

**TRANSPORTATION IMPACT ASSESSMENT  
STRATEGY REPORT**

**INDUSTRIAL DEVELOPMENT  
125 COLONNADE ROAD  
CITY OF OTTAWA**

**PREPARED FOR:  
ACCESS PROPERTY DEVELOPMENT INC.**

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## Executive Summary

### Background

C.F. Crozier & Associates Inc. (Crozier) was retained by Access Property Development Inc. to prepare a Transportation Impact Assessment (TIA) in support of the Site Plan Application for the industrial development at 125 Colonnade Road in the City of Ottawa. The purpose of this TIA study is to assess the site-specific requirements as well as impacts of the proposed development on the boundary road network and to recommend required mitigation measures, if warranted.

A Transportation Impact Assessment (TIA) was originally submitted in June 2022 in support of the proposed development. This updated TIA addresses the comments received from the City of Ottawa, dated August 29, 2022. A comment response letter highlighting how each City comment was addressed has been submitted separately.

Based on the Site Plan, the proposed development is an industrial development expansion which will consist of the following elements:

- Retaining the existing 1-storey building of 5000 m<sup>2</sup> area
- A 3-storey industrial building with a total gross floor area of 8667 m<sup>2</sup>
- A 1-storey industrial building with a total gross floor area of 3747 m<sup>2</sup>
- A total of 127 parking spaces to serve the combined site
- Retaining the existing three full-moves site accesses along Colonnade Road and Colonnade Road South to service the entire site.

Reports discussing the Screening, Scoping, Forecasting and Analysis were previously submitted and approved by City staff in fulfillment of the TIA steps 1 to 4. This TIA Report summarizes all the findings in fulfillment of the TIA step 5.

### Screening

Based on the Screening review, the trip generation and safety triggers were both satisfied and thus a TIA is requirement to support the proposed development.

### Scoping

The study area for the TIA includes the following study intersections:

- Prince of Wales Drive and Colonnade Road
- Colonnade Road and Colonnade Road North / Colonnade Road South
- Colonnade Road North and Citiplace Drive
- Prince of Wales Drive and Fisher Avenue
- Colonnade Road and site access #1
- Colonnade Road South and site access #2
- Colonnade Road South and site access #3

The TIA analyzes the weekday a.m. and p.m. peak hours to reflect the employment nature of the proposed development. Existing traffic counts from April 2018, taken during these time periods, were

used as the basis for traffic volumes forecasting. Furthermore, the TIA analyzes the 2025 and 2030 horizon years to reflect full build-out of the proposed development and a five-year horizon beyond buildout.

### Forecasting

The proposed development is expected to generate:

- approximately 20 and 26 total two-way passenger car trips during the weekday a.m. and p.m. peak hours, respectively.
- approximately 2 and 3 total two-way truck trips during the weekday a.m. and p.m. peak hours, respectively.
- approximately 29 and 38 total person trips during the weekday a.m. and p.m. peak hours, respectively.

A heavy reliance on auto travel is still expected in the future given the industrial nature of the proposed development. The mode split identified in the TRANS Trip Generation Manual for the Merivale District was applied to the proposed development in the future horizons. The vehicle trips generated by the proposed development were distributed to the boundary road network based on origin and destination data from the NCR survey (2011) for the Merivale District.

Historical and future growth rates were determined based on a review of results from the City of Ottawa's TRANS Regional Model. The general trends of the traffic volume projections were recorded to determine appropriate growth rates to apply to the study roadways. Future background traffic growth is expected to be fully captured by growth rates given no background developments were identified as part of the study review process.

### Analysis

While the development proposal is primarily auto-centric given its existing and proposed industrial uses, several measures are included which follow the City of Ottawa Planning and Design Guidelines to support design for sustainable modes. The building entrance locations are in proximity to sidewalks and bus stop locations. In addition, the vehicle, barrier-free and bicycle parking space supply all satisfy the relevant City of Ottawa Zoning By-Law requirements.

The future background evaluation of non-vehicular transportation modes indicates that several travel modes do not meet the targets set out in the MMLOS Guidelines. Several initiatives were identified that the City may consider to achieve the MMLOS targets in the study area.

The three existing site accesses and internal roadways to the site are expected to adequately accommodate development traffic. The site accesses meet or exceed the applicable Transportation Association of Canada Geometric Design Guide for Canadian Roads (TAC-GDGCR) sight distance and corner clearance requirements. Further, truck turning diagrams were prepared, which confirmed that the expected design vehicles are able to service the site adequately without constraints.

Under the existing, future background, and future total conditions, the Colonnade Road and Fisher Avenue intersections with Prince of Wales Drive are forecast to operate at capacity, at a LOS "E" and LOS "F" during the a.m. and p.m. peak hours, respectively. Several movements are projected to be near or at capacity given the volume-to-capacity ratio forecasts. Further, the 95<sup>th</sup> percentile queues for northbound left-turn lane at the Colonnade Road and Prince of Wales Drive intersection are expected to occasionally exceed the storage onto the taper during the peak hours. However, site traffic imparts a minor impact on overall traffic operations at these study intersections, with a

maximum intersection volume-to-capacity increment of 0.003 expected compared to the future background scenario. Operations at these intersections are expected to improve in future with the proposed future widening of Prince of Wales.

The remaining study intersections, including the site accesses, are expected to operate safely and efficiently into the 2030 horizon year, at a LOS "C" or better during the peak hours.

### Recommendations

Based on the results of the TIA process, it is recommended that:

- The City pursue road widening along Prince of Wales Drive as identified in the Prince of Wales Drive Environmental Assessment, 2011 and the City of Ottawa Transportation Master Plan (2014). This roadway improvement is expected to improve intersection capacity to accommodate current and future traffic demands, and enable achieving the Auto LOS target set in the City of Ottawa Multi-Modal Level of Service Guidelines at the Prince of Wales Drive study intersections.
- The City explore a revised timing plan and prohibition of the westbound left/through movement in the interim before Prince of Wales road improvements are implemented to improve traffic operations at the intersection of Prince of Wales Drive and Colonnade Road.
- The City consider reducing the speed limits of the study roadways to 50km/h in order to improve the pedestrian Level of Service (PLOS) to the City's desired target.
- The City consider cycling improvements, particular for the Cross-town Bikeway along Prince of Wales Drive, in the study area to promote achieving the bicycle Level of Service (BLOS) targets set out in the MMLOS guidelines. The bike lane improvement identified in the Prince of Wales Drive Environmental Assessment (2011) would support this recommendation.
- The City consider revising the signal system and or phase change interval at the intersection of Prince of Wales Drive and Colonnade Road with the goal of reducing the current prevalence of rear end collisions. Additionally, installing warning signs upstream of each approach encouraging drivers to pay attention to the driving task may be helpful in reducing collisions at the intersection.
- The proposed industrial development at 125 Colonnade Road be supported by the City based on the analysis of the TIA herein. The development proposal is forecast to have an immaterial impact on traffic operations at the boundary intersections and the Site Plan Application can be supported from a traffic operations perspective.

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## 1.0 Introduction

### 1.1 Background

C.F. Crozier & Associates Inc. (Crozier) was retained by Access Property Development Inc. to prepare a Transportation Impact Assessment in support of the Site Plan Application for the proposed industrial development located at 125 Colonnade Road in the City of Ottawa.

A Transportation Impact Assessment (TIA) Strategy Report was originally submitted in June 2022 in support of the proposed development. This TIA addresses the comments received from the City of Ottawa, dated August 29, 2022. A comment response letter highlighting how each City comment was addressed is submitted separately.

The Screening and Scoping Report prepared by Crozier was submitted to the City and MTO in January 2022 as part of the City's TIA process. The City provided comments to address regarding the Screening and Scoping Report and gave approval to proceed to the forecasting report. Thus, the methodology proposed in this report for the Forecasting Report is based on the approved scope of work per the Screening and Scoping Report. The comments included in the City response to the Screening and Scoping Report have been addressed herein. Correspondence is included in **Appendix A**.

### 1.2 Subject Property

The subject property covers an area of approximately 3.46 ha and currently consists of an existing 1-storey warehouse building with an approximate Gross Floor Area (GFA) of 5000 m<sup>2</sup>. The property, located in a "Urban Employment Area" per the City's Official Plan, is bound by Colonnade Road to the north, Prince of Wales Drive to the east, Colonnade Road South to the west, and a railway line to the south. Refer to **Figure 1** for the site location and the surrounding area.

### 1.3 Development Proposal

According to the conceptual site plan prepared by Architecture 49 (dated September 29, 2022), the proposed development includes the following:

- Retaining the existing 1-storey warehouse building of 5000 m<sup>2</sup> GFA
- A 3-storey self-storage building with a total GFA of 8667 m<sup>2</sup>
- A 1-storey warehouse building with a total GFA of 3747 m<sup>2</sup>
- A total of 127 parking spaces to serve the combined site
- Retaining the existing three full-moves site accesses along Colonnade Road and Colonnade Road South to serve the entire site.

Refer to **Appendix B** for the site plan.

## 2.0 Screening

**Trip Generation Trigger** – Excluding the existing building on the subject site, the proposed additions have a combined GFA that exceeds 5,000 m<sup>2</sup>, which meets the trip generation trigger of 5,000m<sup>2</sup> for industrial land uses.

**Location Triggers** – The site proposes to retain the existing access connections to Colonnade Road and Colonnade Road South; both roads are not classified as transit priority corridors. Additionally, the subject property is not located in a Design Priority Area (DPA) or Transit-Oriented Development (TOD) zone. Therefore, this trigger is not satisfied.

**Safety Triggers** – This trigger is satisfied as the horizontal curvature of the roadway on Colonnade Road South may limit sight lines at the existing driveway. The existing driveway (that will serve the proposed site) is within 150m of the Colonnade Road and Prince of Wales Drive Intersection. There is a documented history of safety concerns at the Prince of Wales Drive / Colonnade Road intersection (refer to **Section 3.1.8**). Moreover, the existing driveway at Colonnade Road is within the auxiliary lanes of the Colonnade Road South and Colonnade Road intersection. Therefore, the safety trigger is satisfied.

Given that the Trip Generation and Safety trigger are satisfied, a TIA is required as requested by the City. Refer to **Appendix C** for the completed Screening Form.

## 3.0 Scoping

### 3.1 Existing Conditions

#### 3.1.1 Roadways

The boundary road network within the study area is described in **Table 1**.

**Table 1: Boundary Road Network – Roadways**

Feature	Boundary Roadways					
	Prince of Wales Drive	Colonnade Road	Colonnade Road North	Colonnade Road South	Citiplace Drive	Fisher Avenue
Direction	Two-way (North-South)	Two-way (East-West)	Two-way (East-West)	Two-way (East-West)	Two-way (North-South)	Two-way (North-South)
Jurisdiction	City of Ottawa					
Classification <sup>1</sup>	Arterial (Regional Road 73)	Major Collector	Major Collector	Collector	Local	Arterial
Speed Limit	60 km/h posted	Assumed 50 km/h (unposted)	60 km/h posted	60 km/h posted	Assumed 50 km/h (unposted)	60 km/h posted
Span	Preston Street / Queen Elizabeth Driveway to Fourth Line Road	Merivale Road to Prince of Wales Drive <sup>2</sup>			Citiplace Drive to Colonnade Road North	Holland Avenue to Prince of Wales Drive
Alignment in Study Area	Straight and Flat	Straight and Flat	~50m radius horizontal curve just north of intersection with Colonnade Road	~75m radius horizontal curve just south of intersection with Colonnade Road	Straight and Flat	~150m radius horizontal curve just north of intersection with Prince of Wales Drive.
Right of Way (ROW)	40m	26m	26m	24m	Varies <sup>3</sup>	Varies <sup>4</sup>
Number of travel lanes	Two or Four <sup>5</sup>	Two	Two	Two	Two	Two

Note 1: Roadway classifications per the City of Ottawa Official Plan.

Note 2: Colonnade Road splits into Colonnade Road North and Colonnade Road South and rejoins back into Colonnade Road between the identified termini.

Note 3: Citiplace Drive is a local roadway that does not have a right-of-way protection. Measured right-of-way varies from 13 to 16m in the study area.

Note 4: Fisher Avenue in the study area does not have right-of-way protection indicated in the City of Ottawa Official Plan given the roadway cannot be widened given the building adjacent to the roadway. Measured right-of-way varies from 24 to 28m.

Note 5: There are four travel lanes (two per direction) present on Prince of Wales Drive between Fisher Avenue and Colonnade Road. For all other locations within the study area, including at the study intersections themselves, Prince of Wales Drive carries two travel lanes.

**Figure 2** illustrates the existing boundary road network lane configurations and intersection control.

### 3.1.2. Intersections

**Table 2** summarizes the existing traffic control, configurations, and pedestrian crossing provisions at the signalized intersections on the boundary road network. Refer to **Figure 2** for the existing boundary road network.

**Table 2: Boundary Road Network – Signalized Intersections**

Intersection	Control	Approaches	Major Street	Lane Configurations	Pedestrian Crossing
Prince of Wales Drive and Colonnade Road	Signal	4 <sup>1</sup>	Prince of Wales Drive	NBL; NBTR <sup>2</sup> SBT <sup>3</sup> ; SBR EBL (x2); EBTR WBL; WBTR	South, East, and West Approaches
Colonnade Road and Colonnade Road North / Colonnade Road South	Signal	3	Colonnade Road	NBTR SBLT WBL; WBR	All Approaches
Colonnade Road North and Citiplace Drive	Signal	3	Colonnade Road North	SBL; SBR EBL; EBTR WBTR	All Approaches
Prince of Wales Drive and Fisher Avenue	Signal	3	Prince of Wales Drive	NBL; NBT SBT; SBR EBL; EBR	All Approaches

Note 1: The signalized intersection is four legged, with the east approach serving a private property.

Note 2: There are two receiving lanes for northbound through movements at the intersection of Prince of Wales Drive and Colonnade Road.

Note 3: Southbound left movements at this intersection are prohibited.

The three existing full-moves access connections for the 125 Colonnade Road site are proposed to be retained to serve the entire site. Typical of driveway connections, these study intersections will be modelled with stop control on the minor approaches only. Two of the site access connections are located on the east side of Colonnade Road South, immediately south of the Colonnade Road and Colonnade Road North/South intersection. For both intersections, all three approaches have a single shared lane for the applicable turning movements. The site access connection at Colonnade Road meets the roadway from the south, between the two signalized study intersections. For the purposes of analysis, the intersection will be modelled as having an exclusive eastbound through lane, a shared eastbound through and right-turn lane, a shared westbound left-turn/through lane, an exclusive westbound through lane and a northbound (NB) lane for both left and right-turn movements.

### 3.1.3. Adjacent Driveways

There are several nearby driveway connections within 200m of the site access connections. The driveways as listed below are within 200 m of the site, located along Colonnade Road, Colonnade Road North, Colonnade Road South and Prince of Wales Drive. These driveways primarily serve commercial and industrial land uses. Locations of the driveway connections for the subject site which serve the existing 1-storey warehouse building are specified in **Section 3.1.2**.

- One commercial driveway for 111 Prince of Wales Drive
- One institutional use driveway for 1989 Prince of Wales Drive
- Two commercial driveways for 107 Colonnade Road North

- One industrial driveway for 106 Colonnade Road North
- Two industrial driveways for 112 Colonnade Road South
- Two industrial driveways for 120 Colonnade Road South
- Two industrial driveways for 141 Colonnade Road South
- One industrial driveway for 147 Colonnade Road South
- One mixed-use driveway for 155 Colonnade Road South

### 3.1.4. Existing Transit Services

There are several transit routes in the vicinity of the subject site. **Table 3** provides details regarding the existing transit service pattern at the time of this Study in June 2022.

**Table 3: Existing Transit Services**

Route	Span	Time of Operation	Peak Hour Headways	Direction 1 Transit Stop <sup>1</sup>	Direction 2 Transit Stop <sup>1</sup>
Bus Route 80 Barrhaven Centre	Tunney's Pasture to Colonnade Road / Ad. 177 <sup>2</sup>	Monday to Friday	N/A <sup>2</sup>	N/A	Colonnade Road / Ad. 112 (50m, <2min walk)
Bus Route 89 Colonnade	Tunney's Pasture to Colonnade Concourse	Monday to Sunday	15 minutes	Colonnade / 106 Colonnade (~300m, 5min walk)	Colonnade Road / Ad. 112 (50m, <2min walk)
Bus Route 96 Merivale / Hunt Club & Merivale & Colonnade	Greenboro to Colonnade / Ad. 177 <sup>3</sup>	Monday to Friday	N/A <sup>3</sup>	N/A	Colonnade Road / Ad. 112 (50m, <2min walk)
Bus Route 670 St. Pius X	St. Pius X High School to Vaán / Woodroffe	Monday to Friday	N/A <sup>4</sup>	Prince of Wales / Colonnade (~300m, 5min walk)	Prince of Wales / Colonnade (~300m, 5min walk)

Note 1: Direction 1 & Direction 2 refer to the nearest stops which service buses travelling towards the first and second listed destination under the "Span" column, respectively. An assumed walking speed of 1m/s was used to calculate walk time.

Note 2: While Route 80 does not normally service Colonnade Road, there are two daily inbound trip that travel from Tunney's pasture before 6 a.m. Bus Route 89 provides transit service to the area.

Note 3: While Route 96 does not normally service Colonnade Road, there is a single inbound trip that travels from Greenboro before 6 a.m. Beyond 6 a.m., Bus Route 89 provides transit service to the area.

Note 4: School transit trip. Includes one inbound and one outbound trip per weekday.

Refer to **Appendix D** for transit service information. The boundary road network in **Figure 2** illustrates the existing bus stop locations in the study area.

### 3.1.5. Existing Active Transportation Facilities

The existing active transportation facilities on the boundary road network are described in **Table 4**. The boundary road network in **Figure 2** illustrates the existing pedestrian and cycling facilities in the study area. The identified municipal active transportation facilities on the boundary road network provides access to the subject site from various developments located nearby.

**Table 4: Existing Active Transportation Network**

Roadway	Pedestrian Facilities	Separation from Roadway	Cycling Facilities <sup>1</sup>	Separation from Roadway
Prince of Wales Drive	Paved Shoulders	None	Paved Shoulders (Cross-town Bikeway)	None
Colonnade Road	~2m sidewalk (south side only)	~2m asphalt strip	None (Major Pathway)	N/A
Colonnade Road North	~2m sidewalk (east side only)	None	None (Major Pathway)	N/A
Colonnade Road South	~2m sidewalk (east side only)	None	None	N/A
Citiplace Drive	~2m sidewalks (both sides)	None	None	N/A
Fisher Avenue	~2m sidewalk (west side only)	~2m grass strip	None (Spine Route)	N/A

Note 1: City of Ottawa Transportation Master Plan designation is included in parentheses.

### 3.1.6. Area Traffic Management

There are no known Area Traffic Management measures in the study area nor are there any known Area Traffic Management studies in progress.

### 3.1.7. Existing Traffic Volumes

The most current traffic movement counts (TMC's) available was obtained from the City. The data for the intersections along Colonnade Road and Colonnade Road North were collected during the weekday peak periods (7:00 a.m. – 10:00 a.m., 11:30 a.m. – 1:30 p.m. and 3:00 p.m. – 6:00 p.m) on Tuesday April 10, 2018. The data at the intersection of Prince of Wales Drive and Fisher Avenue was collected during the same peak period hours, but instead on Wednesday April 06, 2016. The traffic count data is included as **Appendix E**.

The obtained TMC's on the boundary road network includes passenger cars, heavy trucks and pedestrian volumes at the study intersections.

### 3.1.8. Collision History

Historical collision data was compiled through City of Ottawa Open Data by the proponent from January 1, 2015, to December 31, 2019. A collision analysis was conducted to identify any existing collision trends in the area, with the critical threshold per the City's guidelines being more than six collisions within a five-year period for any collision type. The collision data is included as **Appendix F**.

**Table 5** outlines the collision frequency by type, severity and weather conditions in the area.

As outlined below, the intersection of Prince of Wales Drive and Colonnade Road has an established pattern for several collision types. Most notably, the intersection appears to have a pattern of rear end collisions. Furthermore, the number of sideswipe collisions may suggest a trend for this type of collision.

Additionally, the roadway segment of Prince of Wales Drive between Colonnade Road and Stephanie Avenue appears to have a pattern of rear end collisions.

Therefore, the TIA will include a safety analysis of the intersection of Prince of Wales Drive and Colonnade Road, along with the roadway segment south of the intersection to identify existing conditions at the intersection and opportunities or recommendations to address the pattern of rear end and sideswipe collisions.

**Table 5: Collision History – 2015 to 2019**

<b>Intersection</b>	<b>Collision Type</b>	<b>Severity</b>	<b>Weather Conditions</b>
Prince of Wales Drive and Colonnade Road	Rear-End – 50 Turning Movement – 10 Sideswipe – 7 Single Manned Vehicle (SMV) / Other – 3 <b>Total – 70</b>	Non-fatal injury – 12 Property Damage (PD) Only – 58 <b>Total – 70</b>	Clear – 60 Rain – 4 Snow – 5 Freezing Rain – 1 <b>Total – 70</b>
Colonnade Road and Colonnade Road North / Colonnade Road South	Rear End – 2 Sideswipe – 2 Other – 2 <b>Total – 6</b>	PD Only – 6 <b>Total – 6</b>	Clear – 4 Rain – 1 Snow – 1 <b>Total – 6</b>
<b>Roadway</b>	<b>Collision Type</b>	<b>Severity</b>	<b>Weather Conditions</b>
Prince of Wales Drive between Rideau Shore Ct. and Colonnade Road	Sideswipe – 3 Rear end – 1 Angle – 1 <b>Total – 5</b>	PD Only – 5 <b>Total – 5</b>	Clear – 4 Rain – 1 <b>Total – 5</b>
Prince of Wales Drive between Colonnade Road and Stephanie Avenue	Rear end – 7 SMV other – 1 <b>Total – 8</b>	PD Only – 7 Non-fatal injury – 1 <b>Total – 8</b>	Clear – 8 <b>Total – 8</b>
Colonnade Road between Colonnade Road N/S and Prince of Wales Drive	Turning Movement – 1 <b>Total – 1</b>	PD Only – 1 <b>Total – 1</b>	Clear – 1 <b>Total – 1</b>
Colonnade Road North between Citiplace Drive and Colonnade Road	SMV unattended vehicle – 2 Angle – 1 Turning Movement – 1 <b>Total – 4</b>	PD Only – 4 <b>Total – 4</b>	Clear – 3 Rain – 1 <b>Total – 4</b>
Colonnade Road South between Concourse Gate and Colonnade Road	Angle – 1 Turning Movement – 1 SMV / Other – 2 <b>Total – 4</b>	PD Only – 3 Non-fatal injury – 1 <b>Total – 4</b>	Clear – 4 <b>Total – 4</b>

## 3.2 Future Planned Conditions

### 3.2.1 Roadway Improvements

Per Map 10 of the City's Transportation Master Plan (2013), Prince of Wales Drive is designated as a "widened arterial" within the study area under the 2031 network concept. No other road improvements are identified. However, the City is currently updating their Transportation Master Plan which may include improvement changes to Prince of Wales Drive and Colonnade Road. The City confirmed through correspondence that timing of this road improvement is currently unknown. Roadway drawings outlining the ultimate intersection configurations of Colonnade Road and Fisher Avenue at Prince of Wales Drive after road widening was circulated and is attached in **Appendix G**.

### 3.2.2 Background Developments

A review of the City's development applications website map indicates no background developments located in the immediate vicinity of the subject site. Therefore, no background developments shall be included within the scope of the study. Generic future background traffic growth will be captured using growth rates provided by the City as part of the forecasting step.

## 3.3 Study Area

The study area for the TIA will consist of the following study intersections:

- Prince of Wales Drive and Colonnade Road
- Colonnade Road and Colonnade Road North / Colonnade Road South
- Colonnade Road North and Citiplace Drive
- Prince of Wales Drive and Fisher Avenue
- Colonnade Road and site access #1
- Colonnade Road South and site access #2
- Colonnade Road South and site access #3

## 3.4 Time Periods

The employment nature of the proposed development will result in additional traffic on the boundary road network during the critical weekday commuter peak hours. Therefore, the TIA will analyze the weekday a.m. and p.m. peak periods.

## 3.5 Horizon Years

Per the City's guidelines, the year of full build-out and the five-year horizon must be analyzed. It is anticipated that the development will be built-out by 2025. Therefore, the TIA will analyze the 2025 and 2030 horizon years.

## 3.6 Exemptions Review

This section reviews possible exemptions in the scope of work elements of the TIA study per the City's guidelines. **Table 6** summarizes the City's possible exemptions and the developments status in meeting the exemption.



**Table 6: Possible Exemptions**

Module	Element	Exemption Condition	Development Status
<b>Design Review Component</b>			
Development Design	Circulation and Access	Only required for Site Plans	Not exempt
	<b>New Street Networks</b>	<b>Only required for Plans of Subdivision</b>	<b>Exempt</b>
Parking	Parking Supply	Only required for Site Plans	Not exempt
	<b>Spillover Parking</b>	<b>Only required for Site Plans where parking supply is 15% below unconstrained demand</b>	<b>Exempt</b>
Transportation Demand Management	All elements	Not required for Site Plans expected to have fewer than 60 employees and/or students on location at any given time	Not exempt
Neighbourhood Traffic Management	Adjacent Neighbourhoods	Only required when the development relies on local or collector streets for access and total volumes exceed ATM capacity thresholds	Not exempt
Network Concept	---	<b>Only required when proposed development generates more than 200 person-trips during the peak hour in excess of the equivalent volume permitted by established zoning</b>	<b>Exempt</b>

Therefore, the TIA will contain analysis of Circulation and Access, Parking Supply, Transportation Demand Management, and Neighbourhood Traffic Management.

## 4.0 Forecasting

### 4.1 Trip Generation and Mode Share

Trip generation for the proposed development was forecasted using the Institute of Transportation Engineers (ITE) Trip Generation Manual, 11<sup>th</sup> Edition and the City of Ottawa TRANS Trip Generation Manual given that the TRANS Trip Generation Manual does not have trip generation rates for employment type land uses. The proposed development includes retaining the existing 5000m<sup>2</sup> warehouse building, while adding a 8667m<sup>2</sup> self-storage building and a 3747m<sup>2</sup> warehouse building. Given that traffic counts was not available for the existing site accesses and undertaking such counts may not be accurate due to the pandemic, trip generation was forecasted for both the existing warehouse building and proposed future buildings at the site. These trip generation forecast and methodology are outlined in the following subsections.

#### 4.1.1. Existing Site Trip Generation

Given the nature of the existing site, Land Use Category (LUC) 150 "Warehousing" was applied to the existing 1-storey warehouse building with a GFA of 5000m<sup>2</sup>. The average rate methodology was applied given multiple land uses are included as part of the future proposed development, and a consistent trip generation was sought for the existing building under the existing and future site trip generation forecasts. The results of the ITE trip generation for the existing site are shown in **Table 7**.

**Table 7: Existing Site ITE Trip Generation**

Trip Type	ITE Land Use Category	Gross Floor Area (GFA)	Peak Hour	Number of Trips		
				Inbound	Outbound	Total
<b>Existing Warehouse Building</b>						
Vehicle	LUC 150 Warehousing	5,000 m <sup>2</sup> (53.82ksqft)	A.M.	7	2	9
			P.M.	3	7	10
Truck			A.M.	0	1	1
			P.M.	1	1	2

The City of Ottawa TIA Guidelines require identification of the existing mode share of the area using the most recent National Capital Region Origin-Destination survey. Given that the site is located within the “Merivale” district, mode splits from Table 12 of the “TRANS Trip Generation Manual – Summary Report” for the “Merivale” district was used for existing modal distribution. **Table 8** outlines the existing mode split for the subject site. This mode split was applied to the existing site trip generation.

**Table 8: Existing Mode Split**

Travel Mode	Percent Mode Split
Auto Driver	69.4%
Auto Passenger	6.9%
Transit	16.3%
Cycling	3.4%
Walking	4.1%

The vehicle trips identified in **Table 7** were converted to person-trips using the conversion factor of 1.28 for non-residential land uses as noted in the City of Ottawa's TRANS Trip Generation Manual. Truck trips were added to the TRANS Trip Generation Manual forecast separately given the manual does not forecast truck trips.

The resulting person trips by travel mode are summarized in **Table 9** for the existing site.

**Table 9: TRANS Trip Generation Forecast – Existing Site**

Travel Mode	Trips Generated – A.M. Peak			Trips Generated – P.M. Peak		
	In	Out	Total	In	Out	Total
Total Person Trips	9	3	12	4	9	13
Auto Driver	6	2	8	3	6	9
Auto Passenger	1	0	1	0	1	1
Transit	1	1	2	1	1	2
Cycling	0	0	0	0	1	1
Walking	1	0	1	0	0	0

The above forecast estimates an existing site trip generation of 12 and 13 person-trips in the a.m. and p.m. peak hour, respectively. The existing building is proposed to be retained as part of the future site plan. Thus, the person-trip generation for this building is incorporated into the future site trip generation process.

#### 4.1.2. Future Site Trip Generation

Given the nature of the future site, LUC 151 “Mini-Warehousing” was applied to the proposed 3-storey self storage facility with a GFA of 8667m<sup>2</sup>, while LUC 150 “Warehousing” was applied to the proposed 1-storey warehousing building with a GFA of 3747 m<sup>2</sup>. The average rate methodology was applied given multiple land uses are included as part of the future proposed development. The existing 5000m<sup>2</sup> warehouse building trip generation discussed in **Section 4.1.1** was maintained for this scenario. The results of the ITE trip generation for the existing site are shown in **Table 10**.

**Table 10: Future Site ITE Trip Generation**

Trip Type	ITE Land Use Category	Gross Floor Area (GFA)	Peak Hour	Number of Trips		
				Inbound	Outbound	Total
<b>Existing Warehouse Building</b>						
Vehicle	LUC 150 Warehousing	5,000 m <sup>2</sup> (53.82ksqft)	A.M.	7	2	9
			P.M.	3	7	10
Truck	LUC 150 Warehousing	5,000 m <sup>2</sup> (53.82ksqft)	A.M.	0	1	1
			P.M.	1	1	2
<b>Future Building “A” Self-Storage Facility</b>						
Vehicle	LUC 151 Mini-Warehousing	8667m <sup>2</sup> (93.29ksqft)	A.M.	5	3	8
			P.M.	7	7	14
Truck	LUC 151 Mini-Warehousing	8667m <sup>2</sup> (93.29ksqft)	A.M.	0	0	0
			P.M.	0	0	0
<b>Future Building “B” Warehouse</b>						
Vehicle	LUC 150 Warehousing	3747 m <sup>2</sup> (40.33ksqft)	A.M.	7	2	9
			P.M.	3	6	9
Truck	LUC 150 Warehousing	3747 m <sup>2</sup> (40.33ksqft)	A.M.	1	0	1
			P.M.	1	1	2
<b>Combined Site Future Total</b>						
Vehicle	Various	17414 m <sup>2</sup> (187.44ksqft)	A.M.	19	7	26
			P.M.	13	20	33
Truck	Various	17414 m <sup>2</sup> (187.44ksqft)	A.M.	1	1	2
			P.M.	2	2	4

The TIA guidelines require mode share target to be set for the development given the future horizon years considered within the assessment. Concerning this, the surrounding lands in the Merivale District generally conform to land use policies outlined in the City of Ottawa's Official Plan, and no major improvements were identified in the City of Ottawa 2013 Transportation Master Plan that would significantly change the mode split of any travel mode. Therefore, the current modal split was applied to the future horizons. A heavy reliance on auto travel is still expected in the future given the industrial nature of the proposed development, the suburban context of the study area with no nearby origin or destination points for walking or cycling trips, and the absence of planned alternative transportation infrastructure improvements in the study area. The mode split identified in **Table 8** was applied to the proposed development as part of the TRANS Trip Generation Manual process.

The vehicle trips identified above were converted to person-trips using the conversion factor of 1.28 for non-residential land uses as noted in the City of Ottawa's TRANS Trip Generation Manual. Similar to the existing site trip generation process, truck trips were added to the TRANS Trip Generation Manual forecast separately given the manual does not forecast truck trips.

The combined person-trip generation for the proposed future site, which was calculated by summing the person trips of each of the three buildings which make up the proposed future site, is outlined in **Table 11**.

**Table 11: TRANS Trip Generation Forecast – Proposed Future Site Total**

Travel Mode		Trips Generated – A.M. Peak			Trips Generated – P.M. Peak		
		In	Out	Total	In	Out	Total
<b>Total Person Trips</b>		<b>20</b>	<b>9</b>	<b>29</b>	<b>15</b>	<b>23</b>	<b>38</b>
Auto Driver	69.4%	6	20	11	15	26	29
Auto Passenger	6.9%	0	2	1	2	3	3
Transit	16.3%	2	5	3	4	7	8
Cycling	3.4%	0	1	0	1	1	1
Walking	4.1%	1	1	0	1	1	2

The proposed development is forecast to generate 29 and 38 two-way person-trips in the a.m. and p.m. peak hours, respectively.

#### 4.2 Trip Distribution

The vehicle trips generated by the proposed development were distributed to the road network based on origin and destination data from the NCR survey (2011) for the Merivale District in support of traffic volume forecasting. The percentage of trips from origin points outside of the study area entering the study area during the weekday a.m. peak hour were analyzed and were assigned based on the most convenient route available and the route with the shortest travel time. Further, trips internal to the Merivale District were assigned based on expected catchment areas given the site's location. The following trip distribution was derived for the boundary road network:

- 28% to and from the south via Prince of Wales Drive
- 28% to and from the north via Prince of Wales Drive
- 26% to and from the west via Colonnade Road (split between North/South, discussed below)
- 18% to and from the north via Fisher Avenue

**Appendix H** contains the NCR survey data and **Appendix I** contains the trip distribution analysis based on percentage of trips from various origin points.

It is noted that the trip distribution for Colonnade Road accounts for both the Colonnade Road North and Colonnade Road South routes. For the purposes of analysis, of the 26% trip distribution to Colonnade Road, 60% of this distribution was directed to the North branch (i.e., 16% of total site traffic) while 40% of this distribution was assigned to the South branch (ie. 10% of total site traffic). As noted, the slightly larger distribution to the Colonnade Road North was assumed due to roadway horizontal alignment and given it is a Major Collector roadway under the City of Ottawa Official Plan, while

Colonnade Road South is only designated as a Collector. In consideration of these findings, more traffic was distributed to Colonnade Road North. Refer to **Figures 3, 4 and 5** for the trip distributions.

### 4.3 Trip Assignment

Passenger vehicle and truck trips generated by the proposed development are assigned to the road network based on the trip distribution outlined in **Section 4.2**.

Given the multiple site accesses, site traffic may utilize any of the three site accesses to service the site. Proportions of the total vehicle trips were assigned to each of the site accesses based on expected travel patterns for both the existing and future buildings. **Table 12** provides a summary of the portions used for site access trip assignment. The site access numeration is properly defined in the boundary road network, shown in **Figure 2**.

**Table 12: Site Access Trip Assignment Proportions**

	Site Access #1	Site Access #2	Site Access #3
<b>Existing Building</b>	50%	25%	25%
<b>Future Building "A"</b>	0%	30%	70%
<b>Future Building "B"</b>	0%	30%	70%

The site access #1 and the associated parking facility is expected to exclusively service the existing building upon buildout of the proposed development. Some vehicle trips, including all truck trips attributable to the existing building, are expected to use the site accesses along Colonnade Road South.

The future buildings "A" and "B" will be serviced by the site accesses along Colonnade Road South. While it is expected that site traffic will utilize both site access #2 and #3 approximately equal amounts of time, the location of the proposed internal roadways and parking locations (as shown on the Site Plan in **Appendix B**) lends to site access #3 being a slightly more attractive option for vehicles and trucks. Therefore, 70% of these building's site traffic was assigned to site access #3, while 30% of this traffic was assigned to site access #2. This assignment method additionally allows for analysis of a worst case scenario should significant traffic opt to use only one of the site accesses.

**Figures 3, 4 and 5** outline the trip distribution used for trips entering and exiting site access #1, #2, and #3, respectively. The existing site vehicle trip assignment is outlined as **Figure 6**. The future proposed development vehicle trip assignment is outlined as **Figure 7**.

### 4.4 Background Transportation Network Plans

According to Map 10 of the City of Ottawa 2013 Transportation Master Plan (TMP), Prince of Wales Drive is identified as a "widened arterial" under the 2031 network concept. However, the City of Ottawa is currently updating their TMP. The City confirmed through correspondence that timing of this road improvement is currently unknown. Roadway drawings outlining the ultimate intersection configurations of Colonnade Road and Fisher Avenue at Prince of Wales Drive after road widening was circulated and is attached in **Appendix G**.

Therefore, the existing boundary road network (identified in **Figure 2**) was applied for the future analysis scenarios.

#### 4.5 Background Growth

Historical growth rates were determined based on a review of results from the City of Ottawa's TRANS Regional Model. The TRANS model is an EMME traffic volume forecasting model which provides projections for a.m. peak hour total traffic volumes in the 2011 and 2031 horizon years. TRANS model excerpts are available in **Appendix J**.

The resulting outputs of the traffic volume forecast for both the 2011 and 2031 scenarios are inconsistent with what was identified in the turning movement count surveys conducted in 2016 and 2018. Therefore, rather than applying the forecasted traffic volumes directly, the general trends of the traffic volume projections were instead recorded to determine appropriate growth rates to apply to the study roadways.

For most study roadway segments, traffic volumes were found to decrease from the 2011 to the 2031 scenarios of the TRANS model. Therefore, unless otherwise noted below, the movements at the study intersections were assigned growth rates of 0% per annum through the 2030 horizon year.

According to the TRANS model, the following roadway segments in the study area are forecast to receive an increase in traffic volumes during the a.m. peak hour. The corresponding compounded annual growth rate associated with the observed TRANS model volume increase is also provided in brackets:

- Northbound on Prince of Wales Drive south of Colonnade Road (0.5%)
- Northbound on Prince of Wales Drive between Colonnade Road and Fisher Avenue (0.9%)
- Northbound on Prince of Wales Drive north of Fisher Avenue (0.7%)
- Northbound on Fisher Avenue north of Prince of Wales Drive (1.3%)
- Eastbound on Colonnade Road west of Prince of Wales Drive (3.4%)

Given the results of the analysis, the northbound through movements in the study area along Prince of Wales Drive (including the northbound left-turn movement at Fisher Avenue) were assigned a growth rate of 1% per annum in the a.m. peak hour only. Based on a review of the existing traffic counts (refer to **Section 3.1.7**), similar but opposite traffic demand can be expected in the p.m. peak hour. Therefore, a 1% growth rate was additionally applied to the southbound (SB) through movements of Prince of Wales Drive along with the southbound right-turn movement at the intersection with Fisher Avenue for p.m. peak hour scenarios.

The TRANS model projects a traffic volume increase of 3.4% for the eastbound movement on Colonnade Road in the a.m. peak hour, between the 2011 and 2031 horizon years. This represents an approximate doubling of the 2011 projected traffic volumes. The projected traffic volume of 248 vehicles/hour in the 2031 horizon is less than the 344 or 331 vehicles recorded on this movement using the traffic survey data discussed in **Section 3.1.7**. Given that the remaining Colonnade Road segments are forecast to experience a corresponding decrease in traffic volumes from the 2011 to the 2031 horizon year, and that no additional traffic growth is expected in the study area apart from the proposed development (discussed in **Section 4.3**), a growth rate of 0% was applied herein for the movements along Colonnade Road for both a.m. and p.m. peak hour traffic volume forecasts.

#### 4.6 Background Developments

As previously noted in **Section 3.2.2**, a review of the City's development applications yielded no background developments located in proximity to the subject site. This was further confirmed in Terms of Reference correspondence with the City (refer to **Appendix A**). Therefore, all future background

traffic (apart from site traffic) is expected to be captured by the growth rates identified in **Section 4.5**.

#### 4.7 Demand Rationalization

Preliminary capacity analysis was conducted to determine if there are any locations or movements under future analysis scenarios where the forecasted demand exceeds capacity. Per the City's TIA guidelines, if the forecasted demand for a location or movement is expected to exceed capacity (i.e. volume-to-capacity ratio exceeding 1.00), then travel demands must be rationalized to account for capacity limitations on the transportation network.

##### 4.7.1. Existing Conditions

The existing conditions scenario was modelled preliminarily under standard City of Ottawa TIA Guideline assumptions as a baseline to assist in calibrating the Synchro model. The traffic operations analysis was conducted under the noted modelling assumptions at all study intersections. The following locations were identified where total auto demand is projected to exceed capacity under initial modelling assumptions:

- Prince of Wales Drive and Colonnade Road – NB left-turn movement (a.m. peak hour)
- Prince of Wales Drive and Colonnade Road – NB through movement (a.m. peak hour)
- Prince of Wales Drive and Colonnade Road – SB through movement (p.m. peak hour)
- Prince of Wales Drive and Fisher Avenue – SB through movement (a.m. peak hour)

The traffic operations summary of this modelling scenario at the two critical study intersections which experienced demand exceeding capacity are summarized below in **Table 13**, which used the 2022 adjusted existing conditions traffic volumes in **Figure 9**. Level of Service Definitions are provided in **Appendix K**. Detailed Capacity Analysis Reports are included in **Appendix L**.

**Table 13: Preliminary Existing Conditions Traffic Operations Analysis**

Intersection	Control	Horizon Year	Peak Hour	Intersection V/C Ratio (Level of Service <sup>[1]</sup> )	V/C Ratio <sup>[2]</sup>
Prince of Wales Drive and Colonnade Road	Signal	2022	A.M.	0.973 (E)	<b>1.29 (NBL)</b> <b>1.10 (NBT)</b> <b>0.94 (SBT)</b>
			P.M.	1.206 (F)	<b>1.47 (SBT)</b>
Prince of Wales Drive and Fisher Avenue	Signal	2022	A.M.	0.948 (E)	<b>1.11 (SBT)</b>
			P.M.	0.869 (D)	0.86 (NBL)

Notes:

[1] Level of Service – The Level of Service (LOS) of an intersection is based on the intersection volume to capacity ratio as per the City of Ottawa Multi-Modal Levels of Service (MMLoS) Guidelines. The LOS of an unsignalized intersection is based on the worst average approach delay.

[2] V/C Ratio – illustrates the maximum and other lane volume to capacity ratios greater than 0.90.

As shown in **Table 13** assessment of the existing horizon based on the projected volumes and using City standard modeling requirements show the two intersections operating at or beyond capacity. The City of Ottawa TIA guidelines specify instructions to rationalize future demand; therefore, adjustments to model parameters to accurately depict the high volumes at these intersections will be considered as part of future traffic analysis. Given the 2022 horizon is also a future year

compared to the existing traffic survey counts, these adjustments will be applied to the 2022 horizon as well. Apart from a couple movements which were grown by 1% per annum, all vehicle movements were based on the existing traffic survey as noted in **Section 3.1.7**. Therefore, volume reductions were not pursued, and standard Synchro model calibration adjustments for high capacity arterial roadway (such as Prince of Wales Drive) was instead employed.

The following methodology was used to accurately calibrate the Synchro model. Modelling parameters were adjusted in the order listed and sequentially added as part of model calibration.

1. Signal Timing Plan Optimization (splits only, cycle time maintained)
2. Total Lost Time
3. Ideal Saturation Flow Rates
4. Peak Hour Factors

If all movements for a particular scenario fell below a value of one after only some of the adjustments were made, subsequent adjustments were excluded for that particular scenario. For example, the volume-to-capacity ratio of the southbound through movement at Prince of Wales Drive and Fisher Avenue fell below one after only adjustments one and two were applied. Therefore, no adjustment to the ideal saturation flow rates, peak hour factors, or traffic volumes were applied for this scenario.

**Table 14** summarizes all adjustments made for each intersection and peak hour scenario. These adjustments are additionally carried forward to the future scenarios to properly calibrate these models. For the remaining study intersections and scenarios, the baseline City of Ottawa modeling parameters were maintained given both existing and future traffic operations analysis did not indicate capacity issues that would warrant changes to the modelling assumptions or traffic volumes forecast.



**Table 14: Modelling Adjustments**

Modelling Adjustment	Rational	Intersection (Peak Hour)
Signal Timing Plan Optimized	Standard practice in optimizing capacity of an intersection.	Prince of Wales Drive and Colonnade Road (A.M. and P.M.) Prince of Wales Drive and Fisher Avenue (A.M.)
Lost Time adjustments: -3 seconds to through movements and -2 seconds to left-turn movements.	To account for movements occurring during intergreen periods, typical for major arterial roadway intersections during commuter peak hours.	Prince of Wales Drive and Colonnade Road (A.M. and P.M.) Prince of Wales Drive and Fisher Avenue (A.M.)
Ideal Saturation Flow Rate of critical through movements set to 2000 veh/hr and 1900 veh/hr for all other movements.	Existing traffic survey data results in v/c ratios above 1, therefore, the ideal saturation flow rate is higher than the City's 1800 veh/hr. An ideal saturation flow rate of 2000 veh/hr is used instead and is consistent with standard industry assumptions for high volume arterials. Example is the Regional Municipality of York Transportation Mobility Plan Guidelines (Nov. 2016).	Prince of Wales Drive and Colonnade Road (A.M. and P.M.)
Peak Hour Factor adjusted to 1.00 for all movements.	As identified by the City of Ottawa Guidelines for future traffic modeling under situations with operations near capacity.	Prince of Wales Drive and Colonnade Road (P.M. only)

With the adjustments to the modelling assumption, the revised 2022 existing conditions scenario was analyzed. **Table 15** outlines the operational measures of effectiveness at the study intersections under the 2022 existing traffic volumes. The Level of Service (LOS) definitions are illustrated in **Appendix K**. Detailed capacity analysis is included in **Appendix L**.

**Table 15: 2022 Existing Conditions Traffic Operations**

Intersection	Control	Horizon Year	Peak Hour	Intersection V/C Ratio (Level of Service <sup>[1]</sup> )	V/C Ratio <sup>[2]</sup>	95 <sup>th</sup> %ile Queues > Storage Length
Prince of Wales Drive and Colonnade Road	Signal	2022	A.M.	0.854 (D)	<b>0.96 (NBT)</b> <b>0.90 (SBT)</b>	178.0m > 85.0m (NBL)
			P.M.	1.030 (F)	<b>1.01 (SBT)</b>	None
Colonnade Road and Colonnade Road North / South	Signal	2022	A.M.	0.589 (A)	0.79 (WBL)	None
			P.M.	0.768 (C)	<b>0.95 (SBT)</b>	None
Colonnade Road North and Citiplace Drive	Signal	2022	A.M.	0.309 (A)	0.70 (EBT)	None
			P.M.	0.369 (A)	0.74 (WBT)	None
Prince of Wales Drive and Fisher Avenue	Signal	2022	A.M.	0.903 (E)	<b>0.99 (SBT)</b>	None
			P.M.	0.869 (D)	0.86 (NBL)	None
Colonnade Road and Site Access #1	Stop Control (Minor Street)	2022	A.M.	0.338 (A)	0.32 (WBT)	None
			P.M.	0.340 (A)	0.36 (EBT)	None
Colonnade Road and Site Access #2	Stop Control (Minor Street)	2022	A.M.	0.330 (A)	0.08 (NBT)	None
			P.M.	0.327 (A)	0.27 (NBT)	None
Colonnade Road and Site Access #3	Stop Control (Minor Street)	2022	A.M.	0.321 (A)	0.08 (NBT)	None
			P.M.	0.326 (A)	0.27 (NBT)	None

Notes:

[1] Level of Service – The Level of Service (LOS) of an intersection is based on the intersection volume to capacity ratio as per the City of Ottawa Multi-Modal Levels of Service (MMLoS) Guidelines.

[2] V/C Ratio – illustrates the maximum and other lane volume to capacity ratios greater than 0.90.

As shown in **Table 15**, even with the adjustments, some movements are expected to operate near capacity due to high volumes and a turning movement like southbound through may require more than a cycle to clear the intersection of Prince of Wales Drive and Colonnade Road during the p.m. peak hours. However, this is not uncommon for existing conditions operations for which traffic volumes are projected. The operational issues at Prince of Wales Drive with Colonnade Road and Fisher Avenue are typical of a high volume arterial during peak hours. Therefore, the modelling adjustments in **Table 14** were carried forward to the analysis portion of the TIA for the existing and future analysis scenarios.

#### 4.7.2. Future Conditions

For the purposes of this analysis, the future total conditions scenarios were preliminarily analyzed to understand if any movements under future analysis are forecasted to be over capacity. The analysis methodology follows the methodology outlined in the City's TIA guidelines along with incorporating the modelling adjustments stated in **Section 4.7.2**.

The results of the preliminary modelling are summarized below in **Table 16**, which used the 2025 and

2030 future total traffic volumes in **Figures 12 and 13**. The Level of Service (LOS) definitions are illustrated in **Appendix K**. Detailed capacity analysis is included in **Appendix L**.

**Table 16: Future Total Traffic Operations Analysis**

Intersection	Control	Horizon Year	Peak Hour	Intersection V/C Ratio (Level of Service <sup>[1]</sup> )	V/C Ratio <sup>[2]</sup>	95 <sup>th</sup> %ile Queues > Storage Length
Prince of Wales Drive and Colonnade Road	Signal	2025	A.M.	0.875 (D)	0.88 (NBT)	166.4m > 85.0m (NBL)
			P.M.	1.080 (F)	<b>1.11 (SBT)</b>	None
		2030	A.M.	0.910 (E)	<b>0.92 (NBT)</b>	215.4m > 85.0m (NBL)
			P.M.	1.115 (F)	<b>1.15 (SBT)</b>	None
Colonnade Road and Colonnade Road North / South	Signal	2025 & 2030	A.M.	0.597 (A)	0.80 (WBL)	None
			P.M.	0.777 (C)	0.73 (SBT)	None
Colonnade Road North and Citiplace Drive	Signal	2025 & 2030	A.M.	0.310 (A)	0.62 (EBT)	None
			P.M.	0.369 (A)	0.71 (WBT)	None
Prince of Wales Drive and Fisher Avenue	Signal	2025	A.M.	0.914 (E)	0.86 (SBT)	None
			P.M.	0.885 (D)	0.68 (SBT)	None
		2030	A.M.	0.931 (E)	<b>0.93 (SBT)</b>	None
			P.M.	0.908 (E)	0.72 (NBL)	None
Colonnade Road and Site Access #1	Stop Control (Minor Street)	2025 & 2030	A.M.	0.335 (A)	0.29 (WBT)	None
			P.M.	0.342 (A)	0.32 (EBT)	None
Colonnade Road and Site Access #2	Stop Control (Minor Street)	2025 & 2030	A.M.	0.350 (A)	0.07 (NBT)	None
			P.M.	0.330 (A)	0.24 (NBT)	None
Colonnade Road and Site Access #3	Stop Control (Minor Street)	2025 & 2030	A.M.	0.371 (A)	0.07 (NBT)	None
			P.M.	0.327 (A)	0.24 (NBT)	None

Notes:

[1] Level of Service – The Level of Service (LOS) of an intersection is based on the intersection volume to capacity ratio as per the City of Ottawa Multi-Modal Levels of Service (MMLOS) Guidelines. The LOS of an unsignalized intersection is based on the worst average approach delay.

[2] V/C Ratio – illustrates the maximum and other lane volume to capacity ratios greater than 0.90.

Similar to existing conditions, the southbound through movements at the intersection of Prince of Wales Drive with Colonnade Road and Fisher Avenue are expected to operate near or above capacity during the peak hours. Operations are expected to improve in future with the proposed future widening of Prince of Wales.

Given almost no traffic is present at the westbound approach of the Prince of Wales Drive and Colonnade Road intersection serving a private property (church), consideration should be given to prohibiting the westbound left and through during the weekday peak hours. With such a change and optimization of the timing plan, the projected are presented in **Table 17**. Detailed capacity analysis is included in **Appendix L**.

**Table 17: Future Total Traffic Operations Analysis – WBL & WBT prohibited in peak hours**

Intersection	Control	Horizon Year	Peak Hour	Intersection V/C Ratio (Level of Service <sup>[1]</sup> )	V/C Ratio <sup>[2]</sup>	95 <sup>th</sup> %ile Queues > Storage Length
Prince of Wales Drive and Colonnade Road	Signal	2025	A.M.	0.900 (E)	0.85 (NBT)	184.6m > 85.0m (NBL)
			P.M.	1.080 (F)	<b>0.98 (SBT)</b> <b>0.96 (EBT)</b> <b>0.93 (EBL)</b>	None
		2030	A.M.	0.935 (E)	0.89 (NBT)	208,7m > 85.0m (NBL)
			P.M.	1.115 (F)	<b>1.02 (SBT)</b> <b>0.98 (EBT)</b> <b>0.93 (EBL)</b>	None

Notes:

[1] Level of Service – The Level of Service (LOS) of an intersection is based on the intersection volume to capacity ratio as per the City of Ottawa Multi-Modal Levels of Service (MMLoS) Guidelines. The LOS of an unsignalized intersection is based on the worst average approach delay.

[2] V/C Ratio – illustrates the maximum and other lane volume to capacity ratios greater than 0.90.

Delays are expected to be reduced as a result of prohibiting westbound left and westbound through movements in the a.m. and p.m. peak hours. Furthermore, the maximum volume-to-capacity ratios for the critical movements are expected to slightly reduce as a result of this potential improvement. Therefore, it is recommended in the interim that the City explore a revised timing plan and prohibition of the westbound left/through movement to improve traffic operations at the intersection of Prince of Wales Drive and Colonnade Road. Based on correspondence with the City, this signal timing configuration was pursued for the analysis portion of the TIA.

## 5.0 Analysis

### 5.1 Development Design

#### 5.1.1. Design for Sustainable Modes

While the development proposal is primarily auto-centric given its existing and proposed industrial uses, several measures are included which follow the City of Ottawa Planning and Design Guidelines. Notably, for the exterior access doors from both buildings of the proposed development, the walking distance to the closest existing OC Transpo bus stops at Colonnade / 106 Colonnade and Colonnade Road / Ad. 112 are less than 400m. Therefore, with 100% of the proposed development being within 400m walking distance to the nearest bus stop, the site permits easy pedestrian access to transit service, consistent with the TIA Guidelines.

The development proposal will additionally provide 14 bicycle parking spaces located near the main exit locations of each of the proposed buildings. Limited interaction is expected between buildings A and B per as advised by the proponent and therefore a connecting sidewalk not included as part of the site layout. Similar to the several industrial developments in the employment area, the site is expected to be functional and safe for vehicle and pedestrian interactions as vehicle site circulation is expected to be at a low speed. Further, a direct pedestrian connection from Colonnade Drive to building B is not included due to constraints with forestry (trees) in providing the connection. The existing sidewalk on Colonnade Drive at the frontage of the site is however sufficient and consistent with most industrial buildings. This setup was confirmed with the City through supplementary correspondence, included in **Appendix A**.

Further, the site satisfies the required measures per the Transportation Demand Management (TDM) – Supportive Development Design and infrastructure (SDDI) Checklist per Section 4.1.1 of the City's TIA Guidelines. The TDM-SDDI checklist is included in **Appendix M**.

#### 5.1.2. Circulation and Access

The internal roadway is wide and has adequate radii to support the trucks expected at the site as shown on the site plan in **Appendix B**. Given the industrial nature of the proposed development, circulation of the site by a medium single unit truck (MSU) is adequate to demonstrate vehicle maneuverability throughout the site.

No changes to the existing site access configuration are included in the development proposal. Nevertheless, the geometrics of the site accesses serving new development (ie. fronting Colonnade Road South) were reviewed against the requirements of the City of Ottawa Private Approach By-Law No. 2003-447 and the Transportation Association of Canada's Geometric Design Guide for Canadian Roads (TAC-GDGCR).

**Tables 18 and 19** summarizes the findings from the access review against the requirements of the City of Ottawa Private Approach By-Law No. 2003-447.

**Table 18: Private Approach By-Law Roadway Frontage Evaluation**

Clause No.	Roadway (Frontage)	Maximum # of two-way private approaches	Satisfied?
S25.(1)(a-b)	Colonnade Road South (~109m)	2	Yes (2 accesses)

**Table 19: Private Approach By-Law Access Spacing Evaluation**

Clause No.	Access	Direction of nearby Street / Private Access relative to the Access	Distance Required to nearest Street / Private Access		Distance Provided to nearest Street / Private Access		Satisfied?
			Street	Access	Street	Access	
S25.(1)(m)	Site Access #2 at Colonnade Road S.	North	30m		>45m		Yes
		South			>>100m	>40m	Yes
	Site Access #3 at Colonnade Road S.	North			>90m	>40m	Yes
		South			>>100m	>30m	Yes

In addition to conforming to the roadway frontage and access spacing requirements, the driveway widths of the existing site accesses are also in general conformance with the Private Approach Zoning By-Law S25.(1)(c), with driveway widths not exceeding the 9m requirement approaching Colonnade Road and Colonnade Road South and driveway radii extending the width beyond 9m to accommodate heavy vehicles and fire trucks to access the site as required, in accordance with S25.(1)(e). In addition, the driveway approach grades to Colonnade Road South are less than 2%, in accordance with the requirements outlined in the Private Access Zoning By-Law.

As requested by the City, clear throat length of the accesses were evaluated using Table 8.9.3 of the TAC-GDGCR requirements. Using the "Light Industrial" land use, a suggested minimum clear throat length of 15m is recommended given the 17,414 m<sup>2</sup> Gross Floor Area of the development proposal. Based on the site plan in **Appendix B**, the measured clear throat length for the Colonnade Road site access and the Colonnade Road South site accesses are 18m and 8m, respectively. Further, given the building additions included in the development proposal are slated to accommodate self-storage uses, and considering the site is serviced by three separate site accesses rather than just one, a more appropriate metric to evaluate the site accesses would be the "Light Industrial" land use requirement for developments under 10,000 m<sup>2</sup> GFA in size. Using this lower threshold, all the site accesses would further satisfy the 8m suggested minimum clear throat length requirement for collector roads. Nevertheless, based on layout and operational expectations all accesses are effectively expected to even exceed a 15m clear throat. Furthermore, the centre line of the fire truck route from Colonnade Drive into the site satisfy the 12m minimum requirement

Based on the above review, the site access connections at Colonnade Road and Colonnade Road South are supportable from an operational and safety perspective.

## 5.2 Parking Review

### 5.2.1. Parking Supply

The site is located in area “C – suburban” and the applicable zoning by-law parking requirements for the proposed development are summarized in **Table 20**. As the existing warehouse building and the proposed Buildings “A” and “B” at 125 Colonnade Road are all within walking distance of each other and are proposed to function together, a combined estimation of parking requirements was considered for the site. Section 101(7), Rows N95 “Warehousing” and N49 “Light Industrial Use” of Table 101 of the City’s zoning by-law parking requirement was used to determine parking requirements for the entire site. As presented in **Table 20**, both N95 & N49 have the same rates. Further, while there are office spaces of approximately 440m<sup>2</sup> GFA and 375m<sup>2</sup> within the existing warehouse building and the proposed Building B, respectively, these offices are expected to function as ancillary spaces to the main warehouse and will be used by warehousing employees. Given this description, the warehousing land use category is most appropriate for these spaces and thus was applied for the parking calculation as such.

**Table 20: Parking Summary**

Land Use	Gross Floor Area (GFA)	By-Law Parking Rate	Total Parking Required	Parking Supply
Warehousing and Light Industrial	17,414 m <sup>2</sup>	0.8 per 100 m <sup>2</sup> for the first 5000 m <sup>2</sup> GFA, 0.4 per 100 m <sup>2</sup> thereafter	90 parking spaces	127 parking spaces

The vehicle parking supply of 127 spaces for both the proposed development satisfies the City’s Zoning By-Law requirement. Additionally, the site provides the required barrier free accessible parking spaces and loading spaces. Further, the site plan will provide 14 bicycle parking spaces for the proposed development, in conformance with the By-Law requirement of 1 per 1000 m<sup>2</sup> and 1 per 2000 m<sup>2</sup> of GFA for the light industrial (self storage) and warehousing portions, respectively.

## 5.3 Boundary Street Design

The boundary roadways and boundary road network intersections were evaluated for Boundary Street Design per the City of Ottawa TIA Guidelines.

### 5.3.1. Future Multi-Modal Levels of Service

**Tables 21 and 22** highlights the existing Multi-Modal Levels of Service (MMLOS), the target minimum desirable MMLOS based on the City of Ottawa TIA supplement - MMLOS Guidelines, and the expected MMLOS after full buildout of the development. As the site is in an Urban Employment Area, the target MMLOS are based on an arterial road located within an employment area per Exhibit 22 of the MMLOS guidelines (see **Appendix K** for MMLOS excerpts).

**Table 21: Future Background Roadway Segments MMLOS Evaluation**

Roadway		Prince of Wales Drive <sup>1</sup> (N. of Colonnade)	Prince of Wales Drive <sup>1</sup> (S. of Colonnade)	Colonnade Road <sup>1</sup>	Colonnade Road North <sup>1</sup>	Colonnade Road South <sup>1</sup>	Citiplace Drive (Both Sides)	Fisher Avenue (West Side)	Fisher Avenue (East Side)	
<b>Target LOS Land-Use Designation</b>		<b>Employment Area</b>					<b>General Urban Area</b>			
<b>Classification<sup>1</sup></b>		Arterial		Major Collector	Major Collector	Collector	Local	Arterial		
<b>Bike Network Designation</b>		Crosstown Bikeway		Major Pathway	Major Pathway	Local	Local	Spine Route		
<b>Truck Route?</b>		Yes		Yes	Yes	Yes	No	Yes		
Travel Mode	Parameter									
<b>Pedestrian</b>	Sidewalk Width Boulevard Width On-Street Parking Operating Speed <sup>2</sup>	Noted in <b>Table 1</b> and <b>Table 4</b> .								
	AADT	>3000	>3000	>3000	>3000	>3000	≤3000	>3000	>3000	
	<b>Level of Service</b>	F	F	C	D	E	B	D	F	
	<b>Target Level of Service</b>	C	C	C	C	C	C	C	C	
<b>Cyclist</b>	# of Travel Lanes Type of Bikeway Bike Lane Width Operating Speed <sup>2</sup>	Noted in <b>Table 1</b> and <b>Table 4</b> .								
	Bike Lane Blockages Unsign. Lane Crossings	N/A								
	<b>Level of Service</b>	F	F	E	F	F	B	F		
	<b>Target Level of Service</b>	B	B	E	E	E	D	C		
<b>Transit</b>		Insufficient Data Requirements to Evaluate.								
<b>Truck</b>	Curb Lane Width	~3.5m	~3.5m	~3.5m	>3.7m	>3.7m		~3.5m		
	# of Travel Lanes	Noted in <b>Table 1</b> .								
	<b>Level of Service</b>	C	A	A	C	C	Not Evaluated	C		
	<b>Target Level of Service</b>	B	B	B	B	B		D		
<b>Auto</b>		Discussed in <b>Section 5.8</b>								

Note 1: It is assumed that employment areas are an appropriate land-use designation to evaluate only the best side of the street given the limited pedestrian volumes expected in the area.

Note 2: For the purposes of analysis, the speed limit of the roadway was applied as the operating speed of the roadway



**Table 22: Future Background Intersections MMLOS Evaluation**

Intersection		Prince of Wales Drive and Colonnade Road				Colonnade Road and Colonnade Road North / South			Colonnade Road North and Citiplace Drive			Prince of Wales Drive and Fisher Avenue			
Approach		North	South	East	West	North	South	East	North	East	West	North	South	West	
<b>Travel Mode</b>	<b>Parameter</b>														
<b>Pedestrian<sup>1</sup></b>	Lanes	N/A <sup>2</sup>	3	3	5	2	2	4	3	2	3	3	4	4	
	Median		≤2.4m	>2.4m	≤2.4m	≤2.4m	≤2.4m	None	None	None	None	None	None	None	None
	Left turn conflict		Prof.	Proh.	Pm+pt	None	Perm.	Pm+pt	Perm.	Perm.	None	Perm.	None	Pm+pt	
	Right turn conflict		Perm.	Perm.	Perm.	Perm.	Perm.	Perm.	Perm.	Perm.	Perm.	Perm.	Perm.	Perm.	Perm.
	Corner Radius		15-25m	5-10m	15-25m	15-25m	>25m	>25m	5-10m	5-10m	5-10m	Channel w.Receiving			
	Total Points		76	79	35	91	82	50	71	89	79	73	64	56	
	<b>Level of Service</b>		<b>B</b>	<b>B</b>	<b>E</b>	<b>A</b>	<b>B</b>	<b>D</b>	<b>C</b>	<b>B</b>	<b>B</b>	<b>C</b>	<b>C</b>	<b>D</b>	
	<b>Target LOS</b>		<b>C</b>				<b>C</b>			<b>C</b>			<b>C</b>		
<b>Cyclist<sup>1</sup></b>	Type of Bikeway	Mixed Traffic										Pocket	Mixed Traffic		
	Right Turn Storage	>50m	N/A	N/A	>50m	N/A	N/A	>50m	25-50m	N/A	N/A	>50m	N/A	>50m	
	Shared Through-Right?	No	Yes	Yes	No	Yes	Yes	No	No	No	Yes	No	Yes	No	
	# of Lanes Crossed for Left Turns	N/A	1	1	1	0	N/A	1	1	N/A	1	N/A	1	1	
	Operating Speed <sup>4</sup>	Noted in <b>Table 1</b> .													
	<b>Level of Service</b>	<b>F</b>	<b>F</b>	<b>D</b>	<b>F</b>	<b>D</b>	<b>D</b>	<b>F</b>	<b>D</b>	<b>D</b>	<b>F</b>	<b>D</b>	<b>F</b>	<b>F</b>	
	<b>Target LOS</b>	<b>B</b>	<b>B</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>E</b>	<b>D</b>	<b>E</b>	<b>E</b>	<b>B</b>	<b>B</b>	<b>C</b>	
<b>Transit</b>	Ave. Signal Delay	N/A				20.8s			16.7s			N/A			
	<b>Level of Service</b>	<b>N/A<sup>5</sup></b>				<b>D</b>			<b>C</b>			<b>N/A<sup>5</sup></b>			
	<b>Target LOS</b>	<b>D</b>				<b>D</b>			<b>D</b>			<b>D</b>			
<b>Truck</b>	Eff. Corner Radius	>15m	N/A	Not Eval.	>15m	>15m	>15m	>15m	Not Eval.	5-10m	5-10m	>15m	>15m	>15m	
	Receiving Lanes	1	2		1	2	2	1		1	1	1	1	1	
	<b>Level of Service</b>	<b>C</b>	<b>A</b>		<b>C</b>	<b>A</b>	<b>A</b>	<b>C</b>		<b>D</b>	<b>D</b>	<b>C</b>	<b>C</b>	<b>C</b>	
	<b>Target LOS</b>	<b>B</b>	<b>B</b>		<b>B</b>	<b>B</b>	<b>B</b>	<b>B</b>		<b>B</b>	<b>B</b>	<b>D</b>	<b>D</b>	<b>D</b>	
<b>Auto</b>	Discussed in <b>Section 5.8</b>														

Note 1: No island refuge, or leading pedestrian phases at all study intersection. Right turns are allowed on red lights at all study intersection approaches. Crosswalk treatment is standard transverse markings at all study intersections.

Note 2: The north approach of Prince of Wales Drive and Colonnade Road does not have a pedestrian crossing.

Note 3: No dual left-turn lanes, dual-right turn lanes, or bike boxes present at any of the study intersections. Turning Speed assumed above 25km/h for analysis.

Note 4: For the purposes of analysis, the speed limit of the roadway was applied as the operating speed of the roadway

Note 5: Transit Service does not pass through study intersection.

The future background evaluation of multi-modal transportation modes indicates that several travel modes do not meet the targets set out in the MMLOS Guidelines.

The experience of the pedestrian travel mode is generally acceptable both for study roadway segments and intersections given the Official Plan policies of the study area. Specific intersection approaches that do not meet the MMLOS guideline targets are generally associated with crossings with four or more vehicle lanes. A review of the signal timing plans indicate that adequate time is provided for pedestrians seeking to cross these intersection approaches. A reduction of vehicle lanes is not considered a reasonable measure given constrained traffic operations (refer to **Section 5.8**) and low pedestrian mode share (refer to **Section 4.1**) in the study area.

The Pedestrian Level of Service (PLOS) is short of the minimum desired along Colonnade Road North, Colonnade Road South, Fisher Avenue and Prince of Wales Drive. In order to improve the PLOS to the desired target, the City may consider reducing the speed limits of the study roadways to 50km/h. Furthermore, implementation of pedestrian facilities along study roadways that current lack such amenities are expected to improve pedestrian connectivity, safety, and experience, while promoting the achievement of the PLOS targets in the study area. It is noted that study roadways within the Urban Employment Area were evaluated given the best side of the roadway given the Employment Area land-use of the area and low pedestrian mode share (refer to **Table 8**).

The Bicycle Level of Service (BLOS) is generally short of the minimum desired for both the study roadways segments and intersections given the Official Plan policies of the study area. Prince of Wales Drive, which is a designated Cross-town bikeway, includes narrow paved shoulders which provide limited comfort for cyclists. Furthermore, no measures which specifically accommodate the cycling transportation mode have been provided for the remaining roadways within the study area. Therefore, cycling improvements, particular for the Cross-town Bikeway along Prince of Wales Drive, should be considered in the study area to promote achieving the BLOS targets set out in the MMLOS guidelines.

Transit Level of Service (TLOS) for the study roadway segments is not included herein as data required for accurate estimate of the ratio of average transit travel speed to posted speed limit is not available. It is noted that several of the boundary roadways do not currently have transit service. TLOS at the study intersections which accommodate transit movements meet or exceed the targets set out in the MMLOS guidelines.

The Truck Level of Service (TrLOS) for both the study roadway segments and intersections is generally acceptable. While several targets are not met for several truck routes and arterial roadways, it is notable that more than 15m of curb radii is provided at all study intersections, and the TrLOS deficiency is attributable to only one receiving lane per direction being present at most study intersections. Implementation of additional travel lanes along the boundary roadways would promote achieving the TrLOS targets, however, the current boundary road network configuration allows for adequate truck servicing both to the site and the study area. Therefore, road improvements for the purpose of accommodating the Truck transportation mode in isolation are not necessary.

Vehicular level of service (LOS) is discussed separately in **Section 5.8**.

### **5.3.2. Road Safety Analysis**

As identified in **Section 3.1.8**, safety analysis was conducted for the Prince of Wales Drive and Colonnade Road to address the existing pattern of rear end collisions. In addition, the City collision

threshold was also exceeded for turning movement and sideswipe collisions, however, the focus of this analysis is on the high prevalence of rear end collisions identified at the noted study intersection.

Given the high number of rear-end collisions, the signal timing plan may need adjustment at the Prince of Wales Drive and Colonnade Road intersection. The signal system and or phase change interval may need adjustment to reduce volume of traffic that encounter the indecision (dilemma) zone on approaching the intersection. Additionally, installing warning signs upstream of each approach encouraging drivers to pay attention to the driving task may be helpful in reducing collisions at the intersection. Other potential causal factors that may be investigated include pavement surface conditions and roadway lighting.

#### **5.4 Access Intersection Review**

The existing accesses are expected to continue to service the existing site and proposed development without safety issues as highlighted by the collision history in **Section 3.1.8**. The accesses have corner clearances of 30m or greater from the Colonnade Road and Colonnade Road North / South intersection and other nearby private access driveways; satisfying the corner clearance (Table 8.8.2) and accessing spacing (section 8.9.8) requirements of the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads (GDGCR) requirements. Further, there is good visibility along Colonnade Road South, including along the curvature of the road south of the site, which provides the accesses with sight distance in excess of the TAC-GDCR requirements. Therefore, the existing accesses (to be retained) are adequate from a safety and operational feasibility perspective.

#### **5.5 Transportation Demand Management**

While it is anticipated that the site will continue to rely upon auto trips for the foreseeable future, to support sustainable transportation, the TDM measures listed below are recommended for the site based on the City's TDM Measures checklist. The TDM Measures checklist as required per Section 4.5.3 of the City's TIA Guidelines is included within **Appendix M**.

- Bicycle parking provides in conformance with the zoning by-law requirements

Given the conveniently close proximity and frequency of transit, as well as the proposed TDM measures for this development, employees and visitors will be encouraged to be less dependent on single occupant auto trips.

#### **5.6 Neighbourhood Traffic Management**

The existing site accesses that are to service proposed development generated traffic connect to Colonnade Road and Colonnade Road South, which are major collector and collector roads, respectively. The City of Ottawa TIA guidelines outline a maximum volume threshold of 5,000 vehicles per day or 600 vehicles during the peak hour for major collector roadways, while a threshold maximum of 2,500 vehicles per day, or 300 vehicles during the peak hour is identified for collector roadways. Based on the 2030 future total traffic projection, a total of approximately 1315 and 603 two-way traffic volumes are projected adjacent to the site during the busier p.m. peak hour along Colonnade Road and Colonnade Road South, respectively. Therefore, the volume projections exceed the TIA thresholds for neighbourhood traffic management.

However, the thresholds outlined in the TIA guidelines are particularly low, and are likely more appropriate for residential neighbourhood contexts rather than for an employment area which is

required to accommodate a high number of vehicle movements. In addition, neither Colonnade Road nor Colonnade Road South have particularly long spans, while Hunt Club Road, located just south of these roadways, is an arterial roadway which is expected to accommodate traffic volumes several times higher than Colonnade Road given its longer span and higher capacity. Therefore, based on the above, the existing roadway classifications are deemed appropriate for Colonnade Road and Colonnade Road South.

## 5.7 Transit

**Table 23** outlines the estimated additional transit ridership on the existing OC Transpo routes or any new future transit routes in the area.

