvine & Carling

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	SB
Directions Served	L	T	T	R	L	T	T	R	LTR	LTR
Maximum Queue (m)	25.6	39.5	47.9	21.8	48.0	91.9	73.5	23.0	50.7	16.4
Average Queue (m)	8.5	16.0	17.2	4.8	6.6	46.7	36.6	1.3	23.9	4.5
95th Queue (m)	19.7	33.7	39.0	16.9	25.3	78.7	65.8	10.7	43.7	12.7
Link Distance (m)		239.5	239.5			191.1	191.1		166.9	225.8
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (m)	20.0			15.0	45.0			25.0		
Storage Blk Time (%)	2	4	9	0		7	11	0		
Queuing Penalty (veh)	5	2	4	0		3	1	0		

Intersection: 14: Carling & Bayswater

Movement	WB
Directions Served	T
Maximum Queue (m)	0.9
Average Queue (m)	0.0
95th Queue (m)	0.9
Link Distance (m)	114.2
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 15: Carling & Sherwood

Movement	EB	EB	EB	WB	WB	WB	SB	SB
Directions Served	L	T	T	T	T	R	L	R
Maximum Queue (m)	30.0	47.0	31.8	61.3	58.4	29.0	70.7	22.0
Average Queue (m)	11.7	17.0	11.4	20.8	23.0	9.1	33.3	4.4
95th Queue (m)	25.5	35.9	26.1	44.0	45.6	20.5	58.1	17.2
Link Distance (m)				143.4	143.4		138.3	
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (m)	30.0					90.0		15.0
Storage Blk Time (%)	1	1					47	0
Queuing Penalty (veh)	2	1					4	0

Intersection: 16: Road A/Champagne & Carling

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	T	R	L	T	T	R	L	TR	L	TR
Maximum Queue (m)	57.2	78.3	67.2	39.6	65.4	106.2	109.9	42.5	59.8	62.3	37.0	57.2
Average Queue (m)	15.9	39.5	34.0	13.8	22.6	55.7	63.9	24.7	31.5	34.8	24.2	17.1
95th Queue (m)	37.2	68.3	58.0	31.4	52.4	99.8	109.3	52.1	55.3	60.4	39.1	40.2
Link Distance (m)		143.4	143.4			103.7	103.7		58.9	58.9		481.7
Upstream Blk Time (%)						1	2		1	2		
Queuing Penalty (veh)						4	10		2	3		
Storage Bay Dist (m)	55.0			75.0	61.0			35.0			30.0	
Storage Blk Time (%)		2	0	0	0	9	28	0			9	0
Queuing Penalty (veh)		2	0	0	0	7	39	1			12	0

Intersection: 17: Carling & Trillium MUP

Movement	EB	EB	WB	WB
Directions Served	T	T	T	T
Maximum Queue (m)	79.6	77.1	60.0	67.5
Average Queue (m)	37.9	36.3	26.8	34.1
95th Queue (m)	72.0	67.8	51.8	60.2
Link Distance (m)	103.7	103.7	93.8	93.8
Upstream Blk Time (%)	0			
Queuing Penalty (veh)	0			
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 18: Preston & Carling

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	R	L	T	T	R	L	T	TR	L
Maximum Queue (m)	73.6	90.8	89.3	80.3	108.0	91.7	94.1	36.5	87.9	88.4	81.6	42.4
Average Queue (m)	44.1	48.6	43.3	49.5	58.7	50.1	60.0	7.9	46.2	38.0	24.6	36.3
95th Queue (m)	74.8	86.3	80.2	77.9	96.2	80.3	88.6	23.3	77.9	73.1	62.4	54.1
Link Distance (m)		93.8	93.8			165.0	165.0		129.7	129.7	129.7	
Upstream Blk Time (%)		1	1	0						0	1	
Queuing Penalty (veh)		4	4	0						0	2	
Storage Bay Dist (m)	70.0			90.0	120.0			95.0				35.0
Storage Blk Time (%)	3	4	1	1	0		0	0				28
Queuing Penalty (veh)	7	5	2	1	1		0	0				100

Intersection: 18: Preston & Carling

Movement	SB	B57
Directions Served	TR	T
Maximum Queue (m)	79.8	382.6
Average Queue (m)	71.8	248.1
95th Queue (m)	79.0	480.4
Link Distance (m)	50.0	416.8
Upstream Blk Time (%)	74	20
Queuing Penalty (veh)	0	0
Storage Bay Dist (m)		
Storage Blk Time (%)	63	
Queuing Penalty (veh)	67	

Intersection: 19: Carling & Rochester

Movement	EB	EB	WB	WB	SB
Directions Served	T	T	T	R	R
Maximum Queue (m)	103.9	96.6	22.0	8.0	59.4
Average Queue (m)	31.3	26.8	1.1	0.4	26.7
95th Queue (m)	118.3	109.3	8.7	4.5	49.3
Link Distance (m)	165.0	165.0	104.1		396.1
Upstream Blk Time (%)	1	2			
Queuing Penalty (veh)	6	6			
Storage Bay Dist (m)				30.0	
Storage Blk Time (%)			0	0	
Queuing Penalty (veh)			0	0	