**Table 23: Proposed Development Transit Trips**

Time Period	Trips	
	Inbound	Outbound
A.M. Peak	2	1
P.M. Peak	2	3

Due to the minimal transit trip generation, identifying transit capacity changes is not required to support the proposed development.

## 5.8 Intersection Levels of Service

This section reviews the auto traffic operations at the study intersections for the existing conditions, future background, and future total scenarios as part of the MMLOS evaluation. As previously discussed in **Section 4.7**, several modelling adjustments, including traffic volume reductions, were incorporated as part of the demand rationalization process to provide accurate projections for all scenarios which do not forecast volume-to-capacity ratios in excess of one. The modelling procedure removed access for the westbound left and through movements out of the access connection to the Prince of Wales Drive and Colonnade Road intersection in the future scenarios, as established in the demand rationalization (refer to **Section 4.7.2**).

Furthermore, given the operational issues along Prince of Wales Drive forecast under both the existing and future scenarios, a sensitivity analysis was undertaken that considered the road improvements identified in the Prince of Wales Drive Environmental Assessment Study (2011). The results of this analysis is presented in **Section 5.8.4**.

### 5.8.1. Existing Intersection Operations

The existing conditions traffic operations at the study intersections were analyzed based on the 2022 existing traffic volumes illustrated in **Figure 9**. **Table 24** outlines the operational measures of effectiveness at the study intersections. The Level of Service definitions re illustrated in **Appendix K**. Detailed capacity analysis is included in **Appendix L**.

**Table 24: 2022 Existing Conditions Traffic Operations**

Intersection	Control	Horizon Year	Peak Hour	Intersection V/C Ratio (Level of Service <sup>[1]</sup> )	V/C Ratio <sup>[2]</sup>	95 <sup>th</sup> %ile Queues > Storage Length
Prince of Wales Drive and Colonnade Road	Signal	2022	A.M.	0.854 (D)	<b>0.96 (NBT)</b> <b>0.90 (SBT)</b>	178.0m > 85.0m (NBL)
			P.M.	1.030 (F)	<b>1.01 (SBT)</b>	None
Colonnade Road and Colonnade Road North / South	Signal	2022	A.M.	0.589 (A)	0.79 (WBL)	None
			P.M.	0.768 (C)	<b>0.95 (SBT)</b>	None
Colonnade Road North and Citiplace Drive	Signal	2022	A.M.	0.309 (A)	0.70 (EBT)	None
			P.M.	0.369 (A)	0.74 (WBT)	None
Prince of Wales Drive and Fisher Avenue	Signal	2022	A.M.	0.903 (E)	<b>0.99 (SBT)</b>	None
			P.M.	0.869 (D)	0.86 (NBL)	None
Colonnade Road and Site Access #1	Stop Control (Minor Street)	2022	A.M.	0.338 (A)	0.32 (WBT)	None
			P.M.	0.340 (A)	0.36 (EBT)	None
Colonnade Road and Site Access #2	Stop Control (Minor Street)	2022	A.M.	0.330 (A)	0.08 (NBT)	None
			P.M.	0.327 (A)	0.27 (NBT)	None
Colonnade Road and Site Access #3	Stop Control (Minor Street)	2022	A.M.	0.321 (A)	0.08 (NBT)	None
			P.M.	0.326 (A)	0.27 (NBT)	None

Notes:

[1] Level of Service – The Level of Service (LOS) of an intersection is based on the intersection volume to capacity ratio as per the City of Ottawa Multi-Modal Levels of Service (MMLoS) Guidelines.

[2] V/C Ratio – illustrates the maximum and other lane volume to capacity ratios greater than 0.90.

Under 2022 existing conditions, the intersection of Prince of Wales Drive and Colonnade Road is operating poorly at a LOS “F” during the p.m. peak hour. The southbound through movement is at capacity during the p.m. peak hour. In addition, the northbound and southbound through movements are near capacity during the a.m. peak hour. Further, 95<sup>th</sup> percentile queues indicate that the northbound left-turn movement is being exceeded with overflow into the tapers and or adjacent through lanes during the a.m. peak hour. Given the current operational constraints of the intersection, It is recommended that the intersection be monitored and the signal timing plan revised accordingly to optimize intersection safety and efficiency.

The signalized intersection of Colonnade Road and Colonnade Road North / Colonnade Road South is operating adequately at a LOS “C” or better during the peak hours. The southbound movement is operating near capacity during the more critical p.m. peak hour.

The intersection of Prince of Wales Drive and Fisher Avenue is currently operating at a LOS “E” or better during the a.m. and p.m. peak hours. The southbound through movement is near capacity

during the a.m. peak hour. It is recommended that the intersection be monitored and the signal timing plan revised accordingly to optimize intersection safety and efficiency.

The remaining study intersections, including the existing site access connections to Colonnade Road and Colonnade Road South, are operate safely and efficiently at a LOS “A” during the peak hours. There are no significant traffic operation issues at the site accesses that serve the existing uses at the subject site.

### 5.8.2. Future Background Intersection Operations

The future background traffic operations at the study intersections were analyzed based on the 2025 and 2030 future background traffic volumes illustrated in **Figures 10 and 11**. **Table 25** outlines the operational measures of effectiveness at the study intersections. The Level of Service definitions are illustrated in **Appendix K**. Detailed capacity analysis is included in **Appendix L**.

**Table 25: Future Background Traffic Operations Analysis**

Intersection	Control	Horizon Year	Peak Hour	Intersection V/C Ratio (Level of Service <sup>[1]</sup> )	V/C Ratio <sup>[2]</sup>	95 <sup>th</sup> %ile Queues > Storage Length
Prince of Wales Drive and Colonnade Road	Signal	2025	A.M.	0.899 (D)	0.85 (NBT)	157.5m > 85.0m (NBL)
			P.M.	1.078 (F)	<b>0.98 (SBT)</b>	None
		2030	A.M.	0.934 (E)	0.89 (NBT)	222.6m > 85.0m (NBL)
			P.M.	1.113 (F)	<b>1.02 (SBT)</b>	None
Colonnade Road and Colonnade Road North / South	Signal	2025 & 2030	A.M.	0.589 (A)	0.80 (WBL)	None
			P.M.	0.768 (C)	0.72 (SBT)	None
Colonnade Road North and Citiplace Drive	Signal	2025 & 2030	A.M.	0.309 (A)	0.62 (EBT)	None
			P.M.	0.369 (A)	0.71 (WBT)	None
Prince of Wales Drive and Fisher Avenue	Signal	2025	A.M.	0.913 (E)	0.86 (SBT)	None
			P.M.	0.882 (D)	0.68 (SBT)	None
		2030	A.M.	0.930 (E)	<b>0.92 (SBT)</b>	None
			P.M.	0.906 (E)	0.72 (NBL)	None
Colonnade Road and Site Access #1	Stop Control (Minor Street)	2025 & 2030	A.M.	0.338 (A)	0.29 (WBT)	None
			P.M.	0.340 (A)	0.32 (EBT)	None
Colonnade Road and Site Access #2	Stop Control (Minor Street)	2025 & 2030	A.M.	0.330 (A)	0.07 (NBT)	None
			P.M.	0.327 (A)	0.24 (NBT)	None
Colonnade Road and Site Access #3	Stop Control (Minor Street)	2025 & 2030	A.M.	0.321 (A)	0.07 (NBT)	None
			P.M.	0.326 (A)	0.24 (NBT)	None

Notes:

[1] Level of Service – The Level of Service (LOS) of an intersection is based on the intersection volume to capacity ratio as per the City of Ottawa Multi-Modal Levels of Service (MMLoS) Guidelines. The LOS of an unsignalized intersection is based on the worst average approach delay.

[2] V/C Ratio – illustrates the maximum and other lane volume to capacity ratios greater than 0.90.

Under the ultimate 2030 future background scenario, even with the prohibition of the westbound left-turn and through movements during the peak hours, the intersection of Prince of Wales Drive and Colonnade Road is projected to continue operating poorly at a LOS “F” during the p.m. peak hour. The southbound through movement remains at capacity during the p.m. peak hour. In addition, the northbound through movement is approaching capacity during the a.m. peak hour. The 95<sup>th</sup> percentile queuing results indicate that the northbound left-turn movement is forecasted to exceed the designated auxiliary turn lane storage length, with overflow into the tapers and or adjacent through lane during the a.m. peak hour.

The signalized intersection of Prince of Wales Drive and Fisher Avenue is projected to operate at a LOS “E” and LOS “D” or better during the a.m. and p.m. peak hours, respectively. The southbound movement is expected to operate near but below capacity during the a.m. peak hour. While capacity at the intersection is constrained and the forecast indicates that the Auto LOS target of “D” will not be met, in practice, optimization of the signal timing plan should allow for adequate intersection performance, with minimal delays to be incurred by vehicular traffic. Therefore, it is recommended that the intersection be monitored by the City and the signal timing plan be revised accordingly to optimize vehicle movements at the intersection.

Given the discussion in **Section 4.7**, and the operational forecast herein, it is recommended that the City pursue road widening along Prince of Wales Drive (as identified in the Prince of Wales Drive Environmental Assessment, 2011). This roadway improvement is expected to improve intersection capacity to accommodate current and future traffic demands, and enable achieving the Auto LOS target set in the City of Ottawa Multi-Modal Level of Service Guidelines at the Prince of Wales Drive study intersections.

Operations at the intersection of Colonnade Road and Colonnade Road North / Colonnade Road South are forecast to be a LOS “C” or better during the a.m. and p.m. peak hours. The intersection is expected to operate safely and efficiently into the 2030 ultimate study horizon.

The remaining study intersections, including the existing site access connections to Colonnade Road and Colonnade Road South, are forecast to operate safely and efficiently at a LOS “A” during the peak hours, similar to existing conditions.

The study intersections are forecast to operate similarly or better under the 2025 future background scenario compared to the 2030 horizon.

### **5.8.3. Future Total Intersection Operations**

The future total traffic operations at the study intersections were analyzed based on the 2025 and 2030 future total traffic volumes illustrated in **Figures 12 and 13**. **Table 26** outlines the operational measures of effectiveness at the study intersections. The Level of Service definitions are illustrated in **Appendix K**. Detailed capacity analysis is included in **Appendix L**.

**Table 26: Future Total Traffic Operations Analysis**

Intersection	Control	Horizon Year	Peak Hour	Intersection V/C Ratio (Level of Service <sup>[1]</sup> )	V/C Ratio <sup>[2]</sup>	95 <sup>th</sup> %ile Queues > Storage Length
Prince of Wales Drive and Colonnade Road	Signal	2025	A.M.	0.900 (E)	0.85 (NBT)	196.8m > 85.0m (NBL)
			P.M.	1.080 (F)	<b>0.98 (SBT)</b>	None
		2030	A.M.	0.935 (E)	0.89 (NBT)	214.7m > 85.0m (NBL)
			P.M.	1.115 (F)	<b>1.02 (SBT)</b>	None
Colonnade Road and Colonnade Road North / South	Signal	2025 & 2030	A.M.	0.599 (A)	0.80 (WBL)	None
			P.M.	0.779 (C)	0.74 (SBT)	None
Colonnade Road North and Citiplace Drive	Signal	2025 & 2030	A.M.	0.310 (A)	0.62 (EBT)	None
			P.M.	0.370 (A)	0.71 (WBT)	None
Prince of Wales Drive and Fisher Avenue	Signal	2025	A.M.	0.916 (E)	0.86 (SBT)	None
			P.M.	0.885 (D)	0.69 (SBT)	None
		2030	A.M.	0.933 (E)	<b>0.93 (SBT)</b>	None
			P.M.	0.909 (E)	0.72 (NBL)	None
Colonnade Road and Site Access #1	Stop Control (Minor Street)	2025 & 2030	A.M.	0.336 (A)	0.29 (WBT)	None
			P.M.	0.342 (A)	0.33 (EBT)	None
Colonnade Road and Site Access #2	Stop Control (Minor Street)	2025 & 2030	A.M.	0.359 (A)	0.08 (NBT)	None
			P.M.	0.331 (A)	0.24 (NBT)	None
Colonnade Road and Site Access #3	Stop Control (Minor Street)	2025 & 2030	A.M.	0.380 (A)	0.07 (NBT)	None
			P.M.	0.327 (A)	0.24 (NBT)	None

Notes:

[1] Level of Service – The Level of Service (LOS) of an intersection is based on the intersection volume to capacity ratio as per the City of Ottawa Multi-Modal Levels of Service (MMLoS) Guidelines. The LOS of an unsignalized intersection is based on the worst average approach delay.

[2] V/C Ratio – illustrates the maximum and other lane volume to capacity ratios greater than 0.90.

Under 2030 future total conditions, even with the prohibition of the westbound left-turn and though movements, the signalized intersection of Prince of Wales Drive and Colonnade Road is forecast to operate at a LOS “E” and LOS “F” during the a.m. and p.m. peak hours, respectively. A maximum intersection volume-to-capacity ratio of 1.115 is projected. This represents an intersection capacity ratio increase of 0.002 compared to 2030 future background conditions. The volume-to-capacity ratios and 95<sup>th</sup> percentile queues remain similar to the future background scenario. This demonstrates that traffic attributable to the proposed development does not meaningfully alter intersection operations. Nevertheless, similar to the future background, the intersection is projected to be at capacity, and the previous recommendation that the City pursue widening along Prince of Wales Drive as recommended in the Prince of Wales Drive Environmental Assessment (2011). It is noted that the development does not contribute any traffic to the at capacity southbound through movement.



At the intersection of Colonnade Road and Colonnade Road North / South, the forecasted LOS is a "C", or the same as future background conditions. A maximum intersection volume-to-capacity ratio increment of 0.011 is expected as a result of the additional forecasted site traffic movements. The intersection is projected to operate safely and efficiently into the 2030 horizon year.

The signalized intersection of Prince of Wales Drive and Fisher Avenue is projected to operate at a LOS "E" and LOS "D" or better during the a.m. and p.m. peak hours, respectively. A maximum intersection volume-to-capacity ratio increment of 0.003 is forecasted. The southbound movement is expected to operate near but below capacity during the a.m. peak hour, with an increase in the volume-to-capacity ratio of 0.01 attributable to the proposed development. Similar to the future background, it is recommended that the intersection be monitored by the City and the signal timing plan be revised accordingly to optimize vehicle movements at the intersection.

The signalized intersection of Colonnade Road North and Citiplace Drive continues to operate at a LOS "A" in the 2030 future total scenario. A maximum intersection volume-to-capacity ratio increment of 0.001 is projected. No operational issues at this intersection are forecast under any of the analysis scenarios included herein.

Under the ultimate 2030 future total conditions, the three site access connections to Colonnade Road and Colonnade Road South are projected to operate at LOS "A" during both peak hours. A maximum intersection volume-to-capacity ratio increment of 0.059 is expected. Minimal additional delay is expected for through movements passing the site access connection compared to the present day situation. The site accesses are projected to operate without any significant traffic operational issues.

Overall, the boundary road network is operating safely and efficiently under the ultimate 2030 future total scenario. The boundary road network is expected to operate similarly or better under the 2025 horizon year scenario.

Based on the analysis herein, the proposed development is not expected to significantly alter the traffic operations of the study intersections. The proposed development can be supported from a traffic operations perspective.

#### **5.8.4. Sensitivity Analysis – Road Widening along Prince of Wales Drive**

A sensitivity scenario was pursued to consider the operational impact of roadway improvements at the Colonnade Road and Fisher Avenue intersections with Prince of Wales Drive as outlined in the Prince of Wales Drive Environmental Assessment (2011). The ultimate 2030 future total scenario traffic volumes in **Figure 13** were used for the sensitivity analysis given volume projections that account for induced traffic demand as a result of road widening are beyond the scope of this study. The prohibition of the westbound left-turn and through movements at the Prince of Wales Drive and Fisher Avenue intersection was removed given reserve capacity is available to utilize for these movements in the peak hours as a result of road widening.

The analysis results for this scenario, outlined in **Table 27**, suggests that improved traffic operations can be expected at the Prince of Wales Drive study intersections during the peak hours should Prince of Wales Drive widening be pursued. The lane configurations and intersection control recommended in the Environmental Assessment result in good operations measures of effectiveness at the Prince of Wales Drive study intersections, with a LOS "C" or better and maximum volume-to-capacity ratio of 0.67 being forecast for any movement. The operational analysis results herein

support the aforementioned recommendation for the City to explore the road widening along Prince Wales Drive in the near to mid-term future to improve traffic operations and transportation safety. Capacity Analysis Reports can be found in **Appendix L**.

**Table 27: Sensitivity Analysis - Prince of Wales Drive Road Widening Traffic Operations**

Intersection	Control	Horizon Year	Peak Hour	Intersection V/C Ratio (Level of Service <sup>[1]</sup> )	V/C Ratio <sup>[2]</sup>	95 <sup>th</sup> %ile Queues > Storage Length
Prince of Wales Drive and Colonnade Road	Signal	2030	A.M.	0.669 (B)	0.60 (NBL)	None
			P.M.	0.685 (B)	0.67 (SBT)	None
Prince of Wales Drive and Fisher Avenue	Signal	2030	A.M.	0.766 (C)	0.67 (NBT)	None
			P.M.	0.794 (C)	0.64 (SBT)	None

Notes:

[1] Level of Service – The Level of Service (LOS) of an intersection is based on the intersection volume to capacity ratio as per the City of Ottawa Multi-Modal Levels of Service (MMLoS) Guidelines. The LOS of an unsignalized intersection is based on the worst average approach delay.

[2] V/C Ratio – illustrates the maximum and other lane volume to capacity ratios greater than 0.90.

## 6.0 Conclusions and Recommendations

This Transportation Impact Assessment (TIA) has assessed the transportation impacts of the proposed industrial development at 125 Colonnade Road in the City of Ottawa. The analysis contained within this report has resulted in the following key findings:

- The proposed development is expected to generate:
  - approximately 20 and 26 total two-way passenger car trips during the weekday a.m. and p.m. peak hours, respectively.
  - approximately 2 and 3 total two-way truck trips during the weekday a.m. and p.m. peak hours, respectively.
  - approximately 29 and 38 total person trips during the weekday a.m. and p.m. peak hours, respectively.
- While the development proposal is primarily auto-centric given its existing and proposed industrial uses, several measures are included which follow the City of Ottawa Planning and Design Guidelines to support design for sustainable modes and transportation demand management. They include:
  - Building entrance locations are located in proximity to sidewalks and bus stop locations.
  - The vehicle, barrier-free and bicycle parking space supply all satisfy the relevant City of Ottawa Zoning By-Law requirements.
- The future background evaluation of non-vehicular transportation modes indicates that several travel modes do not meet the targets set out in the MMLOS Guidelines. Several initiatives were identified that the City may consider to achieve the MMLOS targets in the study area.
- The three existing site accesses and internal roadways to the site are expected to adequately accommodate development traffic. The site accesses meet or exceed the applicable Transportation Association of Canada Geometric Design Guide for Canadian Roads (TAC-GDGCR) sight distance and corner clearance requirements. Further, truck turning diagrams were prepared, which confirmed that the expected design vehicles are able to service the site adequately without constraints.
- Under the existing, future background, and future total conditions, the Colonnade Road and Fisher Avenue intersections with Prince of Wales Drive are forecast to operate at capacity, at a LOS "E" and LOS "F" during the a.m. and p.m. peak hours, respectively. Several movements are projected to be near or at capacity given the volume-to-capacity ratio forecasts. Further, the 95<sup>th</sup> percentile queues for northbound left-turn lane at the Colonnade Road and Prince of Wales Drive intersection are expected to occasionally exceed the storage onto the taper during the peak hours. However, site traffic imparts a minor impact on overall traffic operations at these study intersections, with a maximum intersection volume-to-capacity increment of 0.003 expected compared to the future background scenario. Operations at these intersections are expected to improve in future with the proposed future widening of Prince of Wales.
- The remaining study intersections, including the site accesses, are expected to operate safely and efficiently into the 2030 horizon year, at a LOS "C" or better during the peak hours.

In addition, based on the results of the TIA process, several recommendations are outlined for the

City's consideration. It is recommended that:

- The City pursue road widening along Prince of Wales Drive as identified in the Prince of Wales Drive Environmental Assessment, 2011 and the City of Ottawa Transportation Master Plan (2014). This roadway improvement is expected to improve vehicle safety, accommodate current and future traffic demands, and enable achieving the Auto LOS target set in the City of Ottawa Multi-Modal Level of Service Guidelines at the Prince of Wales Drive study intersections.
- The City explore a revised timing plan and prohibition of the westbound left/through movement in the interim before Prince of Wales road improvements are implemented to improve traffic operations at the intersection of Prince of Wales Drive and Colonnade Road.
- The City consider reducing the speed limits of the study roadways to 50km/h in order to improve the pedestrian Level of Service (PLOS) to the City's desired target.
- The City consider cycling improvements, particular for the Cross-town Bikeway along Prince of Wales Drive, in the study area to promote achieving the bicycle Level of Service (BLOS) targets set out in the MMLOS guidelines. The bike lane improvement identified in the Prince of Wales Drive Environmental Assessment (2011) would support this recommendation.
- The City consider revising the signal system and or phase change interval at the intersection of Prince of Wales Drive and Colonnade Road with the goal of reducing the current prevalence of rear end collisions. Additionally, installing warning signs upstream of each approach encouraging drivers to pay attention to the driving task may be helpful in reducing collisions at the intersection.
- The proposed industrial development at 125 Colonnade Road be supported by the City from a transportation perspective based on the analysis of the TIA herein. The development proposal is forecast to have an immaterial impact on traffic operations at the study intersections, and the Site Plan Application can be supported from a traffic operations and safety perspective.

Minor changes to the site plan will not materially affect the conclusions contained within this report. Should you have any questions or require further information, please contact the undersigned.

Respectfully submitted by,

**C.F. CROZIER & ASSOCIATES INC.**



Peter Apasnore, M.A.Sc., P.Eng., PTOE  
Project Manager

**C.F. CROZIER & ASSOCIATES INC**



Aidan Hallsworth, EIT  
Transportation

/AH

\\Crozier-Files\Toronto-Projects\2100\2112- Access Property Dev. Inc\6218- 125 Colonnade Rd\Reports\2nd Submission Traffic\2022.10.18\_6218\_TIA Report 125 Colonnade Road (CROZIER).docx

# APPENDIX A

## Correspondence

---

**From:** McMahon, Patrick <patrick.mcmahon@ottawa.ca>  
**Sent:** June 2, 2022 3:22 PM  
**To:** Peter Apasnore <papasnore@cfcrozier.ca>  
**Cc:** Jonabelle T <jonabelle@corbettlandstrategies.ca>; Hind Barnieh <HBARNIEH@ACCESSPD.CA>;  
fabrantes@accessstorage.ca  
**Subject:** RE: 125 Colonnade Road (File #: PC2021-0251) - Screening & Scoping Report

Hi Peter,

Attached is an image of the future EA concept for your frontage for your information, however the timing of these works remains unclear.

Please proceed to the strategy report and formal submission. I apologize for the delays,

**Patrick McMahon**

Project Manager, Infrastructure Approvals | GPRJ Approbation des demandes d'infrastructure  
Development Review Branch | Dir Examen des projets d'aménagement  
Planning, Real Estate and Economic Development Department | Direction générale de la planification, des  
biens immobiliers et du développement économique  
City of Ottawa | Ville d'Ottawa  
Tel | Tél. : 613-580- 2424 ext. | poste 23298  
web | Site Web : [www.ottawa.ca](http://www.ottawa.ca)

---

**From:** Peter Apasnore <[papasnore@cfcrozier.ca](mailto:papasnore@cfcrozier.ca)>  
**Sent:** June 02, 2022 10:32 AM  
**To:** McMahon, Patrick <[patrick.mcmahon@ottawa.ca](mailto:patrick.mcmahon@ottawa.ca)>  
**Cc:** Jonabelle T <[jonabelle@corbettlandstrategies.ca](mailto:jonabelle@corbettlandstrategies.ca)>; Hind Barnieh <[HBARNIEH@ACCESSPD.CA](mailto:HBARNIEH@ACCESSPD.CA)>;  
[fabrantes@accessstorage.ca](mailto:fabrantes@accessstorage.ca)  
**Subject:** RE: 125 Colonnade Road (File #: PC2021-0251) - Screening & Scoping Report

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**From:** McMahon, Patrick <patrick.mcmahon@ottawa.ca>  
**Sent:** Friday, January 28, 2022 3:10 PM  
**To:** Peter Apasnore  
**Cc:** Jonabelle T; frank@dbaservices.ca; Aidan Hallsworth  
**Subject:** RE: 125 Colonnade Road (File #: PC2021-0251) - Screening & Scoping Report

**Follow Up Flag:** Follow up  
**Flag Status:** Completed

Hi Peter,

Thank you for the submission. Here are my comments on the scoping report:

Section 3.1.1 – Not that there are two northbound lanes on prince of Wales north of Colonnade.

Section 3.1.2 – Note that the SBL movement is prohibited at Prince of Wales and Colonnade

Section 3.1.4 – Consider including a figure depicting the nearby transit stops.

Section 3.1.7 – Obtain the Colonnade/Citiplace intersection count from the same date as well. Include Prince of Wales/Fisher as well as it is within 1 km of the subject site.

Section 3.2.2 – Contact Tim Wei at [tim.wei@ottawa.ca](mailto:tim.wei@ottawa.ca) to obtain a local snapshot of the Long-Range Transportation Model to inform background growth rates.

Section 3.6 – Justify why Neighbourhood Traffic Management should be exempt. All accesses are from collector or major collector streets.

See answers to your questions below. Please proceed to the forecasting report.

Best regards,

**Patrick McMahon**

Project Manager, Infrastructure Approvals | GPRJ Approbation des demandes d'infrastructure  
Development Review Branch | Dir Examen des projets d'aménagement  
Planning, Real Estate and Economic Development Department | Direction générale de la  
planification, des biens immobiliers et du développement économique  
City of Ottawa | Ville d'Ottawa  
Tel | Tél. : 613-580- 2424 ext. | poste 23298  
web | Site Web : [www.ottawa.ca](http://www.ottawa.ca)

---

**From:** Peter Apasnore <[papasnore@cfcrozier.ca](mailto:papasnore@cfcrozier.ca)>  
**Sent:** January 21, 2022 10:52 AM  
**To:** McMahon, Patrick <[patrick.mcmahon@ottawa.ca](mailto:patrick.mcmahon@ottawa.ca)>  
**Cc:** Jonabelle T <[jonabelle@corbettlandstrategies.ca](mailto:jonabelle@corbettlandstrategies.ca)>; [frank@dbaservices.ca](mailto:frank@dbaservices.ca); Aidan Hallsworth <[ahallsworth@cfcrozier.ca](mailto:ahallsworth@cfcrozier.ca)>  
**Subject:** 125 Colonnade Road (File #: PC2021-0251) - Screening & Scoping Report

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Hi Patrick,

We have been retained to prepare a Transportation Impact Assessment (TIA) for the proposed industrial development expansion at 125 Colonnade Road in the City of Ottawa to support a Site Plan Application.

Attached to this email is the Screening and Scoping Report. Please provide feedback on the Preliminary report (attached) and the notes below before we proceed to the Forecasting & Analysis Report.

- What is the timing of road improvements (if they are to occur at all) along Prince of Wales Drive within the study area? *Prince of Wales widening in the vicinity of this site is not currently anticipated prior to 2031.*
- We'll contact the City traffic forecasting group to establish growth rates for the study roadway. Should this be unavailable, we will use a standard growth rate of 2% for forecasting future volumes. No background development has been identified, therefore, none will be included. *Please contact Tim Wei as mentioned above to obtain background growth rates.*
- Trip Generation for the proposed development will use the Institute of Transportation Engineers' Trip Generation Manual (11<sup>th</sup> Edition) in conjunction with the 2020 TRANS Trip Generation Manual Summary Report to forecast person-trips by travel mode. *Agreed, this is the preferred methodology.*
- Given that the traffic data was taken in 2018, no adjustment related to the COVID-19 pandemic will be applied and the counts will be grown to 2022 levels for the existing conditions scenario. *Agreed.*

Please reach out if you have any question. A quick feedback is greatly appreciated.

Many Thanks,

**Peter Apasnore**, M.A.Sc., P.Eng., PTOE | Project Engineer  
211 Yonge Street, Suite 301 | Toronto, ON M5B 1M4  
T: 416.477.3392



Crozier Connections: [f](#) [t](#) [in](#) 



## Peter Apasnore

---

**From:** McMahon, Patrick <patrick.mcmahon@ottawa.ca>  
**Sent:** September 29, 2022 7:31 AM  
**To:** Aidan Hallsworth  
**Cc:** Peter Apasnore  
**Subject:** RE: TIA City Comment Questions: 125 Colonnade Road (D07-12-22-0095)

Good afternoon Aidan,

Thank you for reaching out. Please find my responses below:

Comment 35: I am only looking for the requirements shown on the site plan and in the TIA to be the same. The office piece shown on the site plan was absent from the report.

Comment 40: Yes, I agree that the existing arrangement should be sufficient to meet the needs of the additional warehousing space.

Comment 41: Given the constraint from forestry, this is acceptable.

Best regards,

### Patrick McMahon

Project Manager, Infrastructure Approvals | GPRJ Approbation des demandes d'infrastructure  
Development Review Branch | Dir Examen des projets d'aménagement  
Planning, Real Estate and Economic Development Department | Direction générale de la planification, des biens immobiliers et du développement économique  
City of Ottawa | Ville d'Ottawa  
Tel | Tél. : 613-580- 2424 ext. | poste 23298  
web | Site Web : [www.ottawa.ca](http://www.ottawa.ca)

---

**From:** Aidan Hallsworth <ahallsworth@cfcrozier.ca>  
**Sent:** September 20, 2022 2:15 PM  
**To:** McMahon, Patrick <patrick.mcmahon@ottawa.ca>  
**Cc:** Peter Apasnore <papasnore@cfcrozier.ca>  
**Subject:** TIA City Comment Questions: 125 Colonnade Road (D07-12-22-0095)

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Good afternoon Patrick,

Hope you are doing well. I have some questions on the comments received concerning the 125 Colonnade Road Transportation Impact Assessment, 1<sup>st</sup> Submission (File No. D07-12-22-0095, Site Plan attached). We would appreciate if you could assist us so that we are able to address the comments appropriately for second submission. The questions are listed below:

---

Comment 35 – Please ensure that the site plan and report provide the same numbers and requirements, as the office parking requirement is absent from the report. Include the minimum for the accessible parking spaces as well.

The office component of the existing/future warehouse buildings is used by the warehouse employees and thus is not a typical office setting with permanent workers. The parking supply will in surplus to the ZBL requirements regardless, but for accuracy purposes, please confirm if the office portion of the warehouse is to be considered office or warehouse for the parking calculation.

Comment 40 – Section 5.1.2 - This section should include a review of the access widths, grades, clear throat, etc. with respect to the Private Approach By-Law and TAC. Please confirm fire route has a centreline radius of 12m, as per OBC.

We note that the clear throat length of each of the accesses abutting Colonnade Road S. have been measured as ~8m, while the access abutting Colonnade Road has a clear throat length of ~18m.

Table 8.9.3: Suggested Minimum Clear Throat Lengths for Major Driveways<sup>14</sup>

Land Use	Development Size	Minimum Clear Throat Length (m)	
		Collector	Arterial
Light Industrial	<10,000 m <sup>2</sup>	8	15
	10,000 – 45,000 m <sup>2</sup>	15	30
	>45,000 m <sup>2</sup>	15	60

Per TAC-GDGCR Table 8.9.3 (excerpt shown above), given the development proposal will include approximately 17,400m<sup>2</sup> of GFA, a 15m clear throat length would normally be required. However, we assess that the requirement for developments below 10,000 m<sup>2</sup> GFA is more appropriate to apply in this situation given the development is serviced by three accesses rather than just one. In addition, the access configuration is an existing situation, and no maneuverability/circulation constraints are anticipated onsite. Therefore, we assess that the proposed access configuration with respect to clear throat length to be adequate. Please confirm.

Comment 41 – Provide a connection for pedestrians from Colonnade to the buildings and consider connections between buildings A and B if there is interaction anticipated between units.

We note that a pedestrian connection is already provided to Building A from Colonnade Road. Limited pedestrian activity between Buildings A and B is expected per the proponent, so a pedestrian walkway between buildings has not been pursued. A pedestrian sidewalk connection from Colonnade Road S. to Building B was explored along the west side of the building but was deemed not feasible due to constraints from Forestry. The pedestrian sidewalk located on the east side of Colonnade Road S. is located approximately 60m away from the proposed Building B, allowing for pedestrian access near to the proposed Building B. Given the above discussion, please confirm if the pedestrian servicing for the site is adequate.

---

Please feel free to contact me regarding the above, if required. Thank you in advance for your assistance, looking forward to your responses.

Regards,

# APPENDIX B

## Site Plan

<b>Zone:</b>	IG5 - General Industrial 5
<b>Permitted Uses (Condensed):</b>	Light Industrial Uses Office Warehouse Truck transport terminal
<b>Warehouse Use</b>	<b>Definition</b>
	Warehouse means a building used for the storage and distribution of goods and equipment including self-storage units and mini-warehouses and may include one accessory dwelling unit for a facility manager. (entrepôt)
<b>Minimum Lot Area</b>	1,000 sq. m.
<b>Minimum Lot Width</b>	NO MINIMUM
<b>Maximum lot coverage</b>	65%
<b>(d) Minimum front yard and corner side yard</b>	3 m
<b>(e) Minimum interior side yard</b>	(i) for uses listed in subsection 199(1) abutting a residential or institutional zone (ii) all other cases
	15 m 3 m
<b>(f) Minimum rear yard</b>	(i) for uses listed in subsection 199(1) abutting a residential or institutional zone (ii) all other cases
	15 m 3 m
<b>(g) Maximum floor space index</b>	2, unless otherwise shown on the zoning maps
<b>(h) Maximum building height</b>	(i) within 20 metres of a property line abutting a residential zone (ii) in all other cases
	11 m 22 m, unless otherwise shown on the zoning maps or schedules
<b>(i) Minimum width of landscaped area</b>	(i) abutting a residential or institutional zone (ii) abutting a street (iii) in all other cases
	3 m 3 m No minimum
<b>Subzone IG5 Additional Restrictions</b>	The following uses are prohibited animal care establishment automobile dealership car wash convenience store gas bar (OMB Order #PL080959 issued March 18, 2010)
<b>Parking</b>	Office (Area C) Warehouse (Area C)
	2.4 per 100 sq. m. of gross floor area 0.8 per 100 m <sup>2</sup> for the first 5000 m <sup>2</sup> of gross floor area 0.4 per 100 m <sup>2</sup> above 5000 m <sup>2</sup> of gross floor area

**SITE PLAN LEGEND**

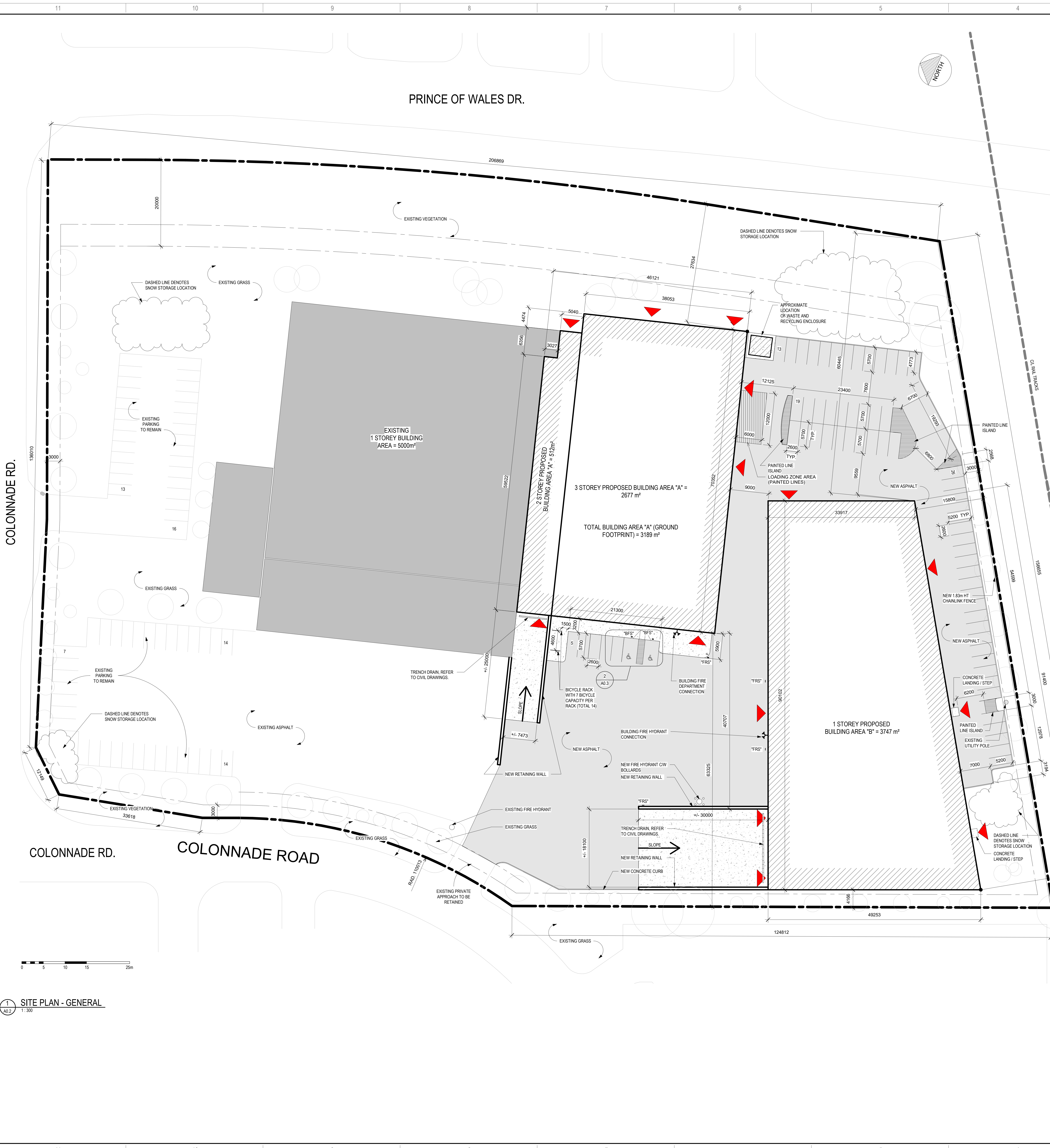
- SHADED AREA DENOTES EXISTING BUILDING
- HATCH AREA DENOTES PROPOSED BUILDINGS
- HATCH AREA DENOTES CONCRETE
- SHADED AREA DENOTES PROPOSED NEW ASPHALT
- EXIT LOCATIONS
- VEGETATION (REFER TO LANDSCAPE DRAWINGS)
- "FRS" DENOTES TO PROVIDE "NO PARKING FIRE ACCESS ROUTE" SIGN AS PER CITY OF OTTAWA SPECIFICATIONS.
- "BFS" DENOTES TO PROVIDE "NO PARKING BARRIER FREE PARKING" SIGN AS PER CITY OF OTTAWA SPECIFICATIONS.

**GENERAL NOTES**

1. CONTRACTOR TO CONFIRM ALL DIMENSIONS AND REPORT ANY DISCREPANCIES TO CONTRACTOR ADMINISTRATOR PRIOR TO CONSTRUCTION.
2. LAYOUT TO APPROVED BY CONTRACT ADMINISTRATOR PRIOR TO ANY CONSTRUCTION OR REMOVALS.
3. ALL DIMENSIONS ARE IN METRIC UNLESS OTHERWISE NOTED.
4. CONTRACTOR IS RESPONSIBLE FOR ALL EXCAVATIONS, REMOVALS, DISPOSALS AND ROUGH GRADING AS REQUIRED AS SHOWN ON ALL PLANS, DETAILS AND SPECIFICATIONS.
5. LOCATION OF ALL UTILITIES SHOWN FOR ILLUSTRATION ONLY. CONTRACTOR MUST CONTACT ALL UTILITIES REGARDING RULES FOR WORKING IN THE AREA OF THE UTILITIES PRIOR TO COMMENCEMENT OF ANY WORK. CONTRACTOR MUST CONFIRM LOCATION OF ALL UTILITIES PRIOR TO CONSTRUCTION.
6. ALL EXISTING EXISTING ROADS, SIDEWALKS, CURBS, FENCING, FENCING, SLOTTED AREAS, AND APPROACHES, ETC. TO REMAIN TO BE PROTECTED DURING CONSTRUCTION TO CONTRACT ADMINISTRATOR'S APPROVAL AT THE CONTRACTOR'S OWN COSTS.
7. FOR LANDSCAPE, REFER TO LANDSCAPE DRAWINGS.
8. FOR UTILITIES, GRADING, ETC. REFER TO CIVIL DRAWINGS.
9. LEGAL SURVEY BOUNDARIES AND TOPOGRAPHICAL INFORMATION TAKEN FROM TOPOGRAPHICAL PLAN OF SURVEY OF PART OF LOTS 28 & 29 CONCESSION A (RIDEAU FRONT) PART OF LOT 29 CONCESSION B (RIDEAU FRONT) PART OF LOT 29 CONCESSION B (RIDEAU FRONT) AND PART OF THE ROAD ALLOWANCE BETWEEN CONCESSIONS A & B (RIDEAU FRONT) (CLOSED BY BY-LAW No. 95 IN ST. C/10213) GEOGRAPHIC TOWNSHIP OF NEPEAN, PLAN 4R-2003, DATED MARCH 9, 2021, FROM THE OFFICE OF FARLEY, SMITH & DENNIS SURVEYING LTD.

**SITE PLAN INFORMATION**

<b>LEGAL DESCRIPTION</b>	PART OF LOTS 28 & 29 CONCESSION A (RIDEAU FRONT) PART OF LOT 29 (RIDEAU FRONT) AND PART OF THE ROAD ALLOWANCE BETWEEN CONCESSIONS A & B (RIDEAU FRONT), CITY OF OTTAWA
<b>BEARINGS</b>	BEARINGS ARE GRID, AND ARE REFERRED TO THE WESTERLY LIMIT OF PRINCE OF WALES DRIVE, HAVING A BEARING OF N 24° 04' 30" W AS SHOWN ON PLAN 4R-2003
<b>P.I.N.</b>	04052-0524
<b>SITE AREA</b>	34,600m <sup>2</sup>
<b>MAX. ALLOWABLE SITE COVERAGE</b>	65%
<b>MAX. SITE COVERAGE</b>	22,490m <sup>2</sup> (65%)
<b>EXISTING BUILDING</b>	5,000m <sup>2</sup>
<b>MAX. ALLOWABLE SITE COVERAGE</b>	17,490m <sup>2</sup> (50.55%)
<b>PROPOSED NEW BUILDING AREA</b>	6,936m <sup>2</sup>
<b>PROPOSED SITE COVERAGE</b>	5000m <sup>2</sup> + 6936m <sup>2</sup> / 34600 = 34%
<b>PARKING</b>	
<b>PARKING SPACES REQUIRED</b>	
<b>EXISTING PARKING</b>	0.8 PER 100m <sup>2</sup> OF GFA (AREA 5,000m <sup>2</sup> ) FOR WAREHOUSE AND LIGHT INDUSTRIAL USE = TOTAL 40 REQUIRED, 64 SPACES PROVIDED
<b>PARKING REQUIRED FOR BUILDING A</b>	0.4 PER 100m <sup>2</sup> OF GFA (AREA 9,056m <sup>2</sup> ) FOR WAREHOUSE AND LIGHT INDUSTRIAL USE = TOTAL 36 SPACES
<b>PARKING REQUIRED FOR BUILDING B</b>	0.4 PER 100m <sup>2</sup> OF GFA (AREA 3,747m <sup>2</sup> ) FOR WAREHOUSE AND LIGHT INDUSTRIAL USE = TOTAL 15 SPACES
<b>TOTAL PARKING REQUIRED</b>	= 91 SPACES
<b>BARRIER-FREE PARKING SPACES</b>	= 2 REQUIRED, 2 PROVIDED
<b>TOTAL SITE PARKING PROVIDED</b>	= 121 SPACES PLUS 2 BARRIER FREE
<b>LOADING SPACES</b>	= 1 REQUIRED (LIGHT INDUSTRIAL <10,000m <sup>2</sup> GFA) = 1 PROVIDED
<b>BICYCLE PARKING</b>	
<b>MINIMUM NUMBER OF BICYCLE PARKING SPACES: SEC 111, TABLE 111A (b)</b>	
<b>WAREHOUSE: 1 PER 2000m<sup>2</sup> GFA</b>	= 8,900m <sup>2</sup> / 2000 = 4.5 ROUNDED TO 5
<b>LIGHT INDUSTRIAL: 1 PER 1000m<sup>2</sup> GFA</b>	= 8,900m <sup>2</sup> / 1000 = 8.9 ROUNDED TO 9
<b>TOTAL REQUIRED BICYCLE PARKING</b>	= 14 BICYCLE SPACES REQUIRED



**SITE PLAN - GENERAL**  
1:300

**ARCHITECTURAL**  
**SITE PLAN - GENERAL**

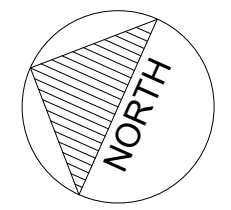
<b>SHEET NUMBER</b>	A0.2
<b>DATE</b>	FEBRUARY 26 2022
<b>ISSUE</b>	
<b>REV #</b>	

Land Use Number: 22-2425  
City File No. D07-12-22-005  
City Plan No. 18809

CONSULTANT - SUB CONSULTANT

CONSULTANT - SUB CONSULTANT

S&A



CLIENT:



CLIENT REF. #

PROJECT:

ACCESS STORAGE 125 COLONNADE  
 SELF STORAGE  
 BUILDING A

KEY PLAN

DISCLAIMER: THIS DRAWING AND DESIGN IS COPYRIGHT PROTECTED WHICH SHALL NOT BE REPRODUCED OR REPRODUCED WITHOUT PERMISSION BY ARCHITECTURE 49. THE CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS AND UTILITY LOCATIONS AND REPORT ALL ERRORS AND OMISSIONS TO ARCHITECTURE 49 IMMEDIATELY UPON COMMENCEMENT OF WORK. THIS DRAWING IS NOT TO BE SCALED.

REVISED FOR REVIEW

IS	RE	DATE	DESCRIPTION

PROJECT NO:	219-00059-00	DATE:	DEC 13, 2021
ORIGINAL SCALE:	1:200	IF THIS BAR IS NOT SHOWN, PLEASE YOUR PLOTTING SCALE.	
DESIGNED BY:	JIC	DRAWN BY:	AS
CHECKED BY:	JIC	DATE:	

TITLE	ARCHITECTURAL
TITLE	BLOCK PLANS
SHEET NUMBER	A2.0-A
SHEET #	OF
DATE OF	REV. #

DEPARTMENT LEGEND

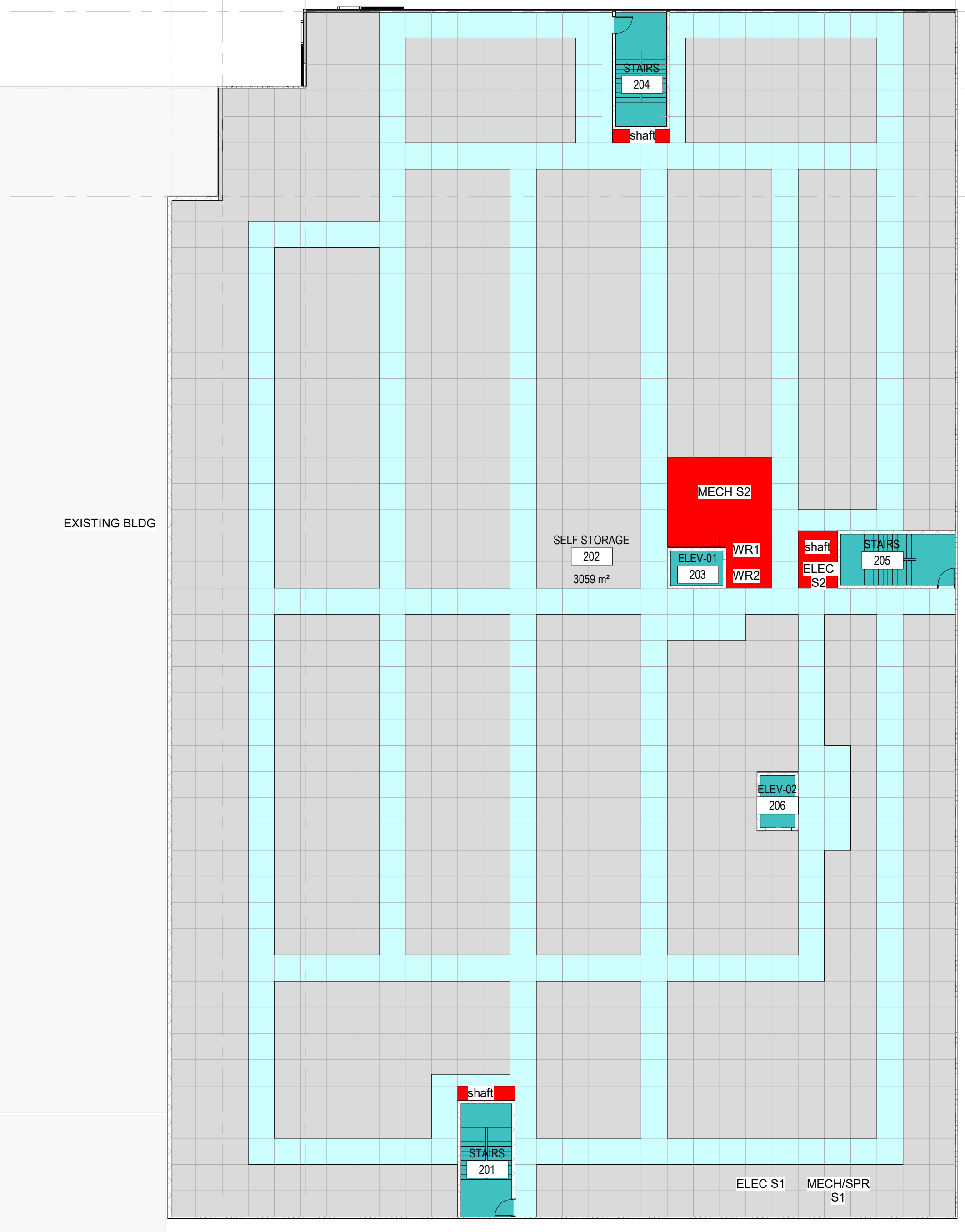
- SELF STORAGE
- SELF STORAGE CIRCULATION
- BUILDING SERVICES

DEPARTMENT LEGEND

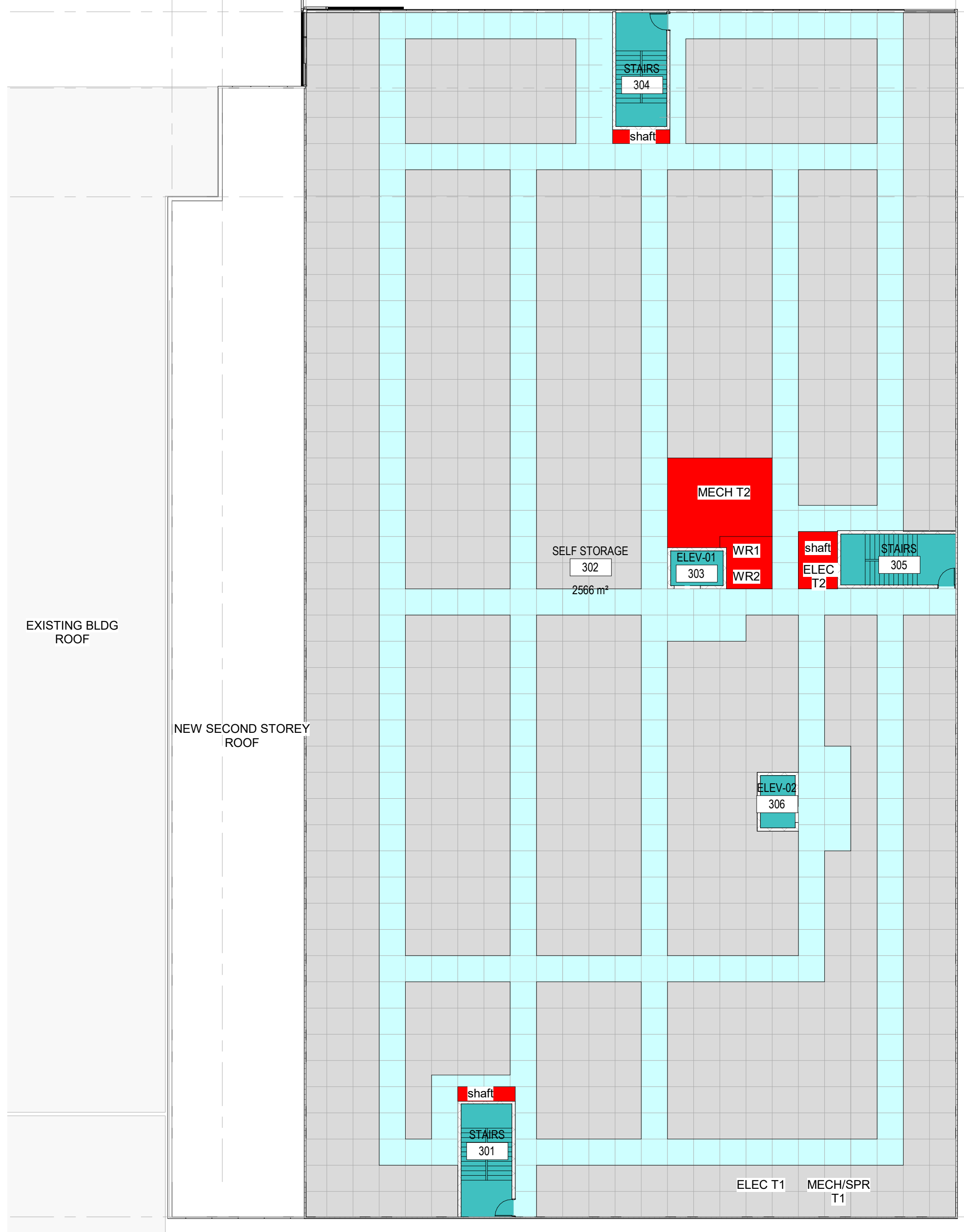
- SELF STORAGE
- SELF STORAGE CIRCULATION
- BUILDING SERVICES

DEPARTMENT LEGEND

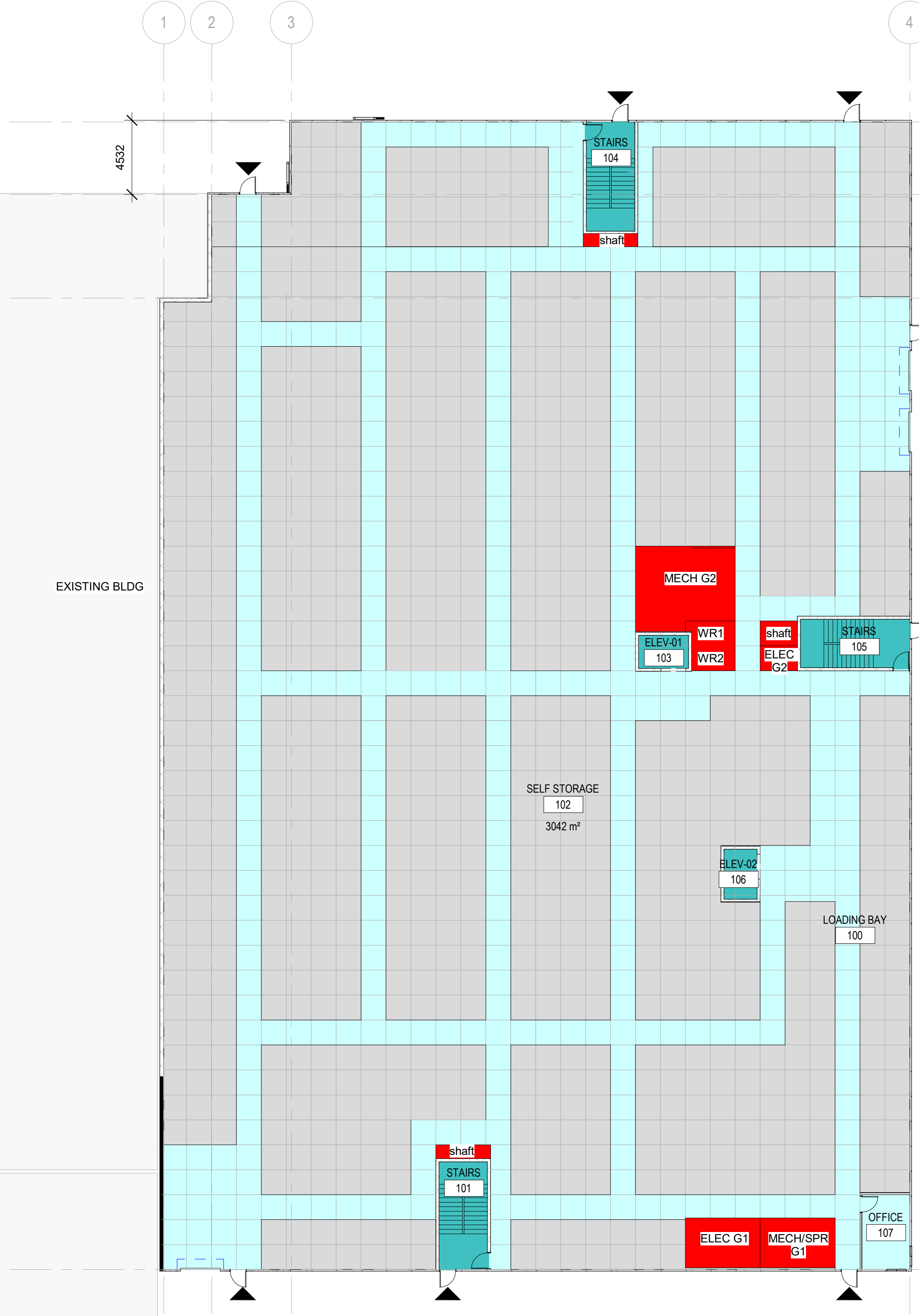
- SELF STORAGE
- SELF STORAGE CIRCULATION
- BUILDING SERVICES



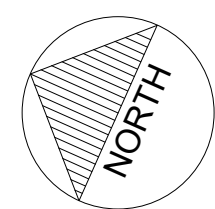
2 BLOCK PLAN - SECOND FLOOR  
 1:200



3 BLOCK PLAN - THIRD FLOOR  
 1:200



1 BLOCK PLAN - GROUND FLOOR  
 1:200



ACCESS STORAGE 125 COLONNADE  
 WAREHOUSE  
 BUILDING B

DISCLAIMER COPYRIGHT  
 THIS DRAWING AND DESIGN IS COPYRIGHT PROTECTED WHICH SHALL NOT BE REPRODUCED OR REUSED WITHOUT WRITTEN PERMISSION BY ARCHITECTURE 49 THE CONTRACTOR SHALL CHECK AND VERIFY ALL DIMENSIONS AND UTILITY LOCATIONS AND REPORT ALL ERRORS AND DISCREPANCIES TO CORRECTIVE WORK.  
 THIS DRAWING IS NOT TO BE SCALED.

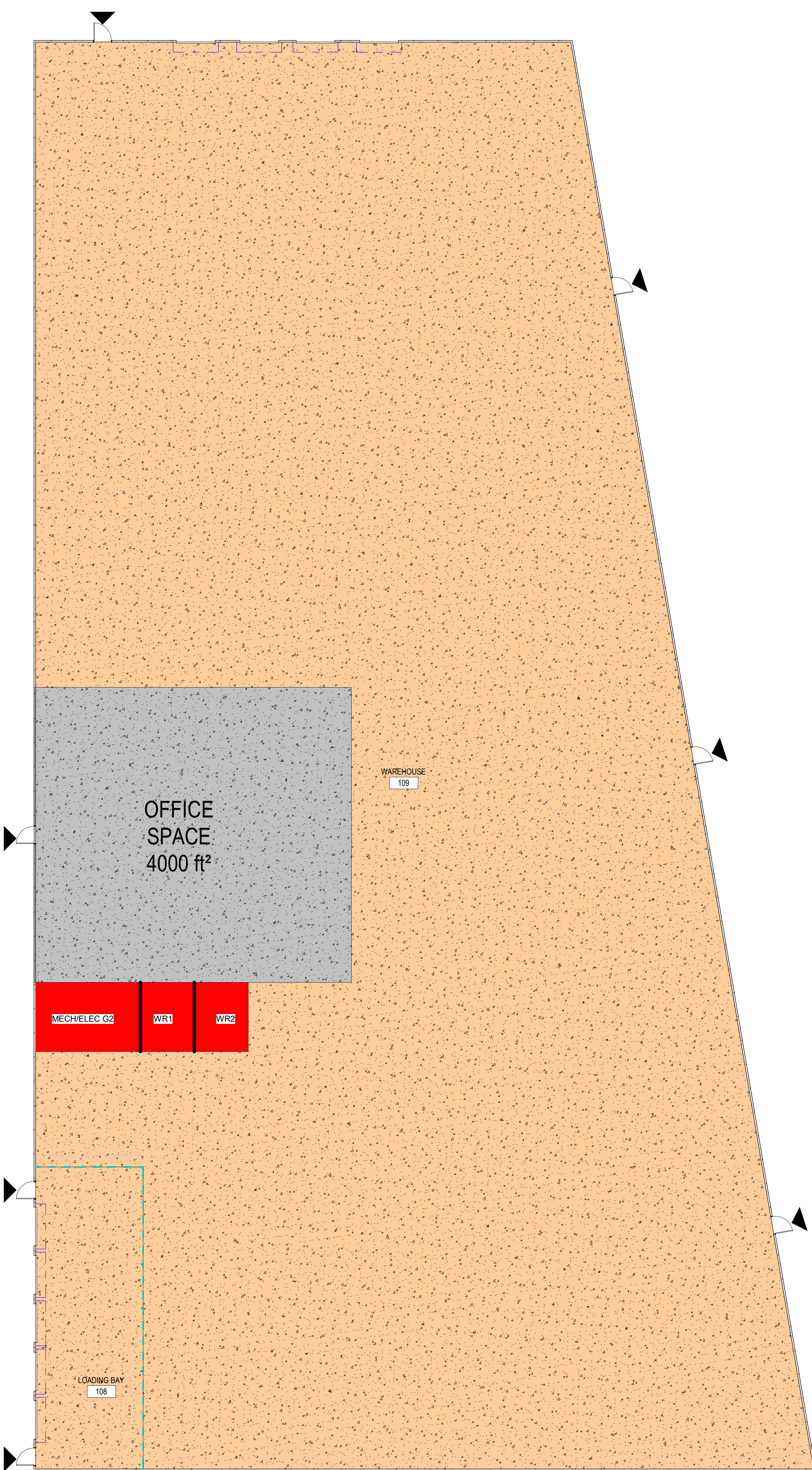
IS	RE	DATE	DESCRIPTION

PROJECT NO:	DATE:
219-00059-00	DEC 13, 2020
ORIGINAL SCALE:	IF THIS BAR IS NOT
1:150	SHOWING, ADJUST
DESIGNED BY:	YOUR PLOTTING SCALE.
JJC	
DRAWN BY:	
AS	
CHECKED BY:	
JJC	
DISCIPLINE:	
ARCHITECTURAL	

TITLE:	
BLOCK PLAN - MAIN FLOOR	
SHEET NUMBER:	
A2.0-B	
SHEET:	OF
DATE OF:	

DEPARTMENT LEGEND

- WAREHOUSE
- OFFICE SPACE
- BUILDING SERVICES



1 BLOCK PLAN - MAIN FLOOR  
 2/28/20

1:150

# APPENDIX C

## Screening Form

**City of Ottawa 2017 TIA Guidelines Screening Form**

**1. Description of Proposed Development**

Municipal Address	125 Colonnade Road, Ottawa, ON
Description of Location	Existing 1-storey warehouse building with surface parking lot
Land Use Classification	ZBL: General Industrial (IG5), OP: Urban Employment Area
Development Size (units)	N/A
Development Size (m <sup>2</sup> )	13,223
Number of Accesses and Locations	Three Total (2 - Colonnade Road S., 1- Colonnade Road)
Phase of Development	Single Phase
Buildout Year	2025

**If available, please attach a sketch of the development or site plan to this form.**

**2. Trip Generation Trigger**

Considering the Development’s Land Use type and Size (as filled out in the previous section), please refer to the Trip Generation Trigger checks below.

Land Use Type	Minimum Development Size
Single-family homes	40 units
Townhomes or apartments	90 units
Office	3,500 m <sup>2</sup>
Industrial	5,000 m <sup>2</sup>
Fast-food restaurant or coffee shop	100 m <sup>2</sup>
Destination retail	1,000 m <sup>2</sup>
Gas station or convenience market	75 m <sup>2</sup>

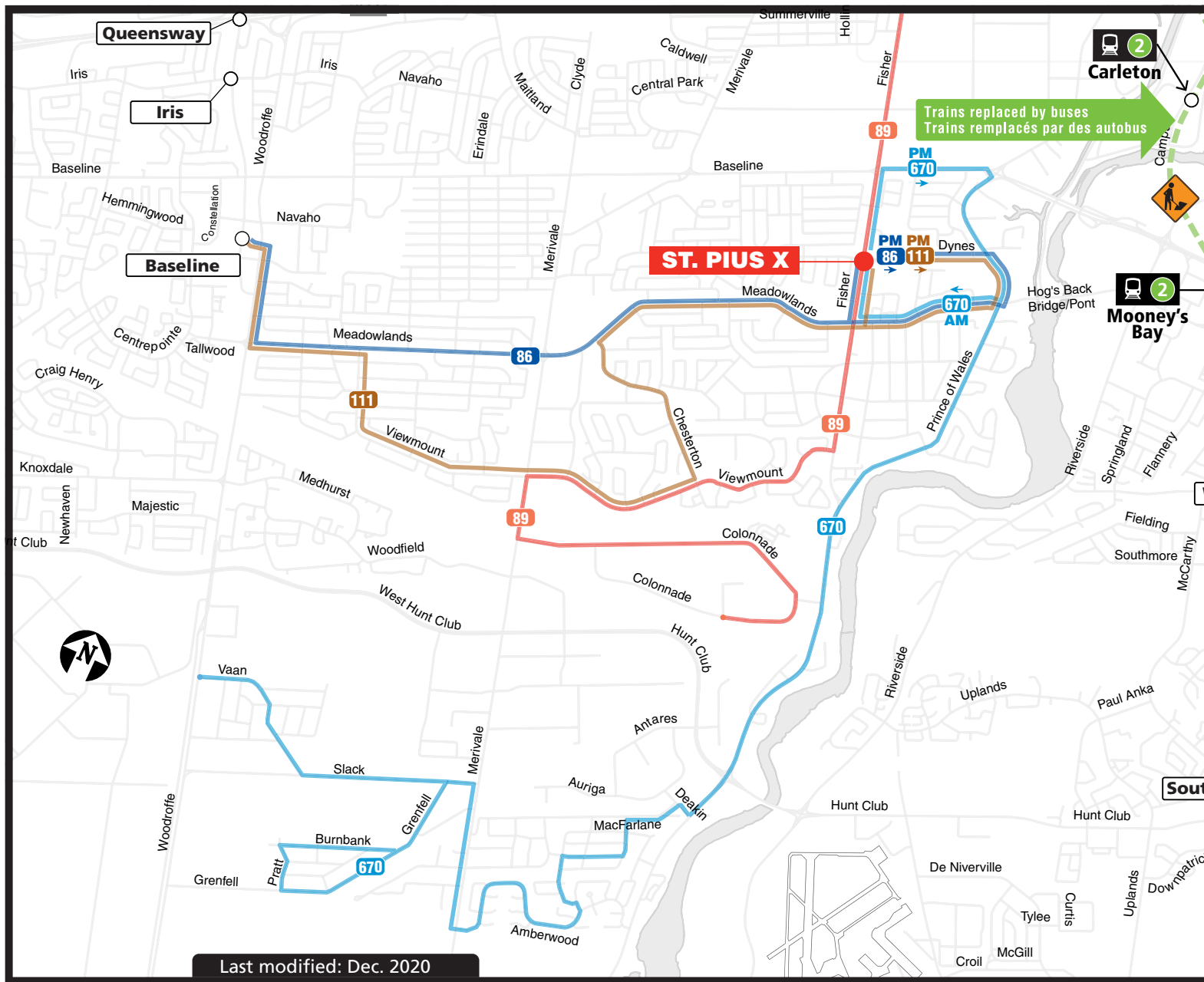
*\* If the development has a land use type other than what is presented in the table above, estimates of person-trip generation may be made based on average trip generation characteristics represented in the current edition of the Institute of Transportation Engineers (ITE) Trip Generation Manual.*

**If the proposed development size is greater than the sizes identified above, the Trip Generation Trigger is satisfied.**



# APPENDIX D

## Transit Service Information





# 89

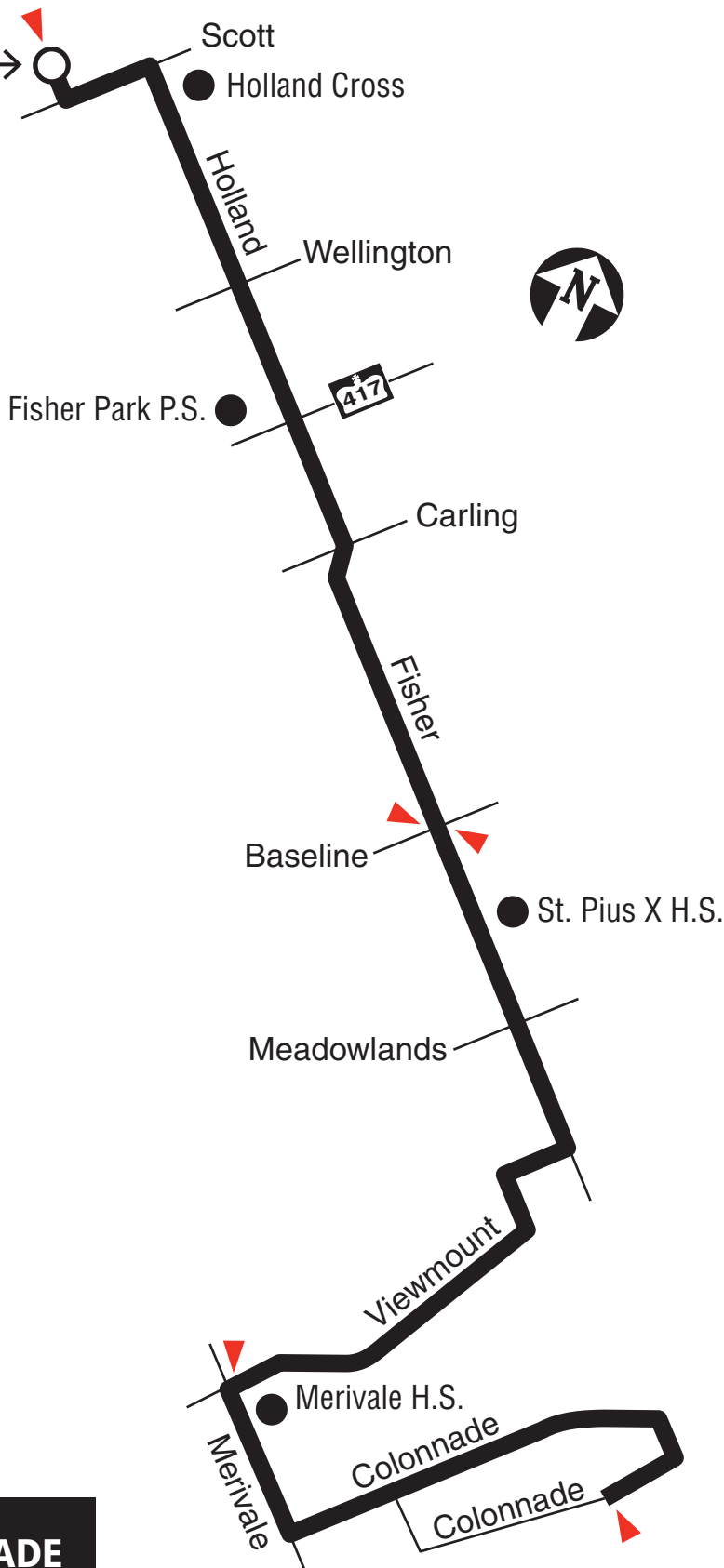
## COLONNADE TUNNEY'S PASTURE

### Local

**7 days a week / 7 jours par semaine**  
All day service  
Service toute la journée

**TUNNEY'S  
PASTURE**

**Tunney's  
Pasture**



**COLONNADE**



Station



Timepoint / Heures de passage

2019.06



**Schedule / Horaire.....613-560-1000**

**Text / Texto .....560560**

*plus your four digit bus stop number / plus votre numéro d'arrêt à quatre chiffres*

Customer Service

Service à la clientèle ..... **613-842-3600**

Lost and Found / Objets perdus..... **613-563-4011**

Security / Sécurité ..... **613-741-2478**

**Effective June 24, 2018**

**En vigueur 24 juin 2018**



**INFO 613-741-4390**  
**octranspo.com**

# Schedules & Maps

The next service change is on Sunday, June 26.

Schedule times are based on typical driving conditions and may vary. Please arrive at your stop a few minutes early to allow for any fluctuations in schedule.

Wed, Jun 8

## 80 Barrhaven Centre

[D] Destination Deakin Auriga

[V] via Westgate

[X] Merivale H.S.

[Y] Longfields-Davidson H.S.

[Z] Destination MacFarlane

TUNNEY'S PASTURE / D	HOLLAND / CARLING	WESTGATE MALL	MERIVALE / BURRIS	MERIVALE / MEADOWLANDS	MERIVALE / H.S.	MERIVALE / VIEWMOUNT	COLONNADE / AD. 177	MERIVALE / SLACK	LEIKIN / BECKSTEAD	NEPEAN WOODS 1A	MARKET PLACE 1A	BARRHAVEN CENTRE 1A	DEAKIN / AURIGA	MACFARLANE / DEAKIN
04:51	04:55		05:01	05:03		05:04	05:09	05:15						
05:21	05:25		05:32	05:35		05:36	05:41	05:47						
05:41	05:45		05:52	05:55		05:57		06:01	06:05	06:14	06:21	06:22		
06:06	06:10		06:18	06:21		06:23		06:29	06:33	06:42	06:49	06:50		
06:21[z]	06:25[z]		06:33[z]	06:36[z]		06:38[z]		06:44[z]					06:49	06:53
06:36	06:40		06:48	06:51		06:53		06:59	07:03	07:12	07:19	07:20		
06:50[z]	06:54[z]		07:02[z]	07:06[z]		07:08[z]		07:14[z]					07:19	07:23
07:04	07:08		07:18	07:22		07:25		07:31	07:36	07:45	07:52	07:53		
07:20[z]	07:24[z]		07:34[z]	07:39[z]		07:42[z]		07:48[z]					07:53	07:56
			07:44	07:49	07:52									
07:37	07:41		07:51	07:56		07:59		08:05	08:09	08:20	08:29	08:30		
07:52[z]	07:56[z]		08:06[z]	08:10[z]		08:13[z]		08:19[z]					08:24	08:28
									08:10[y]	08:19				
									08:13[y]	08:22				
									08:18[y]	08:27				
									08:21[y]	08:30				
08:07	08:11		08:21	08:25		08:28		08:34	08:38	08:47	08:54	08:55		
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08:36	08:40		08:50	08:54		08:57		09:03	09:07	09:16	09:23	09:24		
08:51[z]	08:55[z]		09:05[z]	09:09[z]		09:12[z]		09:18[z]					09:23	09:27
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TUNNEY'S PASTURE D	HOLLAND / CARLING	WESTGAT MALL	EMERIVALE / BURRIS	MERIVALE / MEADOWLANDS	MERIVALE / HS	MERIVALE / VIEWMOUNT	COLONNADE / AD. 177	EMERIVALE / SLACK	LEIKIN / BECKSTEAD	NEPEAN WOODS 1A	MARKETPLACE 1A	BARRHAVEN CENTRE 1A	EMERIVALE / AURIGA	MACFARLANE / DEAKIN
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23:05	23:09		23:16	23:19		23:21		23:25	23:28	23:37	23:45	23:46		
23:35	23:39		23:46	23:49		23:50		23:54	23:58	00:07	00:14	00:15		
00:05	00:09		00:16	00:19		00:20		00:24	00:28	00:37	00:44	00:45		

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# Schedules & Maps

The next service change is on Sunday, June 26.

Schedule times are based on typical driving conditions and may vary. Please arrive at your stop a few minutes early to allow for any fluctuations in schedule.

Wed, Jun 8

## 89 Tunney's Pasture

COLONNADE / CONCOURSE	MERIVALE / VIEWMOUNT	VIEWMOUNT / FARM GATE	FISHER / BASELINE	HOLLAND / CARLING	HOLLAND / SCOTT	TUNNEY'S PASTURE D
05:06	05:10	05:13	05:18	05:21	05:24	05:26
05:36	05:40	05:43	05:48	05:51	05:54	05:56
05:51	05:55	05:58	06:03	06:06	06:09	06:11
06:05	06:09	06:12	06:17	06:20	06:23	06:25
06:20	06:24	06:27	06:32	06:35	06:38	06:40
06:35	06:40	06:45	06:50	06:56	07:01	07:03
06:50	06:55	07:00	07:05	07:11	07:16	07:18
07:05	07:10	07:15	07:20	07:26	07:31	07:33
07:20	07:25	07:30	07:35	07:41	07:46	07:48
07:35	07:40	07:45	07:50	07:56	08:01	08:03
07:52	07:57	08:02	08:07	08:13	08:18	08:20
08:08	08:13	08:18	08:23	08:29	08:34	08:36
08:24	08:29	08:34	08:39	08:45	08:50	08:52
08:58	09:03	09:08	09:12	09:17	09:22	09:24
09:28	09:33	09:38	09:42	09:47	09:52	09:54
09:59	10:04	10:09	10:13	10:18	10:23	10:25
10:29	10:34	10:39	10:43	10:48	10:53	10:55
10:59	11:04	11:09	11:13	11:18	11:23	11:25
11:29	11:34	11:39	11:43	11:48	11:53	11:55
11:59	12:04	12:09	12:13	12:18	12:23	12:25
12:28	12:33	12:39	12:44	12:49	12:53	12:55
13:00	13:05	13:09	13:14	13:19	13:23	13:25
13:30	13:35	13:39	13:44	13:49	13:53	13:55
13:59	14:04	14:08	14:13	14:18	14:22	14:24
14:28	14:33	14:37	14:42	14:47	14:51	14:53
14:52	14:57	15:02	15:08	15:14	15:18	15:20
15:26	15:31	15:36	15:42	15:48	15:52	15:54
15:56	16:01	16:06	16:12	16:18	16:22	16:24
16:25	16:32	16:37	16:42	16:48	16:52	16:54
16:55	17:02	17:07	17:12	17:18	17:22	17:24
17:25	17:31	17:36	17:41	17:47	17:51	17:53
17:55	18:01	18:06	18:11	18:17	18:21	18:23
18:23	18:29	18:33	18:37	18:43	18:47	18:49
18:55	19:00	19:04	19:09	19:13	19:17	19:18
19:25	19:30	19:34	19:39	19:43	19:47	19:48
19:55	20:00	20:04	20:09	20:13	20:17	20:18
20:25	20:30	20:33	20:37	20:40	20:43	20:45
20:55	21:00	21:03	21:07	21:10	21:13	21:15
21:25	21:30	21:33	21:37	21:40	21:43	21:45
21:55	22:00	22:03	22:07	22:10	22:13	22:15
22:25	22:30	22:33	22:37	22:40	22:43	22:45
22:55	23:00	23:03	23:07	23:10	23:13	23:15

# Schedules & Maps

The next service change is on Sunday, June 26.

Schedule times are based on typical driving conditions and may vary. Please arrive at your stop a few minutes early to allow for any fluctuations in schedule.

Wed, Jun 8

## 89 Colonnade

TUNNEY'S PASTURE D	HOLLAND / CARLING	FISHER / BASELINE	VIEWMOUNT / FARMGATE	MERIVALE / VIEWMOUNT	COLONNADE / AD. 177
06:19	06:24	06:27	06:31	06:36	06:43
06:49	06:54	06:57	07:01	07:06	07:13
07:19	07:24	07:27	07:31	07:36	07:43
07:49	07:55	08:00	08:03	08:10	08:20
08:19	08:25	08:30	08:33	08:40	08:50
08:49	08:55	09:00	09:03	09:09	09:19
09:19	09:25	09:30	09:33	09:39	09:49
09:49	09:54	09:58	10:02	10:07	10:15
10:21	10:26	10:30	10:34	10:39	10:47
10:51	10:56	11:00	11:04	11:09	11:17
11:21	11:26	11:30	11:34	11:40	11:48
11:51	11:56	12:00	12:04	12:10	12:18
12:20	12:25	12:29	12:33	12:39	12:47
12:50	12:55	12:59	13:03	13:09	13:17
13:20	13:25	13:29	13:33	13:39	13:47
13:49	13:54	13:58	14:02	14:08	14:16
14:15	14:21	14:26	14:30	14:37	14:45
14:39	14:45	14:50	14:54	15:01	15:09
14:54	15:00	15:05	15:09	15:16	15:24
15:09	15:15	15:20	15:24	15:31	15:39
15:23	15:29	15:34	15:38	15:45	15:53
15:41	15:47	15:53	15:57	16:04	16:13
15:56	16:02	16:08	16:12	16:19	16:28
16:11	16:17	16:23	16:27	16:34	16:43
16:26	16:32	16:38	16:42	16:49	16:58
16:41	16:47	16:53	16:57	17:04	17:13
16:56	17:02	17:08	17:12	17:19	17:28
17:11	17:17	17:23	17:27	17:34	17:43
17:28	17:34	17:40	17:44	17:51	18:00
17:45	17:51	17:57	18:01	18:08	18:17
18:00	18:05	18:10	18:14	18:20	18:28
18:18	18:23	18:28	18:32	18:38	18:46
18:30	18:35	18:40	18:44	18:50	18:58
18:50	18:55	19:00	19:04	19:10	19:18
19:20	19:25	19:30	19:34	19:40	19:48
19:53	19:58	20:01	20:05	20:09	20:16
20:23	20:28	20:31	20:35	20:39	20:46
20:52	20:57	21:00	21:04	21:08	21:15
21:22	21:27	21:30	21:34	21:38	21:45
21:52	21:57	22:00	22:04	22:08	22:15
22:22	22:27	22:30	22:34	22:38	22:45
22:52	22:57	23:00	23:04	23:08	23:15
23:22	23:27	23:30	23:34	23:38	23:45
23:52	23:57	00:00	00:04	00:08	00:15
00:36	00:41	00:44	00:48	00:52	00:59

# Schedules & Maps

The next service change is on Sunday, June 26.

Schedule times are based on typical driving conditions and may vary. Please arrive at your stop a few minutes early to allow for any fluctuations in schedule.

Wed, Jun 8

## 96 Merivale / b Hunt Club & Merivale & Colonnade

[V] Via Hunt Club Lowes

[x] Omer-Deslauriers H.S.

[y] Colonnade

HURDMAN D	GREENBORO 1A	SOUTH KEYS 1D	HUNT CLUB / PRINCE OF WALES	MACFARLANE / MERIVALE	MERIVALE / SLACK	339 WEST HUNT CLUB	VIEWMOUNT / GRANT CARMAN	COLONNADE / AD. 177
	05:23[y]	05:24[y]						05:36
05:41	05:48	05:49	05:55	06:00	06:01		06:08	
06:11	06:18	06:19	06:26	06:32	06:33		06:41	
06:41	06:48	06:49	06:56	07:02	07:03		07:11	
07:11[V]	07:18[V]	07:19[V]	07:29[V]			07:37	07:44	
07:41	07:48	07:49	08:00	08:07	08:08		08:18	
08:06[x]	08:13[x]	08:14[x]	08:25[x]	08:32[x]	08:33[x]		08:43	
08:41	08:48	08:49	08:57	09:05	09:06		09:15	
	09:16	09:17	09:25	09:31	09:32		09:40	
	09:48	09:49	09:57	10:03	10:04		10:12	
	10:15	10:16	10:24	10:30	10:31		10:39	
	11:15	11:16	11:24	11:30	11:31		11:39	
	12:16	12:17	12:23	12:30	12:31		12:39	
	13:16	13:17	13:23	13:30	13:31		13:39	
	14:16	14:17	14:23	14:30	14:31		14:39	
	15:17	15:18	15:26	15:32	15:33		15:42	
	16:16[V]	16:17[V]	16:27[V]			16:35	16:41	
	17:16	17:17	17:27	17:33	17:34		17:44	
	18:16	18:17	18:24	18:31	18:32		18:39	
	19:16	19:17	19:23	19:28	19:29		19:35	
	20:16	20:17	20:23	20:28	20:29		20:35	
	21:16	21:17	21:23	21:28	21:29		21:35	



# Schedules & Maps

The next service change is on Sunday, June 26.

Schedule times are based on typical driving conditions and may vary. Please arrive at your stop a few minutes early to allow for any fluctuations in schedule.

Wed, Jun 8

## 670 St. Pius

VAAN / WOODROFFE	FISHER / DYNES
07:31	08:04

# Schedules & Maps

The next service change is on Sunday, June 26.

Schedule times are based on typical driving conditions and may vary. Please arrive at your stop a few minutes early to allow for any fluctuations in schedule.

Wed, Jun 8

## 670 Nepean S.

FISHER / DYNES	VAAN / COLEWAY
14:44	15:25

# APPENDIX E

## Traffic Data

## Turning Movement Count - Study Results

### COLONNADE RD @ COLONNADE RD E

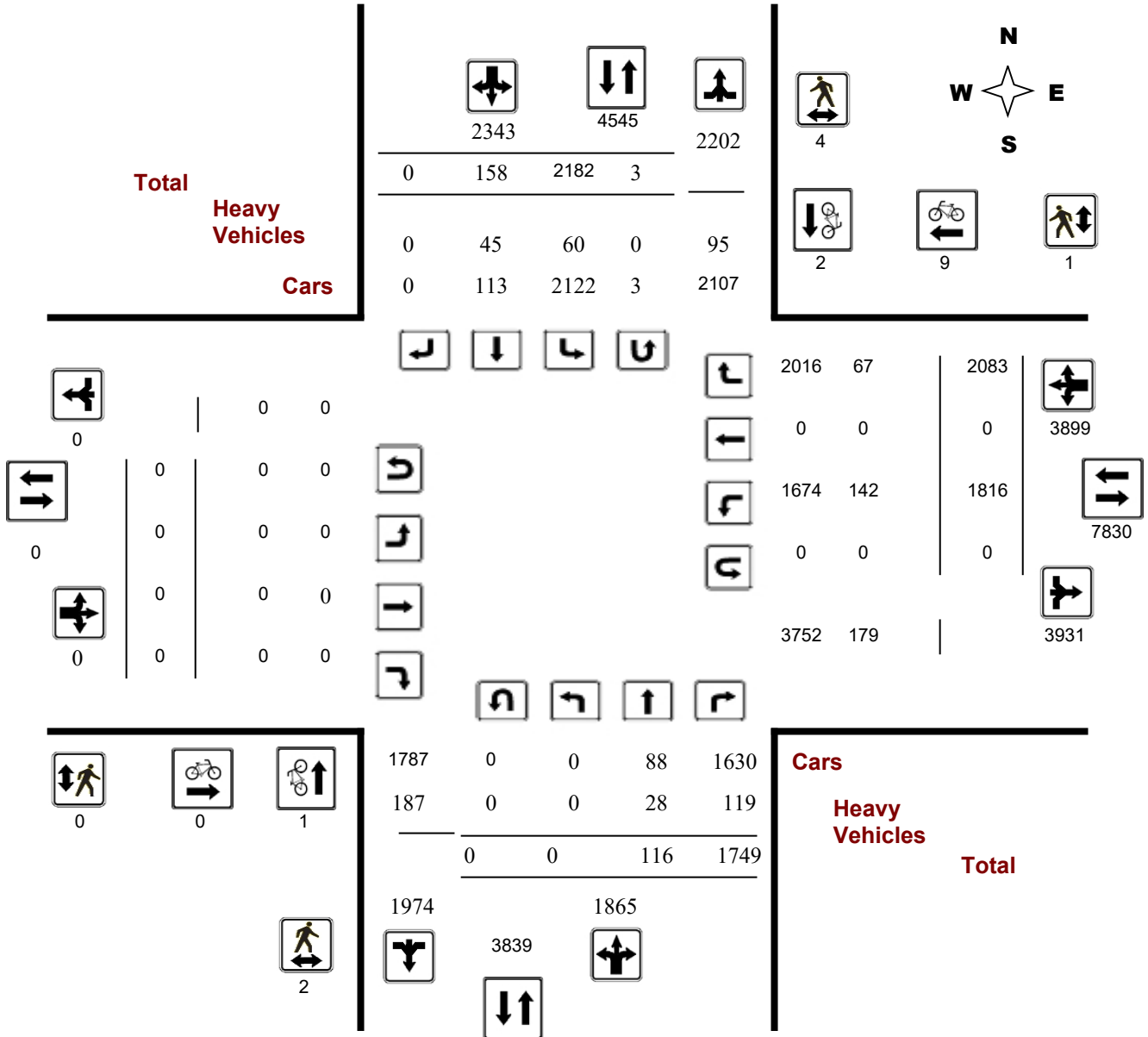
**Survey Date:** Tuesday, April 10, 2018

**WO No:** 37713

**Start Time:** 07:00

**Device:** Miovision

### Full Study Diagram



## Turning Movement Count - Study Results

### COLONNADE RD @ COLONNADE RD E

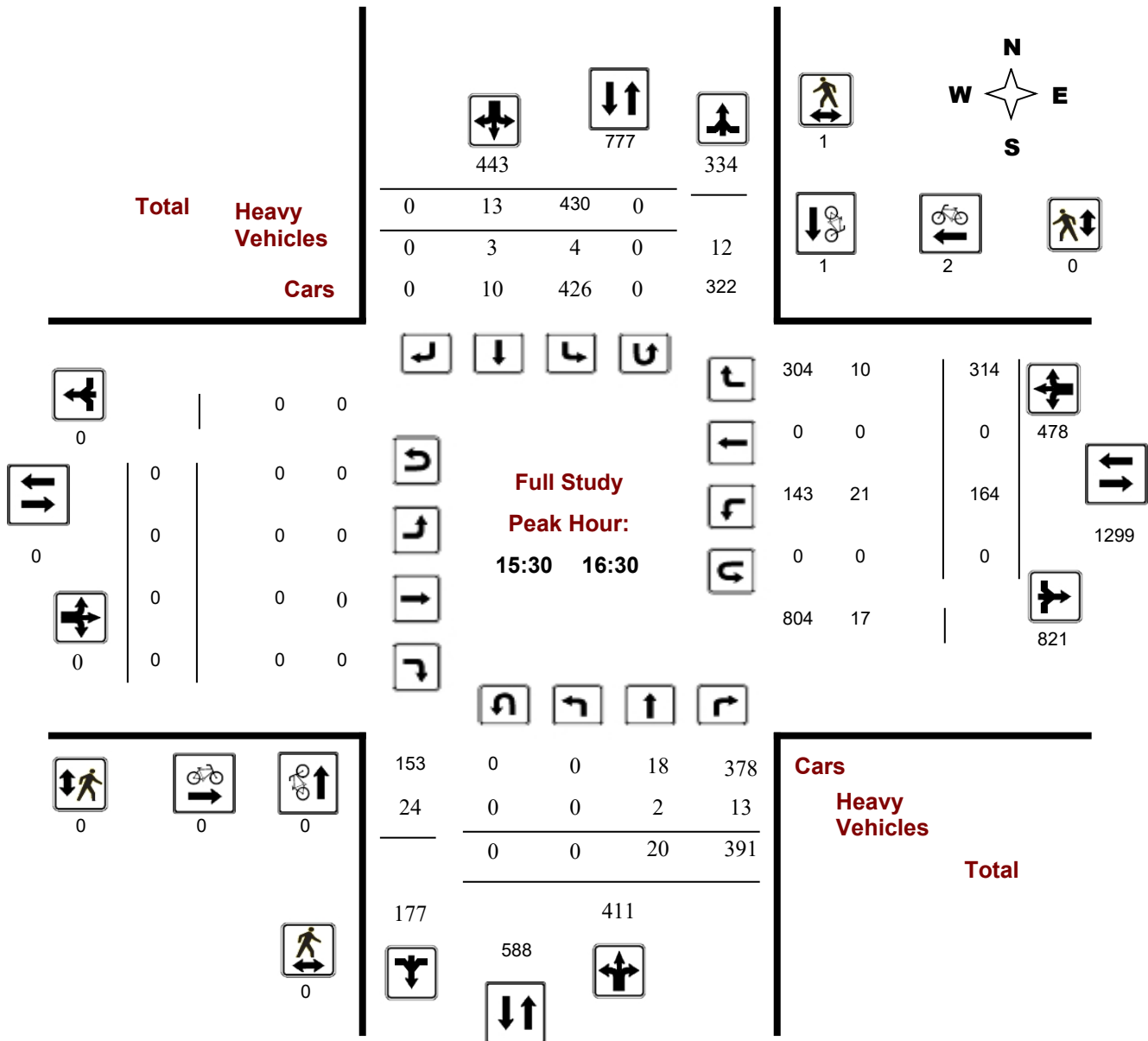
**Survey Date:** Tuesday, April 10, 2018

**WO No:** 37713

**Start Time:** 07:00

**Device:** Miovision

### Full Study Peak Hour Diagram



## Turning Movement Count - Peak Hour Diagram

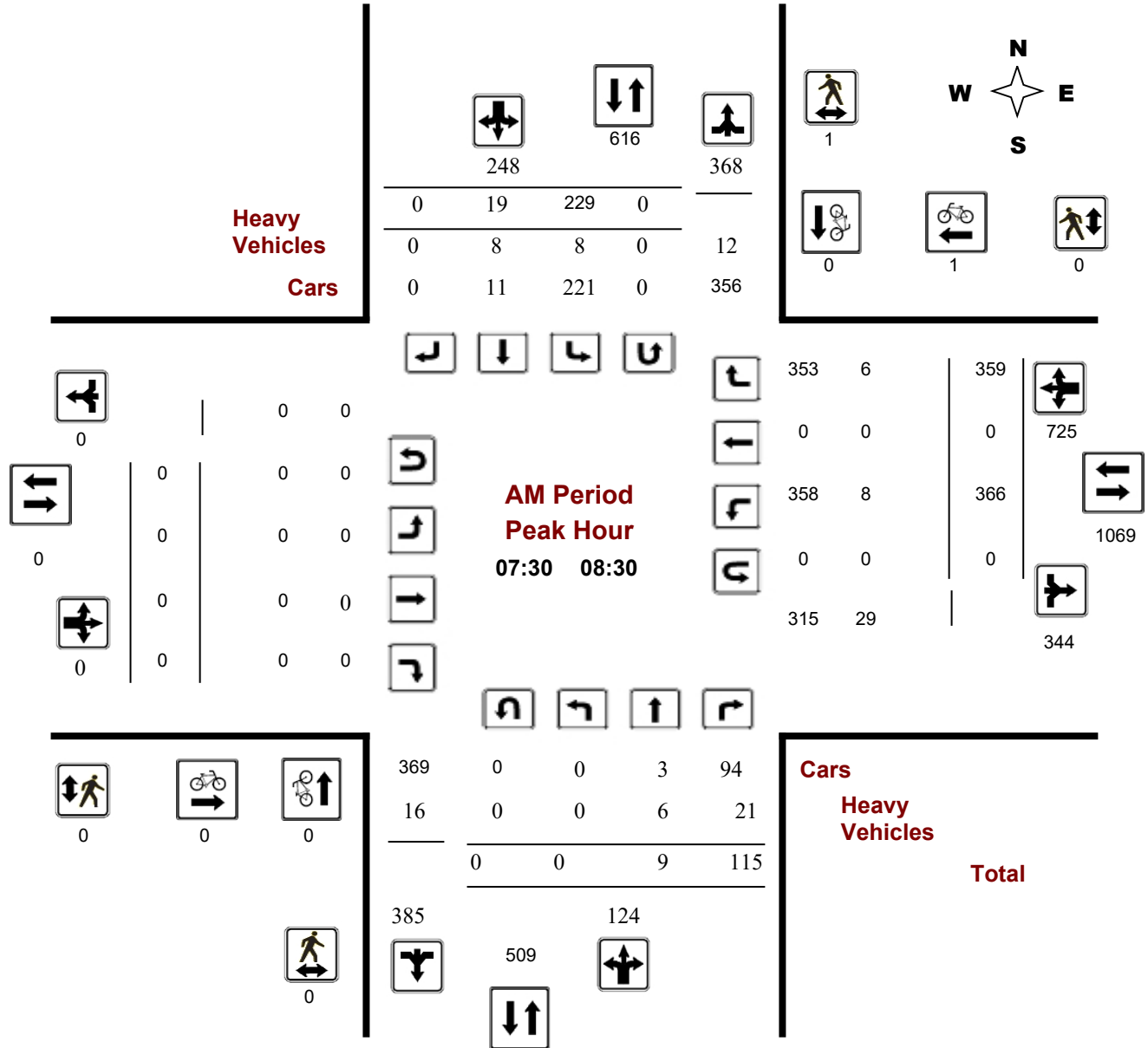
### COLONNADE RD @ COLONNADE RD E

**Survey Date:** Tuesday, April 10, 2018

**Start Time:** 07:00

**WO No:** 37713

**Device:** Miovision



**Comments**

## Turning Movement Count - Peak Hour Diagram

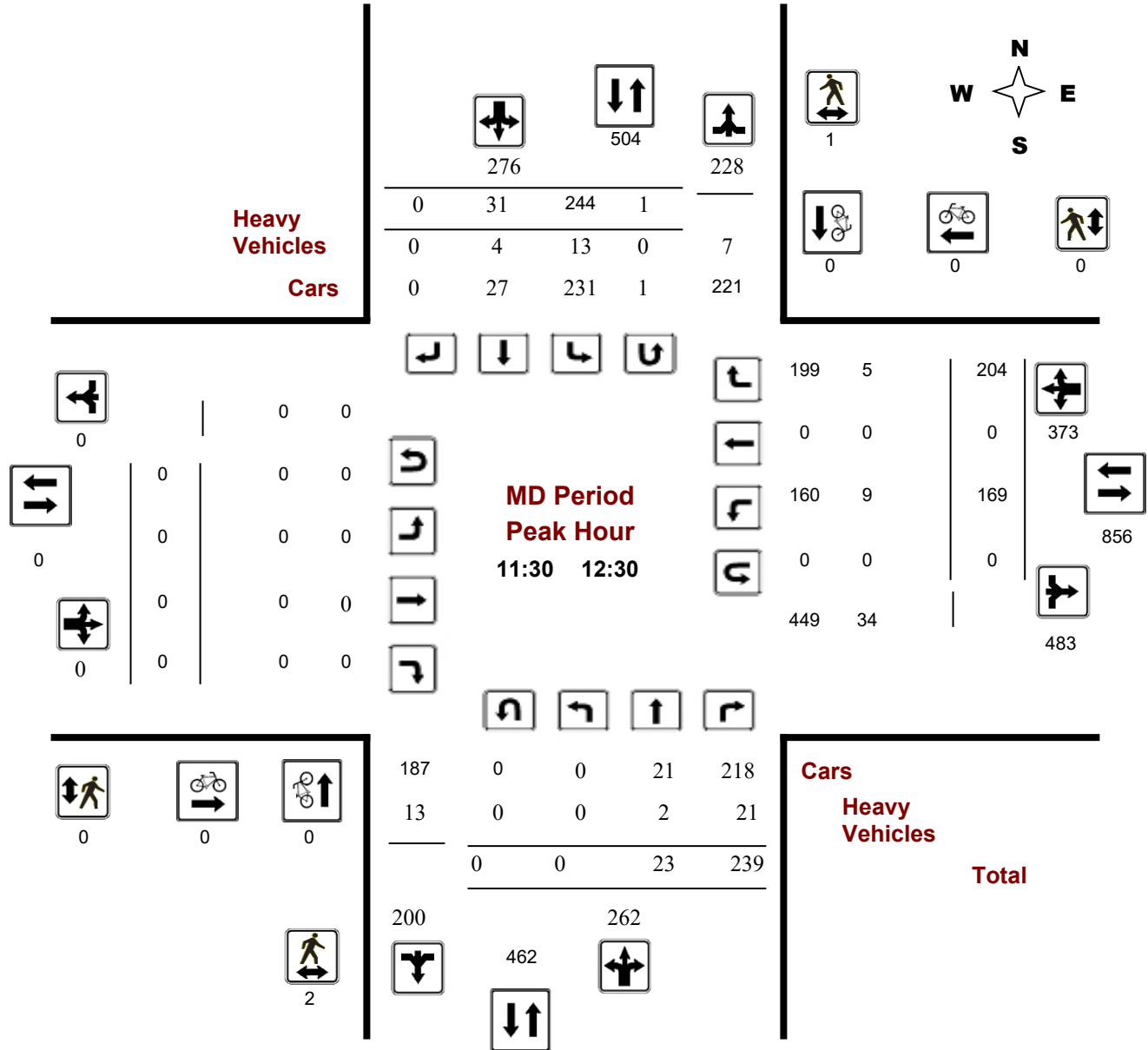
### COLONNADE RD @ COLONNADE RD E

**Survey Date:** Tuesday, April 10, 2018

**Start Time:** 07:00

**WO No:** 37713

**Device:** Miovision



**Comments**

## Turning Movement Count - Peak Hour Diagram

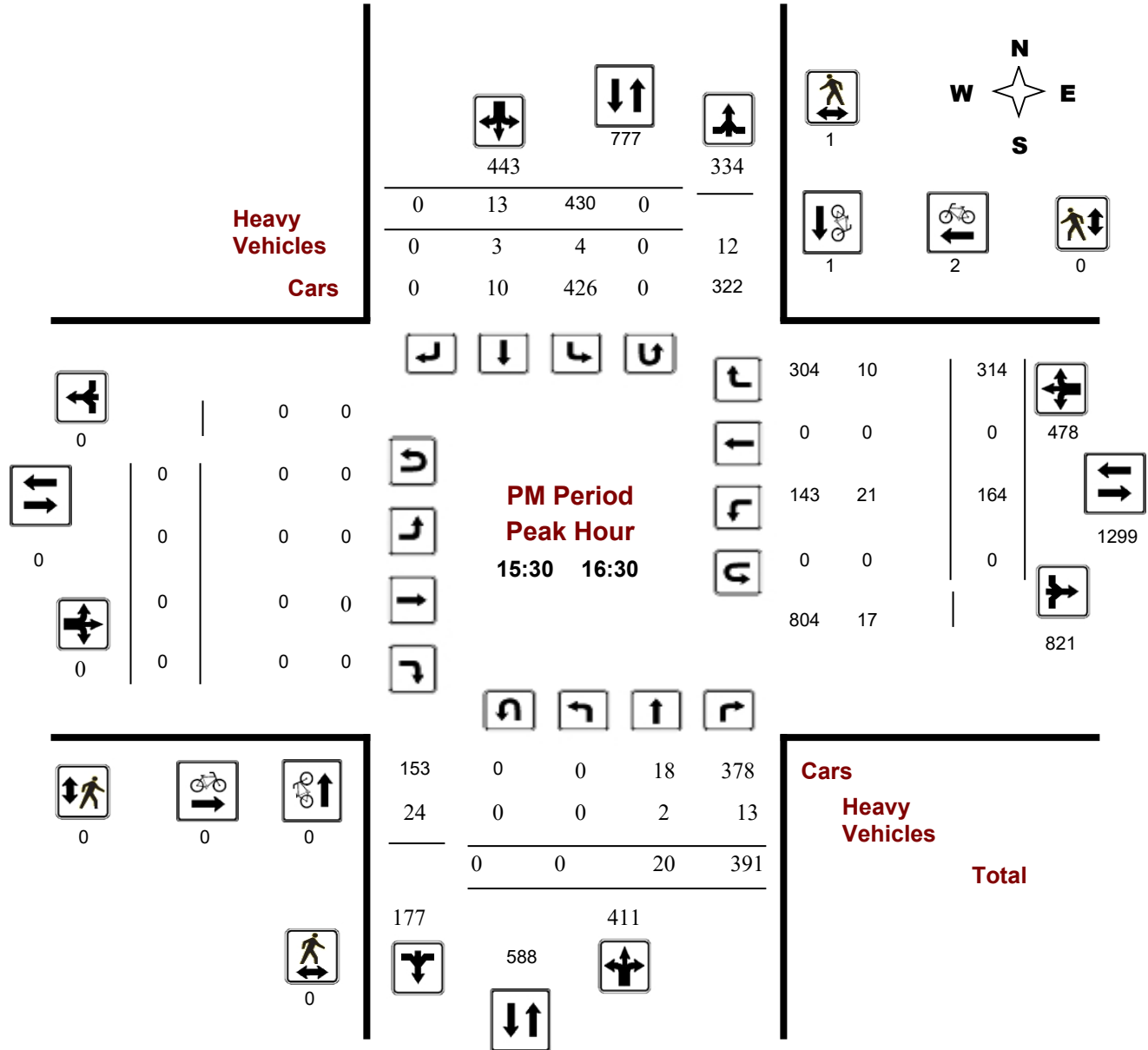
### COLONNADE RD @ COLONNADE RD E

**Survey Date:** Tuesday, April 10, 2018

**Start Time:** 07:00

**WO No:** 37713

**Device:** Miovision



**Comments**





# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### COLONNADE RD @ COLONNADE RD E

**Survey Date:** Tuesday, April 10, 2018

**WO No:** 37713

**Start Time:** 07:00

**Device:** Miovision

### Full Study Summary (8 HR Standard)

**Survey Date:** Tuesday, April 10, 2018

**Total Observed U-Turns**  
 Northbound: 0      Southbound: 3  
 Eastbound: 0      Westbound: 0

**AADT Factor**  
 .90

Period	Northbound				Southbound				STR TOT	Eastbound				Westbound				STR TOT	Grand Total
	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT		LT	ST	RT	EB TOT	LT	ST	RT	WB TOT		
07:00 08:00	0	8	124	132	216	16	0	232	364	0	0	0	0	368	0	263	631	631	995
08:00 09:00	0	8	93	101	200	16	0	216	317	0	0	0	0	330	0	390	720	720	1037
09:00 10:00	0	12	122	134	118	22	0	140	274	0	0	0	0	262	0	222	484	484	758
11:30 12:30	0	23	239	262	244	31	0	275	537	0	0	0	0	169	0	204	373	373	910
12:30 13:30	0	22	177	199	179	35	0	214	413	0	0	0	0	234	0	196	430	430	843
15:00 16:00	0	25	343	368	355	10	0	365	733	0	0	0	0	183	0	267	450	450	1183
16:00 17:00	0	10	367	377	444	11	0	455	832	0	0	0	0	138	0	281	419	419	1251
17:00 18:00	0	8	284	292	426	17	0	443	735	0	0	0	0	132	0	260	392	392	1127
<b>Sub Total</b>	0	116	1749	1865	2182	158	0	2340	4205	0	0	0	0	1816	0	2083	3899	3899	8104
<b>U Turns</b>	0			0	3			3	3	0			0	0			0	0	3
<b>Total</b>	0	116	1749	1865	2185	158	0	2343	4208	0	0	0	0	1816	0	2083	3899	3899	8107
<b>EQ 12Hr</b>	0	161	2431	2592	3037	220	0	3257	5849	0	0	0	0	2524	0	2895	5419	5419	11268
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.													<b>1.39</b>						
<b>AVG 12Hr</b>	0	145	2188	2333	2733	198	0	2931	5264	0	0	0	0	2272	0	2606	4878	4878	10142
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.													<b>.90</b>						
<b>AVG 24Hr</b>	0	190	2866	3056	3580	259	0	3839	6895	0	0	0	0	2976	0	3414	6390	6390	13285

Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor. **1.31**

Note: U-Turns provided for approach totals. Refer to 'U-Turn' Report for specific breakdown.



# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### COLONNADE RD @ COLONNADE RD E

**Survey Date:** Tuesday, April 10, 2018

**WO No:** 37713

**Start Time:** 07:00

**Device:** Miovision

### Full Study 15 Minute Increments

Time Period	Northbound				Southbound				Eastbound				Westbound				Grand Total		
	LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT		W TOT	STR TOT
07:00 07:15	0	2	22	24	43	3	0	46	70	0	0	0	0	84	0	57	141	141	211
07:15 07:30	0	2	31	33	59	1	0	60	93	0	0	0	0	80	0	62	142	142	235
07:30 07:45	0	2	31	33	55	6	0	61	94	0	0	0	0	108	0	64	172	172	266
07:45 08:00	0	2	40	42	59	6	0	65	107	0	0	0	0	96	0	80	176	176	283
08:00 08:15	0	3	22	25	67	3	0	70	95	0	0	0	0	88	0	105	193	193	288
08:15 08:30	0	2	22	24	48	4	0	52	76	0	0	0	0	74	0	110	184	184	260
08:30 08:45	0	2	21	23	37	4	0	41	64	0	0	0	0	70	0	99	169	169	233
08:45 09:00	0	1	28	29	48	5	0	53	82	0	0	0	0	98	0	76	174	174	256
09:00 09:15	0	2	25	27	28	5	0	33	60	0	0	0	0	85	0	78	163	163	223
09:15 09:30	0	3	38	41	32	10	0	42	83	0	0	0	0	67	0	52	119	119	202
09:30 09:45	0	1	31	32	24	1	0	25	57	0	0	0	0	48	0	35	83	83	140
09:45 10:00	0	6	28	34	35	6	0	41	75	0	0	0	0	62	0	57	119	119	194
11:30 11:45	0	5	68	73	75	8	0	83	156	0	0	0	0	42	0	39	81	81	237
11:45 12:00	0	9	63	72	59	6	0	65	137	0	0	0	0	40	0	48	88	88	225
12:00 12:15	0	2	55	57	60	6	0	66	123	0	0	0	0	47	0	63	110	110	233
12:15 12:30	0	7	53	60	51	11	0	62	122	0	0	0	0	40	0	54	94	94	216
12:30 12:45	0	6	41	47	42	6	0	48	95	0	0	0	0	58	0	59	117	117	212
12:45 13:00	0	7	44	51	39	13	0	52	103	0	0	0	0	66	0	56	122	122	225
13:00 13:15	0	7	48	55	46	7	0	53	108	0	0	0	0	53	0	45	98	98	206
13:15 13:30	0	2	44	46	52	9	0	61	107	0	0	0	0	57	0	36	93	93	200
15:00 15:15	0	6	68	74	85	3	0	88	162	0	0	0	0	39	0	53	92	92	254
15:15 15:30	0	5	76	81	59	3	0	62	143	0	0	0	0	44	0	54	98	98	241
15:30 15:45	0	6	79	85	111	3	0	114	199	0	0	0	0	42	0	81	123	123	322
15:45 16:00	0	8	120	128	100	1	0	101	229	0	0	0	0	58	0	79	137	137	366
16:00 16:15	0	5	116	121	118	4	0	122	243	0	0	0	0	28	0	85	113	113	356
16:15 16:30	0	1	76	77	101	5	0	106	183	0	0	0	0	36	0	69	105	105	288
16:30 16:45	0	2	95	97	123	1	0	124	221	0	0	0	0	19	0	56	75	75	296
16:45 17:00	0	2	80	82	103	1	0	104	186	0	0	0	0	55	0	71	126	126	312
17:00 17:15	0	4	104	108	167	6	0	173	281	0	0	0	0	28	0	67	95	95	376
17:15 17:30	0	1	59	60	105	5	0	110	170	0	0	0	0	44	0	77	121	121	291
17:30 17:45	0	2	74	76	84	4	0	88	164	0	0	0	0	32	0	74	106	106	270
17:45 18:00	0	1	47	48	70	2	0	72	120	0	0	0	0	28	0	42	70	70	190
<b>Total:</b>	<b>0</b>	<b>116</b>	<b>1749</b>	<b>1865</b>	<b>2185</b>	<b>158</b>	<b>0</b>	<b>2343</b>	<b>4208</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1816</b>	<b>0</b>	<b>2083</b>	<b>3899</b>	<b>4208</b>	<b>8,107</b>

Note: U-Turns are included in Totals.



# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### COLONNADE RD @ COLONNADE RD E

**Survey Date:** Tuesday, April 10, 2018

**WO No:** 37713

**Start Time:** 07:00

**Device:** Miovision

### Full Study Cyclist Volume

Time Period	Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	Grand Total
07:00 07:15	0	0	0	0	0	0	0
07:15 07:30	0	0	0	0	1	1	1
07:30 07:45	0	0	0	0	1	1	1
07:45 08:00	0	0	0	0	0	0	0
08:00 08:15	0	0	0	0	0	0	0
08:15 08:30	0	0	0	0	0	0	0
08:30 08:45	0	0	0	0	0	0	0
08:45 09:00	0	0	0	0	0	0	0
09:00 09:15	0	0	0	0	1	1	1
09:15 09:30	0	0	0	0	1	1	1
09:30 09:45	0	0	0	0	0	0	0
09:45 10:00	0	0	0	0	1	1	1
11:30 11:45	0	0	0	0	0	0	0
11:45 12:00	0	0	0	0	0	0	0
12:00 12:15	0	0	0	0	0	0	0
12:15 12:30	0	0	0	0	0	0	0
12:30 12:45	0	0	0	0	0	0	0
12:45 13:00	0	0	0	0	0	0	0
13:00 13:15	0	0	0	0	0	0	0
13:15 13:30	0	0	0	0	0	0	0
15:00 15:15	0	0	0	0	1	1	1
15:15 15:30	0	0	0	0	0	0	0
15:30 15:45	0	0	0	0	1	1	1
15:45 16:00	0	0	0	0	1	1	1
16:00 16:15	0	1	1	0	0	0	1
16:15 16:30	0	0	0	0	0	0	0
16:30 16:45	0	0	0	0	0	0	0
16:45 17:00	0	0	0	0	0	0	0
17:00 17:15	0	0	0	0	1	1	1
17:15 17:30	0	1	1	0	0	0	1
17:30 17:45	1	0	1	0	0	0	1
17:45 18:00	0	0	0	0	0	0	0
Total	1	2	3	0	9	9	12



# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### COLONNADE RD @ COLONNADE RD E

**Survey Date:** Tuesday, April 10, 2018

**WO No:** 37713

**Start Time:** 07:00

**Device:** Miovision

### Full Study Pedestrian Volume

Time Period	NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	Total	Grand Total
07:00 07:15	0	0	0	0	0	0	0
07:15 07:30	0	0	0	0	0	0	0
07:30 07:45	0	1	1	0	0	0	1
07:45 08:00	0	0	0	0	0	0	0
08:00 08:15	0	0	0	0	0	0	0
08:15 08:30	0	0	0	0	0	0	0
08:30 08:45	0	0	0	0	0	0	0
08:45 09:00	0	0	0	0	0	0	0
09:00 09:15	0	0	0	0	0	0	0
09:15 09:30	0	0	0	0	0	0	0
09:30 09:45	0	0	0	0	0	0	0
09:45 10:00	0	0	0	0	0	0	0
11:30 11:45	2	1	3	0	0	0	3
11:45 12:00	0	0	0	0	0	0	0
12:00 12:15	0	0	0	0	0	0	0
12:15 12:30	0	0	0	0	0	0	0
12:30 12:45	0	0	0	0	0	0	0
12:45 13:00	0	0	0	0	0	0	0
13:00 13:15	0	0	0	0	0	0	0
13:15 13:30	0	0	0	0	0	0	0
15:00 15:15	0	0	0	0	0	0	0
15:15 15:30	0	0	0	0	0	0	0
15:30 15:45	0	1	1	0	0	0	1
15:45 16:00	0	0	0	0	0	0	0
16:00 16:15	0	0	0	0	0	0	0
16:15 16:30	0	0	0	0	0	0	0
16:30 16:45	0	0	0	0	0	0	0
16:45 17:00	0	0	0	0	0	0	0
17:00 17:15	0	0	0	0	1	1	1
17:15 17:30	0	0	0	0	0	0	0
17:30 17:45	0	1	1	0	0	0	1
17:45 18:00	0	0	0	0	0	0	0
<b>Total</b> .....	<b>2</b>	<b>4</b>	<b>6</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>7</b>



# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### COLONNADE RD @ COLONNADE RD E

**Survey Date:** Tuesday, April 10, 2018

**WO No:** 37713

**Start Time:** 07:00

**Device:** Miovision

### Full Study Heavy Vehicles

Time Period	Northbound				Southbound				Eastbound				Westbound				Grand Total		
	LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT		W TOT	STR TOT
07:00 07:15	0	2	6	8	2	2	0	4	12	0	0	0	0	4	0	0	4	4	16
07:15 07:30	0	1	6	7	1	0	0	1	8	0	0	0	0	4	0	0	4	4	12
07:30 07:45	0	1	6	7	0	3	0	3	10	0	0	0	0	3	0	2	5	5	15
07:45 08:00	0	1	8	9	2	2	0	4	13	0	0	0	0	2	0	1	3	3	16
08:00 08:15	0	2	4	6	4	1	0	5	11	0	0	0	0	1	0	2	3	3	14
08:15 08:30	0	2	3	5	2	2	0	4	9	0	0	0	0	2	0	1	3	3	12
08:30 08:45	0	1	3	4	2	0	0	2	6	0	0	0	0	5	0	4	9	9	15
08:45 09:00	0	1	1	2	4	2	0	6	8	0	0	0	0	10	0	4	14	14	22
09:00 09:15	0	1	1	2	1	1	0	2	4	0	0	0	0	4	0	5	9	9	13
09:15 09:30	0	2	2	4	1	7	0	8	12	0	0	0	0	11	0	3	14	14	26
09:30 09:45	0	0	6	6	2	0	0	2	8	0	0	0	0	6	0	2	8	8	16
09:45 10:00	0	2	5	7	5	1	0	6	13	0	0	0	0	4	0	4	8	8	21
11:30 11:45	0	1	7	8	7	0	0	7	15	0	0	0	0	3	0	2	5	5	20
11:45 12:00	0	1	3	4	3	1	0	4	8	0	0	0	0	1	0	2	3	3	11
12:00 12:15	0	0	3	3	1	1	0	2	5	0	0	0	0	5	0	1	6	6	11
12:15 12:30	0	0	8	8	2	2	0	4	12	0	0	0	0	0	0	0	0	0	12
12:30 12:45	0	0	1	1	3	0	0	3	4	0	0	0	0	2	0	1	3	3	7
12:45 13:00	0	2	3	5	0	2	0	2	7	0	0	0	0	4	0	5	9	9	16
13:00 13:15	0	0	5	5	4	2	0	6	11	0	0	0	0	3	0	2	5	5	16
13:15 13:30	0	1	6	7	3	1	0	4	11	0	0	0	0	9	0	2	11	11	22
15:00 15:15	0	1	8	9	2	2	0	4	13	0	0	0	0	4	0	1	5	5	18
15:15 15:30	0	0	3	3	0	1	0	1	4	0	0	0	0	5	0	1	6	6	10
15:30 15:45	0	1	5	6	2	0	0	2	8	0	0	0	0	8	0	2	10	10	18
15:45 16:00	0	0	2	2	1	1	0	2	4	0	0	0	0	3	0	4	7	7	11
16:00 16:15	0	1	4	5	1	1	0	2	7	0	0	0	0	7	0	3	10	10	17
16:15 16:30	0	0	2	2	0	1	0	1	3	0	0	0	0	3	0	1	4	4	7
16:30 16:45	0	1	1	2	1	0	0	1	3	0	0	0	0	3	0	1	4	4	7
16:45 17:00	0	0	1	1	1	1	0	2	3	0	0	0	0	4	0	2	6	6	9
17:00 17:15	0	2	1	3	2	1	0	3	6	0	0	0	0	6	0	1	7	7	13
17:15 17:30	0	0	2	2	1	2	0	3	5	0	0	0	0	4	0	3	7	7	12
17:30 17:45	0	1	1	2	0	4	0	4	6	0	0	0	0	7	0	1	8	8	14
17:45 18:00	0	0	2	2	0	1	0	1	3	0	0	0	0	5	0	4	9	9	12
Total: None	0	28	119	147	60	45	0	105	252	0	0	0	0	142	0	67	209	209	461



# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### COLONNADE RD @ COLONNADE RD E

**Survey Date:** Tuesday, April 10, 2018

**WO No:** 37713

**Start Time:** 07:00

**Device:** Miovision

### Full Study 15 Minute U-Turn Total

Time Period		Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn Total	Total
07:00	07:15	0	0	0	0	0
07:15	07:30	0	0	0	0	0
07:30	07:45	0	0	0	0	0
07:45	08:00	0	0	0	0	0
08:00	08:15	0	0	0	0	0
08:15	08:30	0	0	0	0	0
08:30	08:45	0	0	0	0	0
08:45	09:00	0	0	0	0	0
09:00	09:15	0	0	0	0	0
09:15	09:30	0	1	0	0	1
09:30	09:45	0	0	0	0	0
09:45	10:00	0	0	0	0	0
11:30	11:45	0	0	0	0	0
11:45	12:00	0	0	0	0	0
12:00	12:15	0	0	0	0	0
12:15	12:30	0	1	0	0	1
12:30	12:45	0	0	0	0	0
12:45	13:00	0	0	0	0	0
13:00	13:15	0	0	0	0	0
13:15	13:30	0	0	0	0	0
15:00	15:15	0	0	0	0	0
15:15	15:30	0	0	0	0	0
15:30	15:45	0	0	0	0	0
15:45	16:00	0	0	0	0	0
16:00	16:15	0	0	0	0	0
16:15	16:30	0	0	0	0	0
16:30	16:45	0	1	0	0	1
16:45	17:00	0	0	0	0	0
17:00	17:15	0	0	0	0	0
17:15	17:30	0	0	0	0	0
17:30	17:45	0	0	0	0	0
17:45	18:00	0	0	0	0	0
Total		0	3	0	0	3

## Turning Movement Count - Study Results

### COLONNADE RD @ PRINCE OF WALES DR

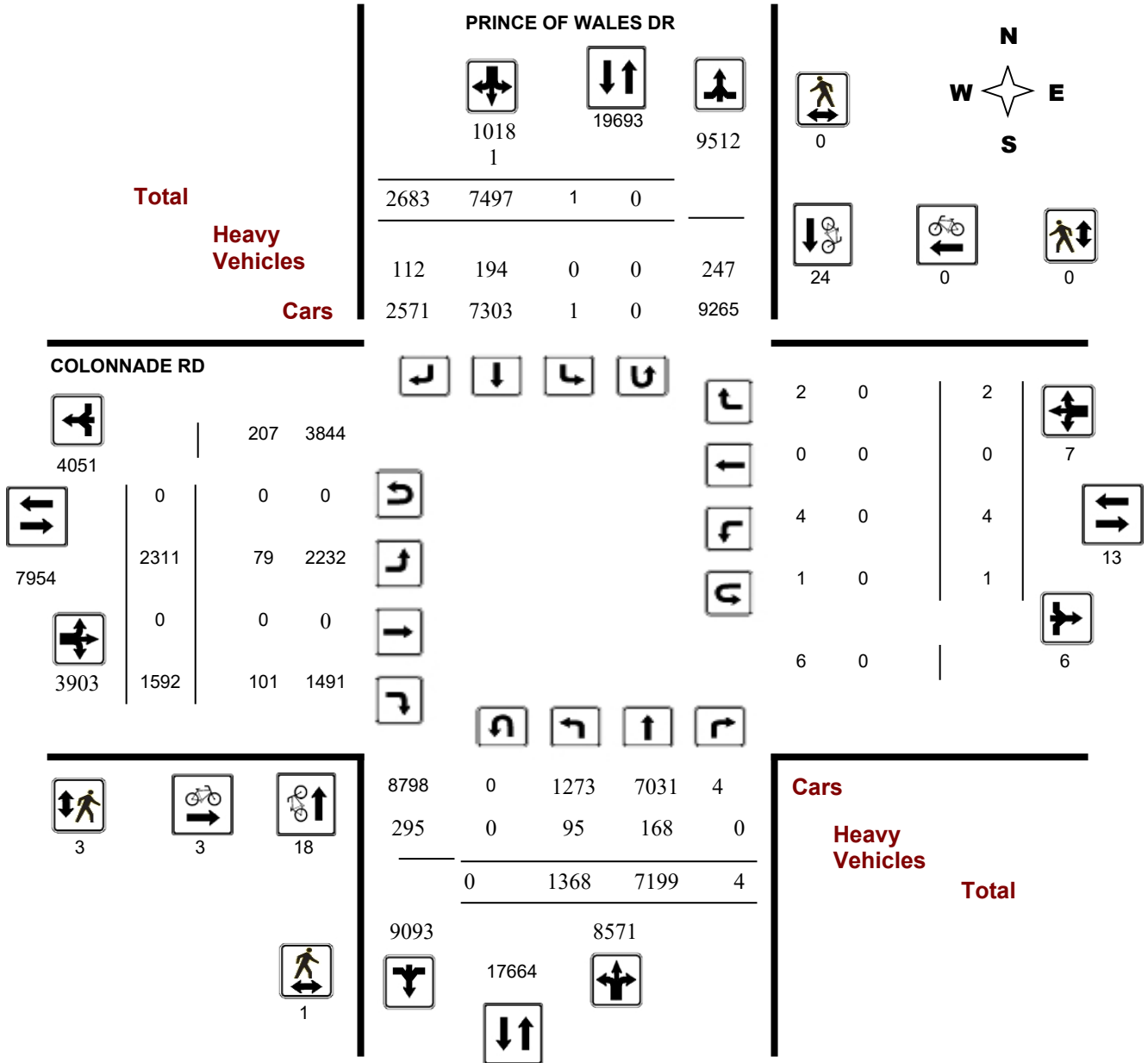
**Survey Date:** Tuesday, April 10, 2018

**WO No:** 37714

**Start Time:** 07:00

**Device:** Miovision

### Full Study Diagram



## Turning Movement Count - Study Results

### COLONNADE RD @ PRINCE OF WALES DR

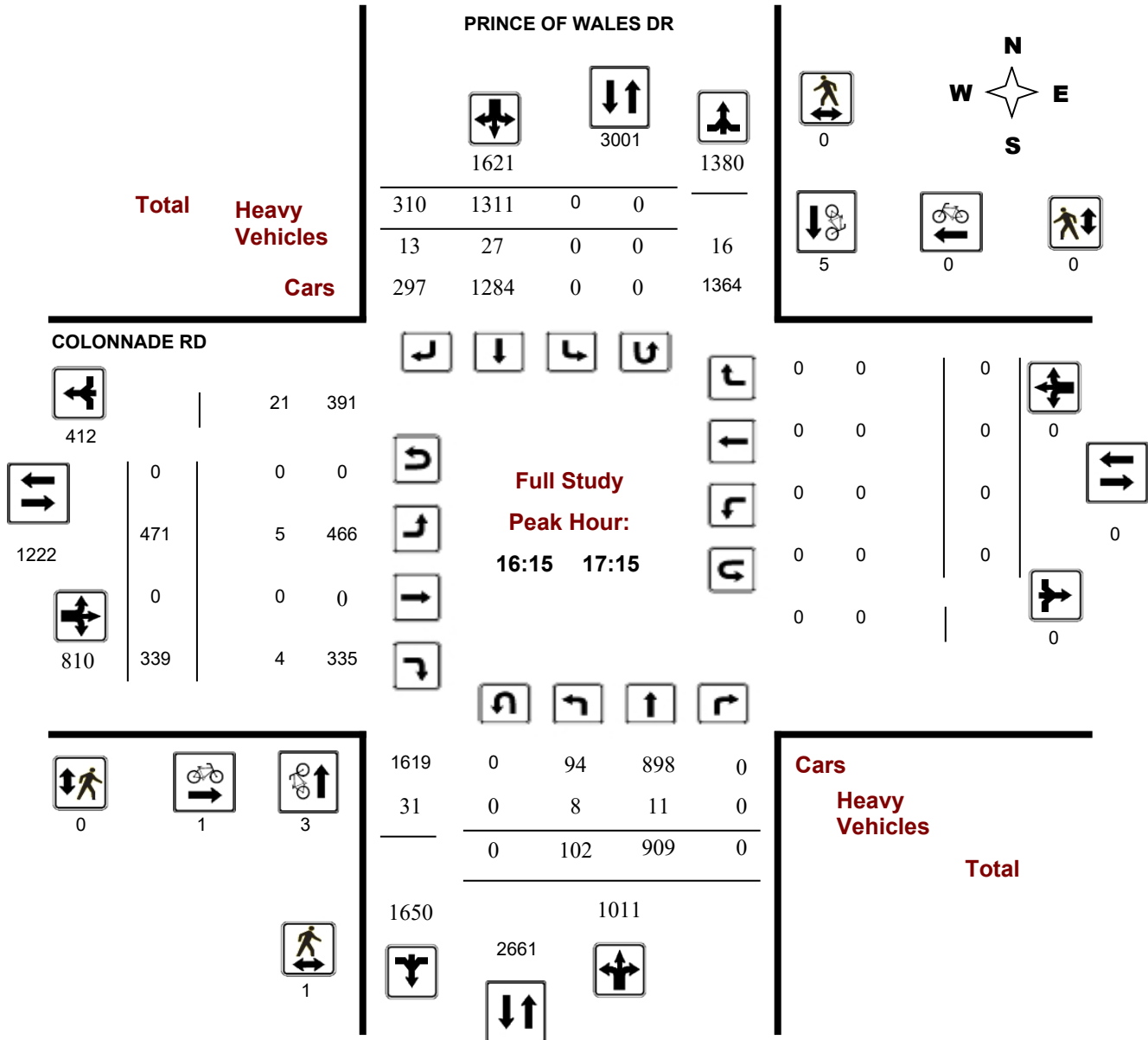
**Survey Date:** Tuesday, April 10, 2018

**WO No:** 37714

**Start Time:** 07:00

**Device:** Miovision

### Full Study Peak Hour Diagram





## Turning Movement Count - Peak Hour Diagram

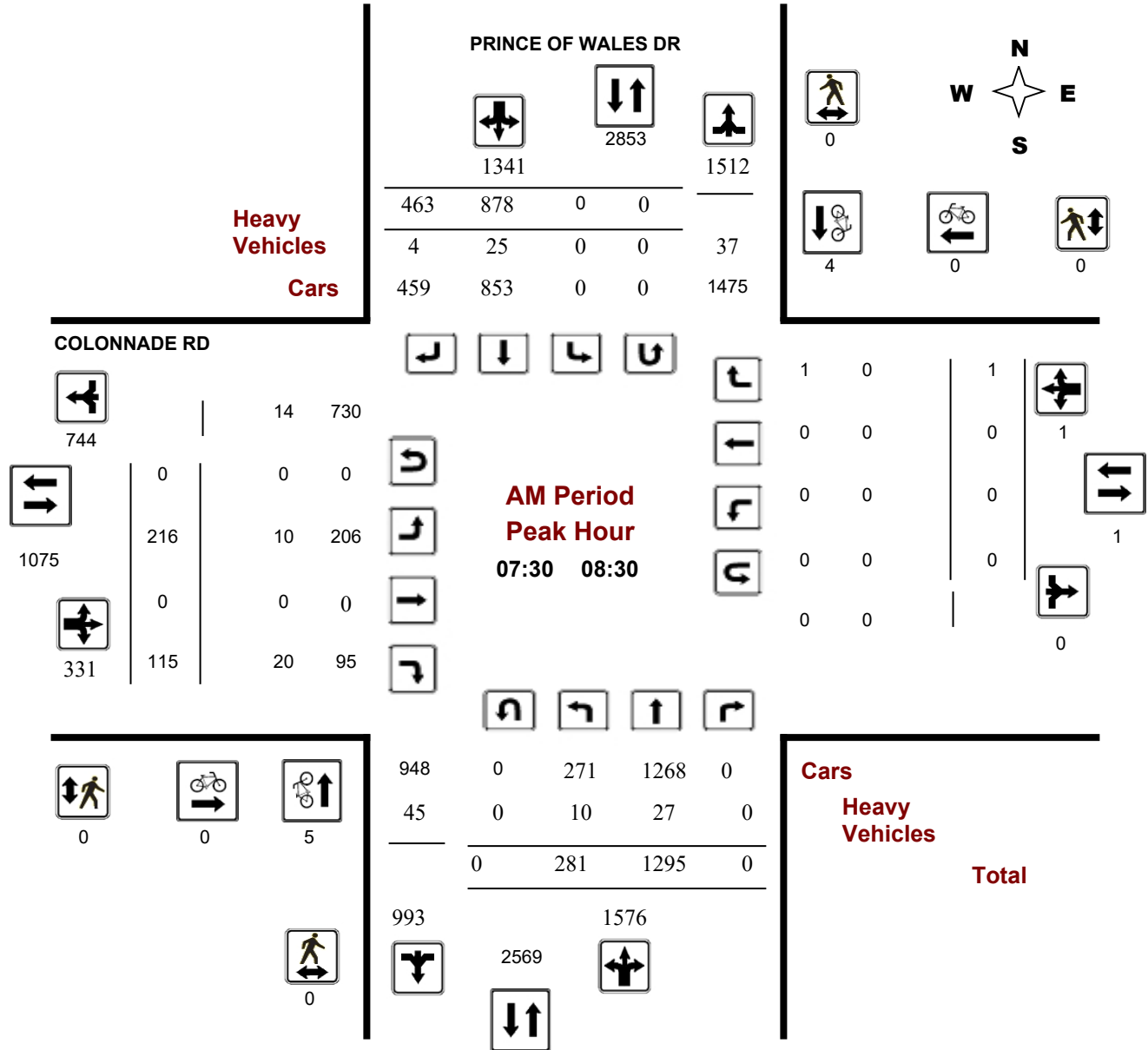
### COLONNADE RD @ PRINCE OF WALES DR

**Survey Date:** Tuesday, April 10, 2018

**Start Time:** 07:00

**WO No:** 37714

**Device:** Miovision



## Turning Movement Count - Peak Hour Diagram

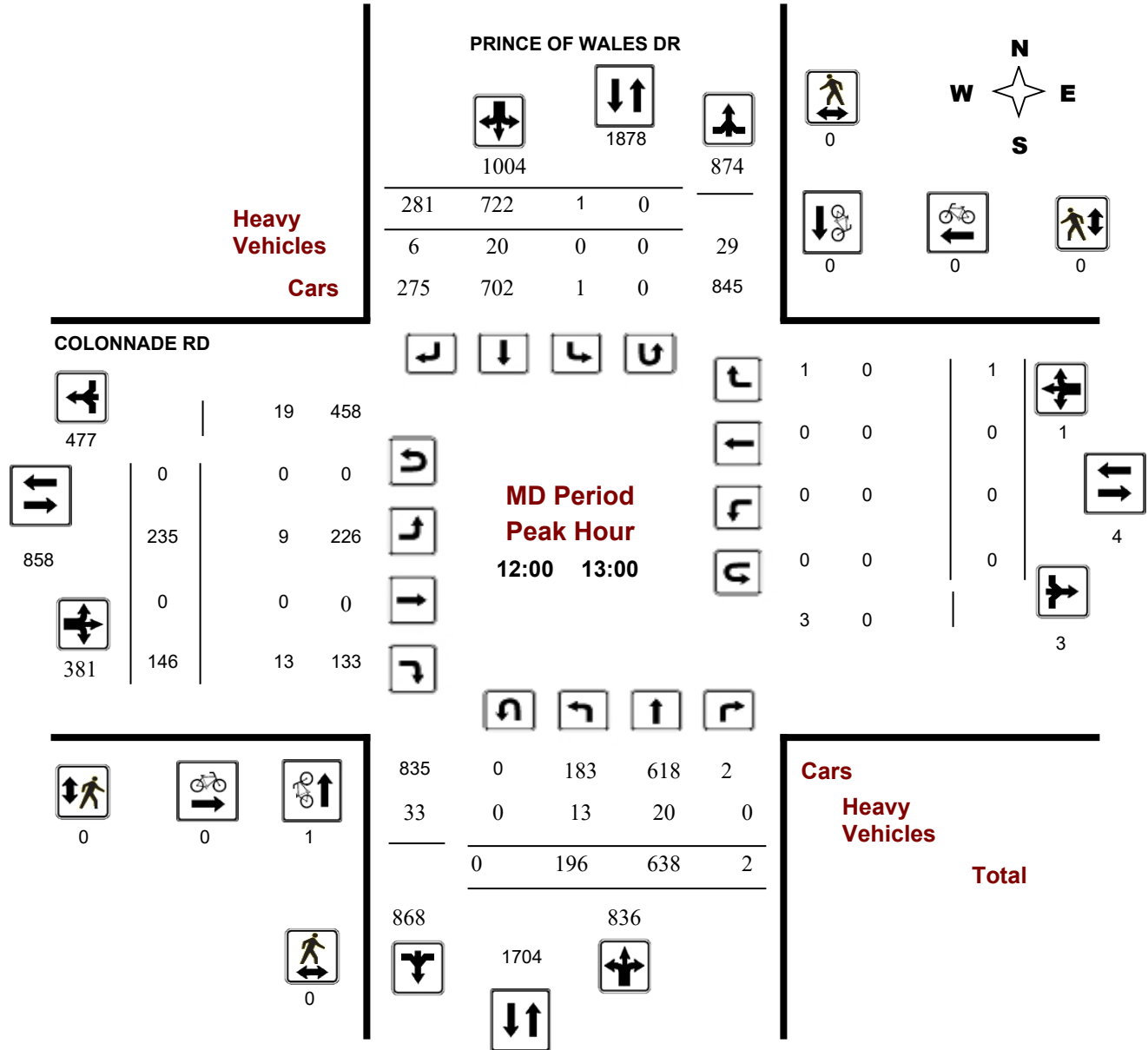
### COLONNADE RD @ PRINCE OF WALES DR

**Survey Date:** Tuesday, April 10, 2018

**Start Time:** 07:00

**WO No:** 37714

**Device:** Miovision



## Turning Movement Count - Peak Hour Diagram

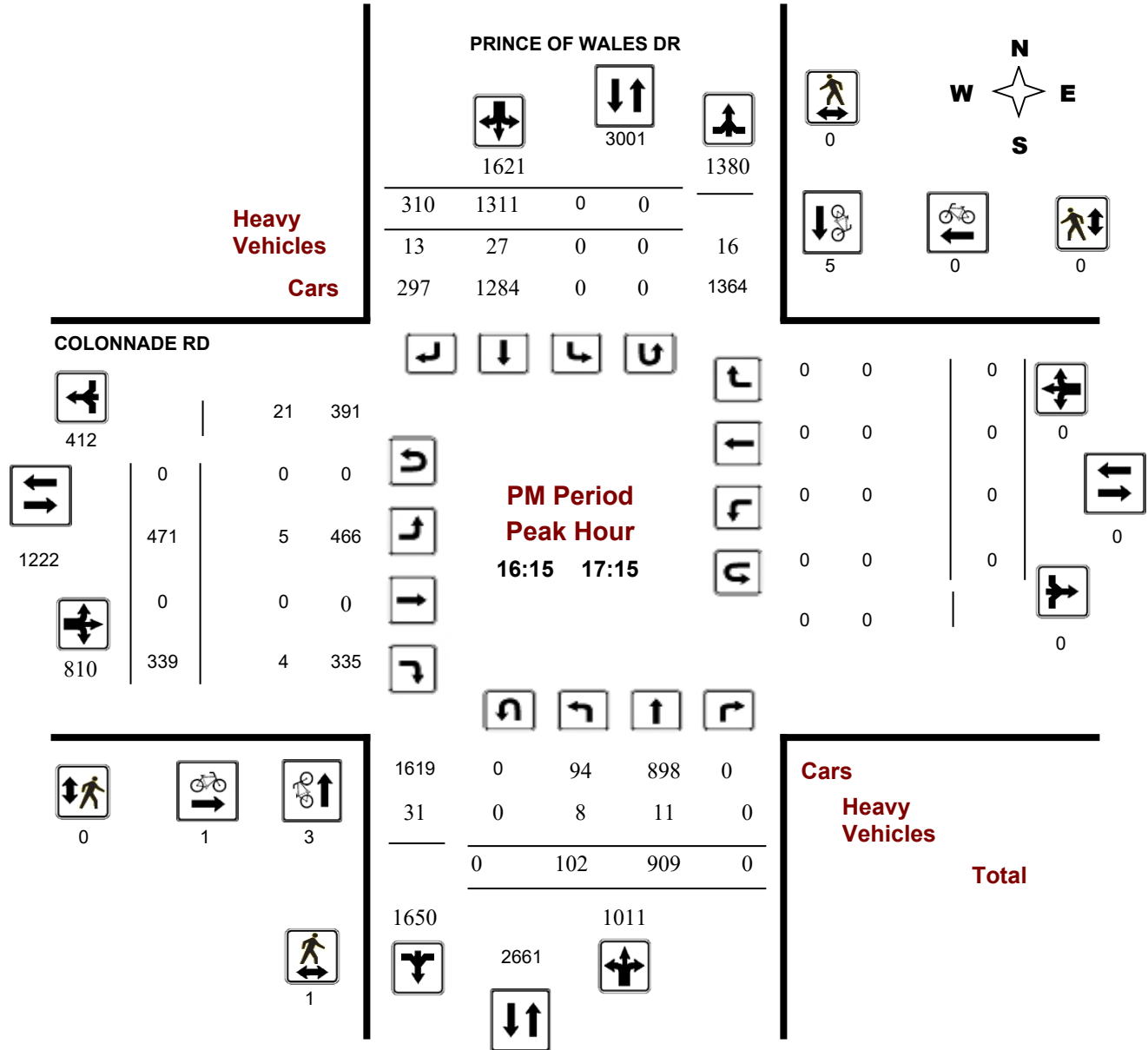
### COLONNADE RD @ PRINCE OF WALES DR

**Survey Date:** Tuesday, April 10, 2018

**Start Time:** 07:00

**WO No:** 37714

**Device:** Miovision





# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### COLONNADE RD @ PRINCE OF WALES DR

**Survey Date:** Tuesday, April 10, 2018

**WO No:** 37714

**Start Time:** 07:00

**Device:** Miovision

### Full Study Summary (8 HR Standard)

**Survey Date:** Tuesday, April 10, 2018

**Total Observed U-Turns**

**AADT Factor**

Northbound: 0      Southbound: 0  
 Eastbound: 0      Westbound: 1

.90

**PRINCE OF WALES DR**

**COLONNADE RD**

Period	Northbound					Southbound					Eastbound					Westbound			STR TOT	Grand Total
	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT			
07:00 08:00	244	1285	0	1529	0	753	365	1118	2647	209	0	110	319	0	0	0	0	319	2966	
08:00 09:00	265	1183	0	1448	0	947	496	1443	2891	180	0	103	283	0	0	1	1	284	3175	
09:00 10:00	187	899	1	1087	0	653	327	980	2067	166	0	88	254	0	0	0	0	254	2321	
11:30 12:30	159	630	1	790	0	713	241	954	1744	261	0	206	467	0	0	1	1	468	2212	
12:30 13:30	187	619	1	807	1	723	266	990	1797	215	0	140	355	0	0	0	0	355	2152	
15:00 16:00	129	833	0	962	0	1190	343	1533	2495	394	0	314	708	2	0	0	2	710	3205	
16:00 17:00	98	856	0	954	0	1327	320	1647	2601	449	0	353	802	1	0	0	1	803	3404	
17:00 18:00	99	894	1	994	0	1191	325	1516	2510	437	0	278	715	1	0	0	1	716	3226	
<b>Sub Total</b>	1368	7199	4	8571	1	7497	2683	10181	18752	2311	0	1592	3903	4	0	2	6	3909	22661	
<b>U Turns</b>	0			0	0			0	0	0			0	1			1	1	1	
<b>Total</b>	1368	7199	4	8571	1	7497	2683	10181	18752	2311	0	1592	3903	5	0	2	7	3910	22662	
<b>EQ 12Hr</b>	1902	10007	6	11915	1	10421	3729	14151	26066	3212	0	2213	5425	7	0	3	10	5435	31501	
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.																<b>1.39</b>				
<b>AVG 12Hr</b>	1712	9006	5	10723	1	9379	3356	12736	23459	2891	0	1992	4883	6	0	3	9	4892	28351	
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.																<b>.90</b>				
<b>AVG 24Hr</b>	2243	11798	7	14048	1	12286	4396	16683	30731	3787	0	2610	6397	8	0	4	12	6409	37140	
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.																<b>1.31</b>				

Note: U-Turns provided for approach totals. Refer to 'U-Turn' Report for specific breakdown.



# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### COLONNADE RD @ PRINCE OF WALES DR

**Survey Date:** Tuesday, April 10, 2018

**WO No:** 37714

**Start Time:** 07:00

**Device:** Miovision

### Full Study 15 Minute Increments

#### PRINCE OF WALES DR

#### COLONNADE RD

Northbound

Southbound

Eastbound

Westbound

Time Period	LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00 07:15	50	299	0	349	0	155	77	232	581	38	0	20	58	0	0	0	0	58	639
07:15 07:30	62	318	0	380	0	181	83	264	644	66	0	25	91	0	0	0	0	91	735
07:30 07:45	70	352	0	422	0	210	92	302	724	50	0	29	79	0	0	0	0	79	803
07:45 08:00	62	316	0	378	0	207	113	320	698	55	0	36	91	0	0	0	0	91	789
08:00 08:15	66	324	0	390	0	239	136	375	765	54	0	26	80	0	0	1	1	81	846
08:15 08:30	83	303	0	386	0	222	122	344	730	57	0	24	81	0	0	0	0	81	811
08:30 08:45	48	259	0	307	0	271	109	380	687	28	0	23	51	0	0	0	0	51	738
08:45 09:00	68	297	0	365	0	215	129	344	709	41	0	30	71	0	0	0	0	71	780
09:00 09:15	54	244	1	299	0	180	105	285	584	46	0	14	60	0	0	0	0	60	644
09:15 09:30	47	243	0	290	0	165	94	259	549	40	0	30	70	0	0	0	0	70	619
09:30 09:45	34	222	0	256	0	154	58	212	468	39	0	22	61	0	0	0	0	61	529
09:45 10:00	52	190	0	242	0	154	70	224	466	41	0	22	63	0	0	0	0	63	529
11:30 11:45	27	162	0	189	0	175	58	233	422	59	0	69	128	0	0	0	0	128	550
11:45 12:00	33	149	0	182	0	172	62	234	416	72	0	56	128	1	0	0	1	129	545
12:00 12:15	59	169	0	228	0	177	54	231	459	64	0	36	100	0	0	0	0	100	559
12:15 12:30	40	150	1	191	0	189	67	256	447	66	0	45	111	0	0	1	1	112	559
12:30 12:45	38	158	0	196	1	172	85	258	454	58	0	32	90	0	0	0	0	90	544
12:45 13:00	59	161	1	221	0	184	75	259	480	47	0	33	80	0	0	0	0	80	560
13:00 13:15	41	157	0	198	0	184	61	245	443	48	0	32	80	0	0	0	0	80	523
13:15 13:30	49	143	0	192	0	183	45	228	420	62	0	43	105	0	0	0	0	105	525
15:00 15:15	26	211	0	237	0	232	67	299	536	90	0	70	160	1	0	0	1	161	697
15:15 15:30	30	214	0	244	0	331	75	406	650	76	0	75	151	1	0	0	1	152	802
15:30 15:45	26	211	0	237	0	321	94	415	652	115	0	76	191	0	0	0	0	191	843
15:45 16:00	47	197	0	244	0	306	107	413	657	113	0	93	206	0	0	0	0	206	863
16:00 16:15	23	181	0	204	0	319	93	412	616	134	0	117	251	1	0	0	1	252	868
16:15 16:30	17	225	0	242	0	366	88	454	696	97	0	72	169	0	0	0	0	169	865
16:30 16:45	20	215	0	235	0	326	57	383	618	115	0	87	202	0	0	0	0	202	820
16:45 17:00	38	235	0	273	0	316	82	398	671	103	0	77	180	0	0	0	0	180	851
17:00 17:15	27	234	0	261	0	303	83	386	647	156	0	103	259	0	0	0	0	259	906
17:15 17:30	21	223	0	244	0	310	98	408	652	102	0	83	185	0	0	0	0	185	837
17:30 17:45	24	246	0	270	0	318	83	401	671	97	0	59	156	0	0	0	0	156	827
17:45 18:00	27	191	1	219	0	260	61	321	540	82	0	33	115	1	0	0	1	116	656
<b>Total:</b>	<b>1368</b>	<b>7199</b>	<b>4</b>	<b>8571</b>	<b>1</b>	<b>7497</b>	<b>2683</b>	<b>10181</b>	<b>18752</b>	<b>2311</b>	<b>0</b>	<b>1592</b>	<b>3903</b>	<b>5</b>	<b>0</b>	<b>2</b>	<b>7</b>	<b>18752</b>	<b>22,662</b>

Note: U-Turns are included in Totals.



# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### COLONNADE RD @ PRINCE OF WALES DR

**Survey Date:** Tuesday, April 10, 2018

**WO No:** 37714

**Start Time:** 07:00

**Device:** Miovision

### Full Study Cyclist Volume

#### PRINCE OF WALES DR

#### COLONNADE RD

Time Period		PRINCE OF WALES DR			COLONNADE RD			Grand Total
		Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	
07:00	07:15	3	0	3	0	0	0	3
07:15	07:30	1	0	1	0	0	0	1
07:30	07:45	0	2	2	0	0	0	2
07:45	08:00	2	2	4	0	0	0	4
08:00	08:15	1	0	1	0	0	0	1
08:15	08:30	2	0	2	0	0	0	2
08:30	08:45	0	1	1	0	0	0	1
08:45	09:00	0	1	1	0	0	0	1
09:00	09:15	1	3	4	0	0	0	4
09:15	09:30	0	1	1	0	0	0	1
09:30	09:45	0	0	0	0	0	0	0
09:45	10:00	0	1	1	0	0	0	1
11:30	11:45	0	0	0	0	0	0	0
11:45	12:00	0	0	0	0	0	0	0
12:00	12:15	0	0	0	0	0	0	0
12:15	12:30	0	0	0	0	0	0	0
12:30	12:45	1	0	1	0	0	0	1
12:45	13:00	0	0	0	0	0	0	0
13:00	13:15	0	0	0	0	0	0	0
13:15	13:30	1	0	1	0	0	0	1
15:00	15:15	0	1	1	0	0	0	1
15:15	15:30	1	0	1	0	0	0	1
15:30	15:45	0	1	1	0	0	0	1
15:45	16:00	0	3	3	0	0	0	3
16:00	16:15	0	2	2	0	0	0	2
16:15	16:30	0	2	2	1	0	1	3
16:30	16:45	0	3	3	0	0	0	3
16:45	17:00	0	0	0	0	0	0	0
17:00	17:15	3	0	3	0	0	0	3
17:15	17:30	1	0	1	1	0	1	2
17:30	17:45	1	0	1	1	0	1	2
17:45	18:00	0	1	1	0	0	0	1
Total		18	24	42	3	0	3	45



# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### COLONNADE RD @ PRINCE OF WALES DR

**Survey Date:** Tuesday, April 10, 2018

**WO No:** 37714

**Start Time:** 07:00

**Device:** Miovision

### Full Study Pedestrian Volume

#### PRINCE OF WALES DR

#### COLONNADE RD

Time Period	NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	Total	Grand Total
07:00 07:15	0	0	0	0	0	0	0
07:15 07:30	0	0	0	0	0	0	0
07:30 07:45	0	0	0	0	0	0	0
07:45 08:00	0	0	0	0	0	0	0
08:00 08:15	0	0	0	0	0	0	0
08:15 08:30	0	0	0	0	0	0	0
08:30 08:45	0	0	0	0	0	0	0
08:45 09:00	0	0	0	0	0	0	0
09:00 09:15	0	0	0	1	0	1	1
09:15 09:30	0	0	0	0	0	0	0
09:30 09:45	0	0	0	0	0	0	0
09:45 10:00	0	0	0	0	0	0	0
11:30 11:45	0	0	0	0	0	0	0
11:45 12:00	0	0	0	0	0	0	0
12:00 12:15	0	0	0	0	0	0	0
12:15 12:30	0	0	0	0	0	0	0
12:30 12:45	0	0	0	0	0	0	0
12:45 13:00	0	0	0	0	0	0	0
13:00 13:15	0	0	0	0	0	0	0
13:15 13:30	0	0	0	0	0	0	0
15:00 15:15	0	0	0	0	0	0	0
15:15 15:30	0	0	0	0	0	0	0
15:30 15:45	0	0	0	1	0	1	1
15:45 16:00	0	0	0	0	0	0	0
16:00 16:15	0	0	0	0	0	0	0
16:15 16:30	0	0	0	0	0	0	0
16:30 16:45	1	0	1	0	0	0	1
16:45 17:00	0	0	0	0	0	0	0
17:00 17:15	0	0	0	0	0	0	0
17:15 17:30	0	0	0	0	0	0	0
17:30 17:45	0	0	0	0	0	0	0
17:45 18:00	0	0	0	1	0	1	1
<b>Total</b> .....	1	0	1	3	0	3	4



# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### COLONNADE RD @ PRINCE OF WALES DR

**Survey Date:** Tuesday, April 10, 2018

**WO No:** 37714

**Start Time:** 07:00

**Device:** Miovision

### Full Study Heavy Vehicles

#### PRINCE OF WALES DR

#### COLONNADE RD

Northbound

Southbound

Eastbound

Westbound

Time Period	Northbound			N TOT	Southbound			S TOT	STR TOT	Eastbound			E TOT	Westbound			W TOT	STR TOT	Grand Total
	LT	ST	RT		LT	ST	RT			LT	ST	RT		LT	ST	RT			
07:00 07:15	1	7	0	8	0	3	2	5	13	5	0	4	9	0	0	0	0	9	22
07:15 07:30	1	12	0	13	0	5	3	8	21	3	0	5	8	0	0	0	0	8	29
07:30 07:45	3	9	0	12	0	4	1	5	17	1	0	4	5	0	0	0	0	5	22
07:45 08:00	1	5	0	6	0	6	2	8	14	4	0	8	12	0	0	0	0	12	26
08:00 08:15	2	4	0	6	0	7	0	7	13	4	0	3	7	0	0	0	0	7	20
08:15 08:30	4	9	0	13	0	8	1	9	22	1	0	5	6	0	0	0	0	6	28
08:30 08:45	3	6	0	9	0	9	5	14	23	2	0	2	4	0	0	0	0	4	27
08:45 09:00	5	7	0	12	0	11	8	19	31	2	0	3	5	0	0	0	0	5	36
09:00 09:15	4	10	0	14	0	7	6	13	27	2	0	0	2	0	0	0	0	2	29
09:15 09:30	2	3	0	5	0	4	11	15	20	0	0	3	3	0	0	0	0	3	23
09:30 09:45	4	9	0	13	0	3	5	8	21	2	0	6	8	0	0	0	0	8	29
09:45 10:00	4	7	0	11	0	4	3	7	18	3	0	6	9	0	0	0	0	9	27
11:30 11:45	1	3	0	4	0	4	5	9	13	2	0	10	12	0	0	0	0	12	25
11:45 12:00	1	6	0	7	0	13	2	15	22	5	0	1	6	0	0	0	0	6	28
12:00 12:15	4	4	0	8	0	9	2	11	19	2	0	1	3	0	0	0	0	3	22
12:15 12:30	0	4	0	4	0	6	0	6	10	5	0	8	13	0	0	0	0	13	23
12:30 12:45	2	6	0	8	0	4	1	5	13	2	0	2	4	0	0	0	0	4	17
12:45 13:00	7	6	0	13	0	1	3	4	17	0	0	2	2	0	0	0	0	2	19
13:00 13:15	4	4	0	8	0	7	1	8	16	4	0	5	9	0	0	0	0	9	25
13:15 13:30	6	3	0	9	0	8	5	13	22	5	0	4	9	0	0	0	0	9	31
15:00 15:15	2	4	0	6	0	2	2	4	10	7	0	4	11	0	0	0	0	11	21
15:15 15:30	4	5	0	9	0	6	4	10	19	3	0	1	4	0	0	0	0	4	23
15:30 15:45	5	6	0	11	0	9	4	13	24	4	0	4	8	0	0	0	0	8	32
15:45 16:00	5	8	0	13	0	8	2	10	23	2	0	1	3	0	0	0	0	3	26
16:00 16:15	5	4	0	9	0	10	6	16	25	1	0	2	3	0	0	0	0	3	28
16:15 16:30	1	6	0	7	0	7	4	11	18	1	0	2	3	0	0	0	0	3	21
16:30 16:45	1	3	0	4	0	6	3	9	13	2	0	0	2	0	0	0	0	2	15
16:45 17:00	2	1	0	3	0	6	3	9	12	0	0	2	2	0	0	0	0	2	14
17:00 17:15	4	1	0	5	0	8	3	11	16	2	0	0	2	0	0	0	0	2	18
17:15 17:30	1	5	0	6	0	3	4	7	13	2	0	2	4	0	0	0	0	4	17
17:30 17:45	1	1	0	2	0	5	7	12	14	0	0	1	1	0	0	0	0	1	15
17:45 18:00	5	0	0	5	0	1	4	5	10	1	0	0	1	0	0	0	0	1	11
<b>Total:</b> None	95	168	0	263	0	194	112	306	569	79	0	101	180	0	0	0	0	180	749





# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### COLONNADE RD @ PRINCE OF WALES DR

**Survey Date:** Tuesday, April 10, 2018

**WO No:** 37714

**Start Time:** 07:00

**Device:** Miovision

### Full Study 15 Minute U-Turn Total

PRINCE OF WALES DR

COLONNADE RD

Time Period		Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn Total	Total
07:00	07:15	0	0	0	0	0
07:15	07:30	0	0	0	0	0
07:30	07:45	0	0	0	0	0
07:45	08:00	0	0	0	0	0
08:00	08:15	0	0	0	0	0
08:15	08:30	0	0	0	0	0
08:30	08:45	0	0	0	0	0
08:45	09:00	0	0	0	0	0
09:00	09:15	0	0	0	0	0
09:15	09:30	0	0	0	0	0
09:30	09:45	0	0	0	0	0
09:45	10:00	0	0	0	0	0
11:30	11:45	0	0	0	0	0
11:45	12:00	0	0	0	1	1
12:00	12:15	0	0	0	0	0
12:15	12:30	0	0	0	0	0
12:30	12:45	0	0	0	0	0
12:45	13:00	0	0	0	0	0
13:00	13:15	0	0	0	0	0
13:15	13:30	0	0	0	0	0
15:00	15:15	0	0	0	0	0
15:15	15:30	0	0	0	0	0
15:30	15:45	0	0	0	0	0
15:45	16:00	0	0	0	0	0
16:00	16:15	0	0	0	0	0
16:15	16:30	0	0	0	0	0
16:30	16:45	0	0	0	0	0
16:45	17:00	0	0	0	0	0
17:00	17:15	0	0	0	0	0
17:15	17:30	0	0	0	0	0
17:30	17:45	0	0	0	0	0
17:45	18:00	0	0	0	0	0
Total		0	0	0	1	1

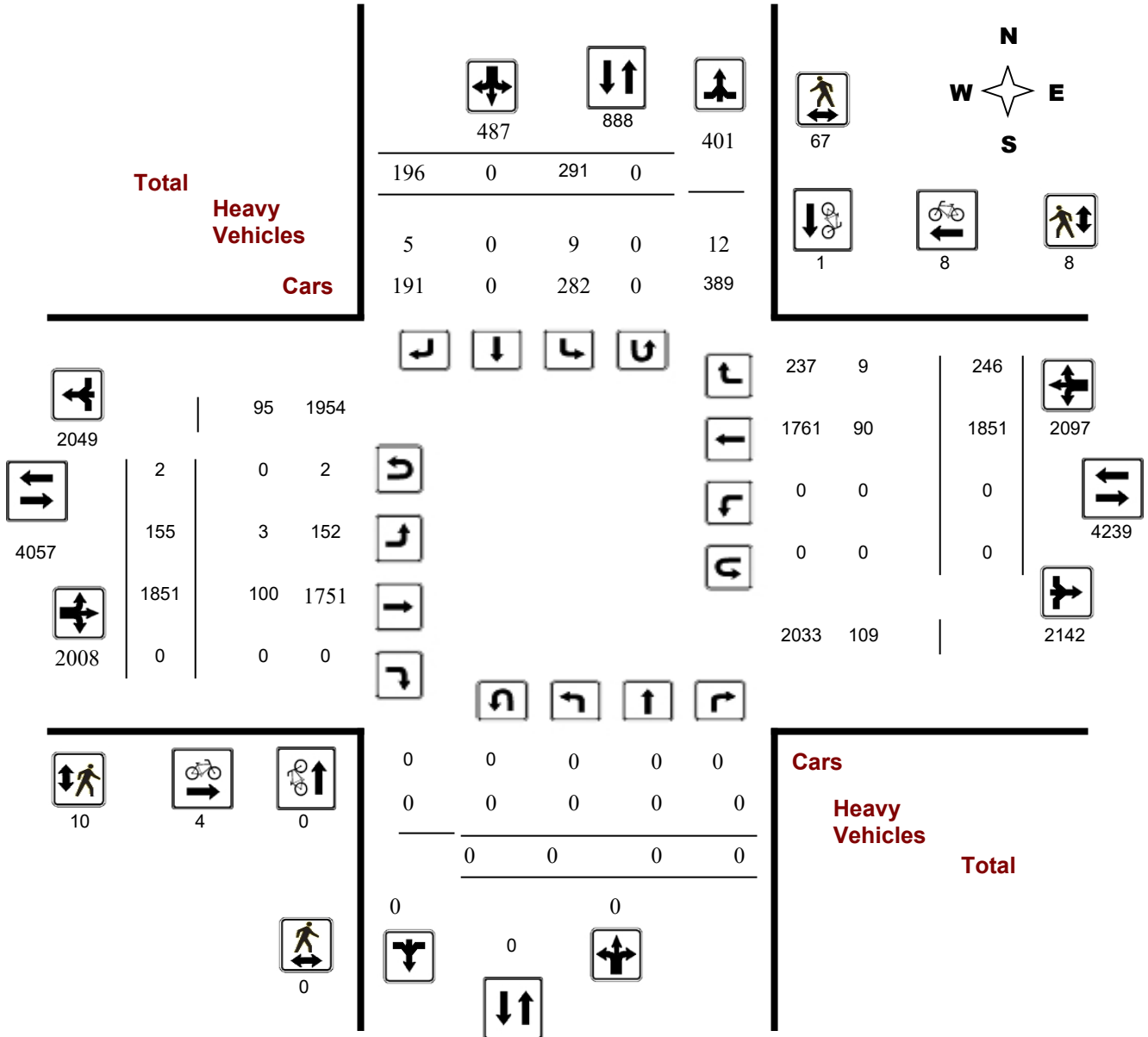
**Survey Date:** Tuesday, April 10, 2018

**WO No:** 37715

**Start Time:** 07:00

**Device:** Miovision

### Full Study Diagram



## Turning Movement Count - Study Results

### CITIPPLACE DR @ COLONNADE RD

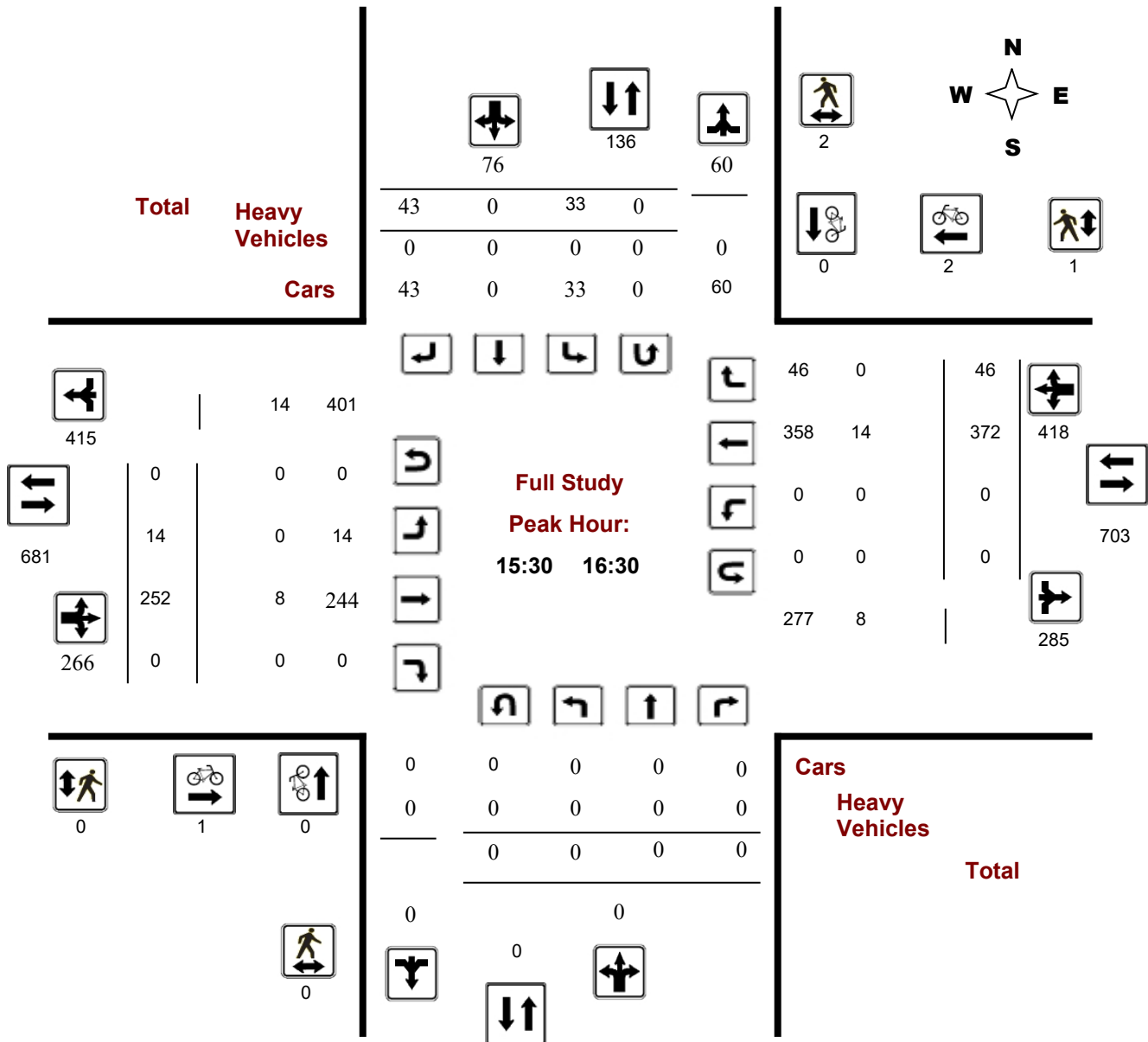
**Survey Date:** Tuesday, April 10, 2018

**WO No:** 37715

**Start Time:** 07:00

**Device:** Miovision

### Full Study Peak Hour Diagram





# Transportation Services - Traffic Services

## Turning Movement Count - Peak Hour Diagram

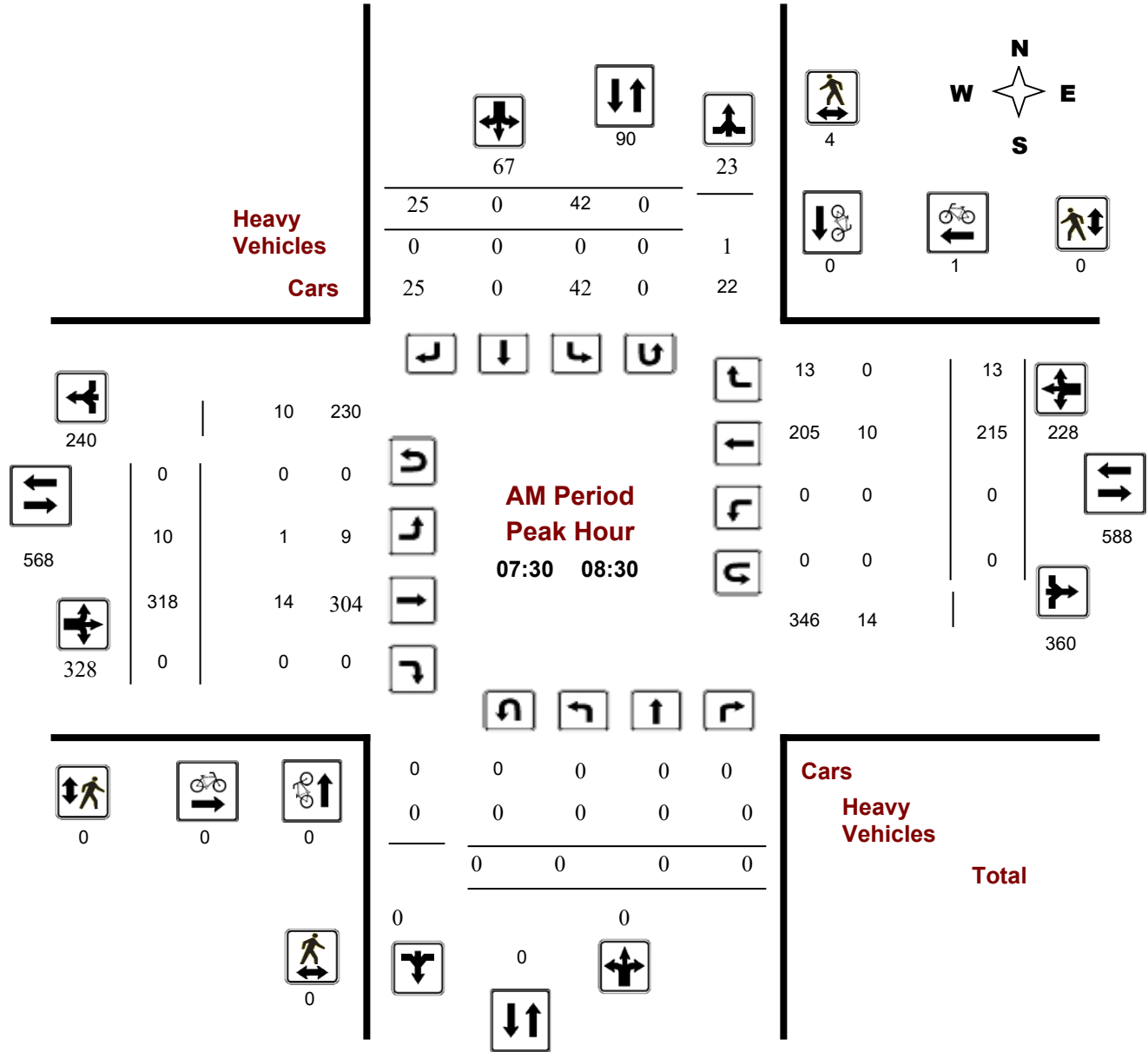
### CITIPPLACE DR @ COLONNADE RD

**Survey Date:** Tuesday, April 10, 2018

**Start Time:** 07:00

**WO No:** 37715

**Device:** Miovision



**Comments**



# Transportation Services - Traffic Services

## Turning Movement Count - Peak Hour Diagram

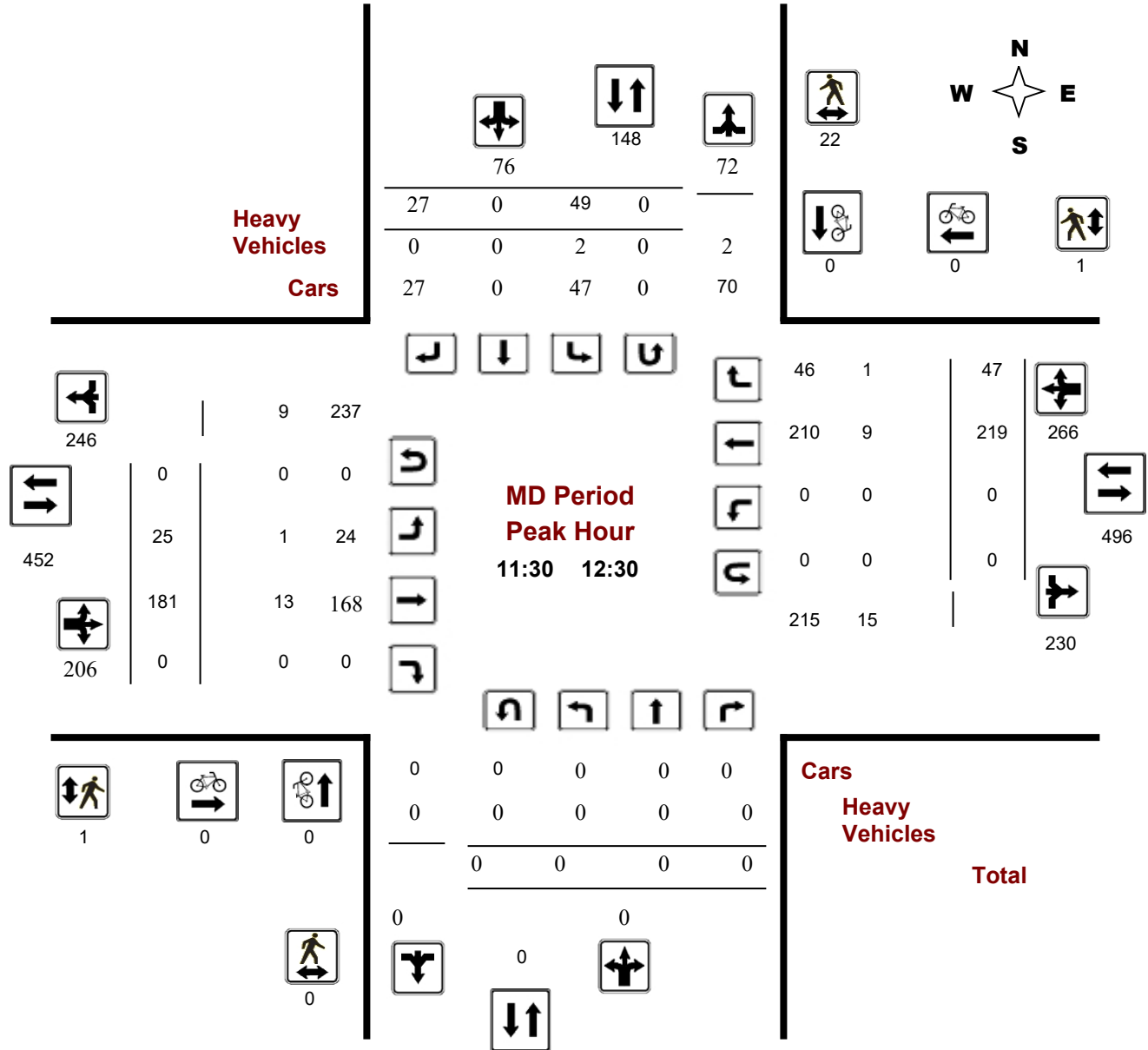
### CITIPPLACE DR @ COLONNADE RD

**Survey Date:** Tuesday, April 10, 2018

**Start Time:** 07:00

**WO No:** 37715

**Device:** Miovision



**Comments**

## Turning Movement Count - Peak Hour Diagram

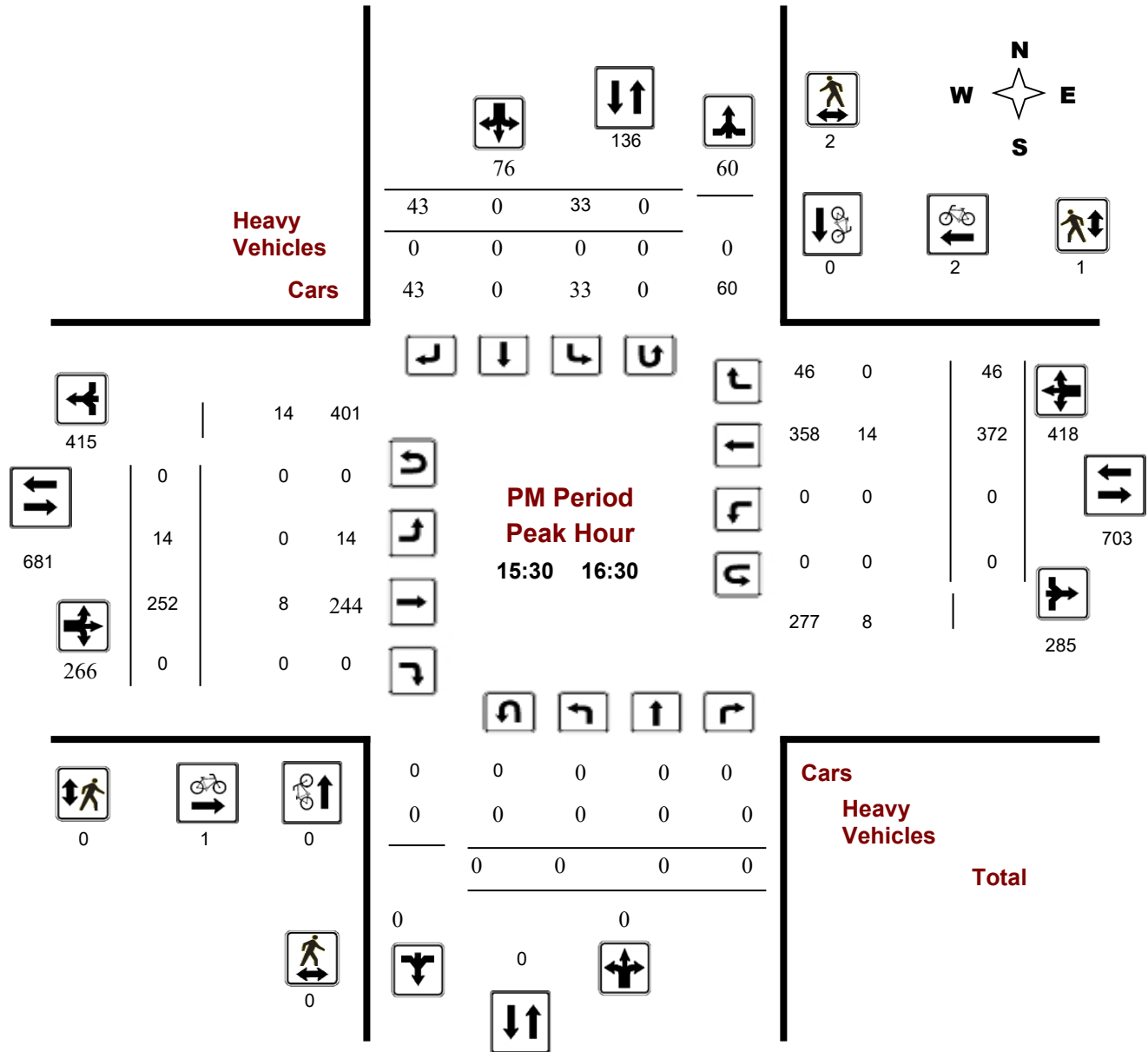
### CITIPPLACE DR @ COLONNADE RD

**Survey Date:** Tuesday, April 10, 2018

**Start Time:** 07:00

**WO No:** 37715

**Device:** Miovision



**Comments**



# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### CITIPPLACE DR @ COLONNADE RD

**Survey Date:** Tuesday, April 10, 2018

**WO No:** 37715

**Start Time:** 07:00

**Device:** Miovision

### Full Study Summary (8 HR Standard)

**Survey Date:** Tuesday, April 10, 2018

**Total Observed U-Turns**  
 Northbound: 0      Southbound: 0  
 Eastbound: 2      Westbound: 0

**AADT Factor**  
 .90

Period	Northbound				Southbound				STR TOT	Eastbound				Westbound				STR TOT	Grand Total
	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT		LT	ST	RT	EB TOT	LT	ST	RT	WB TOT		
07:00 08:00	0	0	0	0	52	0	23	75	75	9	258	0	267	0	153	13	166	433	508
08:00 09:00	0	0	0	0	39	0	21	60	60	17	281	0	298	0	219	18	237	535	595
09:00 10:00	0	0	0	0	28	0	20	48	48	18	141	0	159	0	152	22	174	333	381
11:30 12:30	0	0	0	0	49	0	27	76	76	25	181	0	206	0	219	47	266	472	548
12:30 13:30	0	0	0	0	31	0	17	48	48	24	216	0	240	0	180	19	199	439	487
15:00 16:00	0	0	0	0	40	0	40	80	80	20	210	0	230	0	293	39	332	562	642
16:00 17:00	0	0	0	0	19	0	29	48	48	22	267	0	289	0	347	48	395	684	732
17:00 18:00	0	0	0	0	33	0	19	52	52	20	297	0	317	0	288	40	328	645	697
<b>Sub Total</b>	0	0	0	0	291	0	196	487	487	155	1851	0	2006	0	1851	246	2097	4103	4590
<b>U Turns</b>	0			0	0			0	0	2			2	0			0	2	2
<b>Total</b>	0	0	0	0	291	0	196	487	487	157	1851	0	2008	0	1851	246	2097	4105	4592
<b>EQ 12Hr</b>	0	0	0	0	404	0	272	676	676	218	2573	0	2791	0	2573	342	2915	5706	6382
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.																	<b>1.39</b>		
<b>AVG 12Hr</b>	0	0	0	0	364	0	245	609	609	196	2316	0	2512	0	2316	308	2624	5136	5745
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.																	<b>.90</b>		
<b>AVG 24Hr</b>	0	0	0	0	477	0	321	798	798	257	3034	0	3291	0	3034	403	3437	6728	7526
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.																	<b>1.31</b>		

Note: U-Turns provided for approach totals. Refer to 'U-Turn' Report for specific breakdown.



# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### CITIPALCE DR @ COLONNADE RD

**Survey Date:** Tuesday, April 10, 2018

**WO No:** 37715

**Start Time:** 07:00

**Device:** Miovision

### Full Study 15 Minute Increments

Time Period	Northbound				Southbound				Eastbound				Westbound				Grand Total		
	LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT		W TOT	STR TOT
07:00 07:15	0	0	0	0	12	0	6	18	18	3	45	0	48	0	28	1	29	77	95
07:15 07:30	0	0	0	0	17	0	6	23	23	2	58	0	60	0	37	7	44	104	127
07:30 07:45	0	0	0	0	12	0	4	16	16	3	75	0	78	0	38	3	41	119	135
07:45 08:00	0	0	0	0	11	0	7	18	18	1	80	0	81	0	50	2	52	133	151
08:00 08:15	0	0	0	0	10	0	1	11	11	2	90	0	92	0	56	4	60	152	163
08:15 08:30	0	0	0	0	9	0	13	22	22	4	73	0	77	0	71	4	75	152	174
08:30 08:45	0	0	0	0	5	0	2	7	7	6	60	0	66	0	44	3	47	113	120
08:45 09:00	0	0	0	0	15	0	5	20	20	6	58	0	64	0	48	7	55	119	139
09:00 09:15	0	0	0	0	10	0	3	13	13	7	49	0	56	0	41	3	44	100	113
09:15 09:30	0	0	0	0	9	0	6	15	15	3	33	0	36	0	46	9	55	91	106
09:30 09:45	0	0	0	0	3	0	8	11	11	3	23	0	26	0	26	4	30	56	67
09:45 10:00	0	0	0	0	6	0	3	9	9	5	36	0	41	0	39	6	45	86	95
11:30 11:45	0	0	0	0	13	0	7	20	20	9	48	0	57	0	54	6	60	117	137
11:45 12:00	0	0	0	0	11	0	7	18	18	3	41	0	44	0	58	6	64	108	126
12:00 12:15	0	0	0	0	13	0	6	19	19	6	41	0	47	0	54	19	73	120	139
12:15 12:30	0	0	0	0	12	0	7	19	19	7	51	0	58	0	53	16	69	127	146
12:30 12:45	0	0	0	0	6	0	3	9	9	10	46	0	56	0	52	6	58	114	123
12:45 13:00	0	0	0	0	8	0	0	8	8	7	52	0	59	0	48	5	53	112	120
13:00 13:15	0	0	0	0	11	0	7	18	18	5	58	0	63	0	45	6	51	114	132
13:15 13:30	0	0	0	0	6	0	7	13	13	3	60	0	63	0	35	2	37	100	113
15:00 15:15	0	0	0	0	8	0	9	17	17	5	47	0	52	0	59	9	68	120	137
15:15 15:30	0	0	0	0	7	0	9	16	16	9	55	0	64	0	63	9	72	136	152
15:30 15:45	0	0	0	0	17	0	10	27	27	2	51	0	53	0	84	10	94	147	174
15:45 16:00	0	0	0	0	8	0	12	20	20	4	57	0	61	0	87	11	98	159	179
16:00 16:15	0	0	0	0	3	0	10	13	13	4	89	0	93	0	116	15	131	224	237
16:15 16:30	0	0	0	0	5	0	11	16	16	4	55	0	59	0	85	10	95	154	170
16:30 16:45	0	0	0	0	7	0	5	12	12	4	67	0	71	0	65	11	76	147	159
16:45 17:00	0	0	0	0	4	0	3	7	7	10	56	0	66	0	81	12	93	159	166
17:00 17:15	0	0	0	0	11	0	5	16	16	7	104	0	111	0	82	6	88	199	215
17:15 17:30	0	0	0	0	9	0	8	17	17	3	82	0	85	0	89	16	105	190	207
17:30 17:45	0	0	0	0	4	0	4	8	8	6	61	0	67	0	78	6	84	151	159
17:45 18:00	0	0	0	0	9	0	2	11	11	4	50	0	54	0	39	12	51	105	116
<b>Total:</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>291</b>	<b>0</b>	<b>196</b>	<b>487</b>	<b>487</b>	<b>157</b>	<b>1851</b>	<b>0</b>	<b>2008</b>	<b>0</b>	<b>1851</b>	<b>246</b>	<b>2097</b>	<b>487</b>	<b>4,592</b>

Note: U-Turns are included in Totals.





# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### CITIPPLACE DR @ COLONNADE RD

**Survey Date:** Tuesday, April 10, 2018

**WO No:** 37715

**Start Time:** 07:00

**Device:** Miovision

### Full Study Cyclist Volume

Time Period	Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	Grand Total
07:00 07:15	0	0	0	0	0	0	0
07:15 07:30	0	0	0	0	0	0	0
07:30 07:45	0	0	0	0	0	0	0
07:45 08:00	0	0	0	0	0	0	0
08:00 08:15	0	0	0	0	1	1	1
08:15 08:30	0	0	0	0	0	0	0
08:30 08:45	0	0	0	0	0	0	0
08:45 09:00	0	0	0	0	1	1	1
09:00 09:15	0	0	0	0	0	0	0
09:15 09:30	0	0	0	0	1	1	1
09:30 09:45	0	0	0	0	0	0	0
09:45 10:00	0	1	1	0	0	0	1
11:30 11:45	0	0	0	0	0	0	0
11:45 12:00	0	0	0	0	0	0	0
12:00 12:15	0	0	0	0	0	0	0
12:15 12:30	0	0	0	0	0	0	0
12:30 12:45	0	0	0	0	0	0	0
12:45 13:00	0	0	0	0	0	0	0
13:00 13:15	0	0	0	1	1	2	2
13:15 13:30	0	0	0	0	0	0	0
15:00 15:15	0	0	0	0	1	1	1
15:15 15:30	0	0	0	0	0	0	0
15:30 15:45	0	0	0	0	0	0	0
15:45 16:00	0	0	0	0	1	1	1
16:00 16:15	0	0	0	1	1	2	2
16:15 16:30	0	0	0	0	0	0	0
16:30 16:45	0	0	0	1	0	1	1
16:45 17:00	0	0	0	0	0	0	0
17:00 17:15	0	0	0	0	0	0	0
17:15 17:30	0	0	0	1	1	2	2
17:30 17:45	0	0	0	0	0	0	0
17:45 18:00	0	0	0	0	0	0	0
<b>Total</b>	0	1	1	4	8	12	13



# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### CITIPPLACE DR @ COLONNADE RD

**Survey Date:** Tuesday, April 10, 2018

**WO No:** 37715

**Start Time:** 07:00

**Device:** Miovision

### Full Study Pedestrian Volume

Time Period	NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	Total	Grand Total
07:00 07:15	0	0	0	0	0	0	0
07:15 07:30	0	0	0	0	0	0	0
07:30 07:45	0	2	2	0	0	0	2
07:45 08:00	0	0	0	0	0	0	0
08:00 08:15	0	2	2	0	0	0	2
08:15 08:30	0	0	0	0	0	0	0
08:30 08:45	0	2	2	0	0	0	2
08:45 09:00	0	3	3	1	0	1	4
09:00 09:15	0	3	3	0	0	0	3
09:15 09:30	0	0	0	1	0	1	1
09:30 09:45	0	0	0	0	0	0	0
09:45 10:00	0	1	1	0	0	0	1
11:30 11:45	0	7	7	0	1	1	8
11:45 12:00	0	4	4	1	0	1	5
12:00 12:15	0	2	2	0	0	0	2
12:15 12:30	0	9	9	0	0	0	9
12:30 12:45	0	8	8	0	0	0	8
12:45 13:00	0	5	5	0	0	0	5
13:00 13:15	0	2	2	0	0	0	2
13:15 13:30	0	2	2	0	2	2	4
15:00 15:15	0	0	0	0	0	0	0
15:15 15:30	0	2	2	0	0	0	2
15:30 15:45	0	0	0	0	0	0	0
15:45 16:00	0	0	0	0	0	0	0
16:00 16:15	0	1	1	0	0	0	1
16:15 16:30	0	1	1	0	1	1	2
16:30 16:45	0	3	3	0	1	1	4
16:45 17:00	0	2	2	1	1	2	4
17:00 17:15	0	2	2	3	0	3	5
17:15 17:30	0	2	2	0	0	0	2
17:30 17:45	0	1	1	2	1	3	4
17:45 18:00	0	1	1	1	1	2	3
<b>Total</b> .....	0	67	67	10	8	18	85



# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### CITIPPLACE DR @ COLONNADE RD

**Survey Date:** Tuesday, April 10, 2018

**WO No:** 37715

**Start Time:** 07:00

**Device:** Miovision

### Full Study Heavy Vehicles

Time Period	Northbound				Southbound				Eastbound				Westbound				Grand Total		
	LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT		W TOT	STR TOT
07:00 07:15	0	0	0	0	0	0	0	0	0	0	5	0	5	0	3	0	3	8	8
07:15 07:30	0	0	0	0	0	0	0	0	0	0	3	0	3	0	1	0	1	4	4
07:30 07:45	0	0	0	0	0	0	0	0	0	0	3	0	3	0	3	0	3	6	6
07:45 08:00	0	0	0	0	0	0	0	0	0	0	3	0	3	0	1	0	1	4	4
08:00 08:15	0	0	0	0	0	0	0	0	0	0	4	0	4	0	1	0	1	5	5
08:15 08:30	0	0	0	0	0	0	0	0	0	1	4	0	5	0	5	0	5	10	10
08:30 08:45	0	0	0	0	0	0	1	1	1	0	2	0	2	0	2	0	2	4	5
08:45 09:00	0	0	0	0	2	0	1	3	3	0	4	0	4	0	7	1	8	12	15
09:00 09:15	0	0	0	0	0	0	0	0	0	1	2	0	3	0	3	1	4	7	7
09:15 09:30	0	0	0	0	2	0	1	3	3	0	6	0	6	0	5	3	8	14	17
09:30 09:45	0	0	0	0	0	0	1	1	1	0	5	0	5	0	2	0	2	7	8
09:45 10:00	0	0	0	0	1	0	0	1	1	0	4	0	4	0	3	1	4	8	9
11:30 11:45	0	0	0	0	1	0	0	1	1	1	5	0	6	0	4	1	5	11	12
11:45 12:00	0	0	0	0	1	0	0	1	1	0	2	0	2	0	3	0	3	5	6
12:00 12:15	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	2	2
12:15 12:30	0	0	0	0	0	0	0	0	0	0	5	0	5	0	1	0	1	6	6
12:30 12:45	0	0	0	0	0	0	0	0	0	0	2	0	2	0	1	0	1	3	3
12:45 13:00	0	0	0	0	0	0	0	0	0	0	2	0	2	0	4	2	6	8	8
13:00 13:15	0	0	0	0	1	0	0	1	1	0	5	0	5	0	3	0	3	8	9
13:15 13:30	0	0	0	0	1	0	1	2	2	0	4	0	4	0	3	0	3	7	9
15:00 15:15	0	0	0	0	0	0	0	0	0	0	5	0	5	0	2	0	2	7	7
15:15 15:30	0	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	1	2	2
15:30 15:45	0	0	0	0	0	0	0	0	0	0	2	0	2	0	3	0	3	5	5
15:45 16:00	0	0	0	0	0	0	0	0	0	0	1	0	1	0	4	0	4	5	5
16:00 16:15	0	0	0	0	0	0	0	0	0	0	3	0	3	0	6	0	6	9	9
16:15 16:30	0	0	0	0	0	0	0	0	0	0	2	0	2	0	1	0	1	3	3
16:30 16:45	0	0	0	0	0	0	0	0	0	0	2	0	2	0	3	0	3	5	5
16:45 17:00	0	0	0	0	0	0	0	0	0	0	2	0	2	0	1	0	1	3	3
17:00 17:15	0	0	0	0	0	0	0	0	0	0	3	0	3	0	3	0	3	6	6
17:15 17:30	0	0	0	0	0	0	0	0	0	0	3	0	3	0	4	0	4	7	7
17:30 17:45	0	0	0	0	0	0	0	0	0	0	3	0	3	0	1	0	1	4	4
17:45 18:00	0	0	0	0	0	0	0	0	0	0	2	0	2	0	5	0	5	7	7
Total: None	0	0	0	0	9	0	5	14	14	3	100	0	103	0	90	9	99	202	216



# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### CITIPPLACE DR @ COLONNADE RD

**Survey Date:** Tuesday, April 10, 2018

**WO No:** 37715

**Start Time:** 07:00

**Device:** Miovision

### Full Study 15 Minute U-Turn Total

Time Period		Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn Total	Total
07:00	07:15	0	0	0	0	0
07:15	07:30	0	0	0	0	0
07:30	07:45	0	0	0	0	0
07:45	08:00	0	0	0	0	0
08:00	08:15	0	0	0	0	0
08:15	08:30	0	0	0	0	0
08:30	08:45	0	0	0	0	0
08:45	09:00	0	0	1	0	1
09:00	09:15	0	0	0	0	0
09:15	09:30	0	0	0	0	0
09:30	09:45	0	0	0	0	0
09:45	10:00	0	0	0	0	0
11:30	11:45	0	0	0	0	0
11:45	12:00	0	0	0	0	0
12:00	12:15	0	0	0	0	0
12:15	12:30	0	0	0	0	0
12:30	12:45	0	0	1	0	1
12:45	13:00	0	0	0	0	0
13:00	13:15	0	0	0	0	0
13:15	13:30	0	0	0	0	0
15:00	15:15	0	0	0	0	0
15:15	15:30	0	0	0	0	0
15:30	15:45	0	0	0	0	0
15:45	16:00	0	0	0	0	0
16:00	16:15	0	0	0	0	0
16:15	16:30	0	0	0	0	0
16:30	16:45	0	0	0	0	0
16:45	17:00	0	0	0	0	0
17:00	17:15	0	0	0	0	0
17:15	17:30	0	0	0	0	0
17:30	17:45	0	0	0	0	0
17:45	18:00	0	0	0	0	0
Total		0	0	2	0	2

## Turning Movement Count - Study Results

### FISHER AVE @ PRINCE OF WALES DR

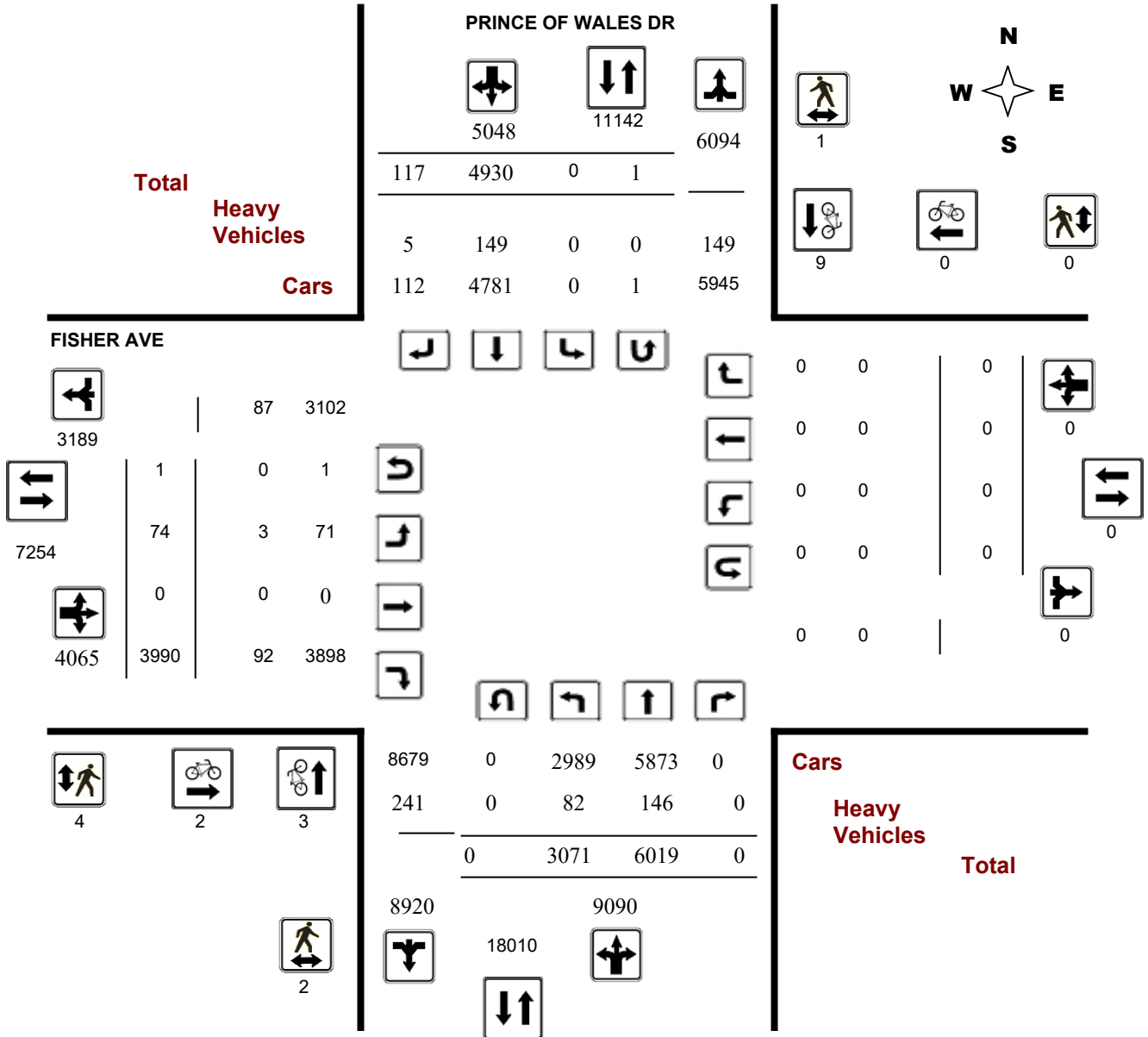
**Survey Date:** Wednesday, April 06, 2016

**WO No:** 35850

**Start Time:** 07:00

**Device:** Miovision

### Full Study Diagram



## Turning Movement Count - Study Results

### FISHER AVE @ PRINCE OF WALES DR

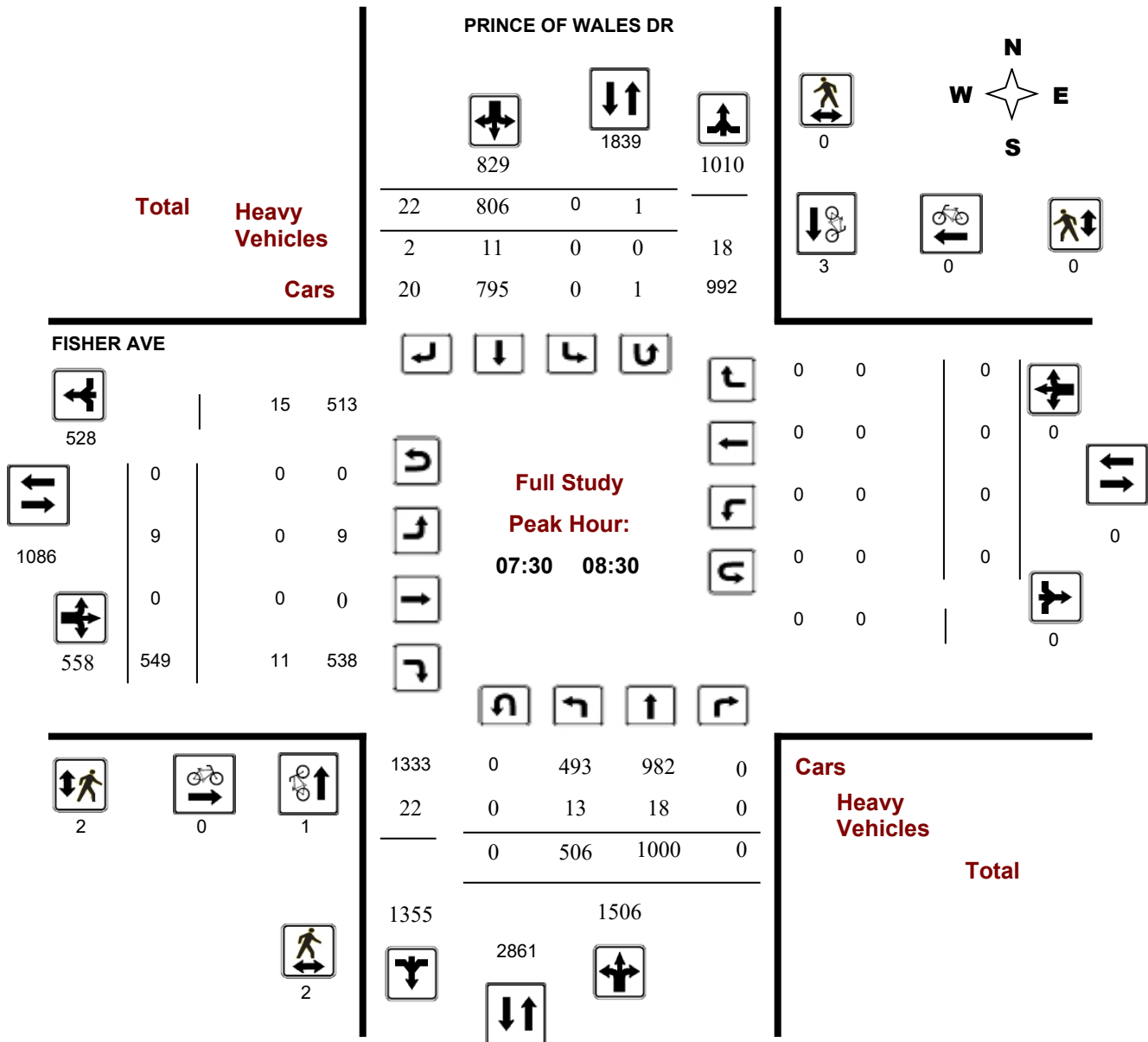
**Survey Date:** Wednesday, April 06, 2016

**WO No:** 35850

**Start Time:** 07:00

**Device:** Miovision

### Full Study Peak Hour Diagram



## Turning Movement Count - Peak Hour Diagram

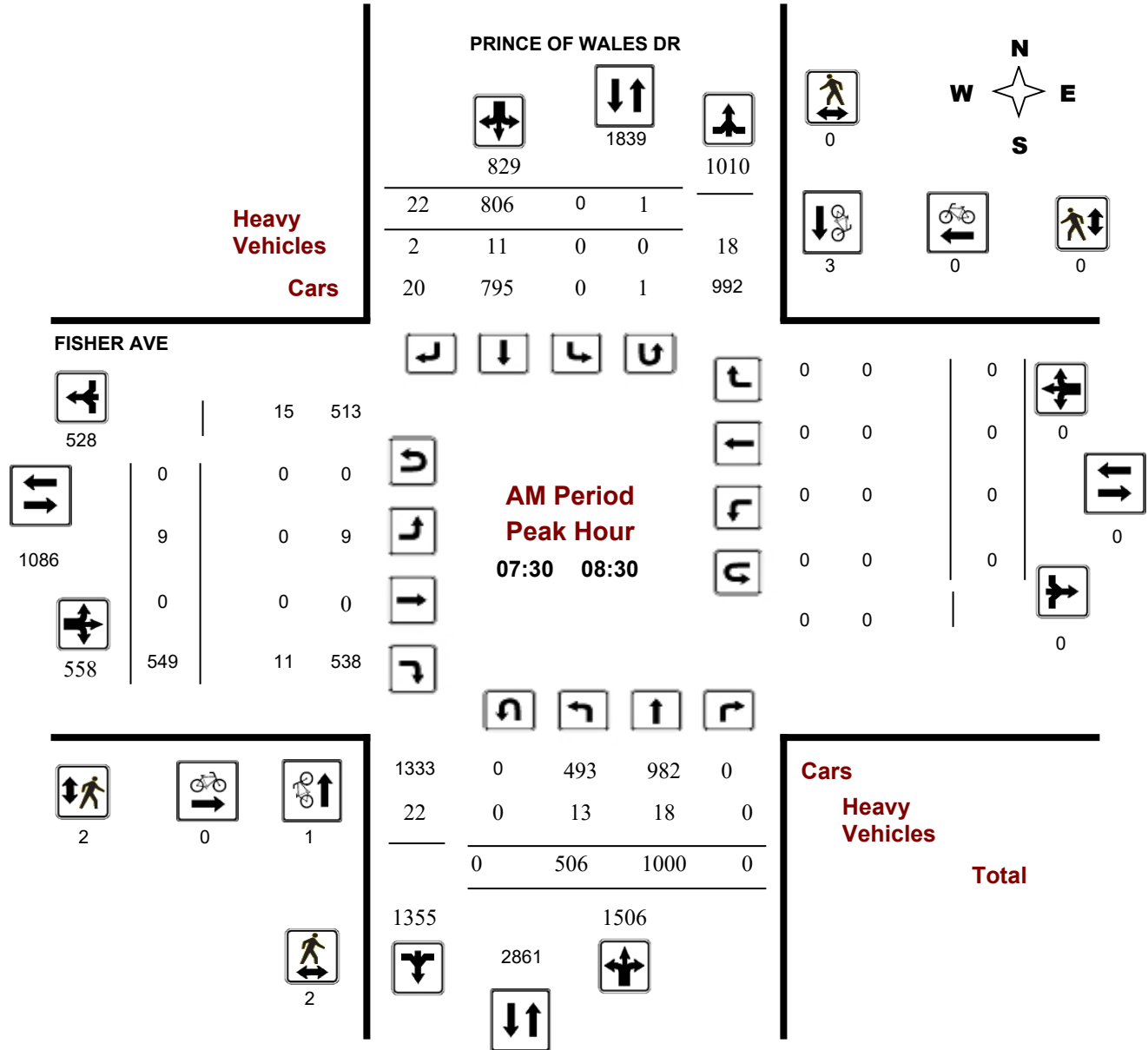
### FISHER AVE @ PRINCE OF WALES DR

**Survey Date:** Wednesday, April 06, 2016

**Start Time:** 07:00

**WO No:** 35850

**Device:** Miovision



## Turning Movement Count - Peak Hour Diagram

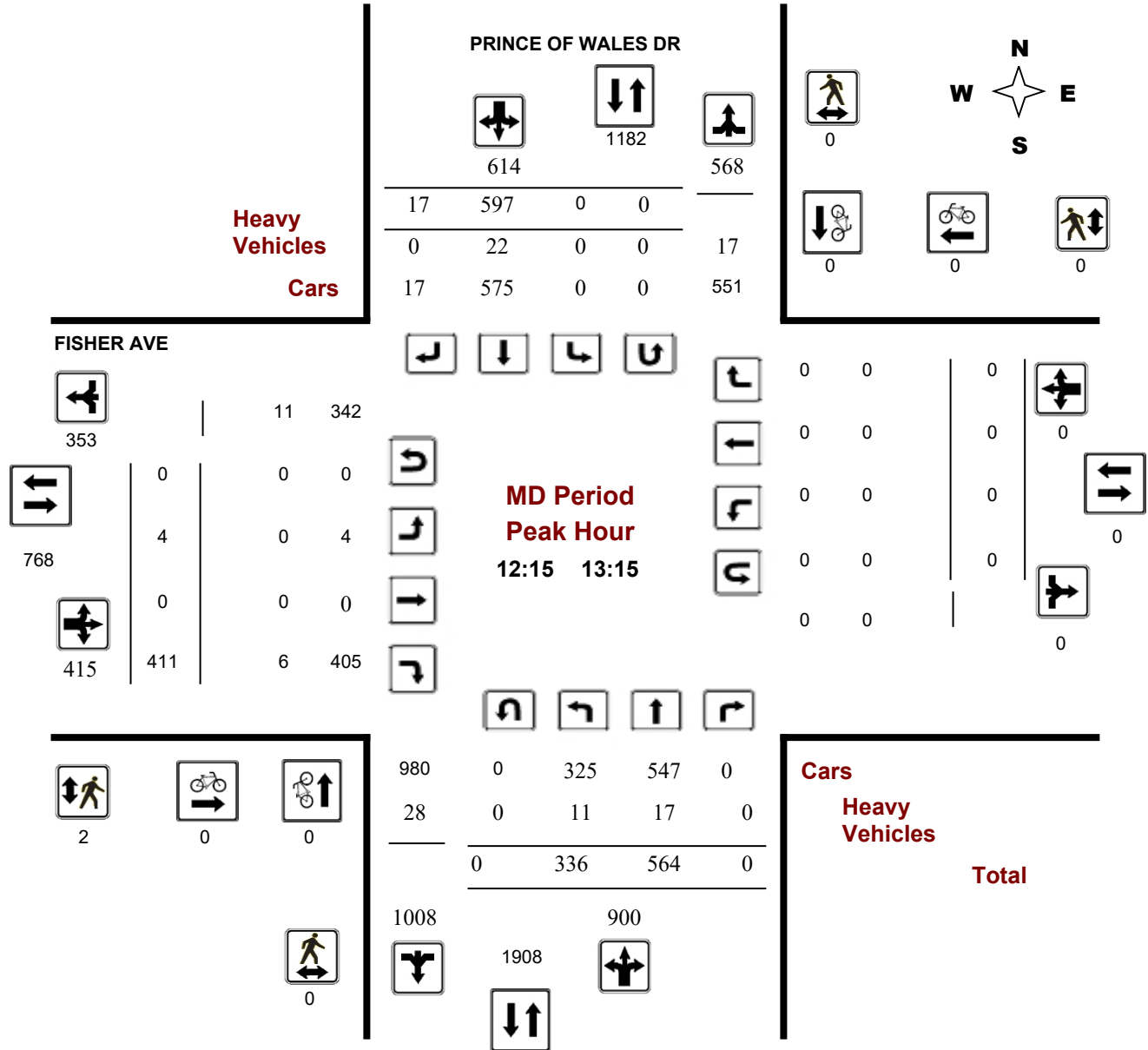
### FISHER AVE @ PRINCE OF WALES DR

**Survey Date:** Wednesday, April 06, 2016

**Start Time:** 07:00

**WO No:** 35850

**Device:** Miovision





## Turning Movement Count - Peak Hour Diagram

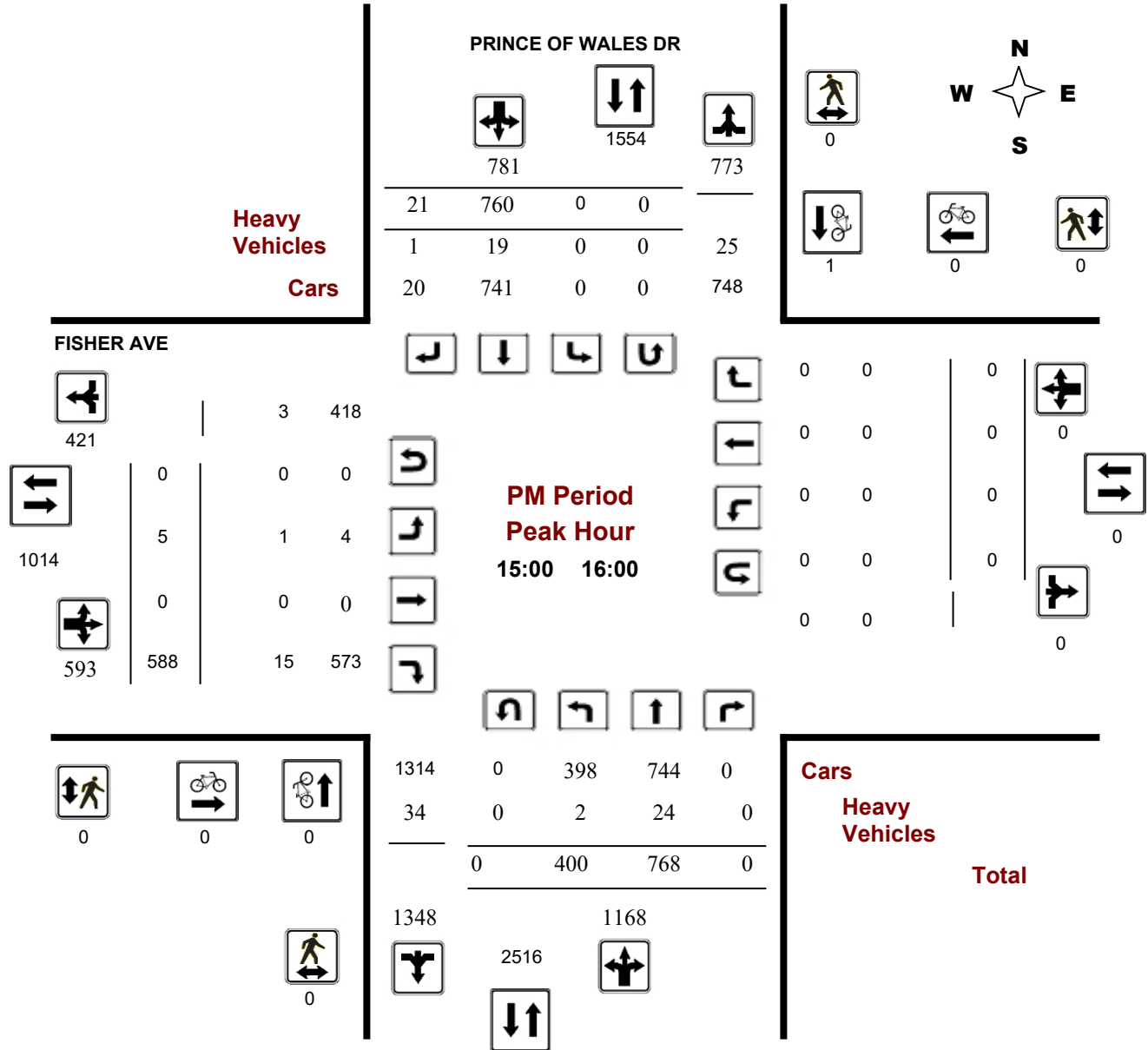
### FISHER AVE @ PRINCE OF WALES DR

**Survey Date:** Wednesday, April 06, 2016

**Start Time:** 07:00

**WO No:** 35850

**Device:** Miovision





# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### FISHER AVE @ PRINCE OF WALES DR

**Survey Date:** Wednesday, April 06, 2016

**WO No:** 35850

**Start Time:** 07:00

**Device:** Miovision

### Full Study Summary (8 HR Standard)

**Survey Date:** Wednesday, April 06, 2016

**Total Observed U-Turns**

**AADT Factor**

Northbound: 0      Southbound: 1  
 Eastbound: 1      Westbound: 0

.90

**PRINCE OF WALES DR**

**FISHER AVE**

Period	Northbound					Southbound					Eastbound					Westbound					Grand Total
	LT	ST	RT	NB TOT	STR TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	STR TOT	LT	ST	RT	WB TOT	STR TOT	
07:00 08:00	459	984	0	1443	2147	0	684	20	704	14137	10	0	453	463	4064	0	0	0	0	463	2610
08:00 09:00	432	896	0	1328	2156	0	815	13	828	2156	8	0	543	551	4064	0	0	0	0	551	2707
09:00 10:00	331	744	0	1075	1700	0	610	15	625	1700	5	0	364	369	4064	0	0	0	0	369	2069
11:30 12:30	334	559	0	893	1449	0	536	20	556	1449	5	0	372	377	4064	0	0	0	0	377	1826
12:30 13:30	323	557	0	880	1494	0	599	15	614	1494	5	0	386	391	4064	0	0	0	0	391	1885
15:00 16:00	400	768	0	1168	1949	0	760	21	781	1949	5	0	588	593	4064	0	0	0	0	593	2542
16:00 17:00	411	823	0	1234	1744	0	503	7	510	1744	16	0	665	681	4064	0	0	0	0	681	2425
17:00 18:00	381	688	0	1069	1498	0	423	6	429	1498	20	0	619	639	4064	0	0	0	0	639	2137
<b>Sub Total</b>	3071	6019	0	9090	14137	0	4930	117	5047	14137	74	0	3990	4064	4064	0	0	0	0	4064	18201
<b>U Turns</b>	0			0	1				1	1	1		1	0					0	1	2
<b>Total</b>	3071	6019	0	9090	14138	1	4930	117	5048	14138	75	0	3990	4065	4065	0	0	0	0	4065	18203
<b>EQ 12Hr</b>	4269	8366	0	12635	19652	1	6853	163	7017	19652	104	0	5546	5650	5650	0	0	0	0	5650	25302
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.															<b>1.39</b>						
<b>AVG 12Hr</b>	3842	7529	0	11371	17687	1	6168	147	6316	17687	94	0	4991	5085	5085	0	0	0	0	5085	22772
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.															<b>.90</b>						
<b>AVG 24Hr</b>	5033	9863	0	14896	23170	1	8080	193	8274	23170	123	0	6538	6661	6661	0	0	0	0	6661	29831
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.															<b>1.31</b>						

Note: U-Turns provided for approach totals. Refer to 'U-Turn' Report for specific breakdown.



# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### FISHER AVE @ PRINCE OF WALES DR

**Survey Date:** Wednesday, April 06, 2016

**WO No:** 35850

**Start Time:** 07:00

**Device:** Miovision

### Full Study 15 Minute Increments

#### PRINCE OF WALES DR

#### FISHER AVE

Northbound

Southbound

Eastbound

Westbound

Time Period	LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00 07:15	96	223	0	319	0	117	1	118	437	1	0	78	79	0	0	0	0	79	516
07:15 07:30	110	252	0	362	0	177	4	181	543	3	0	87	90	0	0	0	0	90	633
07:30 07:45	128	270	0	398	0	176	5	181	579	4	0	137	141	0	0	0	0	141	720
07:45 08:00	125	239	0	364	0	214	10	224	588	2	0	151	153	0	0	0	0	153	741
08:00 08:15	146	248	0	394	1	198	4	203	597	1	0	136	137	0	0	0	0	137	734
08:15 08:30	107	243	0	350	0	218	3	221	571	2	0	125	127	0	0	0	0	127	698
08:30 08:45	100	211	0	311	0	207	3	210	521	2	0	145	147	0	0	0	0	147	668
08:45 09:00	79	194	0	273	0	192	3	195	468	3	0	137	140	0	0	0	0	140	608
09:00 09:15	100	211	0	311	0	179	3	182	493	1	0	104	105	0	0	0	0	105	598
09:15 09:30	90	193	0	283	0	166	3	169	452	2	0	90	92	0	0	0	0	92	544
09:30 09:45	70	176	0	246	0	130	3	133	379	2	0	90	92	0	0	0	0	92	471
09:45 10:00	71	164	0	235	0	135	6	141	376	0	0	80	80	0	0	0	0	80	456
11:30 11:45	82	139	0	221	0	135	9	144	365	1	0	90	91	0	0	0	0	91	456
11:45 12:00	85	140	0	225	0	116	1	117	342	1	0	87	88	0	0	0	0	88	430
12:00 12:15	86	143	0	229	0	143	5	148	377	2	0	96	98	0	0	0	0	98	475
12:15 12:30	81	137	0	218	0	142	5	147	365	1	0	99	100	0	0	0	0	100	465
12:30 12:45	82	163	0	245	0	153	2	155	400	2	0	122	124	0	0	0	0	124	524
12:45 13:00	87	119	0	206	0	146	5	151	357	0	0	89	89	0	0	0	0	89	446
13:00 13:15	86	145	0	231	0	156	5	161	392	1	0	101	102	0	0	0	0	102	494
13:15 13:30	68	130	0	198	0	144	3	147	345	2	0	74	76	0	0	0	0	76	421
15:00 15:15	107	204	0	311	0	217	5	222	533	2	0	126	128	0	0	0	0	128	661
15:15 15:30	96	178	0	274	0	190	6	196	470	1	0	142	143	0	0	0	0	143	613
15:30 15:45	97	182	0	279	0	184	7	191	470	2	0	138	140	0	0	0	0	140	610
15:45 16:00	100	204	0	304	0	169	3	172	476	0	0	182	182	0	0	0	0	182	658
16:00 16:15	105	195	0	300	0	144	0	144	444	4	0	167	171	0	0	0	0	171	615
16:15 16:30	96	212	0	308	0	121	2	123	431	3	0	184	187	0	0	0	0	187	618
16:30 16:45	102	204	0	306	0	131	2	133	439	5	0	164	169	0	0	0	0	169	608
16:45 17:00	108	212	0	320	0	107	3	110	430	5	0	150	155	0	0	0	0	155	585
17:00 17:15	113	190	0	303	0	111	0	111	414	5	0	173	178	0	0	0	0	178	592
17:15 17:30	108	176	0	284	0	99	3	102	386	7	0	163	170	0	0	0	0	170	556
17:30 17:45	91	161	0	252	0	94	2	96	348	4	0	159	163	0	0	0	0	163	511
17:45 18:00	69	161	0	230	0	119	1	120	350	4	0	124	128	0	0	0	0	128	478
<b>Total:</b>	<b>3071</b>	<b>6019</b>	<b>0</b>	<b>9090</b>	<b>1</b>	<b>4930</b>	<b>117</b>	<b>5048</b>	<b>14138</b>	<b>75</b>	<b>0</b>	<b>3990</b>	<b>4065</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>14138</b>	<b>18,203</b>

Note: U-Turns are included in Totals.



# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### FISHER AVE @ PRINCE OF WALES DR

**Survey Date:** Wednesday, April 06, 2016

**WO No:** 35850

**Start Time:** 07:00

**Device:** Miovision

### Full Study Cyclist Volume

#### PRINCE OF WALES DR

#### FISHER AVE

Time Period	Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	Grand Total
07:00 07:15	0	0	0	0	0	0	0
07:15 07:30	0	0	0	1	0	1	1
07:30 07:45	1	1	2	0	0	0	2
07:45 08:00	0	2	2	0	0	0	2
08:00 08:15	0	0	0	0	0	0	0
08:15 08:30	0	0	0	0	0	0	0
08:30 08:45	0	1	1	1	0	1	2
08:45 09:00	1	2	3	0	0	0	3
09:00 09:15	0	0	0	0	0	0	0
09:15 09:30	0	0	0	0	0	0	0
09:30 09:45	0	1	1	0	0	0	1
09:45 10:00	0	0	0	0	0	0	0
11:30 11:45	0	0	0	0	0	0	0
11:45 12:00	0	0	0	0	0	0	0
12:00 12:15	0	0	0	0	0	0	0
12:15 12:30	0	0	0	0	0	0	0
12:30 12:45	0	0	0	0	0	0	0
12:45 13:00	0	0	0	0	0	0	0
13:00 13:15	0	0	0	0	0	0	0
13:15 13:30	0	0	0	0	0	0	0
15:00 15:15	0	0	0	0	0	0	0
15:15 15:30	0	0	0	0	0	0	0
15:30 15:45	0	0	0	0	0	0	0
15:45 16:00	0	1	1	0	0	0	1
16:00 16:15	0	0	0	0	0	0	0
16:15 16:30	1	1	2	0	0	0	2
16:30 16:45	0	0	0	0	0	0	0
16:45 17:00	0	0	0	0	0	0	0
17:00 17:15	0	0	0	0	0	0	0
17:15 17:30	0	0	0	0	0	0	0
17:30 17:45	0	0	0	0	0	0	0
17:45 18:00	0	0	0	0	0	0	0
<b>Total</b>	<b>3</b>	<b>9</b>	<b>12</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>14</b>



# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### FISHER AVE @ PRINCE OF WALES DR

**Survey Date:** Wednesday, April 06, 2016

**WO No:** 35850

**Start Time:** 07:00

**Device:** Miovision

### Full Study Pedestrian Volume

**PRINCE OF WALES DR**

**FISHER AVE**

Time Period	NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	Total	Grand Total
07:00 07:15	0	0	0	0	0	0	0
07:15 07:30	0	0	0	0	0	0	0
07:30 07:45	0	0	0	0	0	0	0
07:45 08:00	0	0	0	0	0	0	0
08:00 08:15	2	0	2	2	0	2	4
08:15 08:30	0	0	0	0	0	0	0
08:30 08:45	0	0	0	0	0	0	0
08:45 09:00	0	0	0	0	0	0	0
09:00 09:15	0	0	0	0	0	0	0
09:15 09:30	0	0	0	0	0	0	0
09:30 09:45	0	0	0	0	0	0	0
09:45 10:00	0	0	0	0	0	0	0
11:30 11:45	0	0	0	0	0	0	0
11:45 12:00	0	0	0	0	0	0	0
12:00 12:15	0	0	0	0	0	0	0
12:15 12:30	0	0	0	0	0	0	0
12:30 12:45	0	0	0	1	0	1	1
12:45 13:00	0	0	0	0	0	0	0
13:00 13:15	0	0	0	1	0	1	1
13:15 13:30	0	0	0	0	0	0	0
15:00 15:15	0	0	0	0	0	0	0
15:15 15:30	0	0	0	0	0	0	0
15:30 15:45	0	0	0	0	0	0	0
15:45 16:00	0	0	0	0	0	0	0
16:00 16:15	0	0	0	0	0	0	0
16:15 16:30	0	0	0	0	0	0	0
16:30 16:45	0	0	0	0	0	0	0
16:45 17:00	0	0	0	0	0	0	0
17:00 17:15	0	0	0	0	0	0	0
17:15 17:30	0	0	0	0	0	0	0
17:30 17:45	0	1	1	0	0	0	1
17:45 18:00	0	0	0	0	0	0	0
<b>Total .....</b>	<b>2</b>	<b>1</b>	<b>3</b>	<b>4</b>	<b>0</b>	<b>4</b>	<b>7</b>



# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### FISHER AVE @ PRINCE OF WALES DR

**Survey Date:** Wednesday, April 06, 2016

**WO No:** 35850

**Start Time:** 07:00

**Device:** Miovision

### Full Study Heavy Vehicles

#### PRINCE OF WALES DR

#### FISHER AVE

Northbound

Southbound

Eastbound

Westbound

Time Period	Northbound			N TOT	Southbound			S TOT	STR TOT	Eastbound			E TOT	Westbound			W TOT	STR TOT	Grand Total
	LT	ST	RT		LT	ST	RT			LT	ST	RT		LT	ST	RT			
07:00 07:15	6	10	0	16	0	2	0	2	18	0	0	0	0	0	0	0	0	0	18
07:15 07:30	4	5	0	9	0	3	1	4	13	0	0	0	0	0	0	0	0	0	13
07:30 07:45	7	7	0	14	0	3	1	4	18	0	0	3	3	0	0	0	0	3	21
07:45 08:00	4	6	0	10	0	1	1	2	12	0	0	1	1	0	0	0	0	1	13
08:00 08:15	1	1	0	2	0	3	0	3	5	0	0	4	4	0	0	0	0	4	9
08:15 08:30	1	4	0	5	0	4	0	4	9	0	0	3	3	0	0	0	0	3	12
08:30 08:45	2	8	0	10	0	10	0	10	20	0	0	3	3	0	0	0	0	3	23
08:45 09:00	1	4	0	5	0	12	0	12	17	1	0	4	5	0	0	0	0	5	22
09:00 09:15	5	6	0	11	0	7	0	7	18	0	0	2	2	0	0	0	0	2	20
09:15 09:30	5	7	0	12	0	9	0	9	21	0	0	3	3	0	0	0	0	3	24
09:30 09:45	6	4	0	10	0	5	0	5	15	0	0	3	3	0	0	0	0	3	18
09:45 10:00	1	7	0	8	0	3	0	3	11	0	0	5	5	0	0	0	0	5	16
11:30 11:45	4	5	0	9	0	4	0	4	13	0	0	2	2	0	0	0	0	2	15
11:45 12:00	4	4	0	8	0	4	0	4	12	0	0	2	2	0	0	0	0	2	14
12:00 12:15	4	8	0	12	0	8	0	8	20	0	0	5	5	0	0	0	0	5	25
12:15 12:30	0	2	0	2	0	5	0	5	7	0	0	2	2	0	0	0	0	2	9
12:30 12:45	4	6	0	10	0	4	0	4	14	0	0	2	2	0	0	0	0	2	16
12:45 13:00	3	4	0	7	0	9	0	9	16	0	0	1	1	0	0	0	0	1	17
13:00 13:15	4	5	0	9	0	4	0	4	13	0	0	1	1	0	0	0	0	1	14
13:15 13:30	2	5	0	7	0	4	0	4	11	0	0	5	5	0	0	0	0	5	16
15:00 15:15	1	12	0	13	0	2	0	2	15	1	0	4	5	0	0	0	0	5	20
15:15 15:30	0	5	0	5	0	6	1	7	12	0	0	5	5	0	0	0	0	5	17
15:30 15:45	1	5	0	6	0	5	0	5	11	0	0	4	4	0	0	0	0	4	15
15:45 16:00	0	2	0	2	0	6	0	6	8	0	0	2	2	0	0	0	0	2	10
16:00 16:15	1	4	0	5	0	1	0	1	6	0	0	4	4	0	0	0	0	4	10
16:15 16:30	1	1	0	2	0	5	0	5	7	1	0	5	6	0	0	0	0	6	13
16:30 16:45	2	0	0	2	0	3	0	3	5	0	0	3	3	0	0	0	0	3	8
16:45 17:00	3	1	0	4	0	4	0	4	8	0	0	0	0	0	0	0	0	0	8
17:00 17:15	0	3	0	3	0	3	0	3	6	0	0	6	6	0	0	0	0	6	12
17:15 17:30	3	1	0	4	0	2	1	3	7	0	0	3	3	0	0	0	0	3	10
17:30 17:45	2	0	0	2	0	6	0	6	8	0	0	3	3	0	0	0	0	3	11
17:45 18:00	0	4	0	4	0	2	0	2	6	0	0	2	2	0	0	0	0	2	8
Total: None	82	146	0	228	0	149	5	154	382	3	0	92	95	0	0	0	0	95	477



# Transportation Services - Traffic Services

## Turning Movement Count - Study Results

### FISHER AVE @ PRINCE OF WALES DR

**Survey Date:** Wednesday, April 06, 2016

**WO No:** 35850

**Start Time:** 07:00

**Device:** Miovision

### Full Study 15 Minute U-Turn Total

PRINCE OF WALES DR

FISHER AVE

Time Period		Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn Total	Total
07:00	07:15	0	0	0	0	0
07:15	07:30	0	0	0	0	0
07:30	07:45	0	0	0	0	0
07:45	08:00	0	0	0	0	0
08:00	08:15	0	1	0	0	1
08:15	08:30	0	0	0	0	0
08:30	08:45	0	0	0	0	0
08:45	09:00	0	0	0	0	0
09:00	09:15	0	0	0	0	0
09:15	09:30	0	0	0	0	0
09:30	09:45	0	0	0	0	0
09:45	10:00	0	0	0	0	0
11:30	11:45	0	0	0	0	0
11:45	12:00	0	0	0	0	0
12:00	12:15	0	0	0	0	0
12:15	12:30	0	0	0	0	0
12:30	12:45	0	0	0	0	0
12:45	13:00	0	0	0	0	0
13:00	13:15	0	0	0	0	0
13:15	13:30	0	0	0	0	0
15:00	15:15	0	0	0	0	0
15:15	15:30	0	0	0	0	0
15:30	15:45	0	0	0	0	0
15:45	16:00	0	0	0	0	0
16:00	16:15	0	0	1	0	1
16:15	16:30	0	0	0	0	0
16:30	16:45	0	0	0	0	0
16:45	17:00	0	0	0	0	0
17:00	17:15	0	0	0	0	0
17:15	17:30	0	0	0	0	0
17:30	17:45	0	0	0	0	0
17:45	18:00	0	0	0	0	0
Total		0	1	1	0	2

# APPENDIX F

## Collision Data



COLLISION	LOCATION	X	Y	LONGITUDE	LATITUDE	DATE	TIME	ENVIRONMENT	LIGHT	SURFACE	TRAFFIC_C	TRAFFIC_C	COLLISION	IMPACT_T	NO_OF_PE	FID
15-171	COLONNAI	367003	5022883	-75.7063	45.34314	2015/01/0	1899/12/31 22:23:00+00	01 - Clear	05 - Dusk	06 - Ice	10 - No control	03 - P.D. o	06 - SMV u	0	271	
15-851	PRINCE OF	367315.2	5023451	-75.7022	45.34822	2015/01/1	1899/12/31 18:59:00+00	01 - Clear	01 - Daylig	02 - Wet	10 - No control	03 - P.D. o	02 - Angle	0	651	
15-2000	COLONNAI	367394.7	5023268	-75.7012	45.34657	2015/02/0	1900/01/01 04:45:00+00	01 - Clear	07 - Dark	03 - Loose	01 - Traffic	01 - Functi	03 - P.D. o	07 - SMV c	0	1735
15-2253	COLONNAI	367394.7	5023266	-75.7012	45.34655	2015/02/0	1899/12/31 14:45:00+00	03 - Snow	01 - Daylig	02 - Wet	01 - Traffic	01 - Functi	03 - P.D. o	05 - Turnin	0	2352
15-2805	COLONNAI	367231.3	5023195	-75.7033	45.34592	2015/02/1	1899/12/31 12:20:00+00	01 - Clear	01 - Daylig	03 - Loose	01 - Traffic	01 - Functi	03 - P.D. o	99 - Other	0	2604
15-3840	PRINCE OF	367508.8	5022922	-75.6998	45.34344	2015/03/1	1899/12/31 17:26:00+00	01 - Clear	01 - Daylig	05 - Packer	10 - No control	03 - P.D. o	07 - SMV c	0	3749	
15-6853	PRINCE OF	367399	5023256	-75.7012	45.34646	2015/06/1	1899/12/31 16:50:00+00	01 - Clear	01 - Daylig	01 - Dry	10 - No control	03 - P.D. o	03 - Rear e	0	6052	
15-6230	COLONNAI	367231.3	5023197	-75.7033	45.34594	2015/06/0	1899/12/31 18:28:00+00	01 - Clear	01 - Daylig	01 - Dry	01 - Traffic	01 - Functi	03 - P.D. o	03 - Rear e	0	6503
15-6454	COLONNAI	367397.2	5023269	-75.7012	45.34657	2015/06/0	1899/12/31 20:03:00+00	02 - Rain	01 - Daylig	02 - Wet	01 - Traffic	01 - Functi	02 - Non-f	03 - Rear e	0	6868
15-6993	COLONNAI	367294.7	5023219	-75.7025	45.34613	2015/06/2	1899/12/31 23:07:00+00	01 - Clear	01 - Daylig	01 - Dry	10 - No control	03 - P.D. o	05 - Turnin	0	6991	
15-7591	COLONNAI	367394	5023267	-75.7012	45.34655	2015/07/1	1899/12/31 22:20:00+00	01 - Clear	01 - Daylig	01 - Dry	01 - Traffic	01 - Functi	03 - P.D. o	03 - Rear e	0	7438
15-8264	COLONNAI	367395.4	5023268	-75.7012	45.34656	2015/07/3	1899/12/31 21:49:00+00	01 - Clear	01 - Daylig	01 - Dry	01 - Traffic	01 - Functi	03 - P.D. o	03 - Rear e	0	8073
15-10421	COLONNAI	367394	5023266	-75.7012	45.34655	2015/10/0	1899/12/31 12:57:00+00	01 - Clear	01 - Daylig	01 - Dry	01 - Traffic	01 - Functi	03 - P.D. o	05 - Turnin	0	10316
15-10240	COLONNAI	367396.2	5023266	-75.7012	45.34655	2015/10/0	1899/12/31 14:56:00+00	01 - Clear	01 - Daylig	01 - Dry	01 - Traffic	01 - Functi	03 - P.D. o	03 - Rear e	0	10626
15-11039	COLONNAI	367395.4	5023267	-75.7012	45.34655	2015/10/2	1899/12/31 17:41:00+00	01 - Clear	01 - Daylig	01 - Dry	01 - Traffic	01 - Functi	03 - P.D. o	03 - Rear e	0	11781
15-12051	COLONNAI	367394.7	5023267	-75.7012	45.34655	2015/11/2	1899/12/31 22:11:00+00	01 - Clear	05 - Dusk	01 - Dry	01 - Traffic	01 - Functi	02 - Non-f	03 - Rear e	0	12758

COLLISION	LOCATION	X	Y	LONGITUD	LATITUDE	DATE	TIME	ENVIRONN	LIGHT	SURFACE_I	TRAFFIC_C	TRAFFIC_C	COLLISION	IMPACT_T	NO_OF_PE	FID
16-457	COLONNAI	367393.6	5023267	-75.7012	45.34655	2016/01/1	1899/12/3	03 - Snow	03 - Dawn	03 - Loose	01 - Traffic	01 - Functi	03 - P.D.	0105 - Turnin	0	357
16-232	PRINCE OF	367489.8	5022982	-75.7	45.34398	2016/01/0	1899/12/3	01 - Clear	01 - Daylig	02 - Wet	10 - No control	03 - P.D.	0103 - Rear e	0	732	
16-1422	COLONNAI	367398.6	5023268	-75.7012	45.34656	2016/02/0	1899/12/3	01 - Clear	01 - Daylig	01 - Dry	01 - Traffic	01 - Functi	03 - P.D.	0103 - Rear e	0	1822
16-2530	PRINCE OF	367390	5023277	-75.7013	45.34664	2016/03/0	1899/12/3	01 - Clear	01 - Daylig	02 - Wet	10 - No control	03 - P.D.	0104 - Sidesw	0	2029	
16-2361	COLONNAI	367394.2	5023263	-75.7012	45.34652	2016/02/2	1900/01/0	04 - Freezi	07 - Dark	06 - Ice	01 - Traffic	01 - Functi	02 - Non-fc	99 - Other	0	2798
16-3380	COLONNAI	367394.9	5023267	-75.7012	45.34655	2016/03/2	1899/12/3	01 - Clear	01 - Daylig	01 - Dry	01 - Traffic	01 - Functi	03 - P.D.	0103 - Rear e	0	3499
16-5607	COLONNAI	367394.9	5023267	-75.7012	45.34656	2016/06/1	1899/12/3	01 - Clear	01 - Daylig	01 - Dry	01 - Traffic	01 - Functi	03 - P.D.	0103 - Rear e	0	5078
16-5573	PRINCE OF	367370.4	5023320	-75.7015	45.34704	2016/06/0	1899/12/3	02 - Rain	01 - Daylig	02 - Wet	10 - No control	03 - P.D.	0103 - Rear e	0	5190	
16-5270	COLONNAI	367394.5	5023267	-75.7012	45.34655	2016/05/3	1899/12/3	01 - Clear	01 - Daylig	01 - Dry	01 - Traffic	01 - Functi	03 - P.D.	0103 - Rear e	0	5295
16-6913	COLONNAI	367395.4	5023266	-75.7012	45.34655	2016/07/2	1899/12/3	01 - Clear	01 - Daylig	01 - Dry	01 - Traffic	01 - Functi	03 - P.D.	0103 - Rear e	0	6239
16-7947	COLONNAI	367394.1	5023268	-75.7012	45.34656	2016/08/2	1899/12/3	01 - Clear	01 - Daylig	01 - Dry	01 - Traffic	01 - Functi	03 - P.D.	0105 - Turnin	0	7745
16-8948	COLONNAI	367394.5	5023267	-75.7012	45.34655	2016/09/2	1899/12/3	01 - Clear	01 - Daylig	01 - Dry	01 - Traffic	01 - Functi	03 - P.D.	0105 - Turnin	0	8458
16-9336	COLONNAI	367397.2	5023265	-75.7012	45.34653	2016/10/1	1899/12/3	01 - Clear	07 - Dark	02 - Wet	01 - Traffic	00 - Unknc	03 - P.D.	0103 - Rear e	0	9128
16-9921	COLONNAI	367395.5	5023266	-75.7012	45.34654	2016/10/2	1899/12/3	02 - Rain	01 - Daylig	02 - Wet	01 - Traffic	01 - Functi	02 - Non-fc	03 - Rear e	0	9326
16-11416	COLONNAI	367136.4	5023260	-75.7045	45.34652	2016/12/0	1899/12/3	01 - Clear	05 - Dusk	01 - Dry	10 - No control	03 - P.D.	0106 - SMV u	0	11233	
16-11731	COLONNAI	367393.9	5023269	-75.7012	45.34657	2016/12/1	1899/12/3	01 - Clear	01 - Daylig	01 - Dry	01 - Traffic	01 - Functi	03 - P.D.	0103 - Rear e	0	11345
16-11384	COLONNAI	367394.7	5023268	-75.7012	45.34656	2016/12/0	1899/12/3	01 - Clear	01 - Daylig	01 - Dry	01 - Traffic	01 - Functi	03 - P.D.	0103 - Rear e	0	11598
16-12257	CITIPLACE	366881.4	5023349	-75.7078	45.34734	2016/12/2	1899/12/3	02 - Rain	00 - Unknc	02 - Wet	10 - No control	03 - P.D.	0106 - SMV u	0	12472	
16-12576	PRINCE OF	367410.5	5023234	-75.701	45.34626	2016/08/1	1899/12/3	01 - Clear	01 - Daylig	01 - Dry	10 - No control	03 - P.D.	0103 - Rear e	0	12691	

Record	Location	X	Y	Longitude	Latitude	Year	Date	Time	Environment	Road_Surf	Traffic_Cor	Collision_L	Light	Collision_C	Impact_ty	FID
3808	COLONNAI	366777.6	5023361	-75.7091	45.34745	2017	2017/03/0	1899/12/3	01 - Clear	05 - Packer	10 - No cor	01 - Non in	01 - Daylig	03 - P.D. oi	01 - Appro	3135
3809	COLONNAI	367069.4	5022923	-75.7054	45.34348	2017	2017/06/1	1899/12/3	01 - Clear	01 - Dry	10 - No cor	04 - At/ne	01 - Daylig	03 - P.D. oi	05 - Turnin	3237
3810	COLONNAI	367230.3	5023196	-75.7033	45.34593	2017	2017/11/1	1899/12/3	02 - Rain	02 - Wet	01 - Traffic	02 - Inters	07 - Dark	03 - P.D. oi	03 - Rear e	3242
3825	COLONNAI	367396.4	5023267	-75.7012	45.34655	2017	2017/05/2	1899/12/3	02 - Rain	02 - Wet	01 - Traffic	02 - Inters	01 - Daylig	03 - P.D. oi	03 - Rear e	3372
3826	COLONNAI	367394.4	5023268	-75.7012	45.34657	2017	2017/05/1	1899/12/3	01 - Clear	01 - Dry	01 - Traffic	03 - At inte	01 - Daylig	02 - Non-f	03 - Rear e	3373
3827	COLONNAI	367395.7	5023266	-75.7012	45.34655	2017	2017/05/0	1899/12/3	01 - Clear	01 - Dry	01 - Traffic	03 - At inte	01 - Daylig	03 - P.D. oi	03 - Rear e	3374
3828	COLONNAI	367395.2	5023267	-75.7012	45.34655	2017	2017/08/1	1899/12/3	01 - Clear	01 - Dry	01 - Traffic	02 - Inters	01 - Daylig	03 - P.D. oi	03 - Rear e	3375
3829	COLONNAI	367395.2	5023266	-75.7012	45.34655	2017	2017/08/1	1899/12/3	01 - Clear	01 - Dry	01 - Traffic	02 - Inters	01 - Daylig	02 - Non-f	03 - Rear e	3376
3830	COLONNAI	367394.1	5023267	-75.7012	45.34655	2017	2017/08/0	1900/01/0	01 - Clear	01 - Dry	01 - Traffic	02 - Inters	01 - Daylig	03 - P.D. oi	03 - Rear e	3377
3831	COLONNAI	367393.5	5023266	-75.7012	45.34655	2017	2017/08/1	1899/12/3	01 - Clear	01 - Dry	01 - Traffic	02 - Inters	01 - Daylig	03 - P.D. oi	03 - Rear e	3378
3832	COLONNAI	367394.9	5023267	-75.7012	45.34655	2017	2017/10/1	1899/12/3	01 - Clear	01 - Dry	01 - Traffic	02 - Inters	03 - Dawn	02 - Non-f	05 - Turnin	3379
3833	COLONNAI	367394.7	5023267	-75.7012	45.34655	2017	2017/12/0	1899/12/3	01 - Clear	02 - Wet	01 - Traffic	02 - Inters	05 - Dusk	03 - P.D. oi	04 - Sidesv	3380
3834	COLONNAI	367393.7	5023266	-75.7012	45.34655	2017	2017/01/0	1899/12/3	01 - Clear	06 - Ice	01 - Traffic	02 - Inters	01 - Daylig	03 - P.D. oi	03 - Rear e	3381
3835	COLONNAI	367395	5023268	-75.7012	45.34657	2017	2017/02/1	1899/12/3	01 - Clear	02 - Wet	01 - Traffic	02 - Inters	01 - Daylig	03 - P.D. oi	03 - Rear e	3382
3836	COLONNAI	367396.4	5023267	-75.7012	45.34655	2017	2017/01/0	1899/12/3	01 - Clear	01 - Dry	01 - Traffic	02 - Inters	07 - Dark	03 - P.D. oi	03 - Rear e	3383
3837	COLONNAI	367394.2	5023267	-75.7012	45.34656	2017	2017/02/0	1899/12/3	01 - Clear	01 - Dry	01 - Traffic	02 - Inters	01 - Daylig	03 - P.D. oi	03 - Rear e	3386
3838	COLONNAI	367396.4	5023267	-75.7012	45.34656	2017	2017/03/1	1900/01/0	01 - Clear	01 - Dry	01 - Traffic	02 - Inters	07 - Dark	03 - P.D. oi	03 - Rear e	3387
3839	COLONNAI	367395	5023268	-75.7012	45.34657	2017	2017/04/1	1899/12/3	01 - Clear	01 - Dry	01 - Traffic	02 - Inters	01 - Daylig	03 - P.D. oi	07 - SMV o	3388
3840	COLONNAI	367394	5023266	-75.7012	45.34655	2017	2017/03/2	1899/12/3	01 - Clear	01 - Dry	01 - Traffic	02 - Inters	01 - Daylig	03 - P.D. oi	03 - Rear e	3389
11640	PRINCE OF	367388.9	5023282	-75.7013	45.34669	2017	2017/08/2	1900/01/0	01 - Clear	01 - Dry	10 - No cor	01 - Non in	07 - Dark	03 - P.D. oi	04 - Sidesv	11712
11591	PRINCE OF	367441.3	5023151	-75.7006	45.34551	2017	2017/09/0	1899/12/3	01 - Clear	01 - Dry	10 - No cor	01 - Non in	01 - Daylig	03 - P.D. oi	03 - Rear e	11924
11592	PRINCE OF	367430.5	5023178	-75.7008	45.34575	2017	2017/10/1	1899/12/3	01 - Clear	01 - Dry	10 - No cor	01 - Non in	01 - Daylig	03 - P.D. oi	03 - Rear e	11925

ANOM_ID	DATE	YEAR	TIME	LOCATION	GEO_ID	ACCIDENT_CLASS_OF	IMPACT_T	ENVIRONN	LIGHT	ROAD_SUF	TRAFFIC_C	TRAFFIC_C	NO_OF_PEX	Y	ObjectID
18-254	2018/01/0	2018	3:58:00	PRINCE OF	__3ZBPHP	01 - Non in	03 - P.D. o	04 - Sidesw	01 - Clear	01 - Daylig	01 - Dry	10 - No control	0	367366.2	5023331 154
18-1524	2018/02/0	2018	11:57:00	COLONNAI	5249	02 - Inters	03 - P.D. o	03 - Rear e	01 - Clear	01 - Daylig	02 - Wet	01 - Traffic	01 - Functi	0	367394.7 5023267 1025
18-1966	2018/02/1	2018	10:20:00	COLONNAI	5249	02 - Inters	03 - P.D. o	03 - Rear e	01 - Clear	01 - Daylig	01 - Dry	01 - Traffic	01 - Functi	0	367394.7 5023267 1693
18-2650	2018/03/0	2018	6:05:00	COLONNAI	5249	02 - Inters	02 - Non-f	03 - Rear e	03 - Snow	05 - Dusk	03 - Loose	01 - Traffic	01 - Functi	0	367394.7 5023267 2282
18-2376	2018/02/2	2018	11:10:00	COLONNAI	__3ZA0AK	04 - At/ne	03 - P.D. o	02 - Angle	01 - Clear	01 - Daylig	01 - Dry	10 - No control	0	367242 5023032 2623	
18-3555	2018/04/0	2018	7:25:00	COLONNAI	5249	02 - Inters	03 - P.D. o	04 - Sidesw	01 - Clear	01 - Daylig	01 - Dry	01 - Traffic	01 - Functi	0	367394.7 5023267 3490
18-4145	2018/05/0	2018	4:34:00	COLONNAI	5249	02 - Inters	03 - P.D. o	03 - Rear e	01 - Clear	01 - Daylig	01 - Dry	01 - Traffic	00 - Unknc	0	367394.5 5023267 4606
18-6664	2018/07/1	2018	12:37:00	COLONNAI	5249	02 - Inters	03 - P.D. o	04 - Sidesw	01 - Clear	01 - Daylig	01 - Dry	01 - Traffic	01 - Functi	0	367394.8 5023267 6068
18-6968	2018/07/2	2018	7:22:00	COLONNAI	5249	03 - At int	02 - Non-f	05 - Turnin	01 - Clear	01 - Daylig	02 - Wet	01 - Traffic	01 - Functi	0	367394.7 5023267 6489
18-7113	2018/08/0	2018	2:35:00	COLONNAI	5249	02 - Inters	03 - P.D. o	03 - Rear e	01 - Clear	01 - Daylig	01 - Dry	01 - Traffic	01 - Functi	0	367394.7 5023267 7357
18-8752	2018/09/2	2018	8:00:00	COLONNAI	5249	02 - Inters	02 - Non-f	03 - Rear e	01 - Clear	01 - Daylig	01 - Dry	01 - Traffic	01 - Functi	0	367394.8 5023267 8838
18-8797	2018/09/2	2018	4:35:00	COLONNAI	5249	02 - Inters	02 - Non-f	03 - Rear e	01 - Clear	01 - Daylig	01 - Dry	01 - Traffic	01 - Functi	0	367394.8 5023267 8952
18-9641	2018/10/2	2018	1:05:00	COLONNAI	5249	02 - Inters	03 - P.D. o	03 - Rear e	01 - Clear	01 - Daylig	01 - Dry	01 - Traffic	01 - Functi	0	367394.9 5023267 9395
18-10075	2018/11/0	2018	11:48:00	COLONNAI	__3ZA0AJ	01 - Non in	03 - P.D. o	06 - SMV u	01 - Clear	01 - Daylig	01 - Dry	10 - No control	0	367070.8 5023279 10570	
18-11624	2018/12/0	2018	4:55:00	PRINCE OF	__3ZA29R	01 - Non in	03 - P.D. o	03 - Rear e	01 - Clear	07 - Dark	01 - Dry	10 - No control	0	367433.6 5023171 11030	
18-11222	2018/11/2	2018	7:52:00	COLONNAI	5249	02 - Inters	03 - P.D. o	04 - Sidesw	03 - Snow	01 - Daylig	04 - Slush	01 - Traffic	01 - Functi	0	367394.7 5023267 11156

Accident_ID	Accident_Location	Geo_ID	Classification	Initial_Impact	Environment	Light	Road_Surface	Traffic_Color	Traffic_Color	Number_of_X	Y	Latitude	Longitude	FID		
2019/01/2	2019/01/2 COLONNAI	4588	02 - Inters	03 - P.D.	01 - 04 - Sidesv	03 - Snow	01 - Daylig	03 - Loose	01 - Traffic	01 - Functi	0	367230.9	5023196	45.34593	-75.7033	1209
2019/03/2	2019/03/2 COLONNAI	5249	02 - Inters	03 - P.D.	01 - 03 - Rear e	01 - Clear	01 - Daylig	01 - Dry	01 - Traffic	01 - Functi	0	367394.8	5023267	45.34655	-75.7012	3143
2019/03/2	2019/03/2 PRINCE OF	3ZA29R	01 - Non in	02 - Non-f	03 - Rear e	01 - Clear	01 - Daylig	01 - Dry	10 - No control		0	367395.8	5023264	45.34653	-75.7012	3161
2019/03/1	2019/03/1 COLONNAI	5249	02 - Inters	03 - P.D.	01 - 03 - Rear e	03 - Snow	05 - Dusk	03 - Loose	01 - Traffic	01 - Functi	0	367394.7	5023266	45.34655	-75.7012	3973
2019/04/1	2019/04/1 COLONNAI	5249	03 - At inte	02 - Non-f	05 - Turnin	01 - Clear	01 - Daylig	01 - Dry	01 - Traffic	01 - Functi	0	367394.4	5023267	45.34655	-75.7012	4109
2019/05/1	2019/05/1 COLONNAI	5249	02 - Inters	03 - P.D.	01 - 03 - Rear e	01 - Clear	01 - Daylig	02 - Wet	01 - Traffic	01 - Functi	0	367394.6	5023267	45.34655	-75.7012	5103
2019/05/0	2019/05/0 COLONNAI	5249	02 - Inters	03 - P.D.	01 - 03 - Rear e	01 - Clear	01 - Daylig	01 - Dry	01 - Traffic	01 - Functi	0	367394.6	5023267	45.34655	-75.7012	5246
2019/05/2	2019/05/2 COLONNAI	3ZA0AJ	04 - At/ne	03 - P.D.	01 - 05 - Turnin	02 - Rain	01 - Daylig	02 - Wet	10 - No control		0	367047.8	5023285	45.34675	-75.7056	5757
2019/05/1	2019/05/1 COLONNAI	3ZA0AK	01 - Non in	02 - Non-f	07 - SMV c	01 - Clear	07 - Dark	01 - Dry	10 - No control		0	367255.8	5023052	45.34464	-75.703	5862
2019/05/2	2019/05/2 COLONNAI	5249	02 - Inters	03 - P.D.	01 - 03 - Rear e	01 - Clear	01 - Daylig	01 - Dry	01 - Traffic	01 - Functi	0	367394.7	5023266	45.34655	-75.7012	5937
2019/06/1	2019/06/1 COLONNAI	5249	03 - At inte	03 - P.D.	01 - 05 - Turnin	01 - Clear	01 - Daylig	01 - Dry	01 - Traffic	01 - Functi	0	367394.8	5023267	45.34655	-75.7012	6410
2019/06/1	2019/06/1 COLONNAI	5249	02 - Inters	03 - P.D.	01 - 03 - Rear e	01 - Clear	01 - Daylig	01 - Dry	01 - Traffic	02 - Not fu	0	367394.6	5023267	45.34655	-75.7012	6496
2019/06/1	2019/06/1 COLONNAI	5249	02 - Inters	03 - P.D.	01 - 03 - Rear e	02 - Rain	01 - Daylig	02 - Wet	01 - Traffic	01 - Functi	0	367394.9	5023266	45.34655	-75.7012	6502
2019/07/0	2019/07/0 COLONNAI	5249	02 - Inters	03 - P.D.	01 - 03 - Rear e	01 - Clear	01 - Daylig	01 - Dry	01 - Traffic	01 - Functi	0	367394.8	5023267	45.34655	-75.7012	7232
2019/07/0	2019/07/0 COLONNAI	5249	02 - Inters	03 - P.D.	01 - 03 - Rear e	01 - Clear	01 - Daylig	01 - Dry	01 - Traffic	01 - Functi	0	367394.7	5023267	45.34655	-75.7012	7829
2019/08/2	2019/08/2 COLONNAI	5249	02 - Inters	03 - P.D.	01 - 03 - Rear e	01 - Clear	01 - Daylig	01 - Dry	01 - Traffic	01 - Functi	0	367394.7	5023267	45.34655	-75.7012	8089
2019/08/1	2019/08/1 COLONNAI	5249	02 - Inters	03 - P.D.	01 - 03 - Rear e	01 - Clear	01 - Daylig	01 - Dry	01 - Traffic	01 - Functi	0	367394.9	5023266	45.34655	-75.7012	8198
2019/07/3	2019/07/3 COLONNAI	5249	02 - Inters	03 - P.D.	01 - 03 - Rear e	01 - Clear	01 - Daylig	01 - Dry	01 - Traffic	01 - Functi	0	367394.5	5023267	45.34655	-75.7012	8467
2019/07/2	2019/07/2 COLONNAI	5249	02 - Inters	03 - P.D.	01 - 03 - Rear e	01 - Clear	01 - Daylig	01 - Dry	01 - Traffic	01 - Functi	0	367394.6	5023267	45.34655	-75.7012	8985
2019/09/0	2019/09/0 COLONNAI	3ZA0AJ	04 - At/ne	03 - P.D.	01 - 02 - Angle	01 - Clear	01 - Daylig	01 - Dry	10 - No control		0	367068.1	5023280	45.3467	-75.7054	9317
2019/09/1	2019/09/1 COLONNAI	5249	02 - Inters	03 - P.D.	01 - 04 - Sidesv	01 - Clear	01 - Daylig	01 - Dry	01 - Traffic	01 - Functi	0	367394.6	5023267	45.34655	-75.7012	9711
2019/10/0	2019/10/0 COLONNAI	5249	02 - Inters	03 - P.D.	01 - 04 - Sidesv	01 - Clear	01 - Daylig	01 - Dry	01 - Traffic	01 - Functi	0	367394.7	5023267	45.34655	-75.7012	10234
2019/10/0	2019/10/0 COLONNAI	4588	02 - Inters	03 - P.D.	01 - 04 - Sidesv	01 - Clear	01 - Daylig	01 - Dry	01 - Traffic	01 - Functi	0	367231.2	5023196	45.34593	-75.7033	10599
2019/10/1	2019/10/1 COLONNAI	4588	02 - Inters	03 - P.D.	01 - 99 - Other	01 - Clear	01 - Daylig	01 - Dry	01 - Traffic	01 - Functi	0	367230.5	5023196	45.34593	-75.7033	10798
2019/11/1	2019/11/1 COLONNAI	5249	02 - Inters	03 - P.D.	01 - 03 - Rear e	01 - Clear	05 - Dusk	01 - Dry	01 - Traffic	01 - Functi	0	367394.7	5023266	45.34655	-75.7012	12257
2019/12/1	2019/12/1 COLONNAI	5249	02 - Inters	03 - P.D.	01 - 04 - Sidesv	01 - Clear	01 - Daylig	02 - Wet	01 - Traffic	00 - Unknc	0	367394.7	5023267	45.34655	-75.7012	13070
2019/12/0	2019/12/0 COLONNAI	5249	03 - At inte	03 - P.D.	01 - 05 - Turnin	01 - Clear	01 - Daylig	01 - Dry	01 - Traffic	01 - Functi	0	367394.7	5023267	45.34655	-75.7012	13761

# APPENDIX G

## Prince of Wales Drive EA Excerpts

10. approuve que dans le cadre du processus budgétaire de 2012, le personnel de la Ville examine les possibilités d'entreprendre en 2012 les travaux de conception concernant les intersections de la promenade Prince of Wales qui ne suffisent pas à la demande en périodes de pointe, comme l'intersection du chemin Hunt Club et de la promenade Prince of Wales ainsi que l'intersection du chemin Fallowfield et de la promenade Prince of Wales.

11. approuve qu'il sera enjoint au personnel de travailler avec le propriétaire du 2175, promenade Prince of Wales afin de déterminer une façon de fournir un accès au site de toutes les directions par le biais du processus relatif au plan d'implantation.

#### DOCUMENTATION

1. Deputy City Manager's report, Infrastructure Services and Community Sustainability, dated 26 April 2011 (ACS2011-ICS-PGM-0021).
2. Extract of draft Minutes 8 of the Transportation Committee, dated 1 June 2011.

**Report to / Rapport au :**

**Transportation Committee  
Comité des transports**

**and Council et au Conseil**

**26 April 2011 / le 26 avril 2011**

**Submitted by/Soumis par : Nancy Schepers, Deputy City Manager/Directrice municipale adjointe, Infrastructure Services and Community Sustainability/Services d'infrastructure et Viabilité des collectivités**

*Contact/Personne ressource: Vivi Chi, Manager/Gestionnaire, Transportation Planning/Planification des transports, Planning and Growth Management/Urbanisme et Gestion de la croissance  
(613) 580-2424 x 21877, Vivi.Chi@ottawa.ca*

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Knoxdale-Merivale (9), River (16), Gloucester-South Nepean (22)

Ref N°: ACS2011-ICS-PGM-0021

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**SUBJECT: PRINCE OF WALES DRIVE (FISHER AVENUE TO WOODROFFE AVENUE) ENVIRONMENTAL ASSESSMENT STUDY - RECOMMENDED PLAN**

**OBJET: ÉTUDE D'ÉVALUATION ENVIRONNEMENTALE DE LA PROMENADE PRINCE OF WALES (DE L'AVENUE FISHER À L'AVENUE WOODROFFE) – PLAN RECOMMANDÉ**

#### **REPORT RECOMMENDATIONS**

**That the Transportation Committee recommend that Council:**

1. **Receive the results of the Prince of Wales Environmental Assessment Study as proposed in document 1;**
2. **Direct staff to finalize the Environmental Study Report and proceed with its posting for the 30-day public review period in accordance with Ontario Municipal Class Environmental Assessment, Schedule "C" process;**
3. **Direct staff to work with the National Capital Commission to fulfill the requirements of the *Canadian Environment Assessment Act* in accordance with the principles of the Environment Study Report; and**
4. **Direct staff to undertake necessary property acquisition for the construction of Prince of Wales Drive, in line with the timing identified in the Transportation Master Plan and through the annual Capital Budget Process.**

#### **RECOMMANDATIONS DU RAPPORT**

**Que le Comité des transports recommande au Conseil :**

1. **de prendre connaissance des résultats de l'étude d'évaluation environnementale concernant la promenade Prince of Wales, tel que proposé dans le document 1;**
2. **de demander au personnel de finaliser le rapport d'étude environnementale et de le soumettre à l'examen du public pendant trente jours, conformément au processus d'évaluation environnementale municipale de portée générale de l'Ontario (annexe C);**
3. **de demander au personnel de collaborer avec la Commission de la capitale nationale afin de satisfaire aux exigences de la *Loi canadienne sur l'évaluation environnementale*, conformément aux principes qui sous-tendent le rapport d'étude environnementale; et**
4. **de demander au personnel d'acquérir les terrains nécessaires à l'élargissement de la promenade Prince of Wales, selon le calendrier indiqué dans le Plan directeur des transports et en fonction du budget des immobilisations annuel.**

#### **EXECUTIVE SUMMARY**

**Assumptions and Analysis**

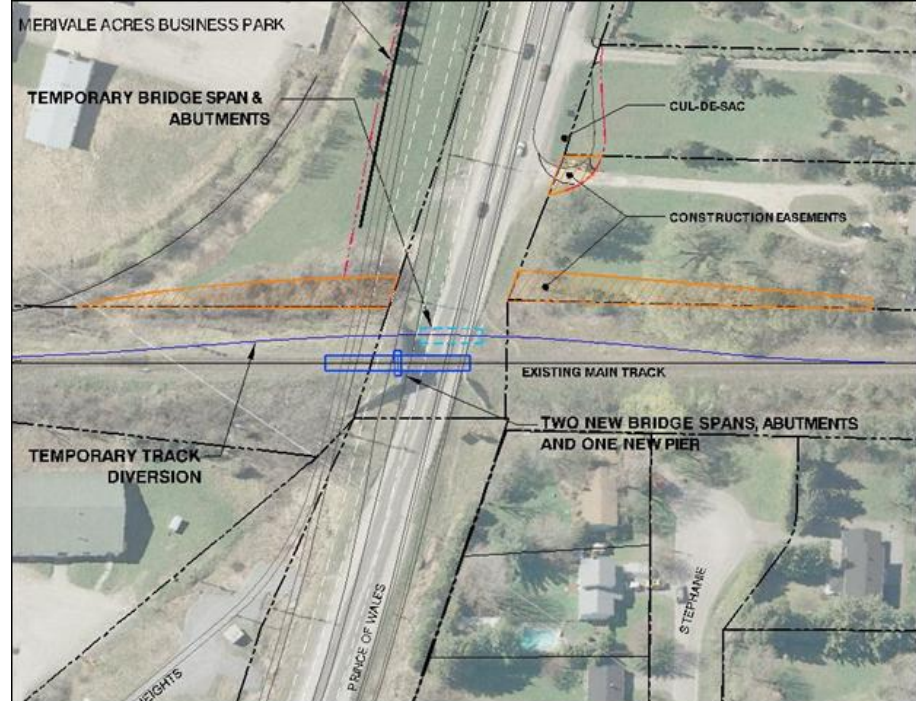


Figure 7 – Proposed Railway Bridge Overpass Diversion

Rideau Heights Drive/Wellsmere Court, Rideau Heights Lane and Stephanie Avenue are proposed to remain as unsignalized intersections, however, protected left-turn lanes will be provided into these streets from Prince of Wales Drive. Modifications are recommended to the existing signalized intersection at Colonnade Road including the addition of a new east leg to the intersection to accommodate the connection for the proposed local service road.

Twenty three existing entrances with full movement access onto Prince of Wales Drive will be converted to right-in/right-out access. These include three commercial properties and various residences - including four on the existing cul-de-sac lane immediately north of Hunt Club Road. Left-turn access to/from these properties will be accommodated through U-turns at nearby intersections or median breaks. Five properties will benefit from the proposed service road connection to Colonnade Road.

Several residential properties will experience 5 m to 6 m property encroachments. One residential property will experience a significant property encroachment (23 m) due to the westerly shift of the roadway north of the CN/VIA Rail line.

Section 6 – Colonnade Road to North of Fisher Avenue – 1.0 km (Document 1: Exhibit 1 I)

This section includes residential development; commercial properties off of Colonnade Road and at Fisher Avenue; the Nepean Creek Stormwater Management facility; and major overhead Hydro One power lines.

The Recommended Plan is a four-lane divided arterial with a fully urban (curbed) cross-section.

On-road cyclists will be accommodated with cycling lanes. A multi-use pathway is proposed along the east side of the roadway and a new sidewalk along the west side. Future consideration should be made to extending the east side pathway north of Fisher Avenue to allow connectivity with existing pathways at Hogs Back Road and Colonel By Drive.

The horizontal alignment of the roadway transitions from a westerly shifted alignment at Colonnade Road to an equal widening at Fisher Avenue.

Rideau Shore Court is proposed to remain as an unsignalized intersection with a new protected southbound left turn lane. Modifications are recommended to the existing intersection at Fisher Avenue including a double left-turn lane and the addition of a new east leg to the intersection to accommodate the connection for a proposed short section of local service road as shown on Figure 8.

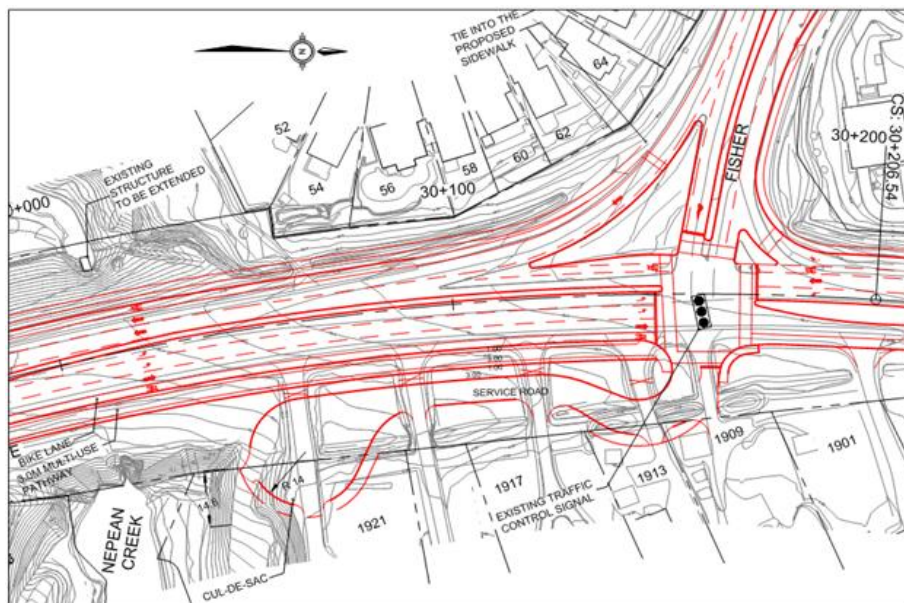


Figure 8 – Service Road and Fisher Avenue Intersection Modification



Ten existing entrances with full movement access onto Prince of Wales Drive will be converted to right-in/right-out access. These include the gas station/plaza entrance at Fisher Avenue, seven residences and an access to the Nepean Creek Stormwater Management Pond. Left-turn access to/from these properties will be accommodated through U-turns at nearby intersections or median breaks. Twelve properties will benefit from the full movement access afforded by two new local service roads connecting at Colonnade Road and Fisher Avenue.

Some of the properties will experience relatively significant property encroachments (up to 18 m) due to the westerly shift of the roadway.

### Segregated Bike Lanes

Although on-road cycling lanes are shown in the plan it is also proposed that segregated bike lanes be investigated at detailed design stage for sections with an identified bike lane and an urban cross-section. This will enhance the safety for cyclists.

### Traffic Impacts to the North of the Study Area

It is proposed that the two northbound lanes in Section 6, transition into one northbound through lane on Prince of Wales Drive north Fisher Avenue and double-left turn lanes from Prince of Wales Drive onto Fisher Avenue northbound. This corresponds with the current roadway geometry north and west of the Fisher Avenue/Prince of Wales Drive intersection. It is also in-line with projected future travel patterns which indicate that the strongest desire line north of the project limits will be via Fisher Avenue. Fisher Avenue has the capacity to carry 65% of the projected traffic growth, where Prince of Wales will only accommodate 35%. The 2031 morning peak hour, peak direction travel pattern is depicted in Figure 9.

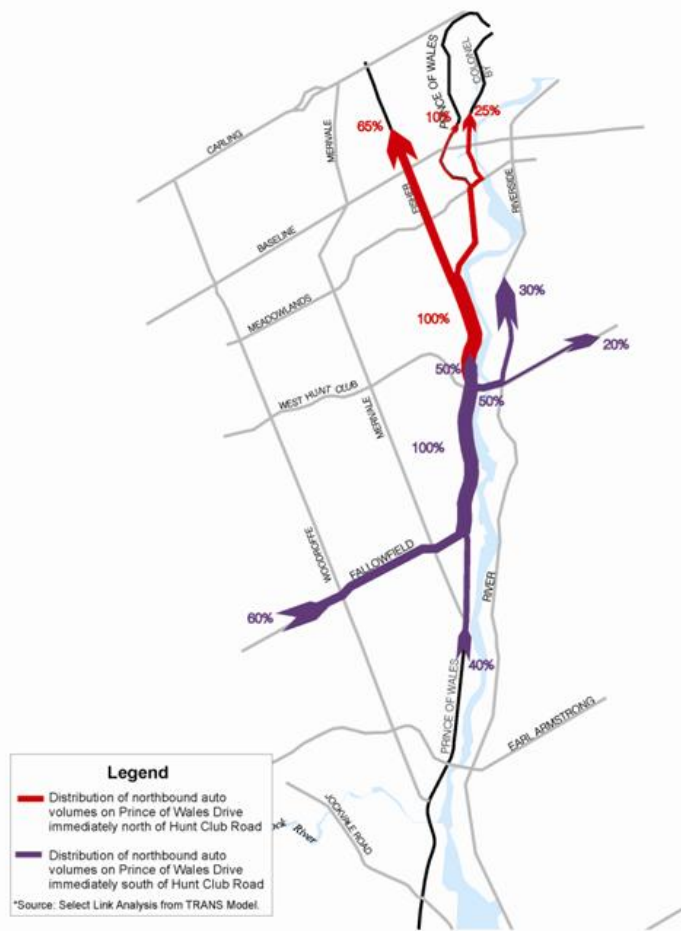


Figure 9 - 2031 Morning peak Hour – Peak Direction Travel Patterns

The proposed plan for Section 6 is also in keeping with the results from the Carleton Heights Traffic Area Management Study. This Traffic Study recommended that provisions for traffic calming measures be made in addition to sidewalks along Prince of Wales Drive north of Fisher Avenue.

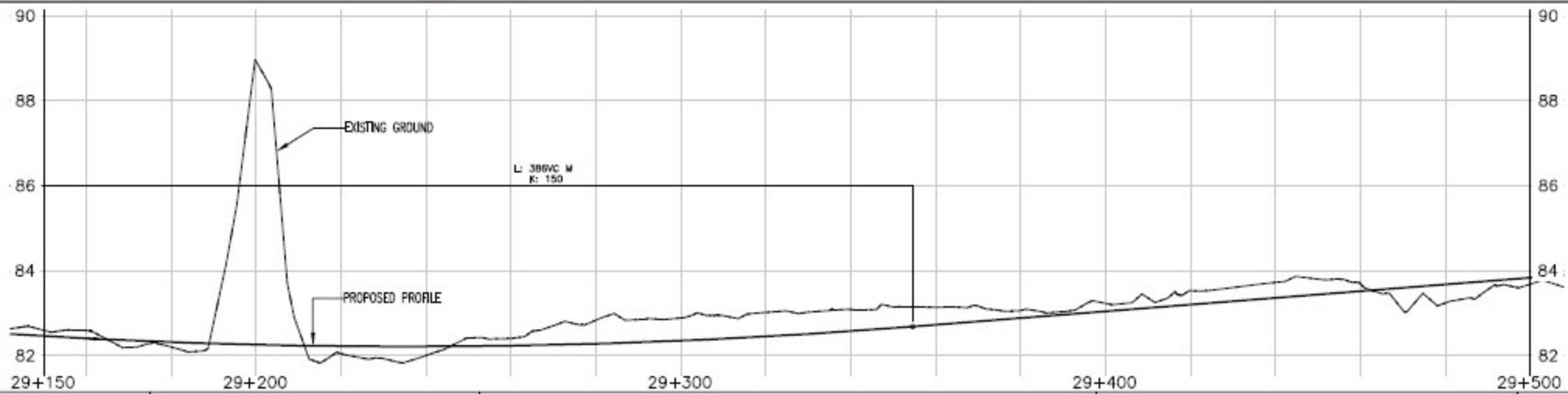
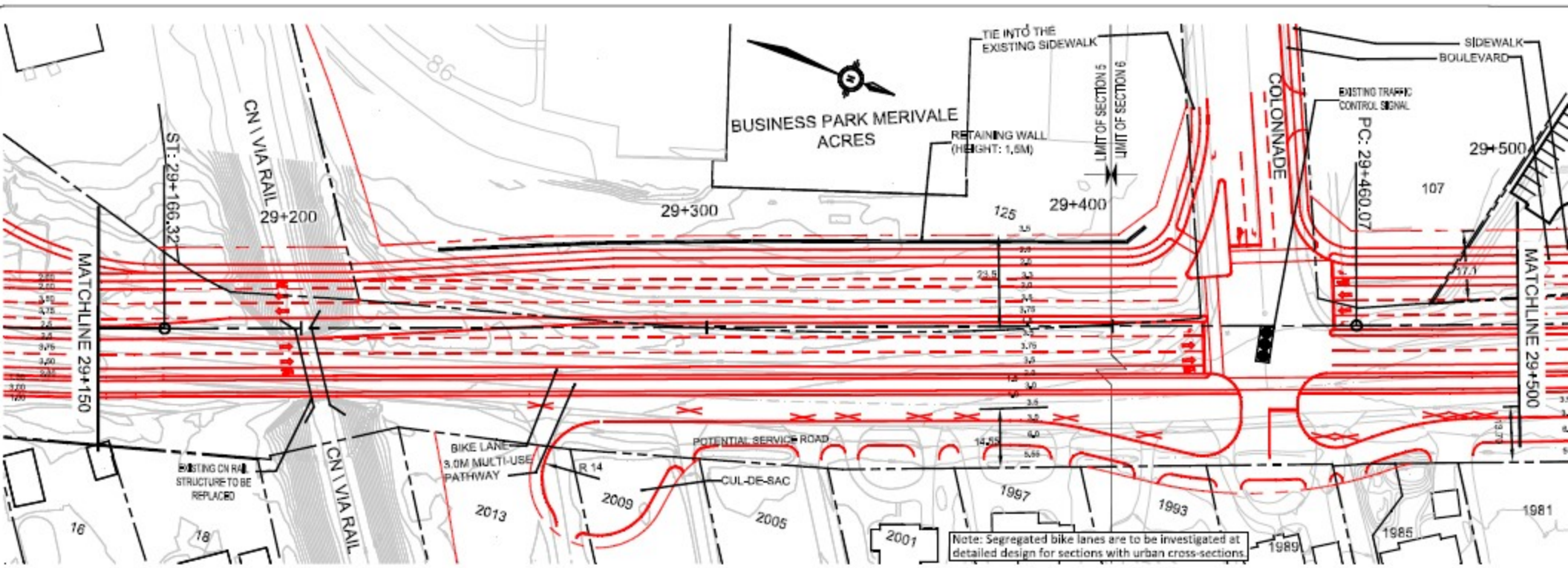
Although intersections north of the project at Fisher Avenue/Meadowlands Drive and at Prince of Wales Drive/Meadowlands Drive are projected to operate at acceptable levels of service, a potential capacity deficiency has been identified north of Baseline Road.

As a result of the above and in recognition of concerns within the Carleton Heights community regarding increased traffic pressures, it is proposed that:

- The widening of Prince of Wales Drive be implemented from south to north.
- Preliminary construction phasing be coordinated with other TMP projects in the area (with priority given to transit), as described in Table 1.
- Assessment of need for potential widening of Fisher Avenue (Dynes Road to Carling Avenue) be considered in the next TMP update.
- Implement mitigation strategies outlined in the Carleton Heights Area Traffic Management Study as appropriate (<http://www.ottawa.ca/calendar/ottawa/citycouncil/trc/2009/12-02/ACS2009-ICS-PGM-0226.htm>).

Table 1 – Preliminary Construction Phasing

Timing for Implementation	Prince of Wales Widening from 2 to 4 lanes	Other Supporting Projects
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# APPENDIX H

## NCR Survey Data

# Merivale

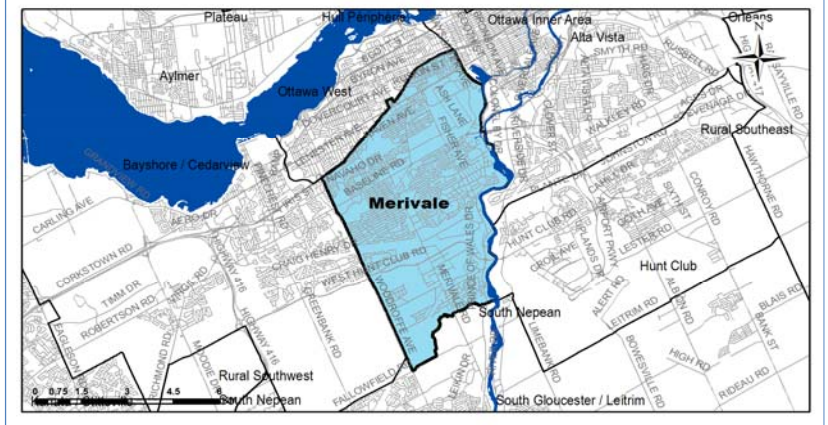
## Demographic Characteristics

Population	77,720	Actively Travelled	61,960
Employed Population	34,650	Number of Vehicles	41,580
Households	32,990	Area (km <sup>2</sup> )	38.8

Occupation Status (age 5+)	Male	Female	Total
Full Time Employed	15,970	14,080	30,050
Part Time Employed	1,660	2,940	4,600
Student	9,510	8,160	17,680
Retiree	6,960	9,020	15,980
Unemployed	1,340	1,130	2,470
Homemaker	50	1,980	2,030
Other	470	810	1,280
<b>Total:</b>	<b>35,960</b>	<b>38,120</b>	<b>74,080</b>

Traveller Characteristics	Male	Female	Total
Transit Pass Holders	7,770	8,770	16,540
Licensed Drivers	27,680	27,260	54,940
Telecommuters	140	150	290
Trips made by residents	98,530	103,670	202,200

Selected Indicators	
Daily Trips per Person (age 5+)	2.73
Vehicles per Person	0.53
Number of Persons per Household	2.36
Daily Trips per Household	6.13
Vehicles per Household	1.26
Workers per Household	1.05
Population Density (Pop/km <sup>2</sup> )	2000

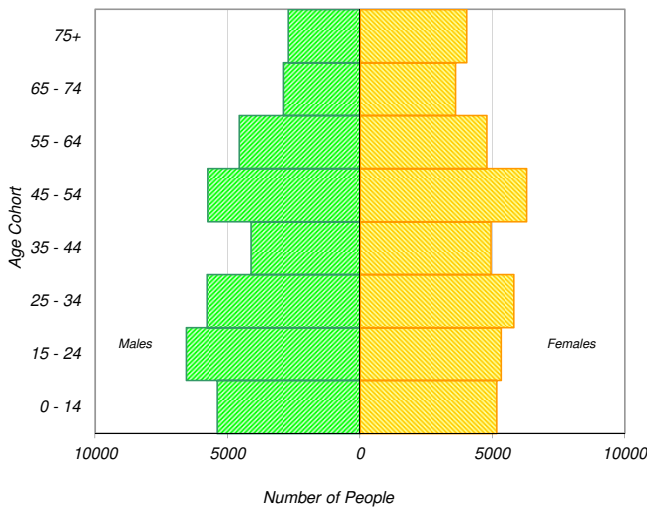


Household Size		
1 person	10,050	30%
2 persons	11,680	35%
3 persons	5,060	15%
4 persons	3,890	12%
5+ persons	2,310	7%
<b>Total:</b>	<b>32,990</b>	<b>100%</b>

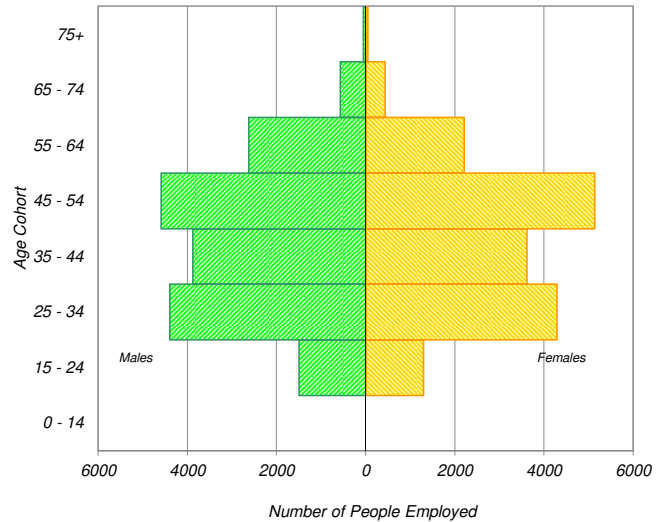
Households by Vehicle Availability		
0 vehicles	5,150	16%
1 vehicle	17,220	52%
2 vehicles	8,490	26%
3 vehicles	1,580	5%
4+ vehicles	560	2%
<b>Total:</b>	<b>32,990</b>	<b>100%</b>

Households by Dwelling Type		
Single-detached	13,910	42%
Semi-detached	3,270	10%
Townhouse	4,320	13%
Apartment/Condo	11,490	35%
<b>Total:</b>	<b>32,990</b>	<b>100%</b>

Population



Employed Population

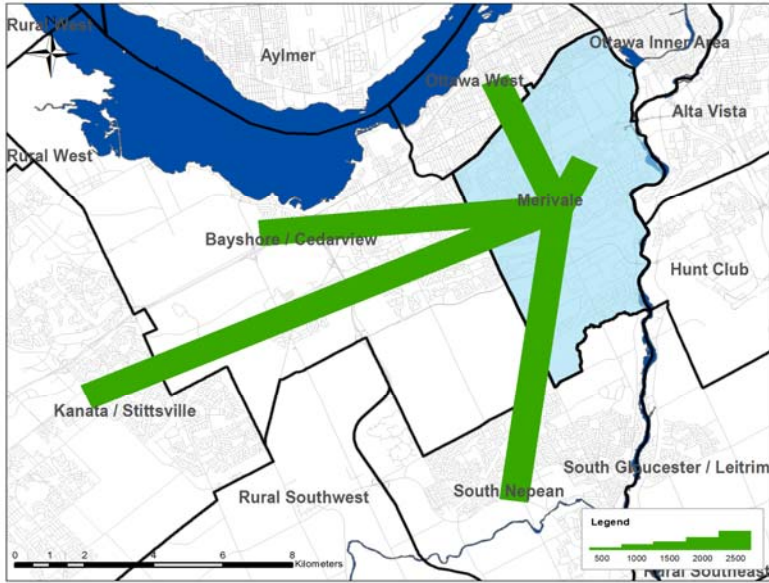


\* In 2005 data was only collected for household members aged 11+ therefore these results cannot be compared to the 2011 data.

## Travel Patterns

### Top Five Origins of Trips to Merivale

#### AM Peak Period



### Summary of Trips to and from Merivale

#### AM Peak Period (6:30 - 8:59)

Districts	Destinations of Trips From		Origins of Trips To	
	District	% Total	District	% Total
Ottawa Centre	4,710	11%	600	1%
Ottawa Inner Area	4,710	11%	3,260	7%
Ottawa East	780	2%	1,610	3%
Beacon Hill	580	1%	540	1%
Alta Vista	3,690	9%	3,010	6%
Hunt Club	960	2%	3,130	6%
Merivale	13,980	34%	13,980	28%
Ottawa West	4,960	12%	3,340	7%
Bayshore / Cedarview	2,850	7%	4,710	9%
Orléans	460	1%	1,940	4%
Rural East	10	0%	340	1%
Rural Southeast	10	0%	960	2%
South Gloucester / Leirtrim	340	1%	770	2%
South Nepean	790	2%	4,310	9%
Rural Southwest	200	0%	840	2%
Kanata / Stittsville	1,200	3%	3,410	7%
Rural West	70	0%	720	1%
Île de Hull	400	1%	130	0%
Hull Périphérie	180	0%	260	1%
Plateau	0	0%	190	0%
Aylmer	70	0%	520	1%
Rural Northwest	10	0%	250	1%
Pointe Gatineau	40	0%	320	1%
Gatineau Est	30	0%	310	1%
Rural Northeast	30	0%	30	0%
Buckingham / Masson-Angers	0	0%	100	0%
<b>Ontario Sub-Total:</b>	<b>40,300</b>	<b>98%</b>	<b>47,470</b>	<b>96%</b>
<b>Québec Sub-Total:</b>	<b>760</b>	<b>2%</b>	<b>2,110</b>	<b>4%</b>
<b>Total:</b>	<b>41,060</b>	<b>100%</b>	<b>49,580</b>	<b>100%</b>

### Trips by Trip Purpose

24 Hours	From District		To District		Within District	
Work or related	26,740	17%	34,050	22%	8,200	9%
School	8,520	6%	15,360	10%	6,130	7%
Shopping	12,310	8%	18,860	12%	19,990	23%
Leisure	13,070	9%	13,870	9%	9,290	11%
Medical	3,690	2%	6,540	4%	2,460	3%
Pick-up / drive passenger	9,730	6%	9,810	6%	5,080	6%
Return Home	73,660	48%	48,810	32%	32,900	37%
Other	5,540	4%	6,050	4%	3,690	4%
<b>Total:</b>	<b>153,260</b>	<b>100%</b>	<b>153,350</b>	<b>100%</b>	<b>87,740</b>	<b>100%</b>

AM Peak (06:30 - 08:59)	From District		To District		Within District	
Work or related	16,720	62%	20,310	57%	4,120	29%
School	5,210	19%	8,320	23%	4,760	34%
Shopping	360	1%	520	1%	610	4%
Leisure	470	2%	880	2%	700	5%
Medical	620	2%	1,290	4%	300	2%
Pick-up / drive passenger	1,790	7%	2,450	7%	1,700	12%
Return Home	980	4%	1,110	3%	950	7%
Other	930	3%	740	2%	830	6%
<b>Total:</b>	<b>27,080</b>	<b>100%</b>	<b>35,620</b>	<b>100%</b>	<b>13,970</b>	<b>100%</b>

PM Peak (15:30 - 17:59)	From District		To District		Within District	
Work or related	1,110	3%	1,110	4%	310	2%
School	290	1%	750	2%	220	1%
Shopping	3,540	9%	3,240	10%	3,250	18%
Leisure	3,200	8%	2,840	9%	2,140	12%
Medical	160	0%	530	2%	310	2%
Pick-up / drive passenger	3,430	9%	2,690	9%	1,060	6%
Return Home	27,480	68%	18,570	59%	9,960	56%
Other	940	2%	1,530	5%	610	3%
<b>Total:</b>	<b>40,150</b>	<b>100%</b>	<b>31,260</b>	<b>100%</b>	<b>17,860</b>	<b>100%</b>

Peak Period (%)	Total:	% of 24 Hours	Within District (%)
24 Hours	394,350		22%
AM Peak Period	76,670	19%	18%
PM Peak Period	89,270	23%	20%

### Trips by Primary Travel Mode

24 Hours	From District		To District		Within District	
Auto Driver	94,090	61%	94,010	61%	47,940	55%
Auto Passenger	22,640	15%	22,750	15%	13,260	15%
Transit	28,190	18%	27,930	18%	6,370	7%
Bicycle	2,400	2%	2,440	2%	1,340	2%
Walk	2,800	2%	2,790	2%	15,100	17%
Other	3,150	2%	3,420	2%	3,720	4%
<b>Total:</b>	<b>153,270</b>	<b>100%</b>	<b>153,340</b>	<b>100%</b>	<b>87,730</b>	<b>100%</b>

AM Peak (06:30 - 08:59)	From District		To District		Within District	
Auto Driver	14,480	53%	21,440	60%	6,050	43%
Auto Passenger	2,940	11%	4,180	12%	2,030	15%
Transit	6,960	26%	7,770	22%	1,500	11%
Bicycle	840	3%	660	2%	430	3%
Walk	600	2%	500	1%	2,380	17%
Other	1,270	5%	1,060	3%	1,580	11%
<b>Total:</b>	<b>27,090</b>	<b>100%</b>	<b>35,610</b>	<b>100%</b>	<b>13,970</b>	<b>100%</b>

PM Peak (15:30 - 17:59)	From District		To District		Within District	
Auto Driver	25,650	64%	18,310	59%	9,270	52%
Auto Passenger	5,440	14%	4,410	14%	2,650	15%
Transit	6,940	17%	6,070	19%	1,520	9%
Bicycle	590	1%	790	3%	310	2%
Walk	800	2%	890	3%	3,190	18%
Other	710	2%	790	3%	930	5%
<b>Total:</b>	<b>40,130</b>	<b>100%</b>	<b>31,260</b>	<b>100%</b>	<b>17,870</b>	<b>100%</b>

Avg Vehicle Occupancy	From District		To District		Within District	
24 Hours	1.24		1.24		1.28	
AM Peak Period	1.20		1.19		1.34	
PM Peak Period	1.21		1.24		1.29	

Transit Modal Split	From District		To District		Within District	
24 Hours	19%		19%		9%	
AM Peak Period	29%		23%		16%	
PM Peak Period	18%		21%		11%	

# APPENDIX I

## Trip Distribution Analysis

External Trip Distribution Calculations  
 From Merivale Zone TRNAS O-D Survey 2011 Data

Zone Internal (Meriva	OtripsTo	Entry/Exit Point
	28%	
Ottawa Centre	1%	PoW-North
Ottawa Inner Area	7%	PoW-North
Ottawa East	3%	PoW-North
Beacon Hill	1%	PoW-North
Alta Vista	6%	PoW-North
Hunt Club	6%	PoW-South
Merivale	28%	N/A
Ottawa West	7%	PoW-North
Bayshore/Cedarview	9%	Col-West
Orleans	4%	PoW-North
Rural East	1%	PoW-North
Rural Southeast	1%	PoW-South
South Gloucester /Leit	2%	PoW-South
South Nepean	9%	PoW-South
Rural Southwest	2%	PoW-South
Kanata / Stittsville	7%	Col-West
Rural West	1%	PoW-North
Ile de Hull	0%	PoW-North
Hull Peripherie	1%	PoW-North
Plateau	0%	PoW-North
Aylmer	1%	PoW-North
Rural Northwest	1%	PoW-North
Pointe Gatineau	1%	PoW-North
Gatineau Est	1%	PoW-North
Rural Northeast	0%	PoW-North
Buckingham / Masson	0%	PoW-North
	100%	

Internal	
10%	46% PoW-North
8%	28% PoW-South
10%	26% Col-West
	100%

**Colonnade Road Split per Access**

Access #1	North	60%
	South	40%
Access #2	North	60%
	South	40%
Access #3	North	60%
	South	40%

# APPENDIX J

## TRANS Model Excerpts



# TRANS Regional Model

Version 2.15 - Assigned June 16, 2020

## AM Peak Hour Total Traffic Volume Prince of Wales and Colonnade Area

2011 Model - Basecase

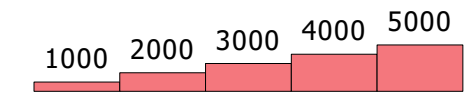
N/A

User Initials: TIMW  
Plot Prepared: Feb 2, 2021  
EMME Scenario: 21711

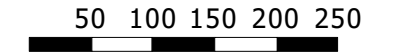


### Legend

AM Peak Hour Total Traffic Volume



Distance (m)



The TRANS model is continuously refined & maintained, and all information is provided in good faith. However, model outputs are provided "as is", and no warranty or guarantee is provided as to the accuracy, reliability or reasonableness of the results. In using this data, you agree to accept any and all risks arising from any incorrect, incomplete, or misleading information.