Intersection: 20: Carling & Booth

Movement	EB	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	T	R	L	R
Maximum Queue (m)	57.4	112.2	106.5	152.6	37.5	214.1	37.5
Average Queue (m)	42.9	69.4	63.5	80.2	13.9	137.1	29.4
95th Queue (m)	70.7	128.7	122.8	146.7	38.3	269.6	51.9
Link Distance (m)		104.1	104.1	302.7		229.2	
Upstream Blk Time (%)		17	11			29	
Queuing Penalty (veh)		76	50			0	
Storage Bay Dist (m)	50.0				30.0		30.0
Storage Blk Time (%)	3	35		28	0	52	10
Queuing Penalty (veh)	11	67		29	1	130	24

Intersection: 21: Bronson & Carling/Glebe

Movement	EB	EB	EB	B1	B1	NB	NB	NB	SB	SB
Directions Served	L	LT	R	T	T	L	L	TR	T	TR
Maximum Queue (m)	47.4	102.2	93.1	311.6	310.7	57.4	399.9	406.1	321.6	327.3
Average Queue (m)	46.7	93.8	49.3	245.9	225.0	57.2	388.9	380.4	245.0	251.3
95th Queue (m)	49.5	99.4	92.4	389.6	418.7	58.0	424.1	474.3	387.7	389.3
Link Distance (m)		71.5	71.5	302.7	302.7		390.8	390.8	332.5	332.5
Upstream Blk Time (%)		72	7	25	19		55	38	6	8
Queuing Penalty (veh)		359	36	126	96		350	241	45	58
Storage Bay Dist (m)	40.0					50.0				
Storage Blk Time (%)	41	74				88	2			
Queuing Penalty (veh)	140	187				199	4			

Intersection: 22: Parkdale & 417 WB on/off

Movement	WB	WB	NB	NB	SB
Directions Served	L	TR	L	T	TR
Maximum Queue (m)	76.8	95.5	56.5	56.3	196.0
Average Queue (m)	39.7	41.5	29.0	23.3	148.3
95th Queue (m)	66.5	76.0	51.1	48.5	230.8
Link Distance (m)	152.4	152.4	55.6	55.6	183.6
Upstream Blk Time (%)			1	1	29
Queuing Penalty (veh)			4	2	0
Storage Bay Dist (m)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 23: Parkdale & 417 EB on/off

Movement	EB	EB	NB	NB	SB	SB
Directions Served	LT	R	T	TR	L	T
Maximum Queue (m)	105.0	71.5	95.8	37.5	60.7	51.2
Average Queue (m)	52.3	16.8	59.1	35.0	52.8	18.6
95th Queue (m)	85.9	43.2	113.5	43.5	70.3	40.9
Link Distance (m)	121.0		90.9		55.6	55.6
Upstream Blk Time (%)	0		6		14	0
Queuing Penalty (veh)	0		34		53	1
Storage Bay Dist (m)		75.0		30.0		
Storage Blk Time (%)	2	0	0	31		
Queuing Penalty (veh)	3	0	1	38		

Intersection: 24: Parkdale & Sherwood

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	33.2	39.0	77.2	77.3
Average Queue (m)	14.1	16.2	30.9	39.5
95th Queue (m)	28.5	31.0	61.1	68.2
Link Distance (m)	236.5	344.4	294.1	90.9
Upstream Blk Time (%)				0
Queuing Penalty (veh)				0
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 25: Parkdale & Ruskin

Movement	EB	WB	WB	NB	SB
Directions Served	LTR	L	TR	LTR	LTR
Maximum Queue (m)	30.9	10.1	25.3	50.8	53.6
Average Queue (m)	12.1	1.5	9.0	17.0	21.4
95th Queue (m)	25.0	6.9	20.1	38.5	44.3
Link Distance (m)	236.1		243.9	272.5	294.1
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)		40.0			
Storage Blk Time (%)			0		
Queuing Penalty (veh)			0		

Intersection: 27: Bayswater & Sherwood

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	17.6	19.3	7.0	22.2
Average Queue (m)	7.2	7.8	1.9	10.9
95th Queue (m)	14.1	16.1	6.9	18.5
Link Distance (m)	602.2	138.3		93.6
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 29: Navy/Navy Parking Access & Prince of Wales

Movement	EB	WB	NB	SB
Directions Served	TR	TR	LTR	R
Maximum Queue (m)	95.9	2.9	10.6	19.3
Average Queue (m)	31.1	0.2	1.9	6.6
95th Queue (m)	92.3	2.7	8.3	15.6
Link Distance (m)	92.6	85.9	39.1	34.1
Upstream Blk Time (%)	2			
Queuing Penalty (veh)	17			
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 30: Prince of Wales & Preston

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	L	TR	L	T	R	LTR	LT	R
Maximum Queue (m)	52.4	92.9	51.5	24.4	189.5	52.5	17.8	95.7	125.3
Average Queue (m)	42.6	77.0	19.1	1.5	166.0	44.3	5.9	50.3	80.7
95th Queue (m)	65.4	106.3	41.2	11.6	229.7	75.2	17.3	83.5	121.8
Link Distance (m)		85.9	85.9		178.4		18.1	129.7	129.7
Upstream Blk Time (%)		14			50		17		1
Queuing Penalty (veh)		60			0		0		3
Storage Bay Dist (m)	45.0			30.0		45.0			
Storage Blk Time (%)	3	33			66	1			
Queuing Penalty (veh)	9	101			241	1			

Intersection: 31: Rochester & 417 WB on/Raymond

Movement	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	T	T	R
Maximum Queue (m)	41.5	67.4	38.9	55.7	43.6	36.9
Average Queue (m)	17.9	31.7	17.2	24.4	16.4	14.8
95th Queue (m)	32.2	54.1	31.4	44.1	33.2	27.4
Link Distance (m)	102.6	102.6	82.9	82.9	166.0	
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)						35.0
Storage Blk Time (%)					0	0
Queuing Penalty (veh)					1	0