Recipients are required to use caution and professional judgement in using and interpreting model outputs. In particular, caution should be used when focusing on a geographically limited area (such as a single road or intersection), as the model is primarily designed to simulate regional-scale phenomena and has been calibrated at a regional level.

As general good practice, it is recommended that the user confirm the network coding within the area of interest, and compare base year forecasts against traffic count data to assess the extent to which the model may be over- or under-estimating the travel demand.

# TRANS Regional Model

Version 2.15 - Assigned June 16, 2020

## AM Peak Hour Total Traffic Volume

### Prince of Wales and Colonnade Area

2031 Model - Basecase

N/A

User Initials: TIMW

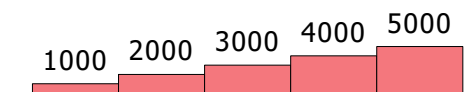
Plot Prepared: Feb 2, 2021

EMME Scenario: 21711

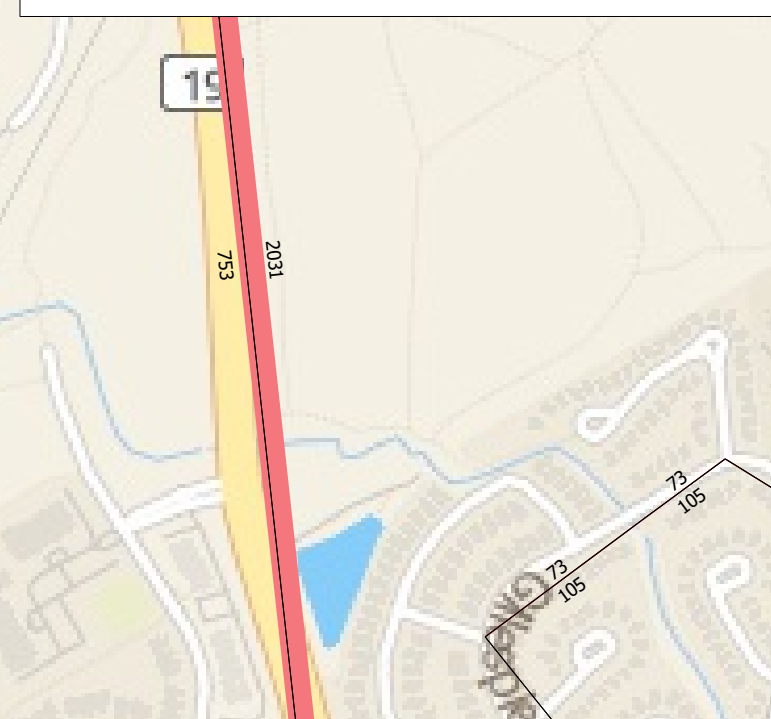
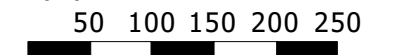


## Legend

AM Peak Hour Total Traffic Volume



Distance (m)



The TRANS model is continuously refined & maintained, and all information is provided in good faith. However, model outputs are provided "as is", and no warranty or guarantee is provided as to the accuracy, reliability or reasonableness of the results. In using this data, you agree to accept any and all risks arising from any incorrect, incomplete, or misleading information.

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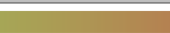
As general good practice, it is recommended that the user confirm the network coding within the area of interest, and compare base year forecasts against traffic count data to assess the extent to which the model may be over- or under-estimating the travel demand.

# APPENDIX K

## Level of Service Definitions

The MMLOS allows for comparison of modes in order to evaluate trade-offs by assessing the critical parameters that determine the relative attractiveness and comfort for particular mode along a corridor. These factors vary – an overview of each LOS range is presented in Exhibit 1.

Exhibit 1 – LOS Ranges by Mode

MODE	ELEMENT	LEVEL OF SERVICE	
			
Pedestrians (PLOS)	Segments	High level of comfort	Low level of comfort
	Intersections	Short delay, high level of comfort, low risk	Long delay, low level of comfort, high risk
Bicycles (BLOS)	Segments	High level of comfort	Low level of comfort
	Intersections	Low level of risk / stress	High level of risk / stress
Trucks (TkLOS)	Segments	Unimpeded movement	Impeded movement
	Intersections	Unimpeded movement / short delay	Impeded movement / long delay
Transit (TLOS)	Segments	High level of reliability	Low level of reliability
	Intersections	Short delay	Long delay
Vehicles (LOS)	Intersections	Low lane utilization	High lane utilization

Although the LOS methodology enables trade-offs to be made between modes, it is still important to consider the scales of each mode as independent from one another. In other words, because the level of service tools measure different factors, they do not necessarily cover the same spectrum of conditions. A vehicle experiencing LOS F with high lane utilization will likely encounter long delays and congested conditions. However this does not necessarily represent the lack of comfort, higher risk or stress that LOS F represents for cyclists, or lack of comfort, longer delays or higher risk that LOS F represents for pedestrians. The varying ranges are reflected in the methodologies for each mode, but also in the target table provided in Section 7.

The following sections provide a detailed explanation of the intent, data requirements, and calculation steps for each modal LOS. For further clarity, examples from the Ottawa context are included in Appendix A.

## 2 Pedestrian Level of Service (PLOS)

### 2.1 Intent

The primary intent of the Pedestrian Level of Service (PLOS) tool is to evaluate pedestrian comfort, safety and convenience. The segment analysis is based on the quality of pedestrian facilities and impact of adjacent traffic while the intersection methodology considers two factors – delay experienced by pedestrians, and Pedestrian Exposure to Traffic at Signalized Intersections (PETS). The PETS approach was originally based on the Charlotte NC Pedestrian LOS at Signalized Intersections methodology, although it has been adapted significantly to better suit the Ottawa context.

It should be noted that there are many additional factors that contribute to pedestrian comfort beyond the effects of the facility and adjacent traffic including lighting, land use / built form, urban design elements and streetscaping, including vegetation and trees. While it is beyond the scope of MMLOS to address all of these elements, appropriate City of Ottawa planning and design

documents should be referenced in the design of the boulevard and pedestrian way. This may include specific consideration of street trees and other vegetation / bio-swale options to create Green Street Designs as per the Urban Tree Strategy, or various Road Corridor Planning & Design Guidelines. Street trees and other elements can have a positive effect on the pedestrian environment and other users of the corridor.

## 2.2 Data Requirements

Data required to evaluate the pedestrian level of service is summarized in Exhibit 2 below.

Exhibit 2 - Data Requirements for Pedestrian Level of Service

SEGMENTS	SIGNALIZED INTERSECTIONS
<ul style="list-style-type: none"> <li>» Vehicular operating speed</li> <li>» Sidewalk width</li> <li>» Boulevard width</li> <li>» Motor vehicle volume (AADT / lane)</li> <li>» Presence of on-street parking</li> </ul>	<p><b>Exposure to Traffic</b></p> <ul style="list-style-type: none"> <li>» Street width (number of through lanes to be crossed – with or without a median) and presence of refuge island for crossing pedestrians</li> <li>» Right &amp; left turn conflicts based on phasing (permitted, protected/permitted, protected, prohibited) and pedestrian-only phases (leading pedestrian interval)</li> <li>» Right turn on Red (RTOR) restrictions</li> <li>» Corner radius and type (smart right turn channel, right turn channel with receiving lane)</li> <li>» Crosswalk treatment (transverse marking, zebra stripe markings, textured/coloured crosswalks, raised crosswalks)</li> </ul> <p><b>Delay</b></p> <ul style="list-style-type: none"> <li>» Cycle length</li> <li>» Pedestrian green time (walk time)</li> </ul>

## 2.3 Methodology

The methodology for evaluating PLOS at a segment level utilizes a look-up table approach based on cross-section and roadway characteristics. Judgement should be applied when determining which section of a corridor to evaluate as representative of the segment. In most cases, sidewalks on both side should be evaluated and documented, however the segment overall score can be taken from the lowest quality facility on that segment. There may be certain land-use designations or policies where sidewalks are required on one side of the street only and therefore only one side of the street is evaluated.

In rural settings where sidewalks are not typically provided and paved shoulders are available for pedestrians to use, several issues are to be considered regarding the suitability of the paved shoulders as pedestrian space:

- Maintenance – Paved shoulders may be maintained differently than sidewalks i.e. they may be partially, rather than fully cleared of snow and debris, or they may be maintained with less priority after snow fall than a sidewalk in an urban area.
- Lack of physical separation – Because paved shoulders are not separated from the travelled way, there is a greater risk of encroachment from vehicles, particularly oversized trucks or trailers can pose a greater risk to pedestrians.

## 3 Bicycle Level of Service (BLOS)

### 3.1 Intent

The intent of the Bicycle Level of Service (BLOS) tool is to evaluate both roadway segments and signalized intersections for the level of traffic stress (LTS) experienced by cyclists using the corridor. The methodology, based on a recent Mineta Transportation Institute report (no. 11-19), relates the LTS on a facility to the degree of comfort experienced by a cyclist and targeted users. The City of Ottawa has adapted the tool to allow for comparison with other modes by mapping LTS to level of service A-F as shown in Exhibit 8.

Exhibit 8 – Qualitative descriptions for each LTS score (adapted from MTI Report no. 11-19)

LTS	DESCRIPTION	CATEGORY OF CYCLIST	CITY OF OTTAWA LOS
LTS 1	Presenting little traffic stress and demanding little attention from cyclists, and attractive enough for a relaxing bike ride. Suitable for almost all cyclists, including children trained to safely cross intersections. On links, cyclists are either physically separated from traffic, or are in an exclusive bicycling zone next to a slow traffic stream with no more than one lane per direction, or are on a shared road where they interact with only occasional motor vehicles (as opposed to a stream of traffic) with a low speed differential. Where cyclists ride alongside a parking lane, they have ample operating space outside the zone into which car doors are opened. Intersections are easy to approach and cross.	All ages and skill levels – both children and adults	A
LTS 2	On links, cyclists are either physically separated from traffic, or are in an exclusive bicycling zone next to a well-confined traffic stream with adequate clearance from a parking lane, or are on a shared road where they interact with only occasional motor vehicles (as opposed to a stream of traffic) with a low speed differential. Where a bike lane lies between a through lane and a right turn lane, it is configured to give cyclists unambiguous priority where cars cross the bike lane and to keep car speed in the right-turn lane comparable to bicycling speeds. Crossings are not difficult for most adults.	Most cyclists	B
LTS 3	More traffic stress than LTS 2, yet markedly less than the stress of integrating with multilane traffic, and therefore welcome to many people currently riding bikes in American cities. Offering cyclists either an exclusive riding zone (lane) next to moderate-speed traffic or shared lanes on streets that are not multilane and have moderately low speed. Crossings may be longer or across higher-speed roads than allowed by LTS 2, but are still considered acceptably safe to most adult pedestrians.	Most experienced adult cyclists	C, D based on facility characteristics
LTS 4	A level of stress beyond LTS3.	Very confident cyclists only	E, F based on facility characteristics

Since the LOS methodology is related to the type of cyclists that will be comfortable on certain roads and facilities, it provides support and justification for infrastructure improvements that may attract new riders.

### 3.2 Data Requirements

Data required to evaluate the bicycle level of service is dependent on the cycling facility / intersection type, as shown in Exhibit 9.

## 4 Transit Level of Service (TLOS)

### 4.1 Intent

The intent of the transit level of service (TLOS) is to evaluate the relative attractiveness of transit in support of the City's aim to ultimately increase transit mode share. The relative attractiveness, for the purposes of TLOS, is evaluated based on transit travel time and the transit priority afforded to transit vehicles based on varying facility types and conditions.

### 4.2 Data Requirements

The data required to evaluate TLOS is shown in Exhibit 13.

Exhibit 13 – Data Requirements for Transit Level of Service

SEGMENTS	SIGNALIZED INTERSECTIONS
<ul style="list-style-type: none"> <li>» Level/exposure to congestion delay, friction, and incidents (qualitative assessment)</li> <li>» Average transit travel speed</li> <li>» Posted speed limit</li> <li>» Number of driveways along corridor and approximate crossing volume</li> </ul>	<ul style="list-style-type: none"> <li>» Average Signal Delay</li> </ul>

The data source for these attributes may vary depending on the type of project. For existing corridors, free flow and actual speeds could be measured through travel time surveys. For new corridors, or for evaluating modal trade-offs, actual transit speed would need to be modelled through micro-simulations.

In terms of evaluating delay at intersections, the estimation/measurement method (in order of preference) is: field measurement, microscopic simulation (VISSIM, AIMSUN), or macroscopic simulation (Synchro, HCS, analytical/graphical methods e.g. deterministic queuing model).

### 4.3 Methodology

The TLOS methodology is intended primarily to be applied only along corridors with existing or planned rapid transit or transit priority measures. However, corridors with regular bus routes (without transit priority) can still be evaluated with the current methodology. The extent of analysis required should be determined at the time of the project or development application.

A summary of the methodology is provided in Exhibit 14, with the segment and signal evaluation tables shown in Exhibit 15 and Exhibit 16, respectively.

Note that since the calibration of the methodology is ongoing, thresholds may be subject to future iterations.

An example illustrating the application of the TLOS methodology is provided in Appendix A.

Exhibit 16 – TLOS Signalized Intersection Evaluation Table

Delay	Typical Location	LOS
0	Grade Separation	A
≤10 sec	High Level TSP	B
≤20 sec		C
≤30 sec		D
≤40 sec	TSP & long cycle length	E
>40 sec	No TSP & long cycle length	F

Note: Delay includes travel time from end of queue to entering the intersection

## 5 Truck Level of Service (TkLOS)

### 5.1 Intent

Motor vehicle LOS accounts for trucks by considering the percent of trucks and buses in the traffic volume. However, some elements of roadway segments and intersections clearly affect the ability of trucks to operate with ease. The intent of the truck level of service (TkLOS) is to complement motor vehicle LOS by considering the physical space available for trucks to negotiate corners quickly and easily, and to operate safely within travelled lanes.

The objective of evaluating TkLOS is to facilitate goods movement within the City of Ottawa – however, unlike other modes, the TkLOS need only be applied along truck routes, arterial roads and key delivery access routes, since trucks are not intended to operate on every street. An exception would be within employment or enterprise areas where targets are set for trucks on all streets in these areas, as laid out in Section 7.

Care should be taken when considering the trade-offs between truck level of service and pedestrian/bicycle level of service with respect to the corner radii and turning speed. There is potential for trucks to encroach on pedestrian and cycling facilities if trucks are not accommodated appropriately, which can put vulnerable users at risk. As mentioned in Section 1.2, the MMLOS guidelines do not replace safety or geometric guidance.

### 5.2 Data Requirements

A summary of the data required to evaluate the truck level of service is provided in Exhibit 17.

Exhibit 17 - Data Requirements for Truck Level of Service

SEGMENTS	SIGNALIZED INTERSECTIONS
<ul style="list-style-type: none"> <li>» Street width (number of through lanes per direction)</li> <li>» Curb lane width (m)</li> </ul>	<ul style="list-style-type: none"> <li>» Effective radius</li> <li>» Number of receiving lanes on departing leg</li> </ul>

Note that effective radius is the same as corner radius where trucks must turn from the curbside lane into a departing curbside lane, however where parking lanes or on-street parking lanes are provided adjacent to the travel / turn lanes the effective radius can be determined by placing a simple or compound radius between the edge of the travel lane on the approach and departing legs – refer to Exhibit 18 below.



## 6 Vehicular Level of Service (LOS)

The following details outlining the evaluation of Vehicular Level of Service are extracted from the 2009 Transportation Impact Assessment Guidelines. As the TIA update is carried out, these parameters may be updated.

### 6.1 Intersection Capacity Analysis

An evaluation is required of any critical intersection within the study area that will potentially be affected by site generated traffic volumes during any or all of the relevant time periods and scenarios. Summaries are to be provided in tabular format clearly identifying intersection performance under existing and future traffic conditions. Where development is anticipated to proceed in phases or stages, projected performance for all intersections must be documented for the end of each phase.

Detailed output from analysis software is to be provided in an appendix to the report and copies of the electronic files should be provided on CD. Appendix B outlines parameters to be used in operational analysis of signalized intersections.

All volume to capacity (V/C) calculations relating to future conditions should be determined using signal timing optimized for the volume conditions being studied. The V/C ratio for an intersection is defined as the sum of equivalent volumes for all critical movements divided by the sum of capacities for all critical movements assuming that the V/C ratios for critical movements can be equalized. In cases where minimum pedestrian phase times prevent equalizing the level of service for critical movements, then the V/C ratio for the most heavily saturated critical movement should be considered as the V/C ratio for the intersection. Adjustment for the impact of pedestrian activated control is permitted provided detailed supporting analysis including projected pedestrian volumes is provided and discussed in advance with traffic engineering staff.

In the case of planning level or functional design projects, practitioners should undertake a two and a half hour peak period observation of volumes (typically 6:30 – 9:00 AM) to verify that the traffic volumes through the intersections reflect existing demands and to identify unusual operating conditions. For operational studies, peak hour observations are acceptable. Timing of observations and conditions observed should be documented in writing in the report.

LEVEL OF SERVICE	VOLUME TO CAPACITY RATIO
A	0 to 0.60
B	0.61 to 0.70
C	0.71 to 0.80
D	0.81 to 0.90
E	0.91 to 1.00
F	> 1.00

Intersection evaluations should identify:

- Signalized Intersections – V/C ratios for the overall intersection, as defined above, and individual movements; and
- Unsignalized Intersections - Level of service (LOS) where the LOS is between A and E; V/C where capacity is based on gap analysis if intersection LOS is F.

Existing signal timing information such as phasing, pedestrian minimums and clearance intervals must be used as a base to analyze the existing capacity of signalized intersections. This signal timing data should be obtained from the City of Ottawa Traffic Operations Division. Operational design of the signals analyzed should be in accordance with City of Ottawa signal operation practices.




























# APPENDIX L

## Detailed Capacity Analysis Reports

Lanes, Volumes, Timings

2022 AM Existing Conditions - Demand Rationalization

1: Prince of Wales Drive & Colonnade Road/Access

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 			 	 		 	 			 	 
Traffic Volume (vph)	216	0	115	0	0	1	281	1319	0	0	878	463
Future Volume (vph)	216	0	115	0	0	1	281	1319	0	0	878	463
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		0.0	85.0		0.0	0.0		0.0
Storage Lanes	2		0	1		0	1		0	0		1
Taper Length (m)	7.6			7.6			90.0			7.6		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.850							0.850
Flt Protected	0.950						0.950					
Satd. Flow (prot)	3195	1322	0	1820	1547	0	1662	1784	0	0	1767	1532
Flt Permitted	0.950						0.056					
Satd. Flow (perm)	3195	1322	0	1820	1547	0	98	1784	0	0	1767	1532
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		356			209							298
Link Speed (k/h)		50			50			60				60
Link Distance (m)		98.6			76.2			181.6				473.7
Travel Time (s)		7.1			5.5			10.9				28.4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	0%	17%	0%	0%	0%	4%	2%	0%	0%	3%	1%
Adj. Flow (vph)	240	0	128	0	0	1	312	1466	0	0	976	514
Shared Lane Traffic (%)												
Lane Group Flow (vph)	240	128	0	0	1	0	312	1466	0	0	976	514
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.4			7.4			3.7				3.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			4.9			4.9				4.9
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2			2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru			Thru	Right
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5			30.5	6.1
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8			1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		pm+pt	NA			NA	Perm
Protected Phases	7	4		3	8		5	2			6	

1: Prince of Wales Drive & Colonnade Road/Access

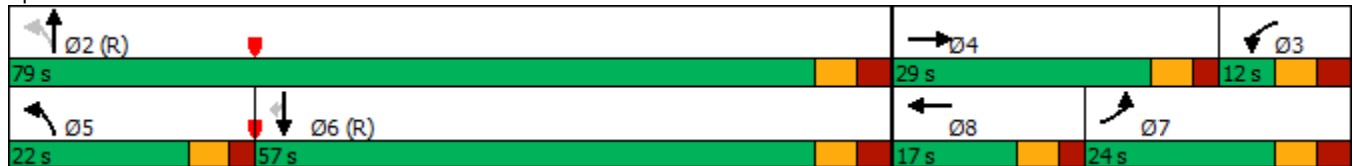


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases							2					6
Detector Phase	7	4		3	8		5	2			6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	5.0
Minimum Split (s)	12.0	28.0		12.0	17.0		11.0	36.0			36.0	36.0
Total Split (s)	24.0	29.0		12.0	17.0		22.0	79.0			57.0	57.0
Total Split (%)	20.0%	24.2%		10.0%	14.2%		18.3%	65.8%			47.5%	47.5%
Maximum Green (s)	17.0	23.0		5.0	11.0		16.0	72.0			50.0	50.0
Yellow Time (s)	3.7	3.7		3.7	3.7		3.7	3.7			3.7	3.7
All-Red Time (s)	3.3	2.3		3.3	2.3		2.3	3.3			3.3	3.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Total Lost Time (s)	7.0	6.0		7.0	6.0		6.0	7.0			7.0	7.0
Lead/Lag	Lag	Lead		Lag	Lead		Lead				Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes				Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Recall Mode	None	None		None	None		None	C-Max			C-Max	C-Max
Walk Time (s)		7.0						7.0			7.0	7.0
Flash Dont Walk (s)		15.0						22.0			22.0	22.0
Pedestrian Calls (#/hr)		0						0			0	0
Act Effct Green (s)	14.3	17.6			5.5		90.4	89.4			70.6	70.6
Actuated g/C Ratio	0.12	0.15			0.05		0.75	0.74			0.59	0.59
v/c Ratio	0.63	0.26			0.00		1.29	1.10			0.94	0.50
Control Delay	57.7	1.3			0.0		190.8	76.0			41.6	9.0
Queue Delay	0.0	0.0			0.0		0.0	0.0			0.0	0.0
Total Delay	57.7	1.3			0.0		190.8	76.0			41.6	9.0
LOS	E	A			A		F	E			D	A
Approach Delay		38.1						96.1			30.3	
Approach LOS		D						F			C	

Intersection Summary

Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green  
 Natural Cycle: 150  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.29  
 Intersection Signal Delay: 63.3  
 Intersection LOS: E  
 Intersection Capacity Utilization 97.3%  
 ICU Level of Service F  
 Analysis Period (min) 15

Splits and Phases: 1: Prince of Wales Drive & Colonnade Road/Access



4: Prince of Wales Drive & Fisher Avenue



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	9	549	537	1062	806	22
Future Volume (vph)	9	549	537	1062	806	22
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>		0.850				0.850
Fl <sub>t</sub> Protected	0.950		0.950			
Satd. Flow (prot)	1729	1517	1679	1784	1802	1419
Fl <sub>t</sub> Permitted	0.950		0.086			
Satd. Flow (perm)	1729	1517	152	1784	1802	1419
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		538				11
Link Speed (k/h)	50			60	50	
Link Distance (m)	277.0			251.2	265.2	
Travel Time (s)	19.9			15.1	19.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	2%	3%	2%	1%	9%
Adj. Flow (vph)	10	610	597	1180	896	24
Shared Lane Traffic (%)						
Lane Group Flow (vph)	10	610	597	1180	896	24
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (m)	2.0	2.0	2.0	10.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	2.0	2.0	0.6	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Free	pm+pt	NA	NA	Free
Protected Phases	4		5	2	6	
Permitted Phases		Free	2			Free
Detector Phase	4		5	2	6	
Switch Phase						

4: Prince of Wales Drive & Fisher Avenue

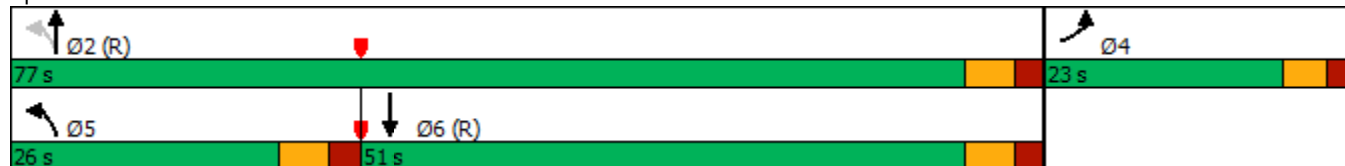


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Initial (s)	5.0		5.0	5.0	5.0	
Minimum Split (s)	22.5		11.0	32.5	32.5	
Total Split (s)	23.0		26.0	77.0	51.0	
Total Split (%)	23.0%		26.0%	77.0%	51.0%	
Maximum Green (s)	17.6		20.0	71.0	45.0	
Yellow Time (s)	3.3		3.7	3.7	3.7	
All-Red Time (s)	2.1		2.3	2.3	2.3	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	5.4		6.0	6.0	6.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	None		None	C-Max	C-Max	
Walk Time (s)	7.0			17.0	17.0	
Flash Dont Walk (s)	10.0			9.0	9.0	
Pedestrian Calls (#/hr)	0			0	0	
Act Effct Green (s)	6.2	100.0	91.4	96.2	45.0	100.0
Actuated g/C Ratio	0.06	1.00	0.91	0.96	0.45	1.00
v/c Ratio	0.09	0.40	0.79	0.69	1.11	0.02
Control Delay	45.7	0.8	29.9	4.5	93.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.7	0.8	29.9	4.5	93.0	0.0
LOS	D	A	C	A	F	A
Approach Delay	1.5			13.1	90.6	
Approach LOS	A			B	F	

Intersection Summary

Area Type: Other  
 Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 26 (26%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 150  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.11  
 Intersection Signal Delay: 32.4  
 Intersection LOS: C  
 Intersection Capacity Utilization 94.8%  
 ICU Level of Service F  
 Analysis Period (min) 15
























Splits and Phases: 4: Prince of Wales Drive & Fisher Avenue



Lanes, Volumes, Timings

2022 PM Existing Conditions - Demand Rationalization

1: Prince of Wales Drive & Colonnade Road/Access

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 			 			 					
Traffic Volume (vph)	471	0	339	0	0	0	102	909	0	0	1364	310
Future Volume (vph)	471	0	339	0	0	0	102	909	0	0	1364	310
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	0.0		0.0	85.0		0.0	0.0		0.0
Storage Lanes	2		0	1		0	1		0	0		1
Taper Length (m)	7.6			7.6			90.0			7.6		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850										0.850
Flt Protected	0.950						0.950					
Satd. Flow (prot)	3321	1532	0	1820	1820	0	1601	1802	0	0	1784	1488
Flt Permitted	0.950						0.043					
Satd. Flow (perm)	3321	1532	0	1820	1820	0	72	1802	0	0	1784	1488
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		169										160
Link Speed (k/h)		50			50			60				60
Link Distance (m)		98.6			76.2			181.6				473.7
Travel Time (s)		7.1			5.5			10.9				28.4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	1%	0%	1%	0%	0%	0%	8%	1%	0%	0%	2%	4%
Adj. Flow (vph)	523	0	377	0	0	0	113	1010	0	0	1516	344
Shared Lane Traffic (%)												
Lane Group Flow (vph)	523	377	0	0	0	0	113	1010	0	0	1516	344
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.4			7.4			3.7				3.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			4.9			4.9				4.9
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2			2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru			Thru	Right
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5			30.5	6.1
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8			1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot			pm+pt	NA			NA	Perm
Protected Phases	7	4		3	8		5	2			6	

Lanes, Volumes, Timings

2022 PM Existing Conditions - Demand Rationalization

1: Prince of Wales Drive & Colonnade Road/Access

	↖		→		↘		↙		←		↖		↙		↑		↘		↙		↓		↘		
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR													
Permitted Phases							2																	6	
Detector Phase	7	4		3	8		5	2														6			6
Switch Phase																									
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0														5.0			5.0
Minimum Split (s)	11.0	28.0		11.0	17.0		12.0	36.0														36.0			36.0
Total Split (s)	25.0	30.0		12.0	17.0		14.0	108.0														94.0			94.0
Total Split (%)	16.7%	20.0%		8.0%	11.3%		9.3%	72.0%														62.7%			62.7%
Maximum Green (s)	19.0	24.0		6.0	11.0		7.0	101.0														87.0			87.0
Yellow Time (s)	3.7	3.7		3.7	3.7		3.7	3.7														3.7			3.7
All-Red Time (s)	2.3	2.3		2.3	2.3		3.3	3.3														3.3			3.3
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0														0.0			0.0
Total Lost Time (s)	6.0	6.0		6.0	6.0		7.0	7.0														7.0			7.0
Lead/Lag	Lag	Lead		Lag	Lead		Lead															Lag			Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes															Yes			Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0														3.0			3.0
Recall Mode	None	None		None	None		None	C-Max														C-Max			C-Max
Walk Time (s)		7.0						7.0														7.0			7.0
Flash Dont Walk (s)		15.0						22.0														22.0			22.0
Pedestrian Calls (#/hr)		0						0														0			0
Act Effct Green (s)	35.0	35.0					102.0	102.0														87.0			87.0
Actuated g/C Ratio	0.23	0.23					0.68	0.68														0.58			0.58
v/c Ratio	0.68	0.78					0.87	0.82														1.47			0.37
Control Delay	57.6	41.2					82.8	24.7														242.6			9.6
Queue Delay	0.0	0.0					0.0	0.0														0.0			0.0
Total Delay	57.6	41.2					82.8	24.7														242.6			9.6
LOS	E	D					F	C														F			A
Approach Delay		50.7						30.5														199.5			
Approach LOS		D						C														F			

Intersection Summary

Area Type: Other  
 Cycle Length: 150  
 Actuated Cycle Length: 150  
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green  
 Natural Cycle: 150  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.47  
 Intersection Signal Delay: 116.2    Intersection LOS: F  
 Intersection Capacity Utilization 120.6%    ICU Level of Service H  
 Analysis Period (min) 15

Splits and Phases: 1: Prince of Wales Drive & Colonnade Road/Access





4: Prince of Wales Drive & Fisher Avenue



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	5	624	400	768	807	21
Future Volume (vph)	5	624	400	768	807	21
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>		0.850				0.850
Fl <sub>t</sub> Protected	0.950		0.950			
Satd. Flow (prot)	1441	1502	1712	1767	1767	1473
Fl <sub>t</sub> Permitted	0.950		0.215			
Satd. Flow (perm)	1441	1502	387	1767	1767	1473
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		484				8
Link Speed (k/h)	50			60	50	
Link Distance (m)	277.0			251.2	265.2	
Travel Time (s)	19.9			15.1	19.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	20%	3%	1%	3%	3%	5%
Adj. Flow (vph)	6	693	444	853	897	23
Shared Lane Traffic (%)						
Lane Group Flow (vph)	6	693	444	853	897	23
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (m)	2.0	2.0	2.0	10.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	2.0	2.0	0.6	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Free	pm+pt	NA	NA	Free
Protected Phases	4		5	2	6	
Permitted Phases		Free	2			Free
Detector Phase	4		5	2	6	
Switch Phase						

Lanes, Volumes, Timings  
4: Prince of Wales Drive & Fisher Avenue

2022 PM Existing Conditions - Demand Rationalization



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Initial (s)	5.0		5.0	5.0	5.0	
Minimum Split (s)	22.5		11.0	32.5	32.0	
Total Split (s)	30.0		20.0	90.0	70.0	
Total Split (%)	25.0%		16.7%	75.0%	58.3%	
Maximum Green (s)	24.6		14.0	84.0	64.0	
Yellow Time (s)	3.3		3.7	3.7	3.7	
All-Red Time (s)	2.1		2.3	2.3	2.3	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	5.4		6.0	6.0	6.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	None		None	C-Max	C-Max	
Walk Time (s)	7.0			17.0	17.0	
Flash Dont Walk (s)	10.0			9.0	9.0	
Pedestrian Calls (#/hr)	0			0	0	
Act Effct Green (s)	6.1	120.0	111.5	116.3	91.5	120.0
Actuated g/C Ratio	0.05	1.00	0.93	0.97	0.76	1.00
v/c Ratio	0.08	0.46	0.86	0.50	0.67	0.02
Control Delay	56.2	1.0	27.3	1.9	10.9	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.2	1.0	27.3	1.9	10.9	0.0
LOS	E	A	C	A	B	A
Approach Delay	1.5			10.6	10.7	
Approach LOS	A			B	B	

Intersection Summary





















Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green  
 Natural Cycle: 120  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.86  
 Intersection Signal Delay: 8.4  
 Intersection LOS: A  
 Intersection Capacity Utilization 86.9%  
 ICU Level of Service E  
 Analysis Period (min) 15

Splits and Phases: 4: Prince of Wales Drive & Fisher Avenue



Lanes, Volumes, Timings  
1: Prince of Wales Drive & Colonnade Road/Access

2022 AM Existing Conditions

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	216	0	115	0	0	1	281	1319	0	0	878	463
Future Volume (vph)	216	0	115	0	0	1	281	1319	0	0	878	463
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000	1900
Storage Length (m)	0.0		0.0	0.0		0.0	85.0		0.0	0.0		0.0
Storage Lanes	2		0	1		0	1		0	0		1
Taper Length (m)	7.6			7.6			90.0			7.6		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.850							0.850
Flt Protected	0.950						0.950					
Satd. Flow (prot)	3372	1396	0	1921	1633	0	1755	1983	0	0	1963	1617
Flt Permitted	0.950						0.062					
Satd. Flow (perm)	3372	1396	0	1921	1633	0	115	1983	0	0	1963	1617
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		250			209							386
Link Speed (k/h)		50			50			60				60
Link Distance (m)		98.6			76.2			181.6				473.7
Travel Time (s)		7.1			5.5			10.9				28.4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	5%	0%	17%	0%	0%	0%	4%	2%	0%	0%	3%	1%
Adj. Flow (vph)	240	0	128	0	0	1	312	1466	0	0	976	514
Shared Lane Traffic (%)												
Lane Group Flow (vph)	240	128	0	0	1	0	312	1466	0	0	976	514
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.4			7.4			3.7				3.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			4.9			4.9				4.9
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.92	0.99	0.99	0.92	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2			2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru			Thru	Right
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5			30.5	6.1
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8			1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		pm+pt	NA			NA	Perm
Protected Phases	7	4		3	8		5	2			6	

Lanes, Volumes, Timings  
1: Prince of Wales Drive & Colonnade Road/Access

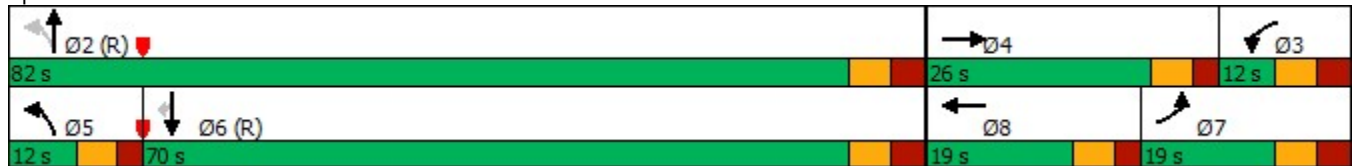
2022 AM Existing Conditions

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Permitted Phases							2						6
Detector Phase	7	4	3		8	5		2				6	6
Switch Phase													
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0		5.0				5.0	5.0
Minimum Split (s)	12.0	26.0	12.0		17.0	11.0		36.0				36.0	36.0
Total Split (s)	19.0	26.0	12.0		19.0	12.0		82.0				70.0	70.0
Total Split (%)	15.8%	21.7%	10.0%		15.8%	10.0%		68.3%				58.3%	58.3%
Maximum Green (s)	12.0	20.0	5.0		13.0	6.0		75.0				63.0	63.0
Yellow Time (s)	3.7	3.7	3.7		3.7	3.7		3.7				3.7	3.7
All-Red Time (s)	3.3	2.3	3.3		2.3	2.3		3.3				3.3	3.3
Lost Time Adjust (s)	-2.0	-3.0	-2.0		-3.0	-2.0		-3.0				-3.0	-3.0
Total Lost Time (s)	5.0	3.0	5.0		3.0	4.0		4.0				4.0	4.0
Lead/Lag	Lag	Lead	Lag		Lead	Lead					Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes					Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0		3.0				3.0	3.0
Recall Mode	None	None	None		None	None		C-Max				C-Max	C-Max
Walk Time (s)	7.0								7.0			7.0	7.0
Flash Dont Walk (s)	13.0								22.0			22.0	22.0
Pedestrian Calls (#/hr)	0								0			0	0
Act Effct Green (s)	15.8	20.1			8.5	92.9		92.9				66.0	66.0
Actuated g/C Ratio	0.13	0.17			0.07	0.77		0.77				0.55	0.55
v/c Ratio	0.54	0.29			0.00	0.78		0.96				0.90	0.48
Control Delay	53.1	1.7			0.0	45.7		28.5				37.4	5.4
Queue Delay	0.0	0.0			0.0	0.0		0.0				0.0	0.0
Total Delay	53.1	1.7			0.0	45.7		28.5				37.4	5.4
LOS	D	A			A	D		C				D	A
Approach Delay	35.2								31.5			26.4	
Approach LOS	D								C			C	

Intersection Summary

Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green  
 Natural Cycle: 145  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.96  
 Intersection Signal Delay: 29.8      Intersection LOS: C  
 Intersection Capacity Utilization 85.4%      ICU Level of Service E  
 Analysis Period (min) 15

Splits and Phases: 1: Prince of Wales Drive & Colonnade Road/Access



2: Colonnade Road South/Colonnade Road North & Colonnade Road



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	366	359	9	115	229	19
Future Volume (vph)	366	359	9	115	229	19
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>		0.850	0.875			
Fl <sub>t</sub> Protected	0.950					0.956
Satd. Flow (prot)	1695	1517	1310	0	0	1642
Fl <sub>t</sub> Permitted	0.950					0.646
Satd. Flow (perm)	1695	1517	1310	0	0	1109
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		399	128			
Link Speed (k/h)	50		60			60
Link Distance (m)	80.2		62.9			186.0
Travel Time (s)	5.8		3.8			11.2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	67%	18%	3%	42%
Adj. Flow (vph)	407	399	10	128	254	21
Shared Lane Traffic (%)						
Lane Group Flow (vph)	407	399	138	0	0	275
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.9		4.9			4.9
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2		1	2
Detector Template	Left	Right	Thru		Left	Thru
Leading Detector (m)	6.1	2.0	10.0		2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	6.1	2.0	0.6		2.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA		pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8			6	
Detector Phase	8	8	2		1	6
Switch Phase						

2: Colonnade Road South/Colonnade Road North & Colonnade Road

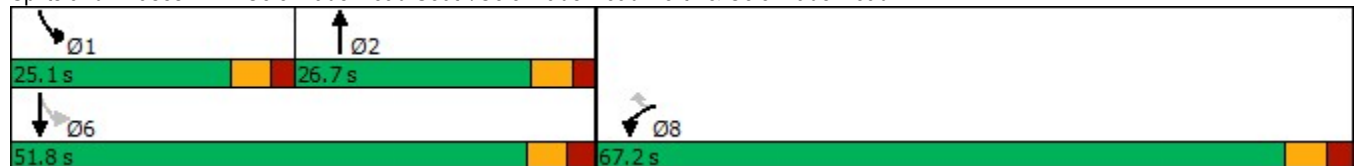


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	10.0	10.0	5.0		5.0	5.0
Minimum Split (s)	31.2	31.2	25.7		10.7	26.2
Total Split (s)	67.2	67.2	26.7		25.1	51.8
Total Split (%)	56.5%	56.5%	22.4%		21.1%	43.5%
Maximum Green (s)	61.0	61.0	21.0		19.4	45.6
Yellow Time (s)	3.7	3.7	3.7		3.7	3.7
All-Red Time (s)	2.5	2.5	2.0		2.0	2.5
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	6.2	6.2	5.7			6.2
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	Max		None	Max
Walk Time (s)	7.0	7.0	7.0			7.0
Flash Dont Walk (s)	18.0	18.0	13.0			13.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	25.4	25.4	46.4			45.9
Actuated g/C Ratio	0.30	0.30	0.55			0.55
v/c Ratio	0.79	0.54	0.18			0.45
Control Delay	38.4	5.2	3.4			16.2
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	38.4	5.2	3.4			16.2
LOS	D	A	A			B
Approach Delay	22.0		3.4			16.2
Approach LOS	C		A			B

Intersection Summary

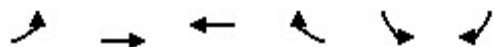
Area Type:	Other
Cycle Length:	119
Actuated Cycle Length:	83.8
Natural Cycle:	70
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.79
Intersection Signal Delay:	18.6
Intersection LOS:	B
Intersection Capacity Utilization	58.9%
ICU Level of Service	B
Analysis Period (min)	15

Splits and Phases: 2: Colonnade Road South/Colonnade Road North & Colonnade Road



Lanes, Volumes, Timings  
3: Colonnade Road North & Citiplace Drive

2022 AM Existing Conditions



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	10	318	215	13	42	25
Future Volume (vph)	10	318	215	13	42	25
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0			0.0	0.0	20.0
Storage Lanes	1			0	1	1
Taper Length (m)	30.0				2.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.993			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1572	1750	1726	0	1729	1547
Flt Permitted	0.558				0.950	
Satd. Flow (perm)	923	1750	1726	0	1729	1547
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			5			28
Link Speed (k/h)		60	60		50	
Link Distance (m)		132.5	212.4		109.2	
Travel Time (s)		8.0	12.7		7.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	10%	4%	5%	0%	0%	0%
Adj. Flow (vph)	11	353	239	14	47	28
Shared Lane Traffic (%)						
Lane Group Flow (vph)	11	353	253	0	47	28
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		3.7	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		1.6	1.6		1.6	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24			14	24	14
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	2.0	0.6	0.6		2.0	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		4	8		6	

Lanes, Volumes, Timings  
3: Colonnade Road North & Citiplace Drive

2022 AM Existing Conditions

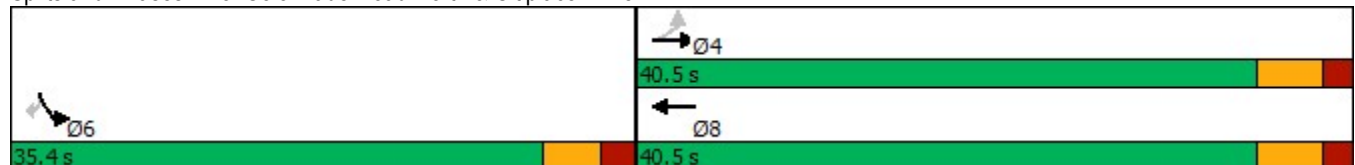


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Permitted Phases	4					6
Detector Phase	4	4	8		6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	40.5	40.5	40.5		22.5	22.5
Total Split (s)	40.5	40.5	40.5		35.4	35.4
Total Split (%)	53.4%	53.4%	53.4%		46.6%	46.6%
Maximum Green (s)	35.0	35.0	35.0		30.0	30.0
Yellow Time (s)	3.7	3.7	3.7		3.3	3.3
All-Red Time (s)	1.8	1.8	1.8		2.1	2.1
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5		5.4	5.4
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	None		Max	Max
Walk Time (s)	24.0	24.0	24.0		7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0		7.0	7.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)	16.5	16.5	16.5		30.2	30.2
Actuated g/C Ratio	0.29	0.29	0.29		0.52	0.52
v/c Ratio	0.04	0.70	0.51		0.05	0.03
Control Delay	14.2	26.4	20.3		8.5	4.1
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	14.2	26.4	20.3		8.5	4.1
LOS	B	C	C		A	A
Approach Delay		26.1	20.3		6.9	
Approach LOS		C	C		A	

Intersection Summary

Area Type: Other  
 Cycle Length: 75.9  
 Actuated Cycle Length: 57.7  
 Natural Cycle: 65  
 Control Type: Semi Act-Uncoord  
 Maximum v/c Ratio: 0.70  
 Intersection Signal Delay: 21.9  
 Intersection Capacity Utilization 30.9%  
 Analysis Period (min) 15  
 Intersection LOS: C  
 ICU Level of Service A

Splits and Phases: 3: Colonnade Road North & Citiplace Drive





Lanes, Volumes, Timings  
4: Prince of Wales Drive & Fisher Avenue

2022 AM Existing Conditions



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	9	549	537	1062	806	22
Future Volume (vph)	9	549	537	1062	806	22
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>		0.850				0.850
Fl <sub>t</sub> Protected	0.950		0.950			
Satd. Flow (prot)	1729	1517	1679	1784	1802	1419
Fl <sub>t</sub> Permitted	0.950		0.082			
Satd. Flow (perm)	1729	1517	145	1784	1802	1419
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		610				11
Link Speed (k/h)	50			60	50	
Link Distance (m)	277.0			251.2	265.2	
Travel Time (s)	19.9			15.1	19.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	2%	3%	2%	1%	9%
Adj. Flow (vph)	10	610	597	1180	896	24
Shared Lane Traffic (%)						
Lane Group Flow (vph)	10	610	597	1180	896	24
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (m)	2.0	2.0	2.0	10.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	2.0	2.0	0.6	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Free	pm+pt	NA	NA	Free
Protected Phases	4		5	2	6	
Permitted Phases		Free	2			Free
Detector Phase	4		5	2	6	
Switch Phase						

Lanes, Volumes, Timings  
4: Prince of Wales Drive & Fisher Avenue

2022 AM Existing Conditions

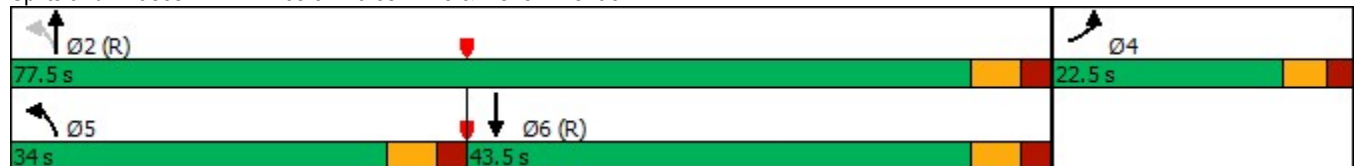


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Initial (s)	5.0		5.0	5.0	5.0	
Minimum Split (s)	22.5		11.0	32.5	32.5	
Total Split (s)	22.5		34.0	77.5	43.5	
Total Split (%)	22.5%		34.0%	77.5%	43.5%	
Maximum Green (s)	17.1		28.0	71.5	37.5	
Yellow Time (s)	3.3		3.7	3.7	3.7	
All-Red Time (s)	2.1		2.3	2.3	2.3	
Lost Time Adjust (s)	-2.0		-2.0	-3.0	-3.0	
Total Lost Time (s)	3.4		4.0	3.0	3.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	None		None	C-Max	C-Max	
Walk Time (s)	7.0			17.0	17.0	
Flash Dont Walk (s)	10.0			9.0	9.0	
Pedestrian Calls (#/hr)	0			0	0	
Act Effct Green (s)	8.2	100.0	93.4	96.8	50.3	100.0
Actuated g/C Ratio	0.08	1.00	0.93	0.97	0.50	1.00
v/c Ratio	0.07	0.40	0.80	0.68	0.99	0.02
Control Delay	43.1	0.8	29.6	3.8	53.6	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.1	0.8	29.6	3.8	53.6	0.0
LOS	D	A	C	A	D	A
Approach Delay	1.5			12.5	52.2	
Approach LOS	A			B	D	

Intersection Summary










Area Type: Other  
 Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 26 (26%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 150  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.99  
 Intersection Signal Delay: 21.4  
 Intersection LOS: C  
 Intersection Capacity Utilization 90.3%  
 ICU Level of Service E  
 Analysis Period (min) 15

Splits and Phases: 4: Prince of Wales Drive & Fisher Avenue












Lanes, Volumes, Timings  
5: Site Access #1 & Colonnade Road

2022 AM Existing Conditions

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	345	0	3	741	0	1
Future Volume (vph)	345	0	3	741	0	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Fr <sub>t</sub>					0.865	
Fl <sub>t</sub> Protected						
Satd. Flow (prot)	3087	0	0	3325	1574	0
Fl <sub>t</sub> Permitted						
Satd. Flow (perm)	3087	0	0	3325	1574	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	80.2			98.6	44.7	
Travel Time (s)	5.8			7.1	3.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	12%	0%	0%	4%	0%	0%
Adj. Flow (vph)	383	0	3	823	0	1
Shared Lane Traffic (%)						
Lane Group Flow (vph)	383	0	0	826	1	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)		14	24		24	14
Sign Control	Free			Free	Stop	
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	33.8%			ICU Level of Service A		
Analysis Period (min)	15					










HCM Unsignalized Intersection Capacity Analysis  
5: Site Access #1 & Colonnade Road

2022 AM Existing Conditions

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	345	0	3	741	0	1
Future Volume (Veh/h)	345	0	3	741	0	1
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	383	0	3	823	0	1
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)	80			98		
pX, platoon unblocked						
vC, conflicting volume			383	800	192	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			383	800	192	
tC, single (s)			4.1	6.8	6.9	
tC, 2 stage (s)						
tF (s)			2.2	3.5	3.3	
p0 queue free %			100	100	100	
cM capacity (veh/h)			1187	325	824	
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	
Volume Total	255	128	277	549	1	
Volume Left	0	0	3	0	0	
Volume Right	0	0	0	0	1	
cSH	1700	1700	1187	1700	824	
Volume to Capacity	0.15	0.08	0.00	0.32	0.00	
Queue Length 95th (m)	0.0	0.0	0.1	0.0	0.0	
Control Delay (s)	0.0	0.0	0.1	0.0	9.4	
Lane LOS			A	A		
Approach Delay (s)	0.0	0.0		9.4		
Approach LOS			A			
Intersection Summary						
Average Delay			0.0			
Intersection Capacity Utilization			33.8%	ICU Level of Service		A
Analysis Period (min)			15			










Lanes, Volumes, Timings  
6: Colonnade Road South & Site Access #2

2022 AM Existing Conditions

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	1	123	0	2	383
Future Volume (vph)	0	1	123	0	2	383
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>	0.865					
Flt Protected						
Satd. Flow (prot)	787	0	1542	0	0	1784
Flt Permitted						
Satd. Flow (perm)	787	0	1542	0	0	1784
Link Speed (k/h)	50		60		60	
Link Distance (m)	39.9		46.7		62.9	
Travel Time (s)	2.9		2.8		3.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	100%	18%	0%	0%	2%
Adj. Flow (vph)	0	1	137	0	2	426
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1	0	137	0	0	428
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0		0.0	
Link Offset(m)	0.0		0.0		0.0	
Crosswalk Width(m)	4.9		4.9		4.9	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free		Free	
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	33.0%			ICU Level of Service A		
Analysis Period (min)	15					










HCM Unsignalized Intersection Capacity Analysis  
6: Colonnade Road South & Site Access #2

2022 AM Existing Conditions

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	1	123	0	2	383
Future Volume (Veh/h)	0	1	123	0	2	383
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	1	137	0	2	426
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	63					
pX, platoon unblocked						
vC, conflicting volume	567	137			137	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	567	137			137	
tC, single (s)	6.4	7.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	4.2			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	488	705			1459	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	1	137	428			
Volume Left	0	0	2			
Volume Right	1	0	0			
cSH	705	1700	1459			
Volume to Capacity	0.00	0.08	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	10.1	0.0	0.0			
Lane LOS	B		A			
Approach Delay (s)	10.1	0.0	0.0			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			0.1			
Intersection Capacity Utilization			33.0%		ICU Level of Service	A
Analysis Period (min)			15			










Lanes, Volumes, Timings  
7: Colonnade Road South & Site Access #3

2022 AM Existing Conditions

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	1	122	0	1	382
Future Volume (vph)	0	1	122	0	1	382
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>	0.865					
Fl <sub>t</sub> Protected						
Satd. Flow (prot)	1574	0	1542	0	0	1784
Fl <sub>t</sub> Permitted						
Satd. Flow (perm)	1574	0	1542	0	0	1784
Link Speed (k/h)	50		60			60
Link Distance (m)	34.9		115.6			46.7
Travel Time (s)	2.5		6.9			2.8
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	18%	0%	0%	2%
Adj. Flow (vph)	0	1	136	0	1	424
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1	0	136	0	0	425
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.9		4.9			4.9
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	32.1%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis  
7: Colonnade Road South & Site Access #3

2022 AM Existing Conditions

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	1	122	0	1	382
Future Volume (Veh/h)	0	1	122	0	1	382
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	1	136	0	1	424
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)	110					
pX, platoon unblocked						
vC, conflicting volume	562	136			136	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	562	136			136	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	491	918			1461	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	1	136	425			
Volume Left	0	0	1			
Volume Right	1	0	0			
cSH	918	1700	1461			
Volume to Capacity	0.00	0.08	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	8.9	0.0	0.0			
Lane LOS	A		A			
Approach Delay (s)	8.9	0.0	0.0			
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			0.0			
Intersection Capacity Utilization			32.1%	ICU Level of Service	A	
Analysis Period (min)			15			



Intersection: 1: Prince of Wales Drive & Colonnade Road/Access

Movement	EB	EB	EB	WB	NB	NB	SB	SB	B15
Directions Served	L	L	TR	TR	L	TR	T	R	T
Maximum Queue (m)	47.1	46.1	48.6	8.9	167.4	178.4	284.0	146.1	1.8
Average Queue (m)	21.7	24.3	17.6	0.5	84.5	126.5	143.7	47.6	0.1
95th Queue (m)	38.4	40.0	37.5	4.0	178.0	206.9	252.1	127.1	1.3
Link Distance (m)	82.1	82.1	82.1	63.5		167.5	449.3	449.3	243.6
Upstream Blk Time (%)					0	6			
Queuing Penalty (veh)					0	0			
Storage Bay Dist (m)					85.0				
Storage Blk Time (%)					1	13			
Queuing Penalty (veh)					16	37			

Intersection: 2: Colonnade Road South/Colonnade Road North & Colonnade Road

Movement	WB	WB	NB	SB
Directions Served	L	R	TR	LT
Maximum Queue (m)	68.3	41.0	34.5	72.8
Average Queue (m)	47.8	20.7	10.3	29.7
95th Queue (m)	73.3	34.0	24.0	56.8
Link Distance (m)	64.0	64.0	41.8	167.0
Upstream Blk Time (%)	3		0	
Queuing Penalty (veh)	12		0	
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Colonnade Road North & Citiplace Drive

Movement	EB	EB	WB	SB	SB
Directions Served	L	T	TR	L	R
Maximum Queue (m)	13.3	70.7	47.7	19.0	13.9
Average Queue (m)	2.6	35.5	24.7	3.6	3.1
95th Queue (m)	9.9	58.0	43.4	12.1	10.5
Link Distance (m)		125.0	200.2	101.7	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)	50.0				20.0
Storage Blk Time (%)		1		0	0
Queuing Penalty (veh)		0		0	0

Intersection: 4: Prince of Wales Drive & Fisher Avenue

Movement	EB	NB	NB	SB
Directions Served	L	L	T	T
Maximum Queue (m)	12.6	108.2	49.0	151.6
Average Queue (m)	2.1	53.0	5.3	50.8
95th Queue (m)	9.3	94.3	26.2	123.8
Link Distance (m)	269.5	243.6	243.6	257.7
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 5: Site Access #1 & Colonnade Road

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (m)	41.8	4.7
Average Queue (m)	4.5	0.3
95th Queue (m)	23.1	2.9
Link Distance (m)	82.1	31.9
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 6: Colonnade Road South & Site Access #2

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (m)	13.0	6.2	13.8
Average Queue (m)	0.7	0.2	0.7
95th Queue (m)	6.4	4.4	7.5
Link Distance (m)	31.0	30.9	41.8
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		0	
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 7: Colonnade Road South & Site Access #3





















Movement	WB
Directions Served	LR
Maximum Queue (m)	9.0
Average Queue (m)	0.4
95th Queue (m)	3.5
Link Distance (m)	26.4
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 66

Lanes, Volumes, Timings  
 1: Prince of Wales Drive & Colonnade Road/Access

2022 PM Existing Conditions

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	471	0	339	0	0	0	102	909	0	0	1364	310
Future Volume (vph)	471	0	339	0	0	0	102	909	0	0	1364	310
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	2000	1900
Storage Length (m)	0.0		0.0	0.0		0.0	85.0		0.0	0.0		0.0
Storage Lanes	2		0	1		0	1		0	0		1
Taper Length (m)	7.6			7.6			90.0			7.6		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850										0.850
Flt Protected	0.950						0.950					
Satd. Flow (prot)	3506	1617	0	1921	1921	0	1690	1902	0	0	2002	1570
Flt Permitted	0.950						0.040					
Satd. Flow (perm)	3506	1617	0	1921	1921	0	71	1902	0	0	2002	1570
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		164										170
Link Speed (k/h)		50			50			60				60
Link Distance (m)		98.6			76.2			181.6				473.7
Travel Time (s)		7.1			5.5			10.9				28.4
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	0%	1%	0%	0%	0%	8%	1%	0%	0%	1%	4%
Adj. Flow (vph)	471	0	339	0	0	0	102	909	0	0	1364	310
Shared Lane Traffic (%)												
Lane Group Flow (vph)	471	339	0	0	0	0	102	909	0	0	1364	310
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.4			7.4			3.7				3.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			4.9			4.9				4.9
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.92	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2			2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru			Thru	Right
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5			30.5	6.1
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8			1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot			pm+pt	NA			NA	Perm
Protected Phases	7	4		3	8		5	2			6	



2: Colonnade Road South/Colonnade Road North & Colonnade Road



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	164	314	20	391	430	13
Future Volume (vph)	164	314	20	391	430	13
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>		0.850	0.872			
Fl <sub>t</sub> Protected	0.950					0.954
Satd. Flow (prot)	1530	1502	1536	0	0	1708
Fl <sub>t</sub> Permitted	0.950					0.433
Satd. Flow (perm)	1530	1502	1536	0	0	775
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		349	434			
Link Speed (k/h)	50		60			60
Link Distance (m)	80.2		62.9			186.0
Travel Time (s)	5.8		3.8			11.2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	13%	3%	10%	3%	1%	23%
Adj. Flow (vph)	182	349	22	434	478	14
Shared Lane Traffic (%)						
Lane Group Flow (vph)	182	349	456	0	0	492
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.9		4.9			4.9
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2		1	2
Detector Template	Left	Right	Thru		Left	Thru
Leading Detector (m)	6.1	2.0	10.0		2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	6.1	2.0	0.6		2.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA		pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8			6	
Detector Phase	8	8	2		1	6
Switch Phase						

2: Colonnade Road South/Colonnade Road North & Colonnade Road

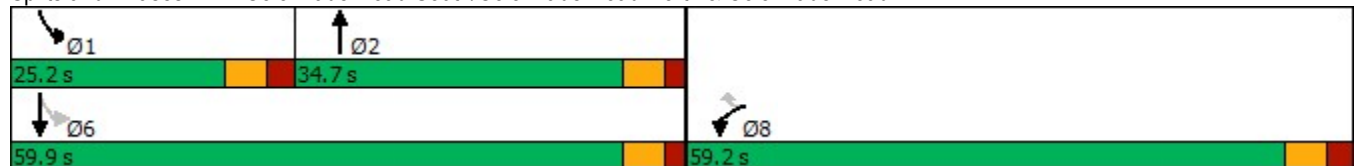


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	31.2	31.2	26.5		11.3	25.7
Total Split (s)	59.2	59.2	34.7		25.2	59.9
Total Split (%)	49.7%	49.7%	29.1%		21.2%	50.3%
Maximum Green (s)	53.0	53.0	29.0		19.0	54.2
Yellow Time (s)	3.7	3.7	3.7		3.7	3.7
All-Red Time (s)	2.5	2.5	2.0		2.5	2.0
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	6.2	6.2	5.7			5.7
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	Max		None	Max
Walk Time (s)	7.0	7.0	7.0			7.0
Flash Dont Walk (s)	18.0	18.0	13.0			13.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	14.9	14.9	54.3			54.3
Actuated g/C Ratio	0.18	0.18	0.67			0.67
v/c Ratio	0.65	0.62	0.39			0.95
Control Delay	41.8	8.7	1.9			45.9
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	41.8	8.7	1.9			45.9
LOS	D	A	A			D
Approach Delay	20.1		1.9			45.9
Approach LOS	C		A			D

Intersection Summary

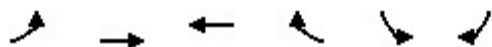
Area Type:	Other
Cycle Length:	119.1
Actuated Cycle Length:	81.2
Natural Cycle:	120
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.95
Intersection Signal Delay:	23.1
Intersection LOS:	C
Intersection Capacity Utilization	76.8%
ICU Level of Service	D
Analysis Period (min)	15

Splits and Phases: 2: Colonnade Road South/Colonnade Road North & Colonnade Road



Lanes, Volumes, Timings  
3: Colonnade Road North & Citiplace Drive

2022 PM Existing Conditions



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	14	252	372	46	33	43
Future Volume (vph)	14	252	372	46	33	43
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0			0.0	0.0	20.0
Storage Lanes	1			0	1	1
Taper Length (m)	30.0				2.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.985			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1729	1767	1731	0	1729	1547
Flt Permitted	0.346				0.950	
Satd. Flow (perm)	630	1767	1731	0	1729	1547
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			14			48
Link Speed (k/h)		60	60		50	
Link Distance (m)		132.5	212.4		109.2	
Travel Time (s)		8.0	12.7		7.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	3%	4%	0%	0%	0%
Adj. Flow (vph)	16	280	413	51	37	48
Shared Lane Traffic (%)						
Lane Group Flow (vph)	16	280	464	0	37	48
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		3.7	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		1.6	1.6		1.6	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24			14	24	14
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	2.0	0.6	0.6		2.0	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		4	8		6	



Lanes, Volumes, Timings  
 3: Colonnade Road North & Citiplace Drive

2022 PM Existing Conditions

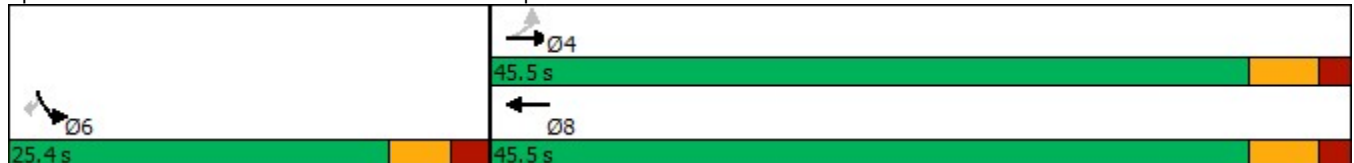


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Permitted Phases	4					6
Detector Phase	4	4	8		6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	40.5	40.5	40.5		23.4	23.4
Total Split (s)	45.5	45.5	45.5		25.4	25.4
Total Split (%)	64.2%	64.2%	64.2%		35.8%	35.8%
Maximum Green (s)	40.0	40.0	40.0		20.0	20.0
Yellow Time (s)	3.7	3.7	3.7		3.3	3.3
All-Red Time (s)	1.8	1.8	1.8		2.1	2.1
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5		5.4	5.4
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	None		Max	Max
Walk Time (s)	24.0	24.0	24.0		7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0		7.0	7.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)	17.5	17.5	17.5		20.2	20.2
Actuated g/C Ratio	0.36	0.36	0.36		0.41	0.41
v/c Ratio	0.07	0.44	0.74		0.05	0.07
Control Delay	10.2	13.8	20.6		10.9	4.7
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	10.2	13.8	20.6		10.9	4.7
LOS	B	B	C		B	A
Approach Delay		13.6	20.6		7.4	
Approach LOS		B	C		A	

Intersection Summary

Area Type: Other  
 Cycle Length: 70.9  
 Actuated Cycle Length: 48.7  
 Natural Cycle: 65  
 Control Type: Semi Act-Uncoord  
 Maximum v/c Ratio: 0.74  
 Intersection Signal Delay: 16.8  
 Intersection Capacity Utilization 36.9%  
 Analysis Period (min) 15  
 Intersection LOS: B  
 ICU Level of Service A

Splits and Phases: 3: Colonnade Road North & Citiplace Drive



Lanes, Volumes, Timings  
4: Prince of Wales Drive & Fisher Avenue

2022 PM Existing Conditions



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	5	624	400	768	807	21
Future Volume (vph)	5	624	400	768	807	21
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>		0.850				0.850
Fl <sub>t</sub> Protected	0.950		0.950			
Satd. Flow (prot)	1441	1502	1712	1767	1767	1473
Fl <sub>t</sub> Permitted	0.950		0.215			
Satd. Flow (perm)	1441	1502	387	1767	1767	1473
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		484				8
Link Speed (k/h)	50			60	50	
Link Distance (m)	277.0			251.2	265.2	
Travel Time (s)	19.9			15.1	19.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	20%	3%	1%	3%	3%	5%
Adj. Flow (vph)	6	693	444	853	897	23
Shared Lane Traffic (%)						
Lane Group Flow (vph)	6	693	444	853	897	23
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (m)	2.0	2.0	2.0	10.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	2.0	2.0	0.6	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Free	pm+pt	NA	NA	Free
Protected Phases	4		5	2	6	
Permitted Phases		Free	2			Free
Detector Phase	4		5	2	6	
Switch Phase						

Lanes, Volumes, Timings  
4: Prince of Wales Drive & Fisher Avenue

2022 PM Existing Conditions

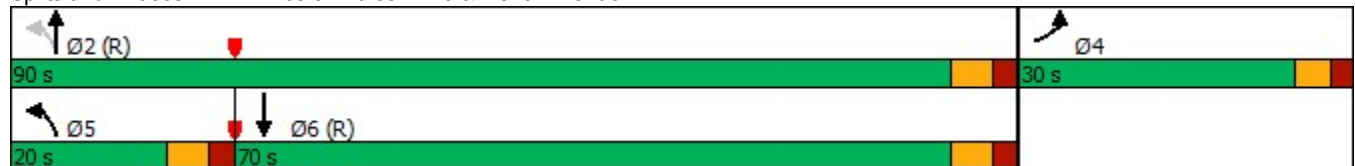


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Initial (s)	5.0		5.0	5.0	5.0	
Minimum Split (s)	22.5		11.0	32.5	32.0	
Total Split (s)	30.0		20.0	90.0	70.0	
Total Split (%)	25.0%		16.7%	75.0%	58.3%	
Maximum Green (s)	24.6		14.0	84.0	64.0	
Yellow Time (s)	3.3		3.7	3.7	3.7	
All-Red Time (s)	2.1		2.3	2.3	2.3	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	5.4		6.0	6.0	6.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	None		None	C-Max	C-Max	
Walk Time (s)	7.0			17.0	17.0	
Flash Dont Walk (s)	10.0			9.0	9.0	
Pedestrian Calls (#/hr)	0			0	0	
Act Effct Green (s)	6.1	120.0	111.5	116.3	91.5	120.0
Actuated g/C Ratio	0.05	1.00	0.93	0.97	0.76	1.00
v/c Ratio	0.08	0.46	0.86	0.50	0.67	0.02
Control Delay	56.2	1.0	27.3	1.9	10.9	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.2	1.0	27.3	1.9	10.9	0.0
LOS	E	A	C	A	B	A
Approach Delay	1.5			10.6	10.7	
Approach LOS	A			B	B	

Intersection Summary

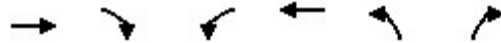
Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle:	120
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.86
Intersection Signal Delay:	8.4
Intersection LOS:	A
Intersection Capacity Utilization:	86.9%
ICU Level of Service:	E
Analysis Period (min):	15

Splits and Phases: 4: Prince of Wales Drive & Fisher Avenue



Lanes, Volumes, Timings  
5: Site Access #1 & Colonnade Road

2022 PM Existing Conditions



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑↑	
Traffic Volume (vph)	823	0	1	478	1	2
Future Volume (vph)	823	0	1	478	1	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Fr <sub>t</sub>					0.910	
Fl <sub>t</sub> Protected					0.984	
Satd. Flow (prot)	3087	0	0	3325	1630	0
Fl <sub>t</sub> Permitted					0.984	
Satd. Flow (perm)	3087	0	0	3325	1630	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	80.2			98.6	44.7	
Travel Time (s)	5.8			7.1	3.2	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	12%	0%	0%	4%	0%	0%
Adj. Flow (vph)	914	0	1	531	1	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	914	0	0	532	3	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)		14	24		24	14
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	34.0%
ICU Level of Service	A
Analysis Period (min)	15










HCM Unsignalized Intersection Capacity Analysis  
5: Site Access #1 & Colonnade Road

2022 PM Existing Conditions

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↘↘	
Traffic Volume (veh/h)	823	0	1	478	1	2
Future Volume (Veh/h)	823	0	1	478	1	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	914	0	1	531	1	2
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)	80			98		
pX, platoon unblocked						
vC, conflicting volume			914	1182	457	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			914	1182	457	
tC, single (s)			4.1	6.8	6.9	
tC, 2 stage (s)						
tF (s)			2.2	3.5	3.3	
p0 queue free %			100	99	100	
cM capacity (veh/h)			754	185	556	
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>EB 2</b>	<b>WB 1</b>	<b>WB 2</b>	<b>NB 1</b>	
Volume Total	609	305	178	354	3	
Volume Left	0	0	1	0	1	
Volume Right	0	0	0	0	2	
cSH	1700	1700	754	1700	334	
Volume to Capacity	0.36	0.18	0.00	0.21	0.01	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.2	
Control Delay (s)	0.0	0.0	0.1	0.0	15.9	
Lane LOS	A			C		
Approach Delay (s)	0.0		0.0		15.9	
Approach LOS				C		
<b>Intersection Summary</b>						
Average Delay			0.0			
Intersection Capacity Utilization			34.0%	ICU Level of Service		A
Analysis Period (min)			15			










Lanes, Volumes, Timings  
6: Colonnade Road South & Site Access #2

2022 PM Existing Conditions

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	2	409	0	2	175
Future Volume (vph)	0	2	409	0	2	175
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>	0.865					
Fl <sub>t</sub> Protected	0.999					
Satd. Flow (prot)	1050	0	1767	0	0	1604
Fl <sub>t</sub> Permitted	0.999					
Satd. Flow (perm)	1050	0	1767	0	0	1604
Link Speed (k/h)	50		60		60	
Link Distance (m)	39.9		46.7		62.9	
Travel Time (s)	2.9		2.8		3.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	50%	3%	0%	50%	13%
Adj. Flow (vph)	0	2	454	0	2	194
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2	0	454	0	0	196
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0		0.0	
Link Offset(m)	0.0		0.0		0.0	
Crosswalk Width(m)	4.9		4.9		4.9	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free		Free	
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	32.7%			ICU Level of Service A		
Analysis Period (min)	15					










HCM Unsignalized Intersection Capacity Analysis  
6: Colonnade Road South & Site Access #2

2022 PM Existing Conditions

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	2	409	0	2	175
Future Volume (Veh/h)	0	2	409	0	2	175
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	2	454	0	2	194
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	63					
pX, platoon unblocked						
vC, conflicting volume	652	454			454	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	652	454			454	
tC, single (s)	6.4	6.7			4.6	
tC, 2 stage (s)						
tF (s)	3.5	3.8			2.7	
p0 queue free %	100	100			100	
cM capacity (veh/h)	435	518			895	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	2	454	196			
Volume Left	0	0	2			
Volume Right	2	0	0			
cSH	518	1700	895			
Volume to Capacity	0.00	0.27	0.00			
Queue Length 95th (m)	0.1	0.0	0.1			
Control Delay (s)	12.0	0.0	0.1			
Lane LOS	B		A			
Approach Delay (s)	12.0	0.0	0.1			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			0.1			
Intersection Capacity Utilization			32.7%	ICU Level of Service		A
Analysis Period (min)			15			

Lanes, Volumes, Timings  
7: Colonnade Road South & Site Access #3










2022 PM Existing Conditions

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	2	407	0	1	174
Future Volume (vph)	0	2	407	0	1	174
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>	0.865					
Fl <sub>t</sub> Protected						
Satd. Flow (prot)	1574	0	1767	0	0	1612
Fl <sub>t</sub> Permitted						
Satd. Flow (perm)	1574	0	1767	0	0	1612
Link Speed (k/h)	50		60			60
Link Distance (m)	34.9		115.6			46.7
Travel Time (s)	2.5		6.9			2.8
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	3%	0%	0%	13%
Adj. Flow (vph)	0	2	452	0	1	193
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2	0	452	0	0	194
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.9		4.9			4.9
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	32.6%			ICU Level of Service A		
Analysis Period (min)	15					



HCM Unsignalized Intersection Capacity Analysis  
7: Colonnade Road South & Site Access #3

2022 PM Existing Conditions

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	2	407	0	1	174
Future Volume (Veh/h)	0	2	407	0	1	174
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	0	2	452	0	1	193
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	110					
pX, platoon unblocked						
vC, conflicting volume	647	452			452	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	647	452			452	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	438	612			1119	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	2	452	194			
Volume Left	0	0	1			
Volume Right	2	0	0			
cSH	612	1700	1119			
Volume to Capacity	0.00	0.27	0.00			
Queue Length 95th (m)	0.1	0.0	0.0			
Control Delay (s)	10.9	0.0	0.1			
Lane LOS	B		A			
Approach Delay (s)	10.9	0.0	0.1			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			0.0			
Intersection Capacity Utilization			32.6%	ICU Level of Service	A	
Analysis Period (min)			15			