Intersection: 32: Rochester & 417 EB off/Orangeville

Movement	EB	EB	NB	NB	SB	SB
Directions Served	LT	TR	T	TR	LT	T
Maximum Queue (m)	80.5	59.2	29.6	48.3	48.0	24.7
Average Queue (m)	43.2	20.9	9.6	20.0	22.7	3.0
95th Queue (m)	67.0	44.3	22.6	38.6	41.4	13.8
Link Distance (m)	116.5	116.5	101.7	101.7	82.9	82.9
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 33: Bronson & Catherine 417 WB on

Movement	WB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	LT	T	TR	L	T	T	T	TR
Maximum Queue (m)	151.2	144.0	125.1	71.1	67.8	58.8	57.2	175.8	171.7
Average Queue (m)	91.0	91.3	68.1	31.4	34.4	33.7	33.4	98.4	95.7
95th Queue (m)	144.4	140.8	122.0	63.2	59.6	55.1	54.5	179.3	174.6
Link Distance (m)	174.4	174.4	174.4	174.4	81.8	81.8	81.8	242.3	242.3
Upstream Blk Time (%)	1	1	0		0			1	1
Queuing Penalty (veh)	0	0	0		0			0	0
Storage Bay Dist (m)									
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 34: Bronson & 417 EB off

Movement	EB	EB	NB	NB	SB	SB
Directions Served	L	R	T	T	T	T
Maximum Queue (m)	100.5	67.5	62.1	66.3	90.0	88.2
Average Queue (m)	50.2	55.4	20.4	39.6	66.8	64.9
95th Queue (m)	108.8	78.6	48.2	69.0	98.3	96.9
Link Distance (m)	91.1		57.4	57.4	81.8	81.8
Upstream Blk Time (%)	11		0	3	4	4
Queuing Penalty (veh)	0		2	13	29	27
Storage Bay Dist (m)		60.0				
Storage Blk Time (%)	0	21				
Queuing Penalty (veh)	1	29				

Intersection: 35: Bronson & Plymouth/Imperial Chamberlain

Movement	NB	NB	SB	SB	SB
Directions Served	LT	TR	L	T	TR
Maximum Queue (m)	348.8	347.8	37.3	61.6	56.2
Average Queue (m)	309.7	324.4	26.7	20.5	19.5
95th Queue (m)	379.5	376.2	41.9	65.9	64.0
Link Distance (m)	332.5	332.5		57.4	57.4
Upstream Blk Time (%)	7	26		3	3
Queuing Penalty (veh)	41	155		25	32
Storage Bay Dist (m)			30.0		
Storage Blk Time (%)			6	7	
Queuing Penalty (veh)			47	17	

Intersection: 36: Bronson & Madawaska/Fifth

Movement	EB	WB	NB	NB	SB	SB
Directions Served	LTR	LTR	LT	TR	LT	TR
Maximum Queue (m)	109.6	120.9	246.2	247.4	134.2	139.4
Average Queue (m)	38.9	73.9	206.0	207.0	55.7	59.6
95th Queue (m)	107.3	139.6	318.4	316.7	114.8	123.1
Link Distance (m)	182.2	118.1	232.0	232.0	390.8	390.8
Upstream Blk Time (%)	1	21	73	75		
Queuing Penalty (veh)	0	0	0	0		
Storage Bay Dist (m)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 37: Road L & Road M/Road A

Movement	NB
Directions Served	R
Maximum Queue (m)	1.5
Average Queue (m)	0.0
95th Queue (m)	1.4
Link Distance (m)	24.1
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 38: Maple & Winding/Road D

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	17.4	8.1	17.6	19.0
Average Queue (m)	8.2	2.7	9.3	9.9
95th Queue (m)	13.5	7.0	15.0	15.2
Link Distance (m)	183.3	13.9	131.4	166.9
Upstream Blk Time (%)		0		
Queuing Penalty (veh)		0		
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 39: Prince of Wales & Road B

Movement	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	TR	L	R
Maximum Queue (m)	40.5	131.0	66.5	42.5	23.2	18.5
Average Queue (m)	5.4	42.6	26.2	13.8	19.7	7.1
95th Queue (m)	20.4	91.6	56.1	42.4	26.2	15.3
Link Distance (m)		205.7	92.6		20.9	20.9
Upstream Blk Time (%)			0		26	0
Queuing Penalty (veh)			1		26	0
Storage Bay Dist (m)	45.0			35.0		
Storage Blk Time (%)	0	6	3	0		
Queuing Penalty (veh)	0	2	12	1		

Intersection: 40: Prince of Wales & Road E

Movement	EB	NB	SB	SB	B86
Directions Served	R	L	T	R	T
Maximum Queue (m)	34.7	15.0	2.2	3.6	13.2
Average Queue (m)	13.9	1.3	0.1	0.1	0.4
95th Queue (m)	27.7	7.7	1.3	2.2	13.0
Link Distance (m)	167.0		72.5		205.7
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)		50.0		50.0	
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 41: Road B & Road A

Movement	EB	EB	WB	WB	NB
Directions Served	T	TR	L	T	LR
Maximum Queue (m)	12.4	21.4	15.5	19.8	18.8
Average Queue (m)	5.7	10.5	7.3	9.8	10.0
95th Queue (m)	13.3	16.8	14.5	16.0	15.0
Link Distance (m)	51.4	51.4	40.4	40.4	45.7
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 42: A Parking Access & Road A

Movement	EB	EB	WB	NB	SB
Directions Served	LT	TR	LT	LTR	LTR
Maximum Queue (m)	2.3	6.9	20.7	43.9	8.5
Average Queue (m)	0.1	0.4	4.0	24.1	1.5
95th Queue (m)	1.6	3.4	13.6	39.8	6.7
Link Distance (m)	40.4	40.4	58.9	36.6	41.4
Upstream Blk Time (%)				2	
Queuing Penalty (veh)				0	
Storage Bay Dist (m)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 43: Road B & B Parking Access

Movement	WB	NB	SB
Directions Served	LR	R	LT
Maximum Queue (m)	30.1	1.5	10.3
Average Queue (m)	13.7	0.0	0.8
95th Queue (m)	23.7	1.1	5.5
Link Distance (m)	32.1	46.2	45.7
Upstream Blk Time (%)	0		
Queuing Penalty (veh)	0		
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 44: Road B & Road F

Movement	EB	NB	SB
Directions Served	LR	LT	T
Maximum Queue (m)	17.4	9.3	37.6
Average Queue (m)	2.2	0.5	11.2
95th Queue (m)	11.2	5.1	31.0
Link Distance (m)	105.3	20.9	46.2
Upstream Blk Time (%)		0	0
Queuing Penalty (veh)		0	0
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 45: Road E & Road D

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (m)	4.6	11.8
Average Queue (m)	0.2	4.4
95th Queue (m)	2.3	10.5
Link Distance (m)	131.9	199.2
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 3572

Intersection: 29: Navy/Navy Parking Access & Prince of Wales

Movement	EB	WB	NB	SB
Directions Served	TR	TR	LTR	R
Maximum Queue (m)	91.9	67.3	9.4	20.3
Average Queue (m)	24.8	8.9	1.7	7.2
95th Queue (m)	76.7	39.1	7.2	16.9
Link Distance (m)	92.6	86.0	39.1	34.1
Upstream Blk Time (%)	1	0		0
Queuing Penalty (veh)	8	0		0
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 30: Prince of Wales & Preston

Movement	EB	EB	EB	WB	WB	WB	NB	SB	SB
Directions Served	L	L	TR	L	T	R	LTR	LT	R
Maximum Queue (m)	52.4	93.2	60.9	16.1	291.0	52.5	20.7	112.7	203.2
Average Queue (m)	49.1	76.4	26.8	0.9	169.1	42.5	9.9	49.6	110.6
95th Queue (m)	59.9	105.7	50.1	8.2	316.5	76.0	21.8	90.9	186.0
Link Distance (m)		86.0	86.0		305.2		18.4	281.5	281.5
Upstream Blk Time (%)		10			11		38	0	0
Queuing Penalty (veh)		43			0		0	0	0
Storage Bay Dist (m)	45.0			30.0		45.0			
Storage Blk Time (%)	4	26			58	0			
Queuing Penalty (veh)	13	81			211	1			

Intersection: 39: Prince of Wales & Road B

Movement	EB	EB	WB	WB	SB	SB
Directions Served	L	T	T	R	L	R
Maximum Queue (m)	28.0	100.3	100.0	38.8	25.0	21.3
Average Queue (m)	5.9	39.3	64.7	3.3	19.9	6.2
95th Queue (m)	19.3	79.9	109.2	19.2	25.9	15.3
Link Distance (m)		204.7	92.6		20.7	20.7
Upstream Blk Time (%)			3		40	0
Queuing Penalty (veh)			22		40	0
Storage Bay Dist (m)	45.0			35.0		
Storage Blk Time (%)		5	13	0		
Queuing Penalty (veh)		1	3	0		

Intersection: 40: Prince of Wales & Road E

Movement	EB	NB	SB
Directions Served	R	L	R
Maximum Queue (m)	36.0	12.2	1.3
Average Queue (m)	15.7	1.6	0.0
95th Queue (m)	30.0	8.0	0.9
Link Distance (m)	362.3		
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)		50.0	50.0
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 44: Road B & Road F

Movement	EB	NB	SB
Directions Served	LR	LT	T
Maximum Queue (m)	21.5	9.5	51.9
Average Queue (m)	3.2	0.3	18.1
95th Queue (m)	14.1	4.0	43.3
Link Distance (m)	105.2	20.7	232.0
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		0	
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 423

Appendix M:
Original TIA and Mobility Study (July 2021) Conclusions and Recommendations

Appendix M: Original TIA and Mobility Study (July 2021) Conclusions and Recommendations

The follow discussion outlines key findings and recommendations of the *TIA and Mobility Study (July 2021)* in black text with updated findings or recommendations in [blue text](#) where applicable.