Intersection: 1: Prince of Wales Drive & Colonnade Road/Access

Movement	EB	EB	EB	NB	NB	SB	SB	B15	B15	
Directions Served	L	L	TR	L	TR	T	R	T	T	
Maximum Queue (m)	87.4	84.7	85.0	54.7	156.9	477.1	473.0	182.2	196.6	
Average Queue (m)	61.0	57.8	73.3	24.4	74.4	459.3	413.4	99.0	93.2	
95th Queue (m)	89.0	83.3	96.9	45.6	133.6	503.9	583.7	221.5	223.7	
Link Distance (m)	82.1	82.1	82.1		167.5	449.3	449.3	243.6	243.6	
Upstream Blk Time (%)	3	1	16		0	75	21	1	2	
Queuing Penalty (veh)	8	3	45		0	535	149	5	12	
Storage Bay Dist (m)				85.0						
Storage Blk Time (%)					5					
Queuing Penalty (veh)					5					

Intersection: 2: Colonnade Road South/Colonnade Road North & Colonnade Road

Movement	WB	WB	NB	SB
Directions Served	L	R	TR	LT
Maximum Queue (m)	52.0	42.6	42.2	149.6
Average Queue (m)	26.4	21.1	19.8	65.6
95th Queue (m)	45.9	35.2	35.7	130.4
Link Distance (m)	64.0	64.0	41.8	167.0
Upstream Blk Time (%)	0		1	0
Queuing Penalty (veh)	0		4	1
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Colonnade Road North & Citiplace Drive

Movement	EB	EB	WB	SB	SB
Directions Served	L	T	TR	L	R
Maximum Queue (m)	10.5	49.4	59.2	10.2	12.7
Average Queue (m)	2.8	21.3	31.9	3.5	4.2
95th Queue (m)	9.5	37.2	52.3	10.6	11.8
Link Distance (m)		125.0	200.2	101.7	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)	50.0		20.0		
Storage Blk Time (%)	0		0		
Queuing Penalty (veh)	0		0		

Intersection: 4: Prince of Wales Drive & Fisher Avenue

Movement	EB	NB	NB	SB	SB
Directions Served	L	L	T	T	R
Maximum Queue (m)	13.4	100.7	37.1	118.2	51.2
Average Queue (m)	1.8	39.3	2.7	28.0	1.7
95th Queue (m)	8.3	76.8	16.8	84.1	36.1
Link Distance (m)	269.5	243.6	243.6	257.7	257.7
Upstream Blk Time (%)					0
Queuing Penalty (veh)					0
Storage Bay Dist (m)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 5: Site Access #1 & Colonnade Road

Movement	EB	EB	WB	NB
Directions Served	T	TR	LT	LR
Maximum Queue (m)	64.2	70.6	3.6	8.3
Average Queue (m)	12.8	21.4	0.1	0.8
95th Queue (m)	47.9	63.7	1.8	4.8
Link Distance (m)	64.0	64.0	82.1	31.9
Upstream Blk Time (%)	0	3		
Queuing Penalty (veh)	0	14		
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Colonnade Road South & Site Access #2

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (m)	15.1	25.8	3.2
Average Queue (m)	1.1	1.2	0.1
95th Queue (m)	7.1	10.6	2.2
Link Distance (m)	31.0	30.9	41.8
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		1	
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 7: Colonnade Road South & Site Access #3

Movement	WB	NB
Directions Served	LR	TR
Maximum Queue (m)	7.0	9.8
Average Queue (m)	0.5	0.3
95th Queue (m)	3.8	5.8
Link Distance (m)	26.4	105.5
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		






















Network Summary

Network wide Queuing Penalty: 781

Lanes, Volumes, Timings

2025 AM Future Background (alternative timing)

1: Prince of Wales Drive & Colonnade Road/Access

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 						 					
Traffic Volume (vph)	216	0	115	0	0	1	281	1359	0	0	878	463
Future Volume (vph)	216	0	115	0	0	1	281	1359	0	0	878	463
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000	1900
Storage Length (m)	0.0		0.0	0.0		0.0	85.0		0.0	0.0		0.0
Storage Lanes	2		0	0		1	1		0	0		1
Taper Length (m)	7.6			7.6			90.0			7.6		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850					0.865					0.850
Flt Protected	0.950						0.950					
Satd. Flow (prot)	3372	1396	0	0	0	1662	1755	1983	0	0	1963	1617
Flt Permitted	0.950						0.171					
Satd. Flow (perm)	3372	1396	0	0	0	1662	316	1983	0	0	1963	1617
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		305				99						426
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		98.6			76.2			181.6			473.7	
Travel Time (s)		7.1			5.5			10.9			28.4	
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 (%)	5%	0%	17%	0%	0%	0%	4%	2%	0%	0%	3%	1%
Adj. Flow (vph)	216	0	115	0	0	1	281	1359	0	0	878	463
Shared Lane Traffic (%)												
Lane Group Flow (vph)	216	115	0	0	0	1	281	1359	0	0	878	463
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.4			7.4			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.92	0.99	0.99	0.92	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2				1	1	2			2	1
Detector Template	Left	Thru				Right	Left	Thru			Thru	Right
Leading Detector (m)	6.1	30.5				6.1	6.1	30.5			30.5	6.1
Trailing Detector (m)	0.0	0.0				0.0	0.0	0.0			0.0	0.0
Detector 1 Position(m)	0.0	0.0				0.0	0.0	0.0			0.0	0.0
Detector 1 Size(m)	6.1	1.8				6.1	6.1	1.8			1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex				Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0				0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)	0.0	0.0				0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)	0.0	0.0				0.0	0.0	0.0			0.0	0.0
Detector 2 Position(m)		28.7						28.7			28.7	
Detector 2 Size(m)		1.8						1.8			1.8	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA				Perm	pm+pt	NA			NA	Perm
Protected Phases		4					5	2			6	

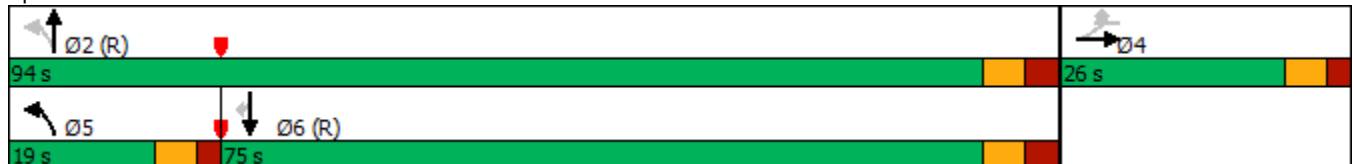
1: Prince of Wales Drive & Colonnade Road/Access

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR		
Permitted Phases	4						4	2					6	
Detector Phase	4	4					4	5	2					6
Switch Phase														
Minimum Initial (s)	5.0	5.0					5.0	5.0	5.0					5.0
Minimum Split (s)	26.0	26.0					26.0	11.0	36.0					36.0
Total Split (s)	26.0	26.0					26.0	19.0	94.0					75.0
Total Split (%)	21.7%	21.7%					21.7%	15.8%	78.3%					62.5%
Maximum Green (s)	20.0	20.0					20.0	13.0	87.0					68.0
Yellow Time (s)	3.7	3.7					3.7	3.7	3.7					3.7
All-Red Time (s)	2.3	2.3					2.3	2.3	3.3					3.3
Lost Time Adjust (s)	-2.0	-3.0					0.0	-2.0	-3.0					-3.0
Total Lost Time (s)	4.0	3.0					6.0	4.0	4.0					4.0
Lead/Lag							Lead			Lag			Lag	
Lead-Lag Optimize?							Yes						Yes	
Vehicle Extension (s)	3.0	3.0					3.0	3.0	3.0					3.0
Recall Mode	None	None					None	None	C-Max					C-Max
Walk Time (s)	7.0	7.0					7.0		7.0					7.0
Flash Dont Walk (s)	13.0	13.0					13.0		22.0					22.0
Pedestrian Calls (#/hr)	0	0					0		0					0
Act Effct Green (s)	15.2	16.2					13.2	96.8	96.8					78.0
Actuated g/C Ratio	0.13	0.14					0.11	0.81	0.81					0.65
v/c Ratio	0.51	0.25					0.00	0.65	0.85					0.69
Control Delay	52.7	1.4					0.0	13.5	14.7					18.2
Queue Delay	0.0	0.0					0.0	0.0	0.0					0.0
Total Delay	52.7	1.4					0.0	13.5	14.7					18.2
LOS	D	A					A	B	B					B
Approach Delay	34.9									14.5			12.8	
Approach LOS	C									B			B	

Intersection Summary




























Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle:	90
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.85
Intersection Signal Delay:	15.8
Intersection LOS:	B
Intersection Capacity Utilization:	89.9%
ICU Level of Service:	E
Analysis Period (min):	15

Splits and Phases: 1: Prince of Wales Drive & Colonnade Road/Access



Lanes, Volumes, Timings  
1: Prince of Wales Drive & Colonnade Road/Access

2025 AM Future Background

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 			 	 		 	 			 	 
Traffic Volume (vph)	216	0	115	0	0	1	281	1359	0	0	878	463
Future Volume (vph)	216	0	115	0	0	1	281	1359	0	0	878	463
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000	1900
Storage Length (m)	0.0		0.0	0.0		0.0	85.0		0.0	0.0		0.0
Storage Lanes	2		0	1		0	1		0	0		1
Taper Length (m)	7.6			7.6			90.0			7.6		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.850							0.850
Flt Protected	0.950						0.950					
Satd. Flow (prot)	3372	1396	0	1921	1633	0	1755	1983	0	0	1963	1617
Flt Permitted	0.950						0.061					
Satd. Flow (perm)	3372	1396	0	1921	1633	0	113	1983	0	0	1963	1617
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		343			155							342
Link Speed (k/h)		50			50			60				60
Link Distance (m)		98.6			76.2			181.6				473.7
Travel Time (s)		7.1			5.5			10.9				28.4
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 (%)	5%	0%	17%	0%	0%	0%	4%	2%	0%	0%	3%	1%
Adj. Flow (vph)	216	0	115	0	0	1	281	1359	0	0	878	463
Shared Lane Traffic (%)												
Lane Group Flow (vph)	216	115	0	0	1	0	281	1359	0	0	878	463
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.4			7.4			3.7				3.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			4.9			4.9				4.9
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.92	0.99	0.99	0.92	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2				2
Detector Template	Left	Thru		Left	Thru		Left	Thru				Thru
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5				30.5
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0				0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0				0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8				1.8
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex				Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0				0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0				0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0				0.0
Detector 2 Position(m)		28.7			28.7			28.7				28.7
Detector 2 Size(m)		1.8			1.8			1.8				1.8
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	Prot	NA		Prot	NA		pm+pt	NA			NA	Perm
Protected Phases	7	4		3	8		5	2			6	

Lanes, Volumes, Timings  
 1: Prince of Wales Drive & Colonnade Road/Access

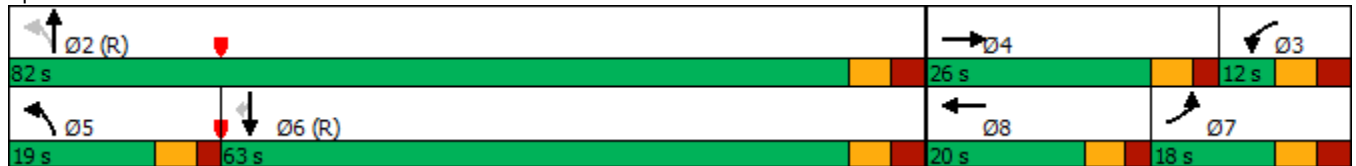
2025 AM Future Background

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases							2					6
Detector Phase	7	4		3	8		5	2			6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	5.0
Minimum Split (s)	12.0	26.0		12.0	17.0		11.0	36.0			36.0	36.0
Total Split (s)	18.0	26.0		12.0	20.0		19.0	82.0			63.0	63.0
Total Split (%)	15.0%	21.7%		10.0%	16.7%		15.8%	68.3%			52.5%	52.5%
Maximum Green (s)	11.0	20.0		5.0	14.0		13.0	75.0			56.0	56.0
Yellow Time (s)	3.7	3.7		3.7	3.7		3.7	3.7			3.7	3.7
All-Red Time (s)	3.3	2.3		3.3	2.3		2.3	3.3			3.3	3.3
Lost Time Adjust (s)	-2.0	-3.0		-2.0	-3.0		-2.0	-3.0			-3.0	-3.0
Total Lost Time (s)	5.0	3.0		5.0	3.0		4.0	4.0			4.0	4.0
Lead/Lag	Lag	Lead		Lag	Lead		Lead				Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes				Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Recall Mode	None	None		None	None		None	C-Max			C-Max	C-Max
Walk Time (s)		7.0						7.0			7.0	7.0
Flash Dont Walk (s)		13.0						22.0			22.0	22.0
Pedestrian Calls (#/hr)		0						0			0	0
Act Effct Green (s)	14.9	19.2			8.5		93.8	93.8			67.3	67.3
Actuated g/C Ratio	0.12	0.16			0.07		0.78	0.78			0.56	0.56
v/c Ratio	0.52	0.23			0.00		0.71	0.88			0.80	0.44
Control Delay	53.2	1.0			0.0		40.0	19.1			29.1	5.8
Queue Delay	0.0	0.0			0.0		0.0	0.0			0.0	0.0
Total Delay	53.2	1.0			0.0		40.0	19.1			29.1	5.8
LOS	D	A			A		D	B			C	A
Approach Delay		35.1						22.7			21.0	
Approach LOS		D						C			C	

Intersection Summary

Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green  
 Natural Cycle: 125  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.88  
 Intersection Signal Delay: 23.2      Intersection LOS: C  
 Intersection Capacity Utilization 87.4%      ICU Level of Service E  
 Analysis Period (min) 15

Splits and Phases: 1: Prince of Wales Drive & Colonnade Road/Access





2: Colonnade Road South/Colonnade Road North & Colonnade Road



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	366	359	9	115	229	19
Future Volume (vph)	366	359	9	115	229	19
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.875			
Flt Protected	0.950					0.956
Satd. Flow (prot)	1695	1517	1310	0	0	1642
Flt Permitted	0.950					0.656
Satd. Flow (perm)	1695	1517	1310	0	0	1126
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		359	115			
Link Speed (k/h)	50		60			60
Link Distance (m)	80.2		62.9			186.0
Travel Time (s)	5.8		3.8			11.2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	2%	67%	18%	3%	42%
Adj. Flow (vph)	366	359	9	115	229	19
Shared Lane Traffic (%)						
Lane Group Flow (vph)	366	359	124	0	0	248
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.9		4.9			4.9
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2		1	2
Detector Template	Left	Right	Thru		Left	Thru
Leading Detector (m)	6.1	2.0	10.0		2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	6.1	2.0	0.6		2.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA		pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8			6	
Detector Phase	8	8	2		1	6
Switch Phase						

2: Colonnade Road South/Colonnade Road North & Colonnade Road

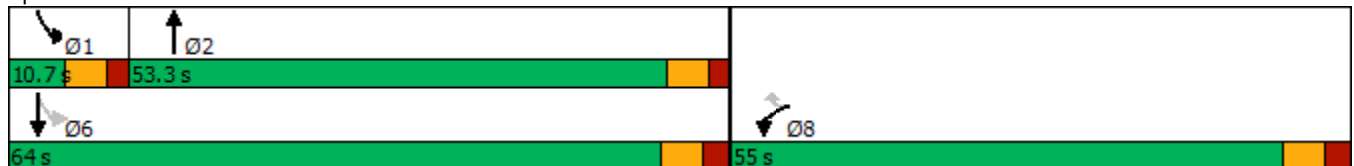


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	10.0	10.0	5.0		5.0	5.0
Minimum Split (s)	31.2	31.2	25.7		10.7	26.2
Total Split (s)	55.0	55.0	53.3		10.7	64.0
Total Split (%)	46.2%	46.2%	44.8%		9.0%	53.8%
Maximum Green (s)	48.8	48.8	47.6		5.0	57.8
Yellow Time (s)	3.7	3.7	3.7		3.7	3.7
All-Red Time (s)	2.5	2.5	2.0		2.0	2.5
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	6.2	6.2	5.7			6.2
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	Max		None	Max
Walk Time (s)	7.0	7.0	7.0			7.0
Flash Dont Walk (s)	18.0	18.0	13.0			13.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	26.0	26.0	58.6			58.1
Actuated g/C Ratio	0.27	0.27	0.61			0.60
v/c Ratio	0.80	0.54	0.15			0.37
Control Delay	46.6	6.0	3.0			13.3
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	46.6	6.0	3.0			13.3
LOS	D	A	A			B
Approach Delay	26.5		3.0			13.3
Approach LOS	C		A			B

Intersection Summary

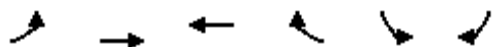
Area Type:	Other
Cycle Length:	119
Actuated Cycle Length:	96.5
Natural Cycle:	70
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.80
Intersection Signal Delay:	20.8
Intersection LOS:	C
Intersection Capacity Utilization	58.9%
ICU Level of Service	B
Analysis Period (min)	15

Splits and Phases: 2: Colonnade Road South/Colonnade Road North & Colonnade Road



Lanes, Volumes, Timings  
3: Colonnade Road North & Citiplace Drive

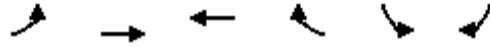
2025 AM Future Background



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	10	318	215	13	42	25
Future Volume (vph)	10	318	215	13	42	25
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0			0.0	0.0	20.0
Storage Lanes	1			0	1	1
Taper Length (m)	30.0				2.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.992			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1572	1750	1724	0	1729	1547
Flt Permitted	0.616				0.950	
Satd. Flow (perm)	1019	1750	1724	0	1729	1547
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			7			25
Link Speed (k/h)		60	60		50	
Link Distance (m)		132.5	212.4		109.2	
Travel Time (s)		8.0	12.7		7.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	10%	4%	5%	0%	0%	0%
Adj. Flow (vph)	10	318	215	13	42	25
Shared Lane Traffic (%)						
Lane Group Flow (vph)	10	318	228	0	42	25
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		3.7	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		1.6	1.6		1.6	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24			14	24	14
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	2.0	0.6	0.6		2.0	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		4	8		6	

Lanes, Volumes, Timings  
3: Colonnade Road North & Citiplace Drive

2025 AM Future Background

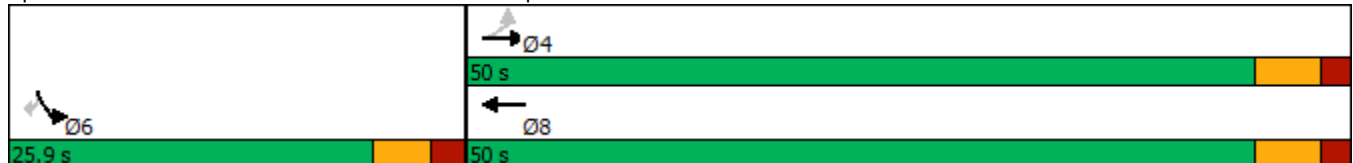


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Permitted Phases	4					6
Detector Phase	4	4	8		6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	40.5	40.5	40.5		22.5	22.5
Total Split (s)	50.0	50.0	50.0		25.9	25.9
Total Split (%)	65.9%	65.9%	65.9%		34.1%	34.1%
Maximum Green (s)	44.5	44.5	44.5		20.5	20.5
Yellow Time (s)	3.7	3.7	3.7		3.3	3.3
All-Red Time (s)	1.8	1.8	1.8		2.1	2.1
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5		5.4	5.4
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	None		Max	Max
Walk Time (s)	24.0	24.0	24.0		7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0		7.0	7.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)	13.1	13.1	13.1		20.6	20.6
Actuated g/C Ratio	0.29	0.29	0.29		0.46	0.46
v/c Ratio	0.03	0.62	0.45		0.05	0.03
Control Delay	10.9	19.3	15.2		8.1	4.3
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	10.9	19.3	15.2		8.1	4.3
LOS	B	B	B		A	A
Approach Delay		19.0	15.2		6.7	
Approach LOS		B	B		A	

Intersection Summary

Area Type: Other  
 Cycle Length: 75.9  
 Actuated Cycle Length: 44.6  
 Natural Cycle: 65  
 Control Type: Semi Act-Uncoord  
 Maximum v/c Ratio: 0.62  
 Intersection Signal Delay: 16.3  
 Intersection LOS: B  
 Intersection Capacity Utilization 30.9%  
 ICU Level of Service A  
 Analysis Period (min) 15

Splits and Phases: 3: Colonnade Road North & Citiplace Drive



Lanes, Volumes, Timings  
4: Prince of Wales Drive & Fisher Avenue

2025 AM Future Background



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	9	549	553	1094	806	22
Future Volume (vph)	9	549	553	1094	806	22
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>		0.850				0.850
Fl <sub>t</sub> Protected	0.950		0.950			
Satd. Flow (prot)	1729	1517	1679	1784	1802	1419
Fl <sub>t</sub> Permitted	0.950		0.079			
Satd. Flow (perm)	1729	1517	140	1784	1802	1419
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		549				11
Link Speed (k/h)	50			60	50	
Link Distance (m)	277.0			251.2	265.2	
Travel Time (s)	19.9			15.1	19.1	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	2%	3%	2%	1%	9%
Adj. Flow (vph)	9	549	553	1094	806	22
Shared Lane Traffic (%)						
Lane Group Flow (vph)	9	549	553	1094	806	22
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (m)	2.0	2.0	2.0	10.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	2.0	2.0	0.6	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Free	pm+pt	NA	NA	Free
Protected Phases	4		5	2	6	
Permitted Phases		Free	2			Free
Detector Phase	4		5	2	6	
Switch Phase						

Lanes, Volumes, Timings  
4: Prince of Wales Drive & Fisher Avenue

2025 AM Future Background

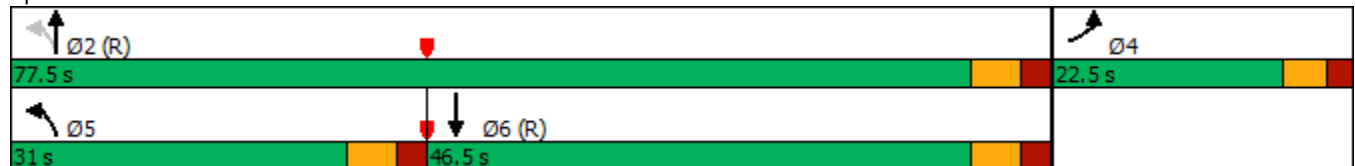


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Initial (s)	5.0		5.0	5.0	5.0	
Minimum Split (s)	22.5		11.0	32.5	32.5	
Total Split (s)	22.5		31.0	77.5	46.5	
Total Split (%)	22.5%		31.0%	77.5%	46.5%	
Maximum Green (s)	17.1		25.0	71.5	40.5	
Yellow Time (s)	3.3		3.7	3.7	3.7	
All-Red Time (s)	2.1		2.3	2.3	2.3	
Lost Time Adjust (s)	-2.0		-2.0	-3.0	-3.0	
Total Lost Time (s)	3.4		4.0	3.0	3.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	None		None	C-Max	C-Max	
Walk Time (s)	7.0			17.0	17.0	
Flash Dont Walk (s)	10.0			9.0	9.0	
Pedestrian Calls (#/hr)	0			0	0	
Act Effct Green (s)	8.1	100.0	93.5	96.9	52.2	100.0
Actuated g/C Ratio	0.08	1.00	0.94	0.97	0.52	1.00
v/c Ratio	0.06	0.36	0.77	0.63	0.86	0.02
Control Delay	43.0	0.7	29.0	3.0	32.7	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.0	0.7	29.0	3.0	32.7	0.0
LOS	D	A	C	A	C	A
Approach Delay	1.4			11.7	31.8	
Approach LOS	A			B	C	

Intersection Summary

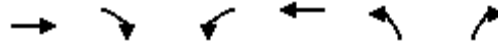
Area Type: Other  
 Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 26 (26%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 110  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.86  
 Intersection Signal Delay: 15.3  
 Intersection LOS: B  
 Intersection Capacity Utilization 91.3%  
 ICU Level of Service F  
 Analysis Period (min) 15

Splits and Phases: 4: Prince of Wales Drive & Fisher Avenue



Lanes, Volumes, Timings  
5: Site Access #1 & Colonnade Road










2025 AM Future Background



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑↑	
Traffic Volume (vph)	345	0	3	741	0	1
Future Volume (vph)	345	0	3	741	0	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Fr <sub>t</sub>					0.865	
Fl <sub>t</sub> Protected						
Satd. Flow (prot)	3087	0	0	3326	1574	0
Fl <sub>t</sub> Permitted						
Satd. Flow (perm)	3087	0	0	3326	1574	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	80.2			98.6	44.7	
Travel Time (s)	5.8			7.1	3.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	12%	0%	0%	4%	0%	0%
Adj. Flow (vph)	345	0	3	741	0	1
Shared Lane Traffic (%)						
Lane Group Flow (vph)	345	0	0	744	1	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)		14	24		24	14
Sign Control	Free			Free	Stop	

Intersection Summary










Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	33.8%
	ICU Level of Service A
Analysis Period (min)	15










						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	345	0	3	741	0	1
Future Volume (Veh/h)	345	0	3	741	0	1
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	345	0	3	741	0	1
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)	80			98		
pX, platoon unblocked						
vC, conflicting volume			345	722	172	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			345	722	172	
tC, single (s)			4.1	6.8	6.9	
tC, 2 stage (s)						
tF (s)			2.2	3.5	3.3	
p0 queue free %			100	100	100	
cM capacity (veh/h)			1225	365	847	
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	
Volume Total	230	115	250	494	1	
Volume Left	0	0	3	0	0	
Volume Right	0	0	0	0	1	
cSH	1700	1700	1225	1700	847	
Volume to Capacity	0.14	0.07	0.00	0.29	0.00	
Queue Length 95th (m)	0.0	0.0	0.1	0.0	0.0	
Control Delay (s)	0.0	0.0	0.1	0.0	9.3	
Lane LOS			A	A		
Approach Delay (s)	0.0	0.0		9.3		
Approach LOS			A			
<b>Intersection Summary</b>						
Average Delay			0.0			
Intersection Capacity Utilization			33.8%	ICU Level of Service		A
Analysis Period (min)			15			



Lanes, Volumes, Timings  
6: Colonnade Road South & Site Access #2










2025 AM Future Background

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	1	123	0	2	383
Future Volume (vph)	0	1	123	0	2	383
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected						
Satd. Flow (prot)	787	0	1542	0	0	1784
Flt Permitted						
Satd. Flow (perm)	787	0	1542	0	0	1784
Link Speed (k/h)	50		60		60	
Link Distance (m)	39.9		46.7		62.9	
Travel Time (s)	2.9		2.8		3.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	100%	18%	0%	0%	2%
Adj. Flow (vph)	0	1	123	0	2	383
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1	0	123	0	0	385
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0		0.0	
Link Offset(m)	0.0		0.0		0.0	
Crosswalk Width(m)	4.9		4.9		4.9	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free		Free	
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	33.0%			ICU Level of Service A		
Analysis Period (min)	15					

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	1	123	0	2	383
Future Volume (Veh/h)	0	1	123	0	2	383
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1	123	0	2	383
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	63					
pX, platoon unblocked						
vC, conflicting volume	510	123			123	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	510	123			123	
tC, single (s)	6.4	7.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	4.2			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	526	719			1477	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	1	123	385			
Volume Left	0	0	2			
Volume Right	1	0	0			
cSH	719	1700	1477			
Volume to Capacity	0.00	0.07	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	10.0	0.0	0.1			
Lane LOS	B		A			
Approach Delay (s)	10.0	0.0	0.1			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			0.1			
Intersection Capacity Utilization			33.0%		ICU Level of Service	A
Analysis Period (min)			15			










Lanes, Volumes, Timings  
7: Colonnade Road South & Site Access #3

2025 AM Future Background

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	1	122	0	1	382
Future Volume (vph)	0	1	122	0	1	382
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected						
Satd. Flow (prot)	1574	0	1542	0	0	1784
Flt Permitted						
Satd. Flow (perm)	1574	0	1542	0	0	1784
Link Speed (k/h)	50		60		60	
Link Distance (m)	34.9		115.6		46.7	
Travel Time (s)	2.5		6.9		2.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	18%	0%	0%	2%
Adj. Flow (vph)	0	1	122	0	1	382
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1	0	122	0	0	383
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0		0.0	
Link Offset(m)	0.0		0.0		0.0	
Crosswalk Width(m)	4.9		4.9		4.9	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free		Free	
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	32.1%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis  
7: Colonnade Road South & Site Access #3

2025 AM Future Background

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	1	122	0	1	382
Future Volume (Veh/h)	0	1	122	0	1	382
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1	122	0	1	382
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)	110					
pX, platoon unblocked						
vC, conflicting volume	506	122			122	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	506	122			122	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	529	935			1478	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	1	122	383			
Volume Left	0	0	1			
Volume Right	1	0	0			
cSH	935	1700	1478			
Volume to Capacity	0.00	0.07	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	8.9	0.0	0.0			
Lane LOS	A		A			
Approach Delay (s)	8.9	0.0	0.0			
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			0.0			
Intersection Capacity Utilization			32.1%	ICU Level of Service		A
Analysis Period (min)			15			

Intersection: 1: Prince of Wales Drive & Colonnade Road/Access

Movement	EB	EB	EB	WB	NB	NB	SB	SB	B15
Directions Served	L	L	TR	R	L	TR	T	R	T
Maximum Queue (m)	51.5	51.0	49.9	4.6	167.4	176.7	228.7	140.7	3.2
Average Queue (m)	23.4	26.4	20.4	0.2	90.1	153.1	126.3	43.2	0.1
95th Queue (m)	40.8	42.2	41.4	2.5	195.9	217.3	219.3	118.3	2.3
Link Distance (m)	82.1	82.1	82.1	63.5		167.5	449.2	449.2	243.6
Upstream Blk Time (%)					0	10			
Queuing Penalty (veh)					0	0			
Storage Bay Dist (m)					85.0				
Storage Blk Time (%)					2	17			
Queuing Penalty (veh)					27	47			

Intersection: 1: Prince of Wales Drive & Colonnade Road/Access

Movement	EB	EB	EB	WB	NB	NB	SB	SB	B15	B15
Directions Served	L	L	TR	TR	L	TR	T	R	T	T
Maximum Queue (m)	44.3	44.2	47.6	7.0	167.3	178.2	335.5	233.6	3.4	9.4
Average Queue (m)	21.2	22.9	20.7	0.4	68.3	112.4	170.6	62.8	0.1	0.3
95th Queue (m)	38.2	38.5	39.8	3.2	157.5	191.8	335.0	211.5	2.4	5.9
Link Distance (m)	82.1	82.1	82.1	63.5		167.5	449.3	449.3	243.6	243.6
Upstream Blk Time (%)					0	4	1	0		
Queuing Penalty (veh)					0	0	7	0		
Storage Bay Dist (m)					85.0					
Storage Blk Time (%)					0	11				
Queuing Penalty (veh)					5	32				

Intersection: 2: Colonnade Road South/Colonnade Road North & Colonnade Road

Movement	WB	WB	NB	SB
Directions Served	L	R	TR	LT
Maximum Queue (m)	67.7	45.4	31.9	64.2
Average Queue (m)	50.8	20.9	10.9	26.2
95th Queue (m)	76.1	35.0	24.7	50.9
Link Distance (m)	64.0	64.0	41.8	167.0
Upstream Blk Time (%)	5	0	0	
Queuing Penalty (veh)	20	0	0	
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Colonnade Road North & Citiplace Drive

Movement	EB	EB	WB	SB	SB
Directions Served	L	T	TR	L	R
Maximum Queue (m)	15.0	53.5	48.3	17.8	9.0
Average Queue (m)	2.2	26.7	20.1	4.7	2.8
95th Queue (m)	9.3	45.5	34.9	13.3	9.3
Link Distance (m)		125.0	200.2	101.7	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)	50.0				20.0
Storage Blk Time (%)		0		0	
Queuing Penalty (veh)		0		0	

Intersection: 4: Prince of Wales Drive & Fisher Avenue

Movement	EB	NB	NB	SB	SB
Directions Served	L	L	T	T	R
Maximum Queue (m)	10.0	113.3	46.0	165.9	52.5
Average Queue (m)	2.1	54.3	6.6	64.9	3.5
95th Queue (m)	8.1	93.0	30.0	164.7	53.1
Link Distance (m)	269.5	243.6	243.6	257.7	257.7
Upstream Blk Time (%)				0	0
Queuing Penalty (veh)				0	0
Storage Bay Dist (m)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 5: Site Access #1 & Colonnade Road

Movement	WB	WB	NB
Directions Served	LT	T	LR
Maximum Queue (m)	44.0	1.8	5.0
Average Queue (m)	6.2	0.1	0.2
95th Queue (m)	25.0	1.3	2.1
Link Distance (m)	82.1	82.1	31.9
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 6: Colonnade Road South & Site Access #2

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (m)	7.2	1.8	1.9
Average Queue (m)	0.4	0.1	0.1
95th Queue (m)	4.9	1.3	1.3
Link Distance (m)	31.0	30.9	41.8
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

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Intersection: 7: Colonnade Road South & Site Access #3

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Movement	WB
Directions Served	LR
Maximum Queue (m)	7.0
Average Queue (m)	0.5
95th Queue (m)	3.8
Link Distance (m)	26.4
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

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Network Summary

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























Network wide Queuing Penalty: 65



Lanes, Volumes, Timings

2025 PM Future Background (alternate timing)

1: Prince of Wales Drive & Colonnade Road/Access

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 					 	 	 			 	 
Traffic Volume (vph)	471	0	339	0	0	0	102	909	0	0	1311	310
Future Volume (vph)	471	0	339	0	0	0	102	909	0	0	1311	310
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	2000	1900
Storage Length (m)	0.0		0.0	0.0		0.0	85.0		0.0	0.0		0.0
Storage Lanes	2		0	0		1	1		0	0		1
Taper Length (m)	7.6			7.6			90.0			7.6		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850										0.850
Flt Protected	0.950						0.950					
Satd. Flow (prot)	3506	1617	0	0	0	1921	1690	1902	0	0	2002	1570
Flt Permitted	0.950						0.036					
Satd. Flow (perm)	3506	1617	0	0	0	1921	64	1902	0	0	2002	1570
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		143										223
Link Speed (k/h)		50			50			60				60
Link Distance (m)		98.6			76.2			181.6				473.7
Travel Time (s)		7.1			5.5			10.9				28.4
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	0%	1%	0%	0%	0%	8%	1%	0%	0%	1%	4%
Adj. Flow (vph)	471	0	339	0	0	0	102	909	0	0	1311	310
Shared Lane Traffic (%)												
Lane Group Flow (vph)	471	339	0	0	0	0	102	909	0	0	1311	310
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.4			7.4			3.7				3.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			4.9			4.9				4.9
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.92	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2				1	1	2			2	1
Detector Template	Left	Thru				Right	Left	Thru			Thru	Right
Leading Detector (m)	6.1	30.5				6.1	6.1	30.5			30.5	6.1
Trailing Detector (m)	0.0	0.0				0.0	0.0	0.0			0.0	0.0
Detector 1 Position(m)	0.0	0.0				0.0	0.0	0.0			0.0	0.0
Detector 1 Size(m)	6.1	1.8				6.1	6.1	1.8			1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex				Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0				0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)	0.0	0.0				0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)	0.0	0.0				0.0	0.0	0.0			0.0	0.0
Detector 2 Position(m)		28.7						28.7			28.7	
Detector 2 Size(m)		1.8						1.8			1.8	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA				Perm	pm+pt	NA			NA	Perm
Protected Phases		4					5	2			6	

Lanes, Volumes, Timings

2025 PM Future Background (alternate timing)

1: Prince of Wales Drive & Colonnade Road/Access

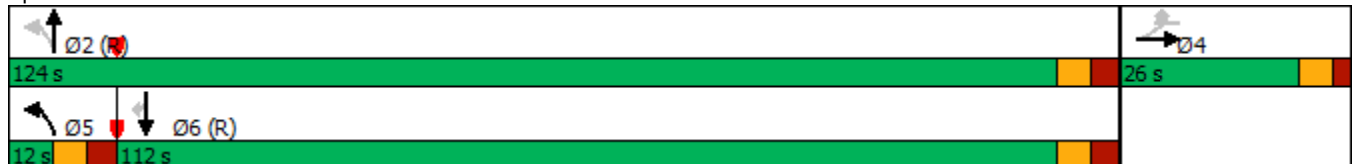


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4					4	2					6
Detector Phase	4	4				4	5	2			6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0				5.0	5.0	5.0			5.0	5.0
Minimum Split (s)	26.0	26.0				26.0	12.0	36.0			36.0	36.0
Total Split (s)	26.0	26.0				26.0	12.0	124.0			112.0	112.0
Total Split (%)	17.3%	17.3%				17.3%	8.0%	82.7%			74.7%	74.7%
Maximum Green (s)	20.0	20.0				20.0	5.0	117.0			105.0	105.0
Yellow Time (s)	3.7	3.7				3.7	3.7	3.7			3.7	3.7
All-Red Time (s)	2.3	2.3				2.3	3.3	3.3			3.3	3.3
Lost Time Adjust (s)	-2.0	-3.0				0.0	-2.0	-3.0			-3.0	-3.0
Total Lost Time (s)	4.0	3.0				6.0	5.0	4.0			4.0	4.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Vehicle Extension (s)	3.0	3.0				3.0	3.0	3.0			3.0	3.0
Recall Mode	None	None				None	None	C-Max			C-Max	C-Max
Walk Time (s)	7.0	7.0				7.0		7.0			7.0	7.0
Flash Dont Walk (s)	13.0	13.0				13.0		22.0			22.0	22.0
Pedestrian Calls (#/hr)	0	0				0		0			0	0
Act Effct Green (s)	22.0	23.0					119.0	120.0			108.0	108.0
Actuated g/C Ratio	0.15	0.15					0.79	0.80			0.72	0.72
v/c Ratio	0.92	0.92					0.81	0.60			0.91	0.26
Control Delay	86.3	65.9					72.2	7.7			28.1	2.5
Queue Delay	0.0	0.0					0.0	0.0			0.0	0.0
Total Delay	86.3	65.9					72.2	7.7			28.1	2.5
LOS	F	E					E	A			C	A
Approach Delay		77.8						14.2			23.2	
Approach LOS		E						B			C	

Intersection Summary




























Area Type: Other  
 Cycle Length: 150  
 Actuated Cycle Length: 150  
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green  
 Natural Cycle: 110  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.92  
 Intersection Signal Delay: 33.4      Intersection LOS: C  
 Intersection Capacity Utilization 103.0%      ICU Level of Service G  
 Analysis Period (min) 15

Splits and Phases: 1: Prince of Wales Drive & Colonnade Road/Access



Lanes, Volumes, Timings  
1: Prince of Wales Drive & Colonnade Road/Access

2025 PM Future Background

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 			 	 		 	 			 	 
Traffic Volume (vph)	471	0	339	0	0	0	102	909	0	0	1406	310
Future Volume (vph)	471	0	339	0	0	0	102	909	0	0	1406	310
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	2000	1900
Storage Length (m)	0.0		0.0	0.0		0.0	85.0		0.0	0.0		0.0
Storage Lanes	2		0	1		0	1		0	0		1
Taper Length (m)	7.6			7.6			90.0			7.6		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850										0.850
Flt Protected	0.950						0.950					
Satd. Flow (prot)	3506	1617	0	1921	1921	0	1690	1902	0	0	2002	1570
Flt Permitted	0.950						0.040					
Satd. Flow (perm)	3506	1617	0	1921	1921	0	71	1902	0	0	2002	1570
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		159										165
Link Speed (k/h)		50			50			60				60
Link Distance (m)		98.6			76.2			181.6				473.7
Travel Time (s)		7.1			5.5			10.9				28.4
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	0%	1%	0%	0%	0%	8%	1%	0%	0%	1%	4%
Adj. Flow (vph)	471	0	339	0	0	0	102	909	0	0	1406	310
Shared Lane Traffic (%)												
Lane Group Flow (vph)	471	339	0	0	0	0	102	909	0	0	1406	310
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.4			7.4			3.7				3.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			4.9			4.9				4.9
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.92	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2			2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru			Thru	Right
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5			30.5	6.1
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8			1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot			pm+pt	NA			NA	Perm
Protected Phases	7	4		3	8		5	2			6	

Lanes, Volumes, Timings  
1: Prince of Wales Drive & Colonnade Road/Access

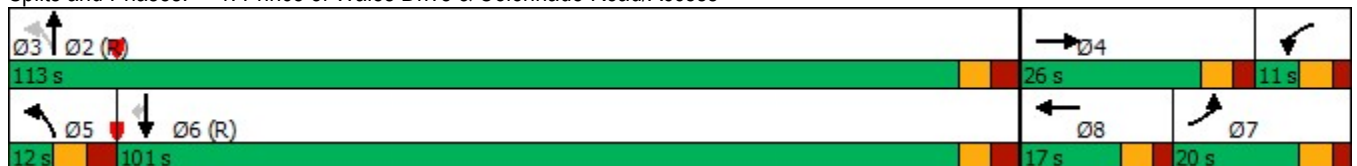
2025 PM Future Background

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases							2					6
Detector Phase	7	4		3	8		5	2			6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	5.0
Minimum Split (s)	11.0	26.0		11.0	17.0		12.0	36.0			36.0	36.0
Total Split (s)	20.0	26.0		11.0	17.0		12.0	113.0			101.0	101.0
Total Split (%)	13.3%	17.3%		7.3%	11.3%		8.0%	75.3%			67.3%	67.3%
Maximum Green (s)	14.0	20.0		5.0	11.0		5.0	106.0			94.0	94.0
Yellow Time (s)	3.7	3.7		3.7	3.7		3.7	3.7			3.7	3.7
All-Red Time (s)	2.3	2.3		2.3	2.3		3.3	3.3			3.3	3.3
Lost Time Adjust (s)	-2.0	-3.0		-2.0	-3.0		-2.0	-3.0			-3.0	-3.0
Total Lost Time (s)	4.0	3.0		4.0	3.0		5.0	4.0			4.0	4.0
Lead/Lag	Lag	Lead		Lag	Lead		Lead				Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes				Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Recall Mode	None	None		None	None		None	C-Max			C-Max	C-Max
Walk Time (s)		7.0						7.0			7.0	7.0
Flash Dont Walk (s)		13.0						22.0			22.0	22.0
Pedestrian Calls (#/hr)		0						0			0	0
Act Effct Green (s)	32.7	33.7					108.3	109.3			97.0	97.0
Actuated g/C Ratio	0.22	0.22					0.72	0.73			0.65	0.65
v/c Ratio	0.62	0.70					0.78	0.66			1.09	0.29
Control Delay	57.1	36.3					66.2	13.4			78.8	5.7
Queue Delay	0.0	0.0					0.0	0.0			0.0	0.0
Total Delay	57.1	36.3					66.2	13.4			78.8	5.7
LOS	E	D					E	B			E	A
Approach Delay		48.4						18.7			65.6	
Approach LOS		D						B			E	

Intersection Summary

Area Type: Other  
 Cycle Length: 150  
 Actuated Cycle Length: 150  
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green  
 Natural Cycle: 145  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.09  
 Intersection Signal Delay: 48.2      Intersection LOS: D  
 Intersection Capacity Utilization 107.8%      ICU Level of Service G  
 Analysis Period (min) 15

Splits and Phases: 1: Prince of Wales Drive & Colonnade Road/Access



2: Colonnade Road South/Colonnade Road North & Colonnade Road



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	164	314	20	391	430	13
Future Volume (vph)	164	314	20	391	430	13
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.872			
Flt Protected	0.950					0.954
Satd. Flow (prot)	1530	1502	1536	0	0	1708
Flt Permitted	0.950					0.466
Satd. Flow (perm)	1530	1502	1536	0	0	834
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		314	391			
Link Speed (k/h)	50		60			60
Link Distance (m)	80.2		62.9			186.0
Travel Time (s)	5.8		3.8			11.2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	13%	3%	10%	3%	1%	23%
Adj. Flow (vph)	164	314	20	391	430	13
Shared Lane Traffic (%)						
Lane Group Flow (vph)	164	314	411	0	0	443
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.9		4.9			4.9
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2		1	2
Detector Template	Left	Right	Thru		Left	Thru
Leading Detector (m)	6.1	2.0	10.0		2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	6.1	2.0	0.6		2.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA		pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8			6	
Detector Phase	8	8	2		1	6
Switch Phase						

2: Colonnade Road South/Colonnade Road North & Colonnade Road

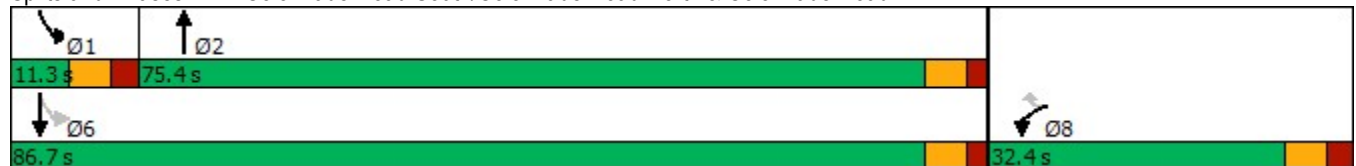


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	31.2	31.2	26.5		11.3	25.7
Total Split (s)	32.4	32.4	75.4		11.3	86.7
Total Split (%)	27.2%	27.2%	63.3%		9.5%	72.8%
Maximum Green (s)	26.2	26.2	69.7		5.1	81.0
Yellow Time (s)	3.7	3.7	3.7		3.7	3.7
All-Red Time (s)	2.5	2.5	2.0		2.5	2.0
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	6.2	6.2	5.7			5.7
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	Max		None	Max
Walk Time (s)	7.0	7.0	7.0			7.0
Flash Dont Walk (s)	18.0	18.0	13.0			13.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	16.9	16.9	81.1			81.1
Actuated g/C Ratio	0.15	0.15	0.74			0.74
v/c Ratio	0.70	0.63	0.33			0.72
Control Delay	59.9	10.7	1.5			18.0
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	59.9	10.7	1.5			18.0
LOS	E	B	A			B
Approach Delay	27.6		1.5			18.0
Approach LOS	C		A			B

Intersection Summary

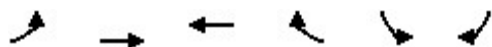
Area Type:	Other
Cycle Length:	119.1
Actuated Cycle Length:	110
Natural Cycle:	90
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.72
Intersection Signal Delay:	16.3
Intersection LOS:	B
Intersection Capacity Utilization	76.8%
ICU Level of Service	D
Analysis Period (min)	15

Splits and Phases: 2: Colonnade Road South/Colonnade Road North & Colonnade Road



Lanes, Volumes, Timings  
3: Colonnade Road North & Citiplace Drive

2025 PM Future Background



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	14	252	372	46	33	43
Future Volume (vph)	14	252	372	46	33	43
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0			0.0	0.0	20.0
Storage Lanes	1			0	1	1
Taper Length (m)	30.0				2.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.985			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1729	1767	1731	0	1729	1547
Flt Permitted	0.387				0.950	
Satd. Flow (perm)	704	1767	1731	0	1729	1547
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			14			43
Link Speed (k/h)		60	60		50	
Link Distance (m)		132.5	212.4		109.2	
Travel Time (s)		8.0	12.7		7.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	3%	4%	0%	0%	0%
Adj. Flow (vph)	14	252	372	46	33	43
Shared Lane Traffic (%)						
Lane Group Flow (vph)	14	252	418	0	33	43
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		3.7	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		1.6	1.6		1.6	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24			14	24	14
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	2.0	0.6	0.6		2.0	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		4	8		6	

Lanes, Volumes, Timings  
3: Colonnade Road North & Citiplace Drive

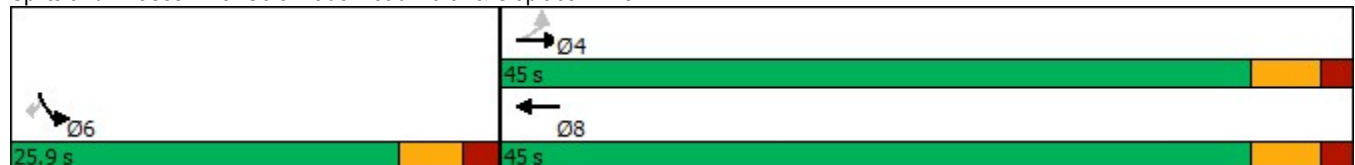


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Permitted Phases	4					6
Detector Phase	4	4	8		6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	40.5	40.5	40.5		23.4	23.4
Total Split (s)	45.0	45.0	45.0		25.9	25.9
Total Split (%)	63.5%	63.5%	63.5%		36.5%	36.5%
Maximum Green (s)	39.5	39.5	39.5		20.5	20.5
Yellow Time (s)	3.7	3.7	3.7		3.3	3.3
All-Red Time (s)	1.8	1.8	1.8		2.1	2.1
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5		5.4	5.4
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	None		Max	Max
Walk Time (s)	24.0	24.0	24.0		7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0		7.0	7.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)	16.1	16.1	16.1		20.7	20.7
Actuated g/C Ratio	0.34	0.34	0.34		0.43	0.43
v/c Ratio	0.06	0.42	0.71		0.04	0.06
Control Delay	10.5	14.2	20.2		9.9	4.4
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	10.5	14.2	20.2		9.9	4.4
LOS	B	B	C		A	A
Approach Delay		14.0	20.2		6.8	
Approach LOS		B	C		A	

Intersection Summary

Area Type: Other  
 Cycle Length: 70.9  
 Actuated Cycle Length: 47.7  
 Natural Cycle: 65  
 Control Type: Semi Act-Uncoord  
 Maximum v/c Ratio: 0.71  
 Intersection Signal Delay: 16.7  
 Intersection LOS: B  
 Intersection Capacity Utilization 36.9%  
 ICU Level of Service A  
 Analysis Period (min) 15

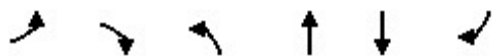
Splits and Phases: 3: Colonnade Road North & Citiplace Drive





Lanes, Volumes, Timings  
4: Prince of Wales Drive & Fisher Avenue

2025 PM Future Background



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	5	643	400	768	831	21
Future Volume (vph)	5	643	400	768	831	21
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>		0.850				0.850
Fl <sub>t</sub> Protected	0.950		0.950			
Satd. Flow (prot)	1441	1502	1712	1767	1767	1473
Fl <sub>t</sub> Permitted	0.950		0.215			
Satd. Flow (perm)	1441	1502	387	1767	1767	1473
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		501				8
Link Speed (k/h)	50			60	50	
Link Distance (m)	277.0			251.2	265.2	
Travel Time (s)	19.9			15.1	19.1	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	20%	3%	1%	3%	3%	5%
Adj. Flow (vph)	5	643	400	768	831	21
Shared Lane Traffic (%)						
Lane Group Flow (vph)	5	643	400	768	831	21
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (m)	2.0	2.0	2.0	10.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	2.0	2.0	0.6	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Free	pm+pt	NA	NA	Free
Protected Phases	4		5	2	6	
Permitted Phases		Free	2			Free
Detector Phase	4		5	2	6	
Switch Phase						

Lanes, Volumes, Timings  
4: Prince of Wales Drive & Fisher Avenue



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Initial (s)	5.0		5.0	5.0	5.0	
Minimum Split (s)	22.5		11.0	32.5	32.0	
Total Split (s)	22.5		28.0	97.5	69.5	
Total Split (%)	18.8%		23.3%	81.3%	57.9%	
Maximum Green (s)	17.1		22.0	91.5	63.5	
Yellow Time (s)	3.3		3.7	3.7	3.7	
All-Red Time (s)	2.1		2.3	2.3	2.3	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	5.4		6.0	6.0	6.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	None		None	C-Max	C-Max	
Walk Time (s)	7.0			17.0	17.0	
Flash Dont Walk (s)	10.0			9.0	9.0	
Pedestrian Calls (#/hr)	0			0	0	
Act Effct Green (s)	6.1	120.0	111.5	116.3	84.8	120.0
Actuated g/C Ratio	0.05	1.00	0.93	0.97	0.71	1.00
v/c Ratio	0.07	0.43	0.68	0.45	0.67	0.01
Control Delay	55.8	0.9	12.5	1.6	14.5	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.8	0.9	12.5	1.6	14.5	0.0
LOS	E	A	B	A	B	A
Approach Delay	1.3			5.3	14.1	
Approach LOS	A			A	B	

Intersection Summary

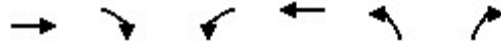
Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle:	100
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.68
Intersection Signal Delay:	7.2
Intersection LOS:	A
Intersection Capacity Utilization:	88.2%
ICU Level of Service:	E
Analysis Period (min):	15

Splits and Phases: 4: Prince of Wales Drive & Fisher Avenue



Lanes, Volumes, Timings  
5: Site Access #1 & Colonnade Road

2025 PM Future Background



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑↑	
Traffic Volume (vph)	823	0	1	478	1	2
Future Volume (vph)	823	0	1	478	1	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Fr <sub>t</sub>					0.910	
Fl <sub>t</sub> Protected					0.984	
Satd. Flow (prot)	3087	0	0	3325	1630	0
Fl <sub>t</sub> Permitted					0.984	
Satd. Flow (perm)	3087	0	0	3325	1630	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	80.2			98.6	44.7	
Travel Time (s)	5.8			7.1	3.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	12%	0%	0%	4%	0%	0%
Adj. Flow (vph)	823	0	1	478	1	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	823	0	0	479	3	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)		14	24		24	14
Sign Control	Free			Free	Stop	

Intersection Summary










Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	34.0%
ICU Level of Service	A
Analysis Period (min)	15



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑↑	
Traffic Volume (veh/h)	823	0	1	478	1	2
Future Volume (Veh/h)	823	0	1	478	1	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	823	0	1	478	1	2
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	80			98		
pX, platoon unblocked						
vC, conflicting volume			823	1064		412
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			823	1064		412
tC, single (s)			4.1	6.8		6.9
tC, 2 stage (s)						
tF (s)			2.2	3.5		3.3
p0 queue free %			100	100		100
cM capacity (veh/h)			816	221		595
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>EB 2</b>	<b>WB 1</b>	<b>WB 2</b>	<b>NB 1</b>	
Volume Total	549	274	160	319	3	
Volume Left	0	0	1	0	1	
Volume Right	0	0	0	0	2	
cSH	1700	1700	816	1700	380	
Volume to Capacity	0.32	0.16	0.00	0.19	0.01	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.2	
Control Delay (s)	0.0	0.0	0.1	0.0	14.5	
Lane LOS	A			B		
Approach Delay (s)	0.0		0.0		14.5	
Approach LOS						B
<b>Intersection Summary</b>						
Average Delay	0.0					
Intersection Capacity Utilization	34.0%		ICU Level of Service			A
Analysis Period (min)	15					










Lanes, Volumes, Timings  
6: Colonnade Road South & Site Access #2

2025 PM Future Background

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	2	409	0	2	175
Future Volume (vph)	0	2	409	0	2	175
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>	0.865					
Fl <sub>t</sub> Protected	0.999					
Satd. Flow (prot)	1050	0	1767	0	0	1603
Fl <sub>t</sub> Permitted	0.999					
Satd. Flow (perm)	1050	0	1767	0	0	1603
Link Speed (k/h)	50		60		60	
Link Distance (m)	39.9		46.7		62.9	
Travel Time (s)	2.9		2.8		3.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	50%	3%	0%	50%	13%
Adj. Flow (vph)	0	2	409	0	2	175
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2	0	409	0	0	177
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0		0.0	
Link Offset(m)	0.0		0.0		0.0	
Crosswalk Width(m)	4.9		4.9		4.9	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free		Free	
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	32.7%			ICU Level of Service A		
Analysis Period (min)	15					










HCM Unsignalized Intersection Capacity Analysis  
6: Colonnade Road South & Site Access #2

2025 PM Future Background

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	2	409	0	2	175
Future Volume (Veh/h)	0	2	409	0	2	175
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	2	409	0	2	175
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)	63					
pX, platoon unblocked						
vC, conflicting volume	588	409			409	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	588	409			409	
tC, single (s)	6.4	6.7			4.6	
tC, 2 stage (s)						
tF (s)	3.5	3.8			2.7	
p0 queue free %	100	100			100	
cM capacity (veh/h)	474	551			933	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	2	409	177			
Volume Left	0	0	2			
Volume Right	2	0	0			
cSH	551	1700	933			
Volume to Capacity	0.00	0.24	0.00			
Queue Length 95th (m)	0.1	0.0	0.0			
Control Delay (s)	11.6	0.0	0.1			
Lane LOS	B		A			
Approach Delay (s)	11.6	0.0	0.1			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			0.1			
Intersection Capacity Utilization			32.7%	ICU Level of Service		A
Analysis Period (min)			15			










Lanes, Volumes, Timings  
7: Colonnade Road South & Site Access #3

2025 PM Future Background

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	2	407	0	1	174
Future Volume (vph)	0	2	407	0	1	174
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>	0.865					
Fl <sub>t</sub> Protected						
Satd. Flow (prot)	1574	0	1767	0	0	1612
Fl <sub>t</sub> Permitted						
Satd. Flow (perm)	1574	0	1767	0	0	1612
Link Speed (k/h)	50		60			60
Link Distance (m)	34.9		115.6			46.7
Travel Time (s)	2.5		6.9			2.8
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	3%	0%	0%	13%
Adj. Flow (vph)	0	2	407	0	1	174
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2	0	407	0	0	175
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.9		4.9			4.9
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	32.6%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis  
7: Colonnade Road South & Site Access #3

2025 PM Future Background

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	2	407	0	1	174
Future Volume (Veh/h)	0	2	407	0	1	174
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	2	407	0	1	174
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	110					
pX, platoon unblocked						
vC, conflicting volume	583	407			407	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	583	407			407	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	478	648			1163	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	2	407	175			
Volume Left	0	0	1			
Volume Right	2	0	0			
cSH	648	1700	1163			
Volume to Capacity	0.00	0.24	0.00			
Queue Length 95th (m)	0.1	0.0	0.0			
Control Delay (s)	10.6	0.0	0.1			
Lane LOS	B		A			
Approach Delay (s)	10.6	0.0	0.1			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			0.1			
Intersection Capacity Utilization			32.6%	ICU Level of Service	A	
Analysis Period (min)			15			



Intersection: 1: Prince of Wales Drive & Colonnade Road/Access

Movement	EB	EB	EB	NB	NB	SB	SB	B15	B15
Directions Served	L	L	TR	L	TR	T	R	T	T
Maximum Queue (m)	88.6	87.5	85.5	51.8	101.2	444.7	362.9	24.9	21.4
Average Queue (m)	70.6	63.7	80.4	23.3	49.3	349.2	168.2	1.5	0.9
95th Queue (m)	102.1	94.9	94.4	41.6	94.4	449.6	368.8	16.2	12.0
Link Distance (m)	82.1	82.1	82.1		167.5	449.2	449.2	243.6	243.6
Upstream Blk Time (%)	27	16	53			3	0		
Queuing Penalty (veh)	74	44	146			19	1		
Storage Bay Dist (m)				85.0					
Storage Blk Time (%)						1			
Queuing Penalty (veh)						1			

Intersection: 1: Prince of Wales Drive & Colonnade Road/Access

Movement	EB	EB	EB	NB	NB	SB	SB	B15	B15	
Directions Served	L	L	TR	L	TR	T	R	T	T	
Maximum Queue (m)	86.9	89.3	85.2	73.6	145.3	476.6	476.1	228.8	269.0	
Average Queue (m)	61.1	59.3	77.1	27.5	70.4	465.4	428.3	132.7	131.7	
95th Queue (m)	92.2	87.9	95.7	54.4	119.4	493.8	572.9	277.7	300.8	
Link Distance (m)	82.1	82.1	82.1		167.5	449.3	449.3	243.6	243.6	
Upstream Blk Time (%)	4	2	24	0	0	81	26	5	10	
Queuing Penalty (veh)	10	5	65	0	0	599	190	38	77	
Storage Bay Dist (m)				85.0						
Storage Blk Time (%)					3					
Queuing Penalty (veh)					3					

Intersection: 2: Colonnade Road South/Colonnade Road North & Colonnade Road

Movement	WB	WB	NB	SB	B9
Directions Served	L	R	TR	LT	T
Maximum Queue (m)	63.2	43.7	39.6	140.3	10.1
Average Queue (m)	34.2	21.3	20.8	69.4	0.8
95th Queue (m)	58.6	35.5	38.6	138.0	10.2
Link Distance (m)	64.0	64.0	41.8	167.0	200.2
Upstream Blk Time (%)	1		1	1	
Queuing Penalty (veh)	2		5	4	
Storage Bay Dist (m)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 3: Colonnade Road North & Citiplace Drive

Movement	EB	EB	WB	SB	SB
Directions Served	L	T	TR	L	R
Maximum Queue (m)	14.0	47.6	61.2	14.9	17.0
Average Queue (m)	3.6	21.0	31.3	4.0	5.7
95th Queue (m)	11.3	36.3	50.9	12.0	13.8
Link Distance (m)		125.0	200.2	101.7	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)	50.0			20.0	
Storage Blk Time (%)		0		0	0
Queuing Penalty (veh)		0		0	0

Intersection: 4: Prince of Wales Drive & Fisher Avenue

Movement	EB	EB	NB	NB	SB	SB
Directions Served	L	R	L	T	T	R
Maximum Queue (m)	9.9	41.9	87.8	38.5	196.2	109.4
Average Queue (m)	1.4	2.1	34.4	2.8	68.8	27.9
95th Queue (m)	6.5	26.1	66.2	17.8	213.9	161.2
Link Distance (m)	269.5	269.5	243.6	243.6	257.7	257.7
Upstream Blk Time (%)					11	8
Queuing Penalty (veh)					0	0
Storage Bay Dist (m)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 5: Site Access #1 & Colonnade Road

Movement	EB	EB	WB	NB
Directions Served	T	TR	LT	LR
Maximum Queue (m)	58.0	70.2	10.3	8.2
Average Queue (m)	20.2	33.0	0.8	1.0
95th Queue (m)	62.0	79.9	7.3	5.4
Link Distance (m)	64.0	64.0	82.1	31.9
Upstream Blk Time (%)	0	7		
Queuing Penalty (veh)	1	28		
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Colonnade Road South & Site Access #2

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (m)	18.0	15.8	17.9
Average Queue (m)	1.6	1.0	0.8
95th Queue (m)	9.1	8.2	10.7
Link Distance (m)	31.0	30.9	41.8
Upstream Blk Time (%)		0	0
Queuing Penalty (veh)		0	0
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 7: Colonnade Road South & Site Access #3

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (m)	8.8	3.3
Average Queue (m)	0.4	0.1
95th Queue (m)	3.4	2.3
Link Distance (m)	26.4	30.9
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		
























Network Summary

Network wide Queuing Penalty: 1027

Lanes, Volumes, Timings

2030 AM Future Background (alternate timing)

1: Prince of Wales Drive & Colonnade Road/Access

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 					 	 	 				
Traffic Volume (vph)	216	0	115	0	0	1	281	1429	0	0	878	463
Future Volume (vph)	216	0	115	0	0	1	281	1429	0	0	878	463
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000	1900
Storage Length (m)	0.0		0.0	0.0		0.0	85.0		0.0	0.0		0.0
Storage Lanes	2		0	0		1	1		0	0		1
Taper Length (m)	7.6			7.6			90.0			7.6		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.865						0.850
Flt Protected	0.950						0.950					
Satd. Flow (prot)	3372	1396	0	0	0	1662	1755	1983	0	0	1963	1617
Flt Permitted	0.950						0.171					
Satd. Flow (perm)	3372	1396	0	0	0	1662	316	1983	0	0	1963	1617
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		305				91						426
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		98.6			76.2			181.6			473.7	
Travel Time (s)		7.1			5.5			10.9			28.4	
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 (%)	5%	0%	17%	0%	0%	0%	4%	2%	0%	0%	3%	1%
Adj. Flow (vph)	216	0	115	0	0	1	281	1429	0	0	878	463
Shared Lane Traffic (%)												
Lane Group Flow (vph)	216	115	0	0	0	1	281	1429	0	0	878	463
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.4			7.4			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.92	0.99	0.99	0.92	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2				1	1	2			2	1
Detector Template	Left	Thru				Right	Left	Thru			Thru	Right
Leading Detector (m)	6.1	30.5				6.1	6.1	30.5			30.5	6.1
Trailing Detector (m)	0.0	0.0				0.0	0.0	0.0			0.0	0.0
Detector 1 Position(m)	0.0	0.0				0.0	0.0	0.0			0.0	0.0
Detector 1 Size(m)	6.1	1.8				6.1	6.1	1.8			1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex				Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0				0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)	0.0	0.0				0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)	0.0	0.0				0.0	0.0	0.0			0.0	0.0
Detector 2 Position(m)		28.7						28.7			28.7	
Detector 2 Size(m)		1.8						1.8			1.8	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA				Perm	pm+pt	NA			NA	Perm
Protected Phases		4					5	2			6	

Lanes, Volumes, Timings

2030 AM Future Background (alternate timing)

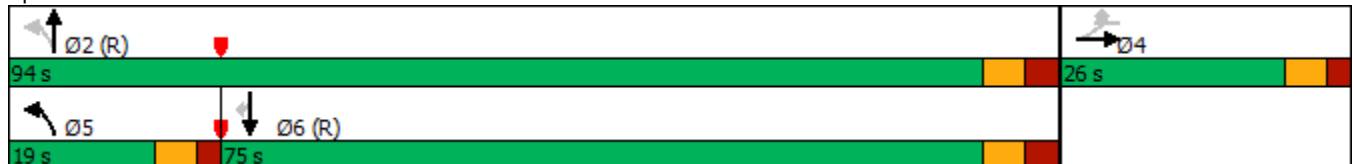
1: Prince of Wales Drive & Colonnade Road/Access

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4					4	2					6
Detector Phase	4	4				4	5	2			6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0				5.0	5.0	5.0			5.0	5.0
Minimum Split (s)	26.0	26.0				26.0	11.0	36.0			36.0	36.0
Total Split (s)	26.0	26.0				26.0	19.0	94.0			75.0	75.0
Total Split (%)	21.7%	21.7%				21.7%	15.8%	78.3%			62.5%	62.5%
Maximum Green (s)	20.0	20.0				20.0	13.0	87.0			68.0	68.0
Yellow Time (s)	3.7	3.7				3.7	3.7	3.7			3.7	3.7
All-Red Time (s)	2.3	2.3				2.3	2.3	3.3			3.3	3.3
Lost Time Adjust (s)	-2.0	-3.0				0.0	-2.0	-3.0			-3.0	-3.0
Total Lost Time (s)	4.0	3.0				6.0	4.0	4.0			4.0	4.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Vehicle Extension (s)	3.0	3.0				3.0	3.0	3.0			3.0	3.0
Recall Mode	None	None				None	None	C-Max			C-Max	C-Max
Walk Time (s)	7.0	7.0				7.0		7.0			7.0	7.0
Flash Dont Walk (s)	13.0	13.0				13.0		22.0			22.0	22.0
Pedestrian Calls (#/hr)	0	0				0		0			0	0
Act Effct Green (s)	15.2	16.2				13.2	96.8	96.8			78.0	78.0
Actuated g/C Ratio	0.13	0.14				0.11	0.81	0.81			0.65	0.65
v/c Ratio	0.51	0.25				0.00	0.65	0.89			0.69	0.39
Control Delay	52.7	1.4				0.0	13.5	18.0			18.2	2.5
Queue Delay	0.0	0.0				0.0	0.0	0.0			0.0	0.0
Total Delay	52.7	1.4				0.0	13.5	18.0			18.2	2.5
LOS	D	A				A	B	B			B	A
Approach Delay		34.9						17.3			12.8	
Approach LOS		C						B			B	

Intersection Summary





















Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle:	100
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.89
Intersection Signal Delay:	17.2
Intersection LOS:	B
Intersection Capacity Utilization:	93.4%
ICU Level of Service:	F
Analysis Period (min):	15

Splits and Phases: 1: Prince of Wales Drive & Colonnade Road/Access



Lanes, Volumes, Timings  
1: Prince of Wales Drive & Colonnade Road/Access

2030 AM Future Background

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	216	0	115	0	0	1	281	1429	0	0	878	463
Future Volume (vph)	216	0	115	0	0	1	281	1429	0	0	878	463
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000	1900
Storage Length (m)	0.0		0.0	0.0		0.0	85.0		0.0	0.0		0.0
Storage Lanes	2		0	1		0	1		0	0		1
Taper Length (m)	7.6			7.6			90.0			7.6		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.850							0.850
Flt Protected	0.950						0.950					
Satd. Flow (prot)	3372	1396	0	1921	1633	0	1755	1983	0	0	1963	1617
Flt Permitted	0.950						0.061					
Satd. Flow (perm)	3372	1396	0	1921	1633	0	113	1983	0	0	1963	1617
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		343			155							342
Link Speed (k/h)		50			50			60				60
Link Distance (m)		98.6			76.2			181.6				473.7
Travel Time (s)		7.1			5.5			10.9				28.4
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 (%)	5%	0%	17%	0%	0%	0%	4%	2%	0%	0%	3%	1%
Adj. Flow (vph)	216	0	115	0	0	1	281	1429	0	0	878	463
Shared Lane Traffic (%)												
Lane Group Flow (vph)	216	115	0	0	1	0	281	1429	0	0	878	463
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.4			7.4			3.7				3.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			4.9			4.9				4.9
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.92	0.99	0.99	0.92	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2			2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru			Thru	Right
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5			30.5	6.1
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8			1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		pm+pt	NA			NA	Perm
Protected Phases	7	4		3	8		5	2			6	

Lanes, Volumes, Timings  
1: Prince of Wales Drive & Colonnade Road/Access

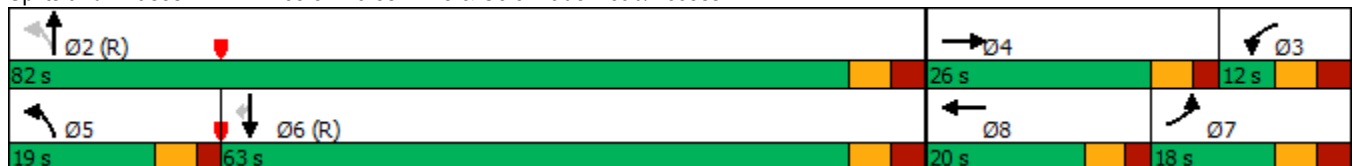
2030 AM Future Background

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases							2					6
Detector Phase	7	4		3	8		5	2			6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	5.0
Minimum Split (s)	12.0	26.0		12.0	17.0		11.0	36.0			36.0	36.0
Total Split (s)	18.0	26.0		12.0	20.0		19.0	82.0			63.0	63.0
Total Split (%)	15.0%	21.7%		10.0%	16.7%		15.8%	68.3%			52.5%	52.5%
Maximum Green (s)	11.0	20.0		5.0	14.0		13.0	75.0			56.0	56.0
Yellow Time (s)	3.7	3.7		3.7	3.7		3.7	3.7			3.7	3.7
All-Red Time (s)	3.3	2.3		3.3	2.3		2.3	3.3			3.3	3.3
Lost Time Adjust (s)	-2.0	-3.0		-2.0	-3.0		-2.0	-3.0			-3.0	-3.0
Total Lost Time (s)	5.0	3.0		5.0	3.0		4.0	4.0			4.0	4.0
Lead/Lag	Lag	Lead		Lag	Lead		Lead				Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes				Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Recall Mode	None	None		None	None		None	C-Max			C-Max	C-Max
Walk Time (s)		7.0						7.0			7.0	7.0
Flash Dont Walk (s)		13.0						22.0			22.0	22.0
Pedestrian Calls (#/hr)		0						0			0	0
Act Effct Green (s)	14.9	19.2			8.5		93.8	93.8			67.3	67.3
Actuated g/C Ratio	0.12	0.16			0.07		0.78	0.78			0.56	0.56
v/c Ratio	0.52	0.23			0.00		0.71	0.92			0.80	0.44
Control Delay	53.2	1.0			0.0		40.0	23.4			29.1	5.8
Queue Delay	0.0	0.0			0.0		0.0	0.0			0.0	0.0
Total Delay	53.2	1.0			0.0		40.0	23.4			29.1	5.8
LOS	D	A			A		D	C			C	A
Approach Delay		35.1						26.1			21.0	
Approach LOS		D						C			C	

Intersection Summary

Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green  
 Natural Cycle: 145  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.92  
 Intersection Signal Delay: 25.0 Intersection LOS: C  
 Intersection Capacity Utilization 90.9% ICU Level of Service E  
 Analysis Period (min) 15

Splits and Phases: 1: Prince of Wales Drive & Colonnade Road/Access





2: Colonnade Road South/Colonnade Road North & Colonnade Road



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	366	359	9	115	229	19
Future Volume (vph)	366	359	9	115	229	19
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.875			
Flt Protected	0.950					0.956
Satd. Flow (prot)	1695	1517	1310	0	0	1642
Flt Permitted	0.950					0.656
Satd. Flow (perm)	1695	1517	1310	0	0	1126
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		359	115			
Link Speed (k/h)	50		60			60
Link Distance (m)	80.2		62.9			186.0
Travel Time (s)	5.8		3.8			11.2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	2%	67%	18%	3%	42%
Adj. Flow (vph)	366	359	9	115	229	19
Shared Lane Traffic (%)						
Lane Group Flow (vph)	366	359	124	0	0	248
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.9		4.9			4.9
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2		1	2
Detector Template	Left	Right	Thru		Left	Thru
Leading Detector (m)	6.1	2.0	10.0		2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	6.1	2.0	0.6		2.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA		pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8			6	
Detector Phase	8	8	2		1	6
Switch Phase						