Existing & Future Background Conditions

1. The Ottawa Hospital (TOH) is replacing the aging Civic Campus located at 1053 Carling Avenue with a New Civic Development. The future site is located to the southwest of the intersection of Carling Avenue and Preston Street, west of Prince of Wales Drive, and on lands to the north and east of the Central Experimental Farm. At this location, the new site will have strong ties to transit, served by Light Rail Transit (LRT) via a rapid transit station on the Trillium Line, and bus transit priority lanes with bus stops along Carling Avenue. The site is also located near the heart of the City, and as such is served with strong arterial roads and active transportation infrastructure. [No change.](#)
2. The estimated mode shares at the existing Civic Campus are: 85% auto-driver and 15% non-auto driver (e.g. transit, walk and cycling), which reflects the lack of high-quality active transportation and transit facilities in the surrounding network. [The existing mode share estimates for the existing Civic Campus in the TIA Mobility Study are now considered conservative, due to changes in travel behaviour caused by the COVID-19 pandemic. A culture shift towards working from home and flexible schedules has already taken hold. A comprehensive Transportation Demand Management \(TDM\) Strategy Report has been prepared which completed an employee survey. A summary of the existing employee mode share findings is included in Section 3.1.2, with detailed results found within the TDM Strategy Report.](#)
3. The future site is located directly adjacent to the Dow's Lake LRT Station, which is currently being upgraded as part of the City's Stage 2 LRT expansion initiative. The Trillium Line expansion is expected to be completed by 2022. There is an opportunity to provide connectivity between the hospital project and Dow's Lake Station, and in turn connect to the City's overall rapid transit system. [The latest available data suggests that the Trillium LRT Line expansion will be operational by Fall 2023.](#)
4. Carling Avenue adjacent to both the existing and future hospital sites is anticipated to be upgraded into a transit priority corridor by the Opening Day (2028) horizon year. The modifications include the conversion of two general purpose travel lanes to bus lanes and the addition of bus stops and cycle tracks that will serve the hospital site and the surrounding community. [No change.](#)
5. The Carling Avenue Transit Priority design includes additional active transportation infrastructure that will further enhance the active transportation experience. The Trillium Pathway, opened in 2016, also provides an important connection to the site. Of note, there was a notable cyclist and pedestrian collision pattern at the Preston/Carling intersection from 2014 to 2018. [No change.](#)
6. Existing MMLOS analysis for road segments and intersections shows poor pedestrian and cyclist performance, and in the case of the pedestrian scores, this is largely due to the length of the crossings of major roads. [No change.](#)
7. Overall, the majority of study area intersections in existing conditions operated within City recommended guideline (LOS E or better), with the exception of the following major arterial to arterial intersections:
 - Preston/Carling
 - Bronson/Carling,
 - Preston/Prince of Wales, and
 - Catherine/Bronson.

[No change.](#) Although time has passed since the *TIA and Mobility Study (July 2021)*, the City provided pre-COVID-19 traffic counts are still being used as they reflect a more conservative approach to the analysis (i.e. pre-work from home/hybrid conditions). The same existing volumes and roadway network has been used.

8. Overall, the majority of study area intersections in 2028 and 2048 background conditions operated within City recommended guideline (LOS E or better), with the exception of the following major arterial to arterial intersections:
- Preston/Carling,
 - Booth/Carling,
 - Bronson/Carling,
 - Preston/Prince of Wales, and
 - Catherine/Bronson

Negligible change. The background volumes accounted for new other area developments that increased traffic volumes in the study area, but this was balanced by adjustments existing Civic Campus traffic volume and distribution estimates based on new Streetlight data. Therefore, the overall change in background volumes was nominal.

Proposed Development

9. The assumed phasing of the New Civic Development is:
- Opening Day 2028, which anticipates approximately 2.4M ft² of hospital use, 6,600 FTE employees and 765 beds;

The latest site statistics propose approximately 2.7M ft² of hospital uses, 5,000 full time employees (FTE) and 640 beds by 2028.
 - Full Buildout 2048, which includes the full hospital expansion and all ancillary facilities, including the Carling Village development site and the UOHI building (totaling approximately 5.0M ft²), 10,500 FTE employees, and 1,250 beds.

The latest site statistics propose approximately 4.9M ft² of hospital and hospital related uses, 9,960 full time employees (FTE) and 1,140 beds by 2048.
10. A total of approximately 3,100 parking spaces (number is subject to change) will be provided on-site. All existing off-site (satellite) parking leases will be discontinued by Opening Day (2028). Please refer to [Section 4.2](#). The total minimum number of parking is still approximately 3,100. There is additional proposed parking which is reserved for snow storage during winter and emergency surge event tents. These additional parking spaces will not be available at all times and will have flexible functions as needed/available.
11. The target mode shares for the New Civic Development are:
- Opening Day: 50% auto-driver, 15% auto-passenger, 30% transit, 5% active transportation
 - Full Buildout: 35% auto-driver, 12% auto-passenger, 45% transit, 8% active transportation
- These targets represent all campus users (staff, visitors etc.), but it is recognized there will be variability in the mode shares between each user group (e.g. employees will have a lower auto-driver component, while patients/visitors will have a higher auto-driver component). The aggregated mode share targets for all trips at the NCD have not changed significantly since the *TIA and Mobility Study (July 2021)*, which were developed through research of other institutions in North America, City of Ottawa policies and approaches, and vetted by City staff.
- The active mode shares have changed by a few base percentage points in response to new data from the employee mode share survey. The overall driver mode share has not changed.
- The TIA Addendum #2 provides further breakdown of the mode share for each type of staff based on anticipated staff schedules, and for visitors based on parking activity data. All information was provided by TOH.

In addition, TOH prepared a *Transportation Demand Management (TDM) Strategy Report* which determined the achievability of these mode share targets and developed a comprehensive plan to help ensure TOH reach these goals.

12. At Opening Day (2028), the New Civic Development is estimated to generate approximately:

- 110 to 100 active transportation trips during the commuter peak hours;
- 600 to 700 transit trips during the commuter peak hours; and
- 1,000 to 1,100 personal vehicle trips during the commuter peak hours.

At Full Buildout (2048), the New Civic Development is estimated to generate approximately:

- 250 to 300 active transportation trips during the commuter peak hours;
- 1,600 to 1,800 transit trips during the commuter peak hours; and
- 1,200 to 1,350 personal vehicle trips during the commuter peak hours.

The updated trip generation results by mode for 2028 were:

- 80 to 130 active transportation trips during the peak hours;
- 340 to 660 transit trips during the peak hours; and
- 520 to 840 personal vehicle trips during the peak hours.

The updated trip generation results by mode for 2048 were:

- 280 to 340 active transportation trips during the peak hours;
- 1,200 to 1,680 transit trips during the peak hours; and
- 880 to 1,190 personal vehicle trips during the peak hours.

The notable reduction in vehicle trips from the *TIA and Mobility Study (July 2021)* reflect the reduction in forecasted number of employees, as well as anticipated staff shift schedules which show a sizeable proportion of staff arriving/departing outside the traditional peak hour period.

Future Combined Network Conditions

13. TOH is proposing high quality active transportation connections throughout the campus that connect to existing and planned pedestrian, cycling and transit networks. However, future MMLOS for road segments and intersections will have difficulty meeting minimum targets for pedestrian and cyclist performance. Although improvements to active transportation have been proposed since the *TIA and Mobility Study (July 2021)*, no changes to MMLOS have occurred due to governing factors such as number of vehicles on adjacent street or lanes required to cross. For further details on changes to active transportation facilities since the *TIA and Mobility Study (July 2021)*, please refer to **Section 4.1**.

14. The implementation of the Carling Avenue Transit Priority measures will diminish existing vehicular capacity within the Carling Avenue corridor in favour of a more balanced transportation system that includes higher-performing active transportation and transit facilities. **No change**.

15. The evaluation of the road network performance showed that the addition of New Civic Development traffic at Opening Day 2028 and Full Buildout 2048, did not increase the number of poorly performing intersections compared to the future Background conditions with the exception of Parkdale/ WB 417.

- Preston/Carling,
- Booth/Carling,
- Bronson/Carling,
- Preston/Prince of Wales, and
- Catherine/Bronson

Parkdale/ WB 417 was on the edge of the acceptable intersection performance threshold in Background conditions, and the addition of New Civic Development traffic reduced performance by only 1%. Overall, the change in overall congestion would be negligible.

This conclusion represented a scenario without demand rationalizations. The TIA Addendum #2 did not revisit this analysis. This decision was made when it was found the updates to the trip generation assumptions with background volumes was generally lower than traffic volumes forecasted in the *TIA and Mobility Study (July 2021)*. Therefore, the results for 2028 and 2048 conditions if demand rationalization reductions were not added are still anticipated to perform similarly or better than previously stated in the *TIA and Mobility Study (July 2021)*.

The New Civic Development [internal] access intersections were all shown to operate well in both future horizons. **No change.**

16. If City-wide sustainable policies and initiatives as outlined in the New Official Plan and supporting transit infrastructure such as the Carling Avenue Transit Priority Corridor are taken into consideration (by applying Background traffic volume reductions), the number of poorly performing intersections would be reduced to:
 - Preston/Carling

The updated trip generation and background volumes along with demand rationalization identified within this TIA Addendum #2 that the only intersection with a critical movement operating poorly is Rochester/Carling, and overall, all signalized intersections are anticipated to operate at LoS 'E' or better.

17. It is acknowledged that the addition of an eastbound right turn-lane at Preston/Carling would resolve the suboptimal intersection performance and enable a time separated phase for cyclists across the south crossride. However, this modification would increase the pedestrian crossing distance at an already excessively long crosswalk (due to the planned median bus lanes), and also would have landscaping and property implications on the south side of Carling Avenue. **This conclusion is still accurate; however, it will be a decision to be made by the City of Ottawa as part of the Carling Avenue Transit Priority Project.**
18. The future New Civic Development access intersections have been designed to accommodate projected vehicular queues where possible considering the locational constraints, but some spillback may occur at times during the critical peak hour when the adjacent arterial network is at its most congested state. These intersection design requirements will be confirmed during the Site Plan Control process for subsequent phases. **Please refer to Section 4.4 of this report for the updated intersection design descriptions and Section 4.9 for updated operational and queuing results. Overall, all access intersections are expected to have adequate capacity to accommodate future NCD traffic. It is important to note that discussions are ongoing with NCC and City of Ottawa regarding the intersection designs which may yield further refinements.**
19. The above results are contingent on TOH achieving ambitious target mode shares for employees and visitors: approximately 50% auto-drivers at Opening Day 2028, and approximately 35% auto-drivers at Full Buildout 2048. **No change.**

Supporting Strategies

20. To help achieve the target mode shares at the Opening Day and Full Buildout horizons, TOH has an opportunity to prioritize the development of a comprehensive Transportation Demand Management (TDM) Strategy/Plan (separate to this document and following the approval of the Master Site Plan) to reduce the project's long-term reliance on the automobile, and in turn reduce parking requirements. TDM Checklists highlight recommended TDM measures for TOH to consider, which will be confirmed incrementally during the development approval process. A preliminary TDM framework is included in this report, and key elements of this framework include:
 - Programming: provide a team and budget for TDM coordination
 - Community and Promotion: inform, engage through campaigns, provide tools and award
 - Partnerships: engage with local associations, OC Transpo, car/bike/van pooling, etc.

- Policy and Infrastructure: measures to incentivize active transportation such as monthly transit pass discounts, aggressively priced staff parking passes, shower and storage facilities for cyclists, real-time transit information and key locations, emergency ride home program, etc.
- Monitoring: complete regular surveys and studies to continually upgrade and retrofit TDM strategies

TOH has prepared a comprehensive *Transportation Demand Management (TDM) Strategy Report* that includes a recommended plan to help TOH achieve future mode share targets and manage parking demand in the future.

21. TOH intends to invest heavily in active transportation infrastructure at the New Civic Development, based on the proposed AT Plan, to leverage the proximity of the future site to high-quality facilities in the surrounding network. A list of the prominent elements of the AT Plan include: “The Highline”, which is an elevated and sheltered pedestrian connection between Dow’s Lake Station and the main Hospital building, Bi-directional cycling facilities around and through the site, ample bicycle parking, secondary pathway connections, and sidewalks that permeate throughout the site. In addition to the stated improvements to AT facilities in the above comment, new facilities have been proposed since the *TIA and Mobility Study (July 2021)*. For a detailed description, please refer to **Section 4.1**. Some of the additional proposed active facilities include additional cross-rides at Prince of Wales Drive/Preston Street and Prince of Wales Drive/Road B. New cycle-track and sidewalk facilities are proposed on the south side of Road A between Road B and the front entrance, along with new bike parking facilities directly in front of the main door. Additional bike parking has been proposed on the west entrance to the hospital (backside) which is accessed via a new MUP on Road D. A new pathway called “Woodland Path” will connect Road D sidewalk facilities to the Road A facilities. There are ongoing discussions with NCC and the City of Ottawa for additional facilities as the intersection designs progress through design approvals.
22. TOH acknowledges the impact the New Civic Development will have on existing AT facilities, such as the pathway across the Queen Juliana Park and the Trillium Pathway.
 - To replace the Queen Juliana Park pathway, cycle tracks have been proposed on both sides of Carling Avenue west of Champagne. The internal roads around the parking garage will also have a bi-directional cycling facility connecting Carling to Prince of Wales.
 - The Trillium Pathway will be redirected to a bi-directional cycle facility on the south side of Carling and the west side of Preston back to its current destination in the form of a bi-directional cross-ride at the Preston/Prince of Wales intersection

New details have emerged regarding the types of facilities and timing proposed. The *TIA Addendum #1 (Oct 2021)* for the SPC for the parking garage identified the redirected Trillium Pathway which would follow the southern side of Carling Avenue from the existing Trillium Pathway to Preston Street and follow the west side of Preston Street to Prince of Wales Drive. Within the *TIA Addendum #1 (Oct 2021)*, the pathway was broken down into two distinct segments. The segment on Carling Avenue was identified to be built as an interim MUP until the Carling Avenue Transit Priority Project is built (estimated for 2028 similar to opening day for the NCD). The interim MUP would then be converted into a new bi-directional cycle-track with separate sidewalks. The second segment stretches from Carling Avenue to Prince of Wales Drive following the west side of Preston Street, proposed to be built to full buildout during the construction of the parking garage.

Since the writing of the *TIA Addendum #1 (Oct 2021)*, the interim MUP has been increased in width to a minimum width of 3m with a full buildout of 3.5m sidewalks with more than 2m boulevard separation and 3m bi-directional cycle-track. The full buildout segment bordering Preston Street was also increased in width from 3m bi-directional cycle-tracks to 3.5m and 3m sidewalks with boulevards exceeding 2m. Lastly, an interim cycle facility is proposed along the south side of Carling Avenue between Road A and Sherwood Drive. Note that no connection from Sherwood Drive to Road A is proposed for this phase of the NCD, as the facility would cross via Phase 5 (Research Building) which is currently reserved as staging

zone for construction and will begin its own construction following completion of this phase 3-4 construction. A future connection between Sherwood Drive to Road A will be explored within the following NCD phase.

23. To support these AT infrastructure initiatives, the signal timing plans at signalized intersections along the New Civic Development frontage will be enhanced to improve pedestrian and cycling operations. **No change.**
24. TOH will meet the require bylaw requirements for bicycle parking. The location and distribution of bicycle parking spaces will be confirmed at the Site Plan Control stage for the various development phases. Of note, TOH has made a design decision that cyclists are not to be accommodated at the main hospital front-door entrance in an effort to minimize potential bicycle/vehicle conflicts. Where feasible, opportunities for indoor and/or covered parking can be explored. **The latest site plan proposes a cycle-track connection on the south side of Road A from the Road A/Road B intersection to the front door of the hospital. TOH proposes new bike parking facilities directly in front of the main hospital door. Additionally, a new MUP is proposed on Road D connecting to the newly proposed bike parking near the west entrance. The latest bike parking numbers have been discussed in Section 4.2, with a total of 630 bike parking spaces proposed for phase 3-4 of the NCD. Future NCD phases are not limited to adding more bike parking if demand exists.**
25. The hospital site's location within 600-meter walk to high frequency LRT Trillium Line and Dow's Lake Station makes it a prime candidate for a transit-oriented development. The additional proposed Carling BRT lanes functions as a supplementary transit service. It is expected the capacity of both services will accommodate future transit ridership at the New Civic Development. The transit demand and capacity will be reassessed during the Site Plan Control process for subsequent phases. **New data from OC Transpo was used to determine transit demand and capacity. Please refer to Section 4.7.**
26. To leverage transit use, the New Civic Development is proposing an AT Plan that provides direct connections to surrounding transit service. A featured element is the Highline connection to Dow's Lake station. TOH is also pursuing a potential extension of the Dow's Lake Station platform to the south side of Carling Avenue, and discussion are ongoing. Additionally, the transit incentives/strategies within the TDM Plan will be a critical element to leverage the proximity of future infrastructure and service, to maximize its use. **In addition to the above, the City of Ottawa is planning an Environmental Assessment (EA) to investigate a future connection between Dow's Lake Station and the NCD across Carling Avenue. Within this EA, the option of adding a MUP bridge crossing over the Trillium Line Corridor is also being explored. TOH has also prepared a *Transportation Demand Management (TDM) Strategy* which developed a comprehensive plan to help achieve future mode share targets, including transit incentives and potential measures to encourage ridership. TOH will also investigate future transit shuttle opportunities between Dow's Lake Station, the front door, and other potential destinations, to further encourage transit use and enhance passenger mobility on-campus.**
27. TOH understands the importance of identifying the most appropriate locations for the blue 'H' marker along the approaches to the Hospital including Hwy 417. These decisions will be made independent of this study; however, this study has identified the Rochester EB off ramp and the Bronson WB off ramp as possible locations for these markers. If selected, these potential routes would follow the City's arterial and major collector road system, and corresponding decisions would need approval by the Ontario Ministry of Transportation (MTO) on Hwy 417 and the City of Ottawa for the installation of all required trailblazing markers on municipal roads. **The accompanying *Neighbourhood Traffic Management Strategy Report* has recommended TOH investigate opportunities immediately to relocate 'H' signs away from the Parkdale Avenue interchange to other interchanges such as Carling Avenue and Rochester Street.**
28. The access and circulation needs for ambulances and emergency transports have been considered in the Master Site Plan. As a result, the access points for ambulances and emergency transports were segregated from public and staff access points where possible, to minimize potential conflicts and operational impacts of these essential vehicles. **No change.**

29. TOH recognizes that the New Civic Development may have traffic implications to nearby communities and neighbourhoods. Therefore, considerable effort was taken to identify vulnerable streets during the design process to help mitigate potential traffic infiltration.
- **Sherwood Drive:** The Sherwood/Carling intersection is ruled out as a primary Carling Avenue access point to the New Civic Development. This will help disincentivize traffic infiltration along Sherwood. Of note, the City of Ottawa is currently updating the Sherwood Traffic Calming Study, and this may lead to other speed management measures along this street. [No change.](#)
 - **Champagne Avenue:** The northbound through movements exiting the future New Civic Development at Carling/Champagne will be prohibited and physical measures such as the inclusion of a channelized turn island departing the site are proposed. Vehicles must turn left or right on to Carling Avenue when exiting the campus. [Champagne Avenue will no longer have a channelized turn island.](#)
 - **Maple Drive:** The New Civic Development intends to regulate access to Maple Drive from the internal site access to discourage/prohibit public and staff movements. This will greatly reduce the traffic volumes on Maple Drive from the New Civic Development and help maximize the travel time and reliability of ambulance movements along the emergency route. [TOH is also preparing a *Neighbourhood Traffic Management Strategy* with measures to help discourage speeding and traffic infiltration in vicinity of the NCD, including Maple Drive.](#)
 - **Dow's Lake Community:** It is acknowledged that Lakeside Avenue provides direct access for eastbound traffic from Queen Elizabeth Driveway to Bronson and may experience slightly higher traffic volumes at times during peak commuter periods when the adjacent arterial network is most likely to be congested. For the remaining local streets, existing area traffic management measures (such as turn prohibitions and time of day restrictions) will still be enforced that will help limit traffic infiltration. Additional measures may be explored in consultation with the City Area Traffic Management group if traffic infiltration is observed in the future. [As previously noted, TOH is preparing a *Neighbourhood Traffic Management Strategy* that includes a comprehensive plan to address potential traffic implications to surrounding communities when the NCD is operational.](#)
30. Current parking demand projections suggest the proposed approximately 3,100 parking space supply is appropriate to the context, but parking availability pressures could be experienced if historic travel trends exhibited at the exiting Civic Hospital persist into the future. To address this healthy tension between parking supply and demand, TOH should endeavor through its TDM Plan, to reduce personal vehicle use by staff and visitors as much as possible to avoid this outcome. Leveraging the proximity to the area's existing and proposed rapid transit system, the bus transit infrastructure, and the active transportation networks will be important aspects of this strategy. [TOH prepared a *Transportation Demand Management \(TDM\) Strategy Report* which developed a comprehensive plan to help achieve future mode share targets to ensure the proposed parking supply is sufficient. Note that the total minimum number of parking is still approximately 3,100. There is additional proposed parking which is reserved for snow storage during winter and emergency surge event tents. These additional parking spaces will not be available at all times and will have flexible functions as needed/available. Refer to **Section 4.2** for further details.](#)
31. TOH will also develop a comprehensive Parking Management Strategy (separate to this report) prior to implementation of Phases 2 and 3 of the New Civic Development to identify potential parking implications and provide mitigation options, building off the preliminary ideas described in this report. TOH will then be prepared to respond quickly to parking supply shortages and the implications if they arise. [TOH has prepared an *Off-site Parking Strategy Report* to accompany this application.](#)
32. TOH acknowledges the requirement from the National Capital Commission (NCC) to provide approximately 200 public parking spaces within the New Civic Development to offset the loss of parking across from Dow's Lake Pavilion. There is expected to be ample supply within the parking garage to meet

this requirement in evenings and weekends. TOH and the NCC are in the process of coming to an agreement as to how these visitor parking requirements and tour bus parking will be provided. TOH has reserved 200 parking spaces within the parking garage structure for NCC use.