2: Colonnade Road South/Colonnade Road North & Colonnade Road

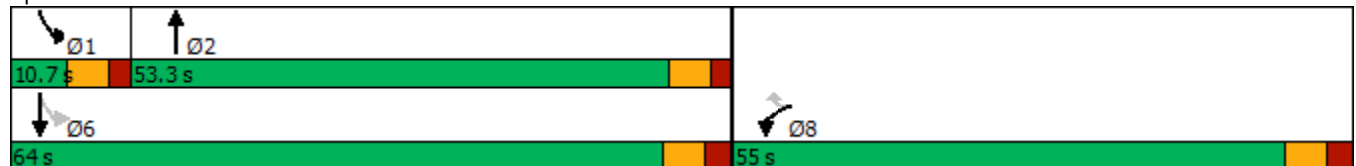


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	10.0	10.0	5.0		5.0	5.0
Minimum Split (s)	31.2	31.2	25.7		10.7	26.2
Total Split (s)	55.0	55.0	53.3		10.7	64.0
Total Split (%)	46.2%	46.2%	44.8%		9.0%	53.8%
Maximum Green (s)	48.8	48.8	47.6		5.0	57.8
Yellow Time (s)	3.7	3.7	3.7		3.7	3.7
All-Red Time (s)	2.5	2.5	2.0		2.0	2.5
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	6.2	6.2	5.7			6.2
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	Max		None	Max
Walk Time (s)	7.0	7.0	7.0			7.0
Flash Dont Walk (s)	18.0	18.0	13.0			13.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	26.0	26.0	58.6			58.1
Actuated g/C Ratio	0.27	0.27	0.61			0.60
v/c Ratio	0.80	0.54	0.15			0.37
Control Delay	46.6	6.0	3.0			13.3
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	46.6	6.0	3.0			13.3
LOS	D	A	A			B
Approach Delay	26.5		3.0			13.3
Approach LOS	C		A			B

Intersection Summary

Area Type:	Other
Cycle Length:	119
Actuated Cycle Length:	96.5
Natural Cycle:	70
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.80
Intersection Signal Delay:	20.8
Intersection LOS:	C
Intersection Capacity Utilization	58.9%
ICU Level of Service	B
Analysis Period (min)	15

Splits and Phases: 2: Colonnade Road South/Colonnade Road North & Colonnade Road



Lanes, Volumes, Timings  
3: Colonnade Road North & Citiplace Drive

2030 AM Future Background



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	10	318	215	13	42	25
Future Volume (vph)	10	318	215	13	42	25
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0			0.0	0.0	20.0
Storage Lanes	1			0	1	1
Taper Length (m)	30.0				2.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.992			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1572	1750	1724	0	1729	1547
Flt Permitted	0.616				0.950	
Satd. Flow (perm)	1019	1750	1724	0	1729	1547
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			7			25
Link Speed (k/h)		60	60		50	
Link Distance (m)		132.5	212.4		109.2	
Travel Time (s)		8.0	12.7		7.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	10%	4%	5%	0%	0%	0%
Adj. Flow (vph)	10	318	215	13	42	25
Shared Lane Traffic (%)						
Lane Group Flow (vph)	10	318	228	0	42	25
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		3.7	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		1.6	1.6		1.6	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24			14	24	14
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	2.0	0.6	0.6		2.0	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		4	8		6	

Lanes, Volumes, Timings  
3: Colonnade Road North & Citiplace Drive

2030 AM Future Background

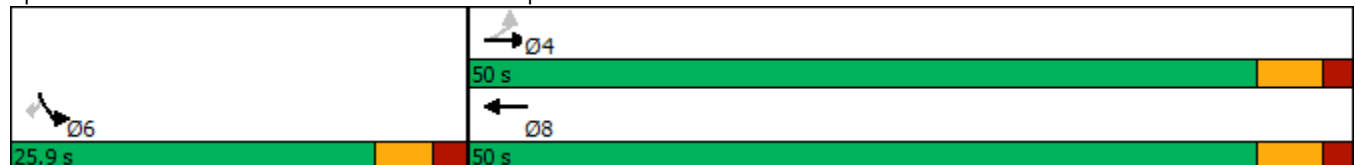


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Permitted Phases	4					6
Detector Phase	4	4	8		6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	40.5	40.5	40.5		22.5	22.5
Total Split (s)	50.0	50.0	50.0		25.9	25.9
Total Split (%)	65.9%	65.9%	65.9%		34.1%	34.1%
Maximum Green (s)	44.5	44.5	44.5		20.5	20.5
Yellow Time (s)	3.7	3.7	3.7		3.3	3.3
All-Red Time (s)	1.8	1.8	1.8		2.1	2.1
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5		5.4	5.4
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	None		Max	Max
Walk Time (s)	24.0	24.0	24.0		7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0		7.0	7.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)	13.1	13.1	13.1		20.6	20.6
Actuated g/C Ratio	0.29	0.29	0.29		0.46	0.46
v/c Ratio	0.03	0.62	0.45		0.05	0.03
Control Delay	10.9	19.3	15.2		8.1	4.3
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	10.9	19.3	15.2		8.1	4.3
LOS	B	B	B		A	A
Approach Delay		19.0	15.2		6.7	
Approach LOS		B	B		A	

Intersection Summary













Area Type: Other  
 Cycle Length: 75.9  
 Actuated Cycle Length: 44.6  
 Natural Cycle: 65  
 Control Type: Semi Act-Uncoord  
 Maximum v/c Ratio: 0.62  
 Intersection Signal Delay: 16.3  
 Intersection LOS: B  
 Intersection Capacity Utilization 30.9%  
 ICU Level of Service A  
 Analysis Period (min) 15

Splits and Phases: 3: Colonnade Road North & Citiplace Drive



Lanes, Volumes, Timings  
4: Prince of Wales Drive & Fisher Avenue

2030 AM Future Background

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	9	549	582	1149	806	22
Future Volume (vph)	9	549	582	1149	806	22
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>		0.850				0.850
Fl <sub>t</sub> Protected	0.950		0.950			
Satd. Flow (prot)	1729	1517	1679	1784	1802	1419
Fl <sub>t</sub> Permitted	0.950		0.085			
Satd. Flow (perm)	1729	1517	150	1784	1802	1419
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		549				11
Link Speed (k/h)	50			60	50	
Link Distance (m)	277.0			251.2	265.2	
Travel Time (s)	19.9			15.1	19.1	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	2%	3%	2%	1%	9%
Adj. Flow (vph)	9	549	582	1149	806	22
Shared Lane Traffic (%)						
Lane Group Flow (vph)	9	549	582	1149	806	22
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (m)	2.0	2.0	2.0	10.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	2.0	2.0	0.6	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Free	pm+pt	NA	NA	Free
Protected Phases	4		5	2	6	
Permitted Phases		Free	2			Free
Detector Phase	4		5	2	6	
Switch Phase						

Lanes, Volumes, Timings  
4: Prince of Wales Drive & Fisher Avenue

2030 AM Future Background

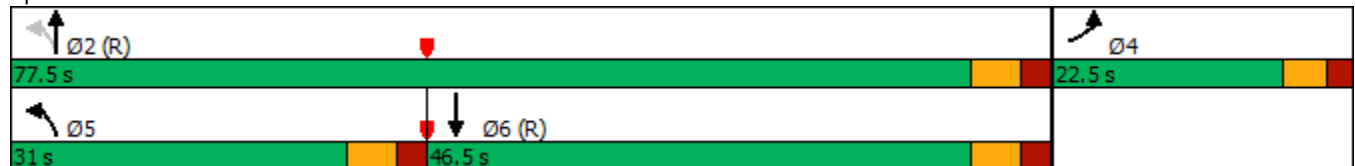


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Initial (s)	5.0		5.0	5.0	5.0	
Minimum Split (s)	22.5		11.0	32.5	32.5	
Total Split (s)	22.5		31.0	77.5	46.5	
Total Split (%)	22.5%		31.0%	77.5%	46.5%	
Maximum Green (s)	17.1		25.0	71.5	40.5	
Yellow Time (s)	3.3		3.7	3.7	3.7	
All-Red Time (s)	2.1		2.3	2.3	2.3	
Lost Time Adjust (s)	-2.0		-2.0	-3.0	-3.0	
Total Lost Time (s)	3.4		4.0	3.0	3.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	None		None	C-Max	C-Max	
Walk Time (s)	7.0			17.0	17.0	
Flash Dont Walk (s)	10.0			9.0	9.0	
Pedestrian Calls (#/hr)	0			0	0	
Act Effct Green (s)	8.1	100.0	93.5	96.9	48.4	100.0
Actuated g/C Ratio	0.08	1.00	0.94	0.97	0.48	1.00
v/c Ratio	0.06	0.36	0.74	0.66	0.92	0.02
Control Delay	43.0	0.7	26.4	3.5	42.1	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.0	0.7	26.4	3.5	42.1	0.0
LOS	D	A	C	A	D	A
Approach Delay	1.4			11.2	40.9	
Approach LOS	A			B	D	

Intersection Summary

Area Type: Other  
 Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 26 (26%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 120  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.92  
 Intersection Signal Delay: 17.3  
 Intersection LOS: B  
 Intersection Capacity Utilization 93.0%  
 ICU Level of Service F  
 Analysis Period (min) 15

Splits and Phases: 4: Prince of Wales Drive & Fisher Avenue















Lanes, Volumes, Timings  
5: Site Access #1 & Colonnade Road

2030 AM Future Background

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↘↘	
Traffic Volume (vph)	345	0	3	741	0	1
Future Volume (vph)	345	0	3	741	0	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Fr <sub>t</sub>					0.865	
Fl <sub>t</sub> Protected						
Satd. Flow (prot)	3087	0	0	3326	1574	0
Fl <sub>t</sub> Permitted						
Satd. Flow (perm)	3087	0	0	3326	1574	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	80.2			98.6	44.7	
Travel Time (s)	5.8			7.1	3.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	12%	0%	0%	4%	0%	0%
Adj. Flow (vph)	345	0	3	741	0	1
Shared Lane Traffic (%)						
Lane Group Flow (vph)	345	0	0	744	1	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)		14	24		24	14
Sign Control	Free			Free	Stop	
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	33.8%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis  
5: Site Access #1 & Colonnade Road










2030 AM Future Background

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	 			 	 	
Traffic Volume (veh/h)	345	0	3	741	0	1
Future Volume (Veh/h)	345	0	3	741	0	1
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	345	0	3	741	0	1
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)	80			98		
pX, platoon unblocked						
vC, conflicting volume			345	722	172	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			345	722	172	
tC, single (s)			4.1	6.8	6.9	
tC, 2 stage (s)						
tF (s)			2.2	3.5	3.3	
p0 queue free %			100	100	100	
cM capacity (veh/h)			1225	365	847	
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>EB 2</b>	<b>WB 1</b>	<b>WB 2</b>	<b>NB 1</b>	
Volume Total	230	115	250	494	1	
Volume Left	0	0	3	0	0	
Volume Right	0	0	0	0	1	
cSH	1700	1700	1225	1700	847	
Volume to Capacity	0.14	0.07	0.00	0.29	0.00	
Queue Length 95th (m)	0.0	0.0	0.1	0.0	0.0	
Control Delay (s)	0.0	0.0	0.1	0.0	9.3	
Lane LOS			A	A		
Approach Delay (s)	0.0	0.0		9.3		
Approach LOS			A			
<b>Intersection Summary</b>						
Average Delay			0.0			
Intersection Capacity Utilization			33.8%	ICU Level of Service	A	
Analysis Period (min)			15			












Lanes, Volumes, Timings  
6: Colonnade Road South & Site Access #2

2030 AM Future Background

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	1	123	0	2	383
Future Volume (vph)	0	1	123	0	2	383
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected						
Satd. Flow (prot)	787	0	1542	0	0	1784
Flt Permitted						
Satd. Flow (perm)	787	0	1542	0	0	1784
Link Speed (k/h)	50		60		60	
Link Distance (m)	39.9		46.7		62.9	
Travel Time (s)	2.9		2.8		3.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	100%	18%	0%	0%	2%
Adj. Flow (vph)	0	1	123	0	2	383
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1	0	123	0	0	385
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0		0.0	
Link Offset(m)	0.0		0.0		0.0	
Crosswalk Width(m)	4.9		4.9		4.9	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free		Free	
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	33.0%			ICU Level of Service A		
Analysis Period (min)	15					










HCM Unsignalized Intersection Capacity Analysis  
6: Colonnade Road South & Site Access #2

2030 AM Future Background

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	1	123	0	2	383
Future Volume (Veh/h)	0	1	123	0	2	383
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1	123	0	2	383
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	63					
pX, platoon unblocked						
vC, conflicting volume	510	123			123	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	510	123			123	
tC, single (s)	6.4	7.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	4.2			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	526	719			1477	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	1	123	385			
Volume Left	0	0	2			
Volume Right	1	0	0			
cSH	719	1700	1477			
Volume to Capacity	0.00	0.07	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	10.0	0.0	0.1			
Lane LOS	B		A			
Approach Delay (s)	10.0	0.0	0.1			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			0.1			
Intersection Capacity Utilization			33.0%	ICU Level of Service	A	
Analysis Period (min)			15			










Lanes, Volumes, Timings  
7: Colonnade Road South & Site Access #3

2030 AM Future Background

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	1	122	0	1	382
Future Volume (vph)	0	1	122	0	1	382
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected						
Satd. Flow (prot)	1574	0	1542	0	0	1784
Flt Permitted						
Satd. Flow (perm)	1574	0	1542	0	0	1784
Link Speed (k/h)	50		60		60	
Link Distance (m)	34.9		115.6		46.7	
Travel Time (s)	2.5		6.9		2.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	18%	0%	0%	2%
Adj. Flow (vph)	0	1	122	0	1	382
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1	0	122	0	0	383
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0		0.0	
Link Offset(m)	0.0		0.0		0.0	
Crosswalk Width(m)	4.9		4.9		4.9	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free		Free	
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	32.1%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis  
7: Colonnade Road South & Site Access #3

2030 AM Future Background

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	1	122	0	1	382
Future Volume (Veh/h)	0	1	122	0	1	382
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	1	122	0	1	382
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	110					
pX, platoon unblocked						
vC, conflicting volume	506	122			122	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	506	122			122	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	529	935			1478	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	1	122	383			
Volume Left	0	0	1			
Volume Right	1	0	0			
cSH	935	1700	1478			
Volume to Capacity	0.00	0.07	0.00			
Queue Length 95th (m)	0.0	0.0	0.0			
Control Delay (s)	8.9	0.0	0.0			
Lane LOS	A		A			
Approach Delay (s)	8.9	0.0	0.0			
Approach LOS	A					
<b>Intersection Summary</b>						
Average Delay			0.0			
Intersection Capacity Utilization			32.1%	ICU Level of Service	A	
Analysis Period (min)			15			

Intersection: 1: Prince of Wales Drive & Colonnade Road/Access

Movement	EB	EB	EB	WB	NB	NB	SB	SB
Directions Served	L	L	TR	R	L	TR	T	R
Maximum Queue (m)	47.7	44.8	53.8	7.2	167.4	181.0	249.1	103.1
Average Queue (m)	23.0	25.0	19.4	0.4	111.2	164.6	142.7	40.4
95th Queue (m)	40.3	40.5	40.4	3.2	214.8	212.1	249.5	96.8
Link Distance (m)	82.1	82.1	82.1	63.5		167.5	449.2	449.2
Upstream Blk Time (%)					0	13		
Queuing Penalty (veh)					0	0		
Storage Bay Dist (m)					85.0			
Storage Blk Time (%)					0	19		
Queuing Penalty (veh)					7	53		

Intersection: 1: Prince of Wales Drive & Colonnade Road/Access

Movement	EB	EB	EB	WB	NB	NB	SB	SB
Directions Served	L	L	TR	TR	L	TR	T	R
Maximum Queue (m)	46.6	47.9	53.1	9.0	167.4	181.1	247.8	156.8
Average Queue (m)	21.7	24.6	18.7	0.6	121.3	165.4	141.2	39.7
95th Queue (m)	37.8	39.6	40.0	4.3	222.6	205.1	234.0	111.4
Link Distance (m)	82.1	82.1	82.1	63.5		167.5	449.3	449.3
Upstream Blk Time (%)					0	14		
Queuing Penalty (veh)					0	0		
Storage Bay Dist (m)					85.0			
Storage Blk Time (%)					1	21		
Queuing Penalty (veh)					8	59		

Intersection: 2: Colonnade Road South/Colonnade Road North & Colonnade Road

Movement	WB	WB	NB	SB
Directions Served	L	R	TR	LT
Maximum Queue (m)	67.9	42.9	37.5	67.6
Average Queue (m)	49.7	19.8	11.2	27.8
95th Queue (m)	73.3	33.5	25.5	53.5
Link Distance (m)	64.0	64.0	41.8	167.0
Upstream Blk Time (%)	4	0	0	
Queuing Penalty (veh)	15	0	0	
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Colonnade Road North & Citiplace Drive

Movement	EB	EB	WB	SB	SB
Directions Served	L	T	TR	L	R
Maximum Queue (m)	15.2	57.5	44.7	14.0	12.8
Average Queue (m)	2.4	26.9	21.0	4.3	2.9
95th Queue (m)	9.7	45.8	35.6	12.5	9.9
Link Distance (m)		125.0	200.2	101.7	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)	50.0				20.0
Storage Blk Time (%)		0		0	0
Queuing Penalty (veh)		0		0	0

Intersection: 4: Prince of Wales Drive & Fisher Avenue

Movement	EB	NB	NB	SB
Directions Served	L	L	T	T
Maximum Queue (m)	11.2	123.6	43.4	190.3
Average Queue (m)	2.3	58.9	7.3	66.9
95th Queue (m)	8.5	106.1	30.1	161.1
Link Distance (m)	269.5	243.6	243.6	257.7
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 5: Site Access #1 & Colonnade Road

Movement	WB	WB	NB
Directions Served	LT	T	LR
Maximum Queue (m)	43.4	1.8	1.6
Average Queue (m)	5.4	0.1	0.1
95th Queue (m)	23.9	1.3	1.6
Link Distance (m)	82.1	82.1	31.9
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 6: Colonnade Road South & Site Access #2

Movement	WB	NB
Directions Served	LR	TR
Maximum Queue (m)	15.1	6.6
Average Queue (m)	0.5	0.2
95th Queue (m)	5.0	2.8
Link Distance (m)	31.0	30.9
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 7: Colonnade Road South & Site Access #3

Movement	WB
Directions Served	LR
Maximum Queue (m)	6.8
Average Queue (m)	0.3
95th Queue (m)	2.8
Link Distance (m)	26.4
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary




















Network wide Queuing Penalty: 82



Lanes, Volumes, Timings

2030 PM Future Background (alternate timing)

1: Prince of Wales Drive & Colonnade Road/Access

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	471	0	339	0	0	0	102	909	0	0	1311	310
Future Volume (vph)	471	0	339	0	0	0	102	909	0	0	1311	310
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	2000	1900
Storage Length (m)	0.0		0.0	0.0		0.0	85.0		0.0	0.0		0.0
Storage Lanes	2		0	0		1	1		0	0		1
Taper Length (m)	7.6			7.6			90.0			7.6		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850										0.850
Flt Protected	0.950						0.950					
Satd. Flow (prot)	3506	1617	0	0	0	1921	1690	1902	0	0	2002	1570
Flt Permitted	0.950						0.036					
Satd. Flow (perm)	3506	1617	0	0	0	1921	64	1902	0	0	2002	1570
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		143										223
Link Speed (k/h)		50			50			60				60
Link Distance (m)		98.6			76.2			181.6				473.7
Travel Time (s)		7.1			5.5			10.9				28.4
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	0%	1%	0%	0%	0%	8%	1%	0%	0%	1%	4%
Adj. Flow (vph)	471	0	339	0	0	0	102	909	0	0	1311	310
Shared Lane Traffic (%)												
Lane Group Flow (vph)	471	339	0	0	0	0	102	909	0	0	1311	310
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.4			7.4			3.7				3.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			4.9			4.9				4.9
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.92	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2				1	1	2			2	1
Detector Template	Left	Thru				Right	Left	Thru			Thru	Right
Leading Detector (m)	6.1	30.5				6.1	6.1	30.5			30.5	6.1
Trailing Detector (m)	0.0	0.0				0.0	0.0	0.0			0.0	0.0
Detector 1 Position(m)	0.0	0.0				0.0	0.0	0.0			0.0	0.0
Detector 1 Size(m)	6.1	1.8				6.1	6.1	1.8			1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex				Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0				0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)	0.0	0.0				0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)	0.0	0.0				0.0	0.0	0.0			0.0	0.0
Detector 2 Position(m)		28.7						28.7			28.7	
Detector 2 Size(m)		1.8						1.8			1.8	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA				Perm	pm+pt	NA			NA	Perm
Protected Phases		4					5	2			6	

Lanes, Volumes, Timings

2030 PM Future Background (alternate timing)

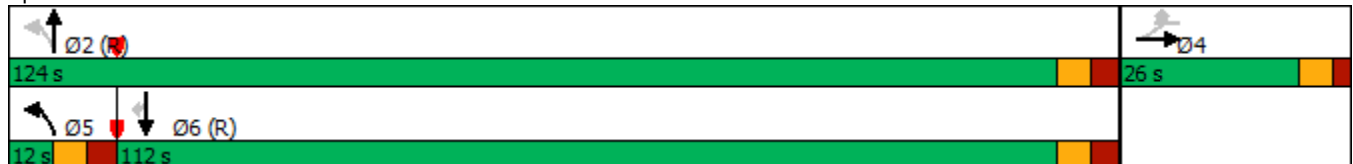
1: Prince of Wales Drive & Colonnade Road/Access

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Permitted Phases	4						4	2					6
Detector Phase	4	4						4	5	2		6	6
Switch Phase													
Minimum Initial (s)	5.0	5.0						5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	26.0	26.0						26.0	12.0	36.0		36.0	36.0
Total Split (s)	26.0	26.0						26.0	12.0	124.0		112.0	112.0
Total Split (%)	17.3%	17.3%						17.3%	8.0%	82.7%		74.7%	74.7%
Maximum Green (s)	20.0	20.0						20.0	5.0	117.0		105.0	105.0
Yellow Time (s)	3.7	3.7						3.7	3.7	3.7		3.7	3.7
All-Red Time (s)	2.3	2.3						2.3	3.3	3.3		3.3	3.3
Lost Time Adjust (s)	-2.0	-3.0						0.0	-2.0	-3.0		-3.0	-3.0
Total Lost Time (s)	4.0	3.0						6.0	5.0	4.0		4.0	4.0
Lead/Lag							Lead			Lag			
Lead-Lag Optimize?							Yes			Yes			
Vehicle Extension (s)	3.0	3.0						3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None						None	None	C-Max		C-Max	C-Max
Walk Time (s)	7.0	7.0						7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	13.0	13.0						13.0	22.0		22.0	22.0	
Pedestrian Calls (#/hr)	0	0						0	0		0	0	
Act Effct Green (s)	22.0	23.0						119.0	120.0		108.0	108.0	
Actuated g/C Ratio	0.15	0.15						0.79	0.80		0.72	0.72	
v/c Ratio	0.92	0.92						0.81	0.60		0.91	0.26	
Control Delay	86.3	65.9						72.2	7.7		28.1	2.5	
Queue Delay	0.0	0.0						0.0	0.0		0.0	0.0	
Total Delay	86.3	65.9						72.2	7.7		28.1	2.5	
LOS	F	E						E	A		C	A	
Approach Delay	77.8						14.2		23.2				
Approach LOS	E						B		C				

Intersection Summary





















Area Type:	Other
Cycle Length:	150
Actuated Cycle Length:	150
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle:	110
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.92
Intersection Signal Delay:	33.4
Intersection LOS:	C
Intersection Capacity Utilization:	103.0%
ICU Level of Service:	G
Analysis Period (min):	15

Splits and Phases: 1: Prince of Wales Drive & Colonnade Road/Access



Lanes, Volumes, Timings  
1: Prince of Wales Drive & Colonnade Road/Access

2030 PM Future Background

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	471	0	339	0	0	0	102	909	0	0	1477	310
Future Volume (vph)	471	0	339	0	0	0	102	909	0	0	1477	310
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	2000	1900
Storage Length (m)	0.0		0.0	0.0		0.0	85.0		0.0	0.0		0.0
Storage Lanes	2		0	1		0	1		0	0		1
Taper Length (m)	7.6			7.6			90.0			7.6		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850										0.850
Flt Protected	0.950						0.950					
Satd. Flow (prot)	3506	1617	0	1921	1921	0	1690	1902	0	0	2002	1570
Flt Permitted	0.950						0.040					
Satd. Flow (perm)	3506	1617	0	1921	1921	0	71	1902	0	0	2002	1570
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		151										160
Link Speed (k/h)		50			50			60				60
Link Distance (m)		98.6			76.2			181.6				473.7
Travel Time (s)		7.1			5.5			10.9				28.4
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	0%	1%	0%	0%	0%	8%	1%	0%	0%	1%	4%
Adj. Flow (vph)	471	0	339	0	0	0	102	909	0	0	1477	310
Shared Lane Traffic (%)												
Lane Group Flow (vph)	471	339	0	0	0	0	102	909	0	0	1477	310
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.4			7.4			3.7				3.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			4.9			4.9				4.9
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.92	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2			2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru			Thru	Right
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5			30.5	6.1
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8			1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot			pm+pt	NA			NA	Perm
Protected Phases	7	4		3	8		5	2			6	

Lanes, Volumes, Timings  
1: Prince of Wales Drive & Colonnade Road/Access

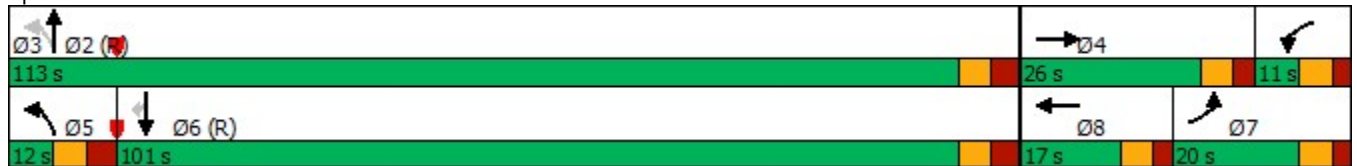
2030 PM Future Background

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases							2					6
Detector Phase	7	4		3	8		5	2			6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	5.0
Minimum Split (s)	11.0	26.0		11.0	17.0		12.0	36.0			36.0	36.0
Total Split (s)	20.0	26.0		11.0	17.0		12.0	113.0			101.0	101.0
Total Split (%)	13.3%	17.3%		7.3%	11.3%		8.0%	75.3%			67.3%	67.3%
Maximum Green (s)	14.0	20.0		5.0	11.0		5.0	106.0			94.0	94.0
Yellow Time (s)	3.7	3.7		3.7	3.7		3.7	3.7			3.7	3.7
All-Red Time (s)	2.3	2.3		2.3	2.3		3.3	3.3			3.3	3.3
Lost Time Adjust (s)	-2.0	-3.0		-2.0	-3.0		-2.0	-3.0			-3.0	-3.0
Total Lost Time (s)	4.0	3.0		4.0	3.0		5.0	4.0			4.0	4.0
Lead/Lag	Lag	Lead		Lag	Lead		Lead				Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes				Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Recall Mode	None	None		None	None		None	C-Max			C-Max	C-Max
Walk Time (s)		7.0						7.0			7.0	7.0
Flash Dont Walk (s)		13.0						22.0			22.0	22.0
Pedestrian Calls (#/hr)		0						0			0	0
Act Effct Green (s)	32.7	33.7					108.3	109.3			97.0	97.0
Actuated g/C Ratio	0.22	0.22					0.72	0.73			0.65	0.65
v/c Ratio	0.62	0.71					0.78	0.66			1.14	0.29
Control Delay	57.1	38.0					66.2	13.4			100.1	5.9
Queue Delay	0.0	0.0					0.0	0.0			0.0	0.0
Total Delay	57.1	38.0					66.2	13.4			100.1	5.9
LOS	E	D					E	B			F	A
Approach Delay		49.1						18.7			83.8	
Approach LOS		D						B			F	

Intersection Summary

Area Type: Other  
 Cycle Length: 150  
 Actuated Cycle Length: 150  
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green  
 Natural Cycle: 145  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.14  
 Intersection Signal Delay: 57.8      Intersection LOS: E  
 Intersection Capacity Utilization 111.3%      ICU Level of Service H  
 Analysis Period (min) 15

Splits and Phases: 1: Prince of Wales Drive & Colonnade Road/Access



2: Colonnade Road South/Colonnade Road North & Colonnade Road



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	164	314	20	391	430	13
Future Volume (vph)	164	314	20	391	430	13
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850	0.872			
Flt Protected	0.950					0.954
Satd. Flow (prot)	1530	1502	1536	0	0	1708
Flt Permitted	0.950					0.466
Satd. Flow (perm)	1530	1502	1536	0	0	834
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		314	391			
Link Speed (k/h)	50		60			60
Link Distance (m)	80.2		62.9			186.0
Travel Time (s)	5.8		3.8			11.2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	13%	3%	10%	3%	1%	23%
Adj. Flow (vph)	164	314	20	391	430	13
Shared Lane Traffic (%)						
Lane Group Flow (vph)	164	314	411	0	0	443
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.9		4.9			4.9
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2		1	2
Detector Template	Left	Right	Thru		Left	Thru
Leading Detector (m)	6.1	2.0	10.0		2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	6.1	2.0	0.6		2.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA		pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8			6	
Detector Phase	8	8	2		1	6
Switch Phase						

2: Colonnade Road South/Colonnade Road North & Colonnade Road

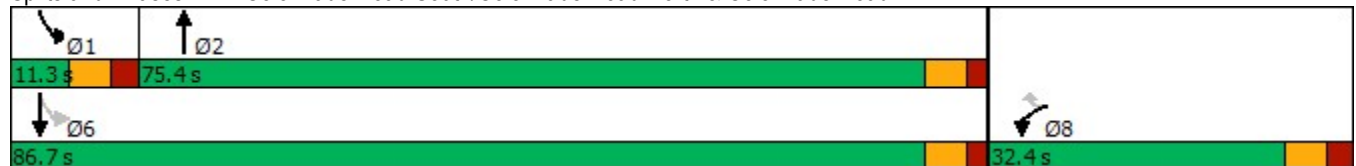


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	31.2	31.2	26.5		11.3	25.7
Total Split (s)	32.4	32.4	75.4		11.3	86.7
Total Split (%)	27.2%	27.2%	63.3%		9.5%	72.8%
Maximum Green (s)	26.2	26.2	69.7		5.1	81.0
Yellow Time (s)	3.7	3.7	3.7		3.7	3.7
All-Red Time (s)	2.5	2.5	2.0		2.5	2.0
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	6.2	6.2	5.7			5.7
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	Max		None	Max
Walk Time (s)	7.0	7.0	7.0			7.0
Flash Dont Walk (s)	18.0	18.0	13.0			13.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	16.9	16.9	81.1			81.1
Actuated g/C Ratio	0.15	0.15	0.74			0.74
v/c Ratio	0.70	0.63	0.33			0.72
Control Delay	59.9	10.7	1.5			18.0
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	59.9	10.7	1.5			18.0
LOS	E	B	A			B
Approach Delay	27.6		1.5			18.0
Approach LOS	C		A			B

Intersection Summary

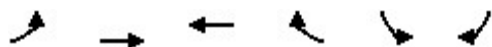
Area Type:	Other
Cycle Length:	119.1
Actuated Cycle Length:	110
Natural Cycle:	90
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.72
Intersection Signal Delay:	16.3
Intersection LOS:	B
Intersection Capacity Utilization	76.8%
ICU Level of Service	D
Analysis Period (min)	15

Splits and Phases: 2: Colonnade Road South/Colonnade Road North & Colonnade Road



Lanes, Volumes, Timings  
3: Colonnade Road North & Citiplace Drive

2030 PM Future Background



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	14	252	372	46	33	43
Future Volume (vph)	14	252	372	46	33	43
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0			0.0	0.0	20.0
Storage Lanes	1			0	1	1
Taper Length (m)	30.0				2.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.985			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1729	1767	1731	0	1729	1547
Flt Permitted	0.387				0.950	
Satd. Flow (perm)	704	1767	1731	0	1729	1547
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			14			43
Link Speed (k/h)		60	60		50	
Link Distance (m)		132.5	212.4		109.2	
Travel Time (s)		8.0	12.7		7.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	3%	4%	0%	0%	0%
Adj. Flow (vph)	14	252	372	46	33	43
Shared Lane Traffic (%)						
Lane Group Flow (vph)	14	252	418	0	33	43
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		3.7	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		1.6	1.6		1.6	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24			14	24	14
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	2.0	0.6	0.6		2.0	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		4	8		6	

Lanes, Volumes, Timings  
3: Colonnade Road North & Citiplace Drive

2030 PM Future Background

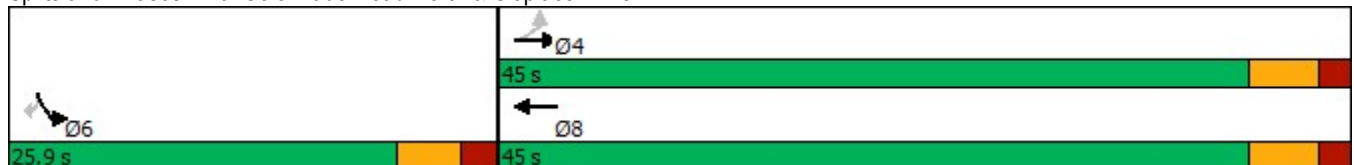


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Permitted Phases	4					6
Detector Phase	4	4	8		6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	40.5	40.5	40.5		23.4	23.4
Total Split (s)	45.0	45.0	45.0		25.9	25.9
Total Split (%)	63.5%	63.5%	63.5%		36.5%	36.5%
Maximum Green (s)	39.5	39.5	39.5		20.5	20.5
Yellow Time (s)	3.7	3.7	3.7		3.3	3.3
All-Red Time (s)	1.8	1.8	1.8		2.1	2.1
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5		5.4	5.4
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	None		Max	Max
Walk Time (s)	24.0	24.0	24.0		7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0		7.0	7.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)	16.1	16.1	16.1		20.7	20.7
Actuated g/C Ratio	0.34	0.34	0.34		0.43	0.43
v/c Ratio	0.06	0.42	0.71		0.04	0.06
Control Delay	10.5	14.2	20.2		9.9	4.4
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	10.5	14.2	20.2		9.9	4.4
LOS	B	B	C		A	A
Approach Delay		14.0	20.2		6.8	
Approach LOS		B	C		A	

Intersection Summary

Area Type: Other  
 Cycle Length: 70.9  
 Actuated Cycle Length: 47.7  
 Natural Cycle: 65  
 Control Type: Semi Act-Uncoord  
 Maximum v/c Ratio: 0.71  
 Intersection Signal Delay: 16.7  
 Intersection LOS: B  
 Intersection Capacity Utilization 36.9%  
 ICU Level of Service A  
 Analysis Period (min) 15

Splits and Phases: 3: Colonnade Road North & Citiplace Drive





Lanes, Volumes, Timings  
4: Prince of Wales Drive & Fisher Avenue

2030 PM Future Background



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	5	676	400	768	874	21
Future Volume (vph)	5	676	400	768	874	21
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>		0.850				0.850
Fl <sub>t</sub> Protected	0.950		0.950			
Satd. Flow (prot)	1441	1502	1712	1767	1767	1473
Fl <sub>t</sub> Permitted	0.950		0.186			
Satd. Flow (perm)	1441	1502	335	1767	1767	1473
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		492				8
Link Speed (k/h)	50			60	50	
Link Distance (m)	277.0			251.2	265.2	
Travel Time (s)	19.9			15.1	19.1	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	20%	3%	1%	3%	3%	5%
Adj. Flow (vph)	5	676	400	768	874	21
Shared Lane Traffic (%)						
Lane Group Flow (vph)	5	676	400	768	874	21
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (m)	2.0	2.0	2.0	10.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	2.0	2.0	0.6	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Free	pm+pt	NA	NA	Free
Protected Phases	4		5	2	6	
Permitted Phases		Free	2			Free
Detector Phase	4		5	2	6	
Switch Phase						

Lanes, Volumes, Timings  
4: Prince of Wales Drive & Fisher Avenue

2030 PM Future Background

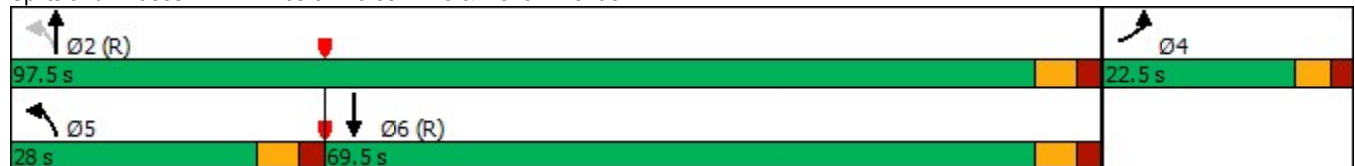


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Initial (s)	5.0		5.0	5.0	5.0	
Minimum Split (s)	22.5		11.0	32.5	32.0	
Total Split (s)	22.5		28.0	97.5	69.5	
Total Split (%)	18.8%		23.3%	81.3%	57.9%	
Maximum Green (s)	17.1		22.0	91.5	63.5	
Yellow Time (s)	3.3		3.7	3.7	3.7	
All-Red Time (s)	2.1		2.3	2.3	2.3	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	5.4		6.0	6.0	6.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	None		None	C-Max	C-Max	
Walk Time (s)	7.0			17.0	17.0	
Flash Dont Walk (s)	10.0			9.0	9.0	
Pedestrian Calls (#/hr)	0			0	0	
Act Effct Green (s)	6.1	120.0	111.5	116.3	83.5	120.0
Actuated g/C Ratio	0.05	1.00	0.93	0.97	0.70	1.00
v/c Ratio	0.07	0.45	0.71	0.45	0.71	0.01
Control Delay	55.8	1.0	17.4	1.6	16.3	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.8	1.0	17.4	1.6	16.3	0.0
LOS	E	A	B	A	B	A
Approach Delay	1.4			7.1	15.9	
Approach LOS	A			A	B	

Intersection Summary

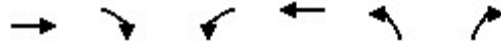
Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle:	100
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.71
Intersection Signal Delay:	8.5
Intersection LOS:	A
Intersection Capacity Utilization:	90.6%
ICU Level of Service:	E
Analysis Period (min):	15

Splits and Phases: 4: Prince of Wales Drive & Fisher Avenue



Lanes, Volumes, Timings  
5: Site Access #1 & Colonnade Road

2030 PM Future Background












Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑↑	
Traffic Volume (vph)	823	0	1	478	1	2
Future Volume (vph)	823	0	1	478	1	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Fr <sub>t</sub>					0.910	
Fl <sub>t</sub> Protected					0.984	
Satd. Flow (prot)	3087	0	0	3325	1630	0
Fl <sub>t</sub> Permitted					0.984	
Satd. Flow (perm)	3087	0	0	3325	1630	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	80.2			98.6	44.7	
Travel Time (s)	5.8			7.1	3.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	12%	0%	0%	4%	0%	0%
Adj. Flow (vph)	823	0	1	478	1	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	823	0	0	479	3	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)		14	24		24	14
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	34.0%
ICU Level of Service	A
Analysis Period (min)	15










HCM Unsignalized Intersection Capacity Analysis  
5: Site Access #1 & Colonnade Road

2030 PM Future Background

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	823	0	1	478	1	2
Future Volume (Veh/h)	823	0	1	478	1	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	823	0	1	478	1	2
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)	80			98		
pX, platoon unblocked						
vC, conflicting volume			823	1064		412
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			823	1064		412
tC, single (s)			4.1	6.8		6.9
tC, 2 stage (s)						
tF (s)			2.2	3.5		3.3
p0 queue free %			100	100		100
cM capacity (veh/h)			816	221		595
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>EB 2</b>	<b>WB 1</b>	<b>WB 2</b>	<b>NB 1</b>	
Volume Total	549	274	160	319	3	
Volume Left	0	0	1	0	1	
Volume Right	0	0	0	0	2	
cSH	1700	1700	816	1700	380	
Volume to Capacity	0.32	0.16	0.00	0.19	0.01	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.2	
Control Delay (s)	0.0	0.0	0.1	0.0	14.5	
Lane LOS	A			B		
Approach Delay (s)	0.0		0.0		14.5	
Approach LOS						B
<b>Intersection Summary</b>						
Average Delay	0.0					
Intersection Capacity Utilization			34.0%	ICU Level of Service		A
Analysis Period (min)	15					










Lanes, Volumes, Timings  
6: Colonnade Road South & Site Access #2

2030 PM Future Background

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	2	409	0	2	175
Future Volume (vph)	0	2	409	0	2	175
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected						0.999
Satd. Flow (prot)	1050	0	1767	0	0	1603
Flt Permitted						0.999
Satd. Flow (perm)	1050	0	1767	0	0	1603
Link Speed (k/h)	50		60		60	
Link Distance (m)	39.9		46.7		62.9	
Travel Time (s)	2.9		2.8		3.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	50%	3%	0%	50%	13%
Adj. Flow (vph)	0	2	409	0	2	175
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2	0	409	0	0	177
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0		0.0	
Link Offset(m)	0.0		0.0		0.0	
Crosswalk Width(m)	4.9		4.9		4.9	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free		Free	
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	32.7%			ICU Level of Service A		
Analysis Period (min)	15					










HCM Unsignalized Intersection Capacity Analysis  
6: Colonnade Road South & Site Access #2

2030 PM Future Background

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	2	409	0	2	175
Future Volume (Veh/h)	0	2	409	0	2	175
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	2	409	0	2	175
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)						63
pX, platoon unblocked						
vC, conflicting volume	588	409			409	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	588	409			409	
tC, single (s)	6.4	6.7			4.6	
tC, 2 stage (s)						
tF (s)	3.5	3.8			2.7	
p0 queue free %	100	100			100	
cM capacity (veh/h)	474	551			933	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	2	409	177			
Volume Left	0	0	2			
Volume Right	2	0	0			
cSH	551	1700	933			
Volume to Capacity	0.00	0.24	0.00			
Queue Length 95th (m)	0.1	0.0	0.0			
Control Delay (s)	11.6	0.0	0.1			
Lane LOS	B		A			
Approach Delay (s)	11.6	0.0	0.1			
Approach LOS	B					
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			32.7%	ICU Level of Service		A
Analysis Period (min)			15			










Lanes, Volumes, Timings  
7: Colonnade Road South & Site Access #3

2030 PM Future Background

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	2	407	0	1	174
Future Volume (vph)	0	2	407	0	1	174
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>	0.865					
Fl <sub>t</sub> Protected						
Satd. Flow (prot)	1574	0	1767	0	0	1612
Fl <sub>t</sub> Permitted						
Satd. Flow (perm)	1574	0	1767	0	0	1612
Link Speed (k/h)	50		60		60	
Link Distance (m)	34.9		115.6		46.7	
Travel Time (s)	2.5		6.9		2.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	3%	0%	0%	13%
Adj. Flow (vph)	0	2	407	0	1	174
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2	0	407	0	0	175
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0		0.0	
Link Offset(m)	0.0		0.0		0.0	
Crosswalk Width(m)	4.9		4.9		4.9	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free		Free	
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	32.6%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis  
7: Colonnade Road South & Site Access #3

2030 PM Future Background

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	2	407	0	1	174
Future Volume (Veh/h)	0	2	407	0	1	174
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	2	407	0	1	174
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						110
pX, platoon unblocked						
vC, conflicting volume	583	407			407	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	583	407			407	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	478	648			1163	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	2	407	175			
Volume Left	0	0	1			
Volume Right	2	0	0			
cSH	648	1700	1163			
Volume to Capacity	0.00	0.24	0.00			
Queue Length 95th (m)	0.1	0.0	0.0			
Control Delay (s)	10.6	0.0	0.1			
Lane LOS	B		A			
Approach Delay (s)	10.6	0.0	0.1			
Approach LOS	B					
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			32.6%	ICU Level of Service		A
Analysis Period (min)			15			



Intersection: 1: Prince of Wales Drive & Colonnade Road/Access

Movement	EB	EB	EB	NB	NB	SB	SB	B15	B15
Directions Served	L	L	TR	L	TR	T	R	T	T
Maximum Queue (m)	89.5	88.2	85.5	54.4	104.7	478.3	471.6	175.9	194.9
Average Queue (m)	78.1	71.9	76.7	24.9	48.8	388.6	271.1	52.4	51.0
95th Queue (m)	100.4	98.0	101.6	44.8	90.9	560.4	579.3	184.0	195.0
Link Distance (m)	82.1	82.1	82.1		167.5	449.2	449.2	243.6	243.6
Upstream Blk Time (%)	39	22	48			36	7	1	3
Queuing Penalty (veh)	107	61	132			280	54	9	26
Storage Bay Dist (m)				85.0					
Storage Blk Time (%)						1			
Queuing Penalty (veh)						1			

Intersection: 1: Prince of Wales Drive & Colonnade Road/Access

Movement	EB	EB	EB	NB	NB	SB	SB	B15	B15	
Directions Served	L	L	TR	L	TR	T	R	T	T	
Maximum Queue (m)	87.4	86.7	85.3	94.5	153.0	477.1	475.0	248.4	301.2	
Average Queue (m)	64.1	59.3	76.1	26.9	71.8	469.0	466.9	223.7	248.9	
95th Queue (m)	92.8	85.5	99.9	65.2	126.5	473.5	493.5	308.2	363.5	
Link Distance (m)	82.1	82.1	82.1		167.5	449.3	449.3	243.6	243.6	
Upstream Blk Time (%)	7	3	25	0	1	94	47	18	40	
Queuing Penalty (veh)	18	7	68	0	0	727	361	141	311	
Storage Bay Dist (m)				85.0						
Storage Blk Time (%)					4					
Queuing Penalty (veh)					4					

Intersection: 2: Colonnade Road South/Colonnade Road North & Colonnade Road

Movement	WB	WB	NB	SB
Directions Served	L	R	TR	LT
Maximum Queue (m)	63.7	43.8	40.0	138.1
Average Queue (m)	33.2	20.1	19.5	66.1
95th Queue (m)	56.6	34.6	35.4	129.8
Link Distance (m)	64.0	64.0	41.8	167.0
Upstream Blk Time (%)	0		1	0
Queuing Penalty (veh)	1		4	1
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Colonnade Road North & Citiplace Drive

Movement	EB	EB	WB	SB	SB
Directions Served	L	T	TR	L	R
Maximum Queue (m)	11.8	42.7	50.0	14.0	15.4
Average Queue (m)	3.8	21.8	28.5	3.9	4.6
95th Queue (m)	11.6	37.8	45.3	11.8	12.3
Link Distance (m)		125.0	200.2	101.7	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)	50.0		20.0		
Storage Blk Time (%)	0		0		0
Queuing Penalty (veh)	0		0		0

Intersection: 4: Prince of Wales Drive & Fisher Avenue

Movement	EB	EB	NB	NB	SB	SB
Directions Served	L	R	L	T	T	R
Maximum Queue (m)	13.6	108.3	82.6	33.8	270.6	267.8
Average Queue (m)	1.4	9.8	36.3	2.3	193.3	159.3
95th Queue (m)	7.2	65.4	66.1	15.5	358.6	370.9
Link Distance (m)	269.5	269.5	243.6	243.6	257.7	257.7
Upstream Blk Time (%)					59	36
Queuing Penalty (veh)					0	0
Storage Bay Dist (m)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 5: Site Access #1 & Colonnade Road

Movement	EB	EB	WB	NB
Directions Served	T	TR	LT	LR
Maximum Queue (m)	62.1	73.1	4.9	6.6
Average Queue (m)	19.9	36.2	0.2	0.7
95th Queue (m)	60.9	82.9	2.6	4.3
Link Distance (m)	64.0	64.0	82.1	31.9
Upstream Blk Time (%)	0	5		
Queuing Penalty (veh)	2	19		
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Colonnade Road South & Site Access #2

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (m)	12.5	15.9	7.5
Average Queue (m)	1.1	1.4	0.3
95th Queue (m)	6.6	10.3	5.3
Link Distance (m)	31.0	30.9	41.8
Upstream Blk Time (%)		0	0
Queuing Penalty (veh)		0	0
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 7: Colonnade Road South & Site Access #3

Movement	WB	NB
Directions Served	LR	TR
Maximum Queue (m)	7.2	1.7
Average Queue (m)	0.4	0.1
95th Queue (m)	3.5	1.2
Link Distance (m)	26.4	105.5
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		




















Network Summary

Network wide Queuing Penalty: 1664

Lanes, Volumes, Timings

2025 AM Future Total (alternative timing)

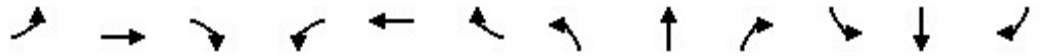
1: Prince of Wales Drive & Colonnade Road/Access

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	219	0	116	0	0	1	285	1359	0	0	878	465
Future Volume (vph)	219	0	116	0	0	1	285	1359	0	0	878	465
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000	1900
Storage Length (m)	0.0		0.0	0.0		0.0	85.0		0.0	0.0		0.0
Storage Lanes	2		0	0		1	1		0	0		1
Taper Length (m)	7.6			7.6			90.0			7.6		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.865						0.850
Flt Protected	0.950						0.950					
Satd. Flow (prot)	3372	1396	0	0	0	1662	1755	1983	0	0	1963	1617
Flt Permitted	0.950						0.169					
Satd. Flow (perm)	3372	1396	0	0	0	1662	312	1983	0	0	1963	1617
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		305				99						428
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		98.6			76.2			181.6			473.7	
Travel Time (s)		7.1			5.5			10.9			28.4	
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 (%)	5%	0%	17%	0%	0%	0%	4%	2%	0%	0%	3%	1%
Adj. Flow (vph)	219	0	116	0	0	1	285	1359	0	0	878	465
Shared Lane Traffic (%)												
Lane Group Flow (vph)	219	116	0	0	0	1	285	1359	0	0	878	465
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.4			7.4			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.92	0.99	0.99	0.92	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2				1	1	2			2	1
Detector Template	Left	Thru				Right	Left	Thru			Thru	Right
Leading Detector (m)	6.1	30.5				6.1	6.1	30.5			30.5	6.1
Trailing Detector (m)	0.0	0.0				0.0	0.0	0.0			0.0	0.0
Detector 1 Position(m)	0.0	0.0				0.0	0.0	0.0			0.0	0.0
Detector 1 Size(m)	6.1	1.8				6.1	6.1	1.8			1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex				Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0				0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)	0.0	0.0				0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)	0.0	0.0				0.0	0.0	0.0			0.0	0.0
Detector 2 Position(m)		28.7						28.7			28.7	
Detector 2 Size(m)		1.8						1.8			1.8	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA				Perm	pm+pt	NA			NA	Perm
Protected Phases		4					5	2			6	

Lanes, Volumes, Timings

2025 AM Future Total (alternative timing)

1: Prince of Wales Drive & Colonnade Road/Access



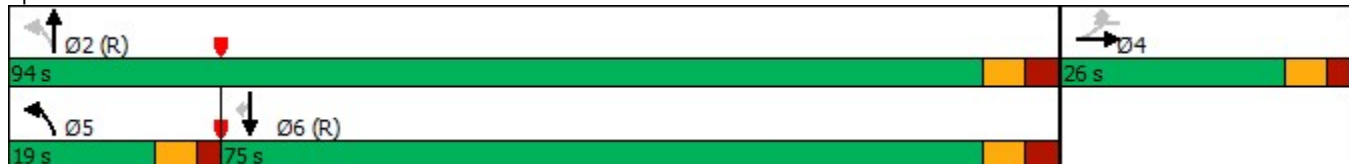
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4					4	2					6
Detector Phase	4	4				4	5	2			6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0				5.0	5.0	5.0			5.0	5.0
Minimum Split (s)	26.0	26.0				26.0	11.0	36.0			36.0	36.0
Total Split (s)	26.0	26.0				26.0	19.0	94.0			75.0	75.0
Total Split (%)	21.7%	21.7%				21.7%	15.8%	78.3%			62.5%	62.5%
Maximum Green (s)	20.0	20.0				20.0	13.0	87.0			68.0	68.0
Yellow Time (s)	3.7	3.7				3.7	3.7	3.7			3.7	3.7
All-Red Time (s)	2.3	2.3				2.3	2.3	3.3			3.3	3.3
Lost Time Adjust (s)	-2.0	-3.0				0.0	-2.0	-3.0			-3.0	-3.0
Total Lost Time (s)	4.0	3.0				6.0	4.0	4.0			4.0	4.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Vehicle Extension (s)	3.0	3.0				3.0	3.0	3.0			3.0	3.0
Recall Mode	None	None				None	None	C-Max			C-Max	C-Max
Walk Time (s)	7.0	7.0				7.0		7.0			7.0	7.0
Flash Dont Walk (s)	13.0	13.0				13.0		22.0			22.0	22.0
Pedestrian Calls (#/hr)	0	0				0		0			0	0
Act Effct Green (s)	15.3	16.3				13.3	96.7	96.7			77.6	77.6
Actuated g/C Ratio	0.13	0.14				0.11	0.81	0.81			0.65	0.65
v/c Ratio	0.51	0.26				0.00	0.66	0.85			0.69	0.39
Control Delay	52.7	1.4				0.0	14.4	14.8			18.5	2.5
Queue Delay	0.0	0.0				0.0	0.0	0.0			0.0	0.0
Total Delay	52.7	1.4				0.0	14.4	14.8			18.5	2.5
LOS	D	A				A	B	B			B	A
Approach Delay		34.9						14.8			13.0	
Approach LOS		C						B			B	

Intersection Summary

Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.85  
 Intersection Signal Delay: 16.1  
 Intersection Capacity Utilization 90.0%  
 Analysis Period (min) 15




























Intersection LOS: B  
 ICU Level of Service E

Splits and Phases: 1: Prince of Wales Drive & Colonnade Road/Access



Lanes, Volumes, Timings  
 1: Prince of Wales Drive & Colonnade Road/Access

2025 AM Future Total

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 			 	 		 	 			 	 
Traffic Volume (vph)	219	0	116	0	0	1	285	1359	0	0	878	465
Future Volume (vph)	219	0	116	0	0	1	285	1359	0	0	878	465
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000	1900
Storage Length (m)	0.0		0.0	0.0		0.0	85.0		0.0	0.0		0.0
Storage Lanes	2		0	1		0	1		0	0		1
Taper Length (m)	7.6			7.6			90.0			7.6		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.850							0.850
Flt Protected	0.950						0.950					
Satd. Flow (prot)	3372	1396	0	1921	1633	0	1755	1983	0	0	1963	1617
Flt Permitted	0.950						0.062					
Satd. Flow (perm)	3372	1396	0	1921	1633	0	115	1983	0	0	1963	1617
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		343			155							344
Link Speed (k/h)		50			50			60				60
Link Distance (m)		98.6			76.2			181.6				473.7
Travel Time (s)		7.1			5.5			10.9				28.4
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 (%)	5%	0%	17%	0%	0%	0%	4%	2%	0%	0%	3%	1%
Adj. Flow (vph)	219	0	116	0	0	1	285	1359	0	0	878	465
Shared Lane Traffic (%)												
Lane Group Flow (vph)	219	116	0	0	1	0	285	1359	0	0	878	465
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.4			7.4			3.7				3.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			4.9			4.9				4.9
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.92	0.99	0.99	0.92	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2			2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru			Thru	Right
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5			30.5	6.1
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8			1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		pm+pt	NA			NA	Perm
Protected Phases	7	4		3	8		5	2			6	

Lanes, Volumes, Timings  
 1: Prince of Wales Drive & Colonnade Road/Access

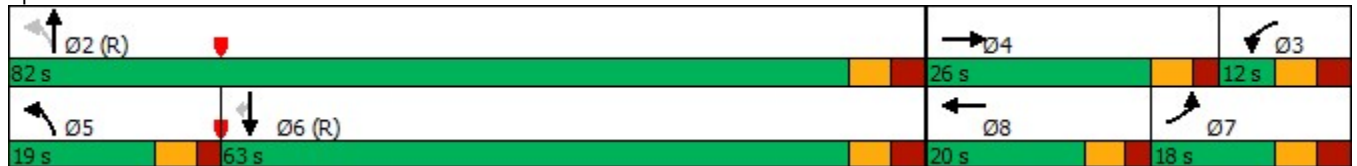
2025 AM Future Total

	↖		→		↗		↖		←		↗		↖		↑		↗		↘		↓		↘		
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR													
Permitted Phases							2						6											6	
Detector Phase	7	4		3	8		5	2					6											6	6
Switch Phase																									
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0					5.0										5.0	5.0	
Minimum Split (s)	12.0	26.0		12.0	17.0		11.0	36.0					36.0										36.0	36.0	
Total Split (s)	18.0	26.0		12.0	20.0		19.0	82.0					63.0										63.0	63.0	
Total Split (%)	15.0%	21.7%		10.0%	16.7%		15.8%	68.3%					52.5%										52.5%	52.5%	
Maximum Green (s)	11.0	20.0		5.0	14.0		13.0	75.0					56.0										56.0	56.0	
Yellow Time (s)	3.7	3.7		3.7	3.7		3.7	3.7					3.7										3.7	3.7	
All-Red Time (s)	3.3	2.3		3.3	2.3		2.3	3.3					3.3										3.3	3.3	
Lost Time Adjust (s)	-2.0	-3.0		-2.0	-3.0		-2.0	-3.0					-3.0										-3.0	-3.0	
Total Lost Time (s)	5.0	3.0		5.0	3.0		4.0	4.0					4.0										4.0	4.0	
Lead/Lag	Lag	Lead		Lag	Lead		Lead						Lag										Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes						Yes										Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0					3.0										3.0	3.0	
Recall Mode	None	None		None	None		None	C-Max					C-Max										C-Max	C-Max	
Walk Time (s)		7.0						7.0					7.0										7.0	7.0	
Flash Dont Walk (s)		13.0						22.0					22.0										22.0	22.0	
Pedestrian Calls (#/hr)		0						0					0										0	0	
Act Effct Green (s)	15.0	19.3			8.5		93.7	93.7					66.7										66.7	66.7	
Actuated g/C Ratio	0.12	0.16			0.07		0.78	0.78					0.56										0.56	0.56	
v/c Ratio	0.52	0.23			0.00		0.71	0.88					0.81										0.81	0.44	
Control Delay	53.2	1.0			0.0		39.4	19.2					29.9										29.9	5.8	
Queue Delay	0.0	0.0			0.0		0.0	0.0					0.0										0.0	0.0	
Total Delay	53.2	1.0			0.0		39.4	19.2					29.9										29.9	5.8	
LOS	D	A			A		D	B					C										C	A	
Approach Delay		35.1						22.7					21.5												
Approach LOS		D						C					C												

Intersection Summary

Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green  
 Natural Cycle: 125  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.88  
 Intersection Signal Delay: 23.5  
 Intersection LOS: C  
 Intersection Capacity Utilization 87.5%  
 ICU Level of Service E  
 Analysis Period (min) 15

Splits and Phases: 1: Prince of Wales Drive & Colonnade Road/Access





2: Colonnade Road South/Colonnade Road North & Colonnade Road



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	372	359	10	119	229	21
Future Volume (vph)	372	359	10	119	229	21
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>		0.850	0.875			
Fl <sub>t</sub> Protected	0.950					0.956
Satd. Flow (prot)	1695	1517	1307	0	0	1637
Fl <sub>t</sub> Permitted	0.950					0.654
Satd. Flow (perm)	1695	1517	1307	0	0	1120
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		359	119			
Link Speed (k/h)	50		60			60
Link Distance (m)	80.2		62.9			186.0
Travel Time (s)	5.8		3.8			11.2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	2%	67%	18%	3%	42%
Adj. Flow (vph)	372	359	10	119	229	21
Shared Lane Traffic (%)						
Lane Group Flow (vph)	372	359	129	0	0	250
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.9		4.9			4.9
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2		1	2
Detector Template	Left	Right	Thru		Left	Thru
Leading Detector (m)	6.1	2.0	10.0		2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	6.1	2.0	0.6		2.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA		pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8			6	
Detector Phase	8	8	2		1	6
Switch Phase						

Lanes, Volumes, Timings  
 2: Colonnade Road South/Colonnade Road North & Colonnade Road

2025 AM Future Total

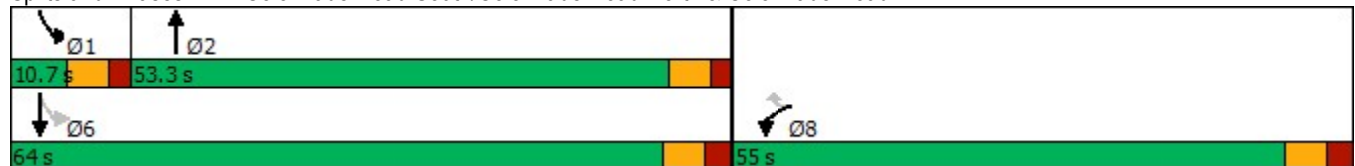


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	10.0	10.0	5.0		5.0	5.0
Minimum Split (s)	31.2	31.2	25.7		10.7	26.2
Total Split (s)	55.0	55.0	53.3		10.7	64.0
Total Split (%)	46.2%	46.2%	44.8%		9.0%	53.8%
Maximum Green (s)	48.8	48.8	47.6		5.0	57.8
Yellow Time (s)	3.7	3.7	3.7		3.7	3.7
All-Red Time (s)	2.5	2.5	2.0		2.0	2.5
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	6.2	6.2	5.7			6.2
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	Max		None	Max
Walk Time (s)	7.0	7.0	7.0			7.0
Flash Dont Walk (s)	18.0	18.0	13.0			13.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	26.6	26.6	58.6			58.1
Actuated g/C Ratio	0.27	0.27	0.60			0.60
v/c Ratio	0.80	0.53	0.15			0.37
Control Delay	46.3	5.9	3.0			13.7
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	46.3	5.9	3.0			13.7
LOS	D	A	A			B
Approach Delay	26.5		3.0			13.7
Approach LOS	C		A			B

Intersection Summary

Area Type:	Other
Cycle Length:	119
Actuated Cycle Length:	97.2
Natural Cycle:	70
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.80
Intersection Signal Delay:	20.9
Intersection LOS:	C
Intersection Capacity Utilization	59.7%
ICU Level of Service	B
Analysis Period (min)	15

Splits and Phases: 2: Colonnade Road South/Colonnade Road North & Colonnade Road



Lanes, Volumes, Timings  
3: Colonnade Road North & Citiplace Drive

2025 AM Future Total



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	10	320	216	13	42	25
Future Volume (vph)	10	320	216	13	42	25
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0			0.0	0.0	20.0
Storage Lanes	1			0	1	1
Taper Length (m)	30.0				2.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.992			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1572	1750	1724	0	1729	1547
Flt Permitted	0.616				0.950	
Satd. Flow (perm)	1019	1750	1724	0	1729	1547
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			7			25
Link Speed (k/h)		60	60		50	
Link Distance (m)		132.5	212.4		109.2	
Travel Time (s)		8.0	12.7		7.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	10%	4%	5%	0%	0%	0%
Adj. Flow (vph)	10	320	216	13	42	25
Shared Lane Traffic (%)						
Lane Group Flow (vph)	10	320	229	0	42	25
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		3.7	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		1.6	1.6		1.6	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24			14	24	14
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	2.0	0.6	0.6		2.0	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		4	8		6	

Lanes, Volumes, Timings  
3: Colonnade Road North & Citiplace Drive

2025 AM Future Total

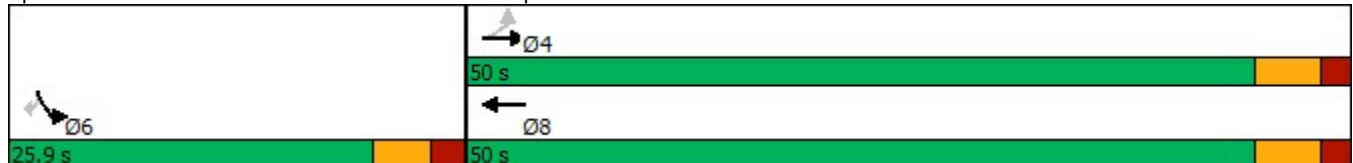


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Permitted Phases	4					6
Detector Phase	4	4	8		6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	40.5	40.5	40.5		22.5	22.5
Total Split (s)	50.0	50.0	50.0		25.9	25.9
Total Split (%)	65.9%	65.9%	65.9%		34.1%	34.1%
Maximum Green (s)	44.5	44.5	44.5		20.5	20.5
Yellow Time (s)	3.7	3.7	3.7		3.3	3.3
All-Red Time (s)	1.8	1.8	1.8		2.1	2.1
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5		5.4	5.4
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	None		Max	Max
Walk Time (s)	24.0	24.0	24.0		7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0		7.0	7.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)	13.1	13.1	13.1		20.6	20.6
Actuated g/C Ratio	0.29	0.29	0.29		0.46	0.46
v/c Ratio	0.03	0.62	0.45		0.05	0.03
Control Delay	10.8	19.3	15.2		8.2	4.3
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	10.8	19.3	15.2		8.2	4.3
LOS	B	B	B		A	A
Approach Delay		19.1	15.2		6.7	
Approach LOS		B	B		A	

Intersection Summary

Area Type: Other  
 Cycle Length: 75.9  
 Actuated Cycle Length: 44.7  
 Natural Cycle: 65  
 Control Type: Semi Act-Uncoord  
 Maximum v/c Ratio: 0.62  
 Intersection Signal Delay: 16.3  
 Intersection Capacity Utilization 31.0%  
 Analysis Period (min) 15  
 Intersection LOS: B  
 ICU Level of Service A

Splits and Phases: 3: Colonnade Road North & Citiplace Drive



Lanes, Volumes, Timings  
4: Prince of Wales Drive & Fisher Avenue

2025 AM Future Total



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	9	550	554	1096	807	22
Future Volume (vph)	9	550	554	1096	807	22
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>		0.850				0.850
Fl <sub>t</sub> Protected	0.950		0.950			
Satd. Flow (prot)	1729	1517	1679	1784	1802	1419
Fl <sub>t</sub> Permitted	0.950		0.079			
Satd. Flow (perm)	1729	1517	140	1784	1802	1419
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		550				11
Link Speed (k/h)	50			60	50	
Link Distance (m)	277.0			251.2	265.2	
Travel Time (s)	19.9			15.1	19.1	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	2%	3%	2%	1%	9%
Adj. Flow (vph)	9	550	554	1096	807	22
Shared Lane Traffic (%)						
Lane Group Flow (vph)	9	550	554	1096	807	22
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (m)	2.0	2.0	2.0	10.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	2.0	2.0	0.6	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Free	pm+pt	NA	NA	Free
Protected Phases	4		5	2	6	
Permitted Phases		Free	2			Free
Detector Phase	4		5	2	6	
Switch Phase						

Lanes, Volumes, Timings  
4: Prince of Wales Drive & Fisher Avenue

2025 AM Future Total

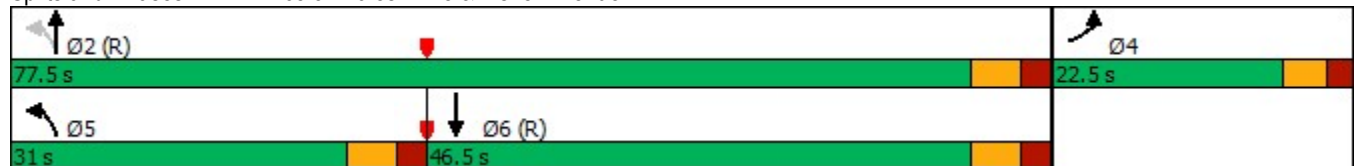


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Initial (s)	5.0		5.0	5.0	5.0	
Minimum Split (s)	22.5		11.0	32.5	32.5	
Total Split (s)	22.5		31.0	77.5	46.5	
Total Split (%)	22.5%		31.0%	77.5%	46.5%	
Maximum Green (s)	17.1		25.0	71.5	40.5	
Yellow Time (s)	3.3		3.7	3.7	3.7	
All-Red Time (s)	2.1		2.3	2.3	2.3	
Lost Time Adjust (s)	-2.0		-2.0	-3.0	-3.0	
Total Lost Time (s)	3.4		4.0	3.0	3.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	None		None	C-Max	C-Max	
Walk Time (s)	7.0			17.0	17.0	
Flash Dont Walk (s)	10.0			9.0	9.0	
Pedestrian Calls (#/hr)	0			0	0	
Act Effct Green (s)	8.1	100.0	93.5	96.9	52.1	100.0
Actuated g/C Ratio	0.08	1.00	0.94	0.97	0.52	1.00
v/c Ratio	0.06	0.36	0.77	0.63	0.86	0.02
Control Delay	43.0	0.7	29.0	3.0	32.9	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.0	0.7	29.0	3.0	32.9	0.0
LOS	D	A	C	A	C	A
Approach Delay	1.4			11.7	32.1	
Approach LOS	A			B	C	

Intersection Summary

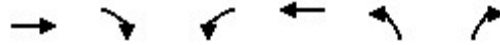
Area Type:	Other
Cycle Length:	100
Actuated Cycle Length:	100
Offset:	26 (26%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle:	110
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.86
Intersection Signal Delay:	15.4
Intersection LOS:	B
Intersection Capacity Utilization:	91.4%
ICU Level of Service:	F
Analysis Period (min):	15

Splits and Phases: 4: Prince of Wales Drive & Fisher Avenue



Lanes, Volumes, Timings  
5: Site Access #1 & Colonnade Road

2025 AM Future Total












Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑↑	
Traffic Volume (vph)	348	0	3	731	0	1
Future Volume (vph)	348	0	3	731	0	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Fr <sub>t</sub>						0.865
Fl <sub>t</sub> Protected						
Satd. Flow (prot)	3087	0	0	3326	1574	0
Fl <sub>t</sub> Permitted						
Satd. Flow (perm)	3087	0	0	3326	1574	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	80.2			98.6	44.7	
Travel Time (s)	5.8			7.1	3.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	12%	0%	0%	4%	0%	0%
Adj. Flow (vph)	348	0	3	731	0	1
Shared Lane Traffic (%)						
Lane Group Flow (vph)	348	0	0	734	1	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	14		24	24		14
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	33.5%
ICU Level of Service	A
Analysis Period (min)	15

HCM Unsignalized Intersection Capacity Analysis  
 5: Site Access #1 & Colonnade Road










2025 AM Future Total

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	348	0	3	731	0	1
Future Volume (Veh/h)	348	0	3	731	0	1
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	348	0	3	731	0	1
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)	80			98		
pX, platoon unblocked						
vC, conflicting volume			348	720	174	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			348	720	174	
tC, single (s)			4.1	6.8	6.9	
tC, 2 stage (s)						
tF (s)			2.2	3.5	3.3	
p0 queue free %			100	100	100	
cM capacity (veh/h)			1222	366	846	
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	
Volume Total	232	116	247	487	1	
Volume Left	0	0	3	0	0	
Volume Right	0	0	0	0	1	
cSH	1700	1700	1222	1700	846	
Volume to Capacity	0.14	0.07	0.00	0.29	0.00	
Queue Length 95th (m)	0.0	0.0	0.1	0.0	0.0	
Control Delay (s)	0.0	0.0	0.1	0.0	9.3	
Lane LOS			A	A		
Approach Delay (s)	0.0	0.0		9.3		
Approach LOS			A			
<b>Intersection Summary</b>						
Average Delay			0.0			
Intersection Capacity Utilization			33.5%	ICU Level of Service		A
Analysis Period (min)			15			












Lanes, Volumes, Timings  
6: Colonnade Road South & Site Access #2

2025 AM Future Total

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	2	127	0	4	389
Future Volume (vph)	0	2	127	0	4	389
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>	0.865					
Fl <sub>t</sub> Protected	0.999					
Satd. Flow (prot)	787	0	1542	0	0	1783
Fl <sub>t</sub> Permitted	0.999					
Satd. Flow (perm)	787	0	1542	0	0	1783
Link Speed (k/h)	50		60		60	
Link Distance (m)	39.9		46.7		62.9	
Travel Time (s)	2.9		2.8		3.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	100%	18%	0%	0%	2%
Adj. Flow (vph)	0	2	127	0	4	389
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2	0	127	0	0	393
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0		0.0	
Link Offset(m)	0.0		0.0		0.0	
Crosswalk Width(m)	4.9		4.9		4.9	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free		Free	
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	35.0%			ICU Level of Service A		
Analysis Period (min)	15					










HCM Unsignalized Intersection Capacity Analysis  
6: Colonnade Road South & Site Access #2

2025 AM Future Total

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	2	127	0	4	389
Future Volume (Veh/h)	0	2	127	0	4	389
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	2	127	0	4	389
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)	63					
pX, platoon unblocked						
vC, conflicting volume	524	127			127	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	524	127			127	
tC, single (s)	6.4	7.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	4.2			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	516	715			1472	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	2	127	393			
Volume Left	0	0	4			
Volume Right	2	0	0			
cSH	715	1700	1472			
Volume to Capacity	0.00	0.07	0.00			
Queue Length 95th (m)	0.1	0.0	0.1			
Control Delay (s)	10.0	0.0	0.1			
Lane LOS	B		A			
Approach Delay (s)	10.0	0.0	0.1			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay	0.1					
Intersection Capacity Utilization	35.0%		ICU Level of Service		A	
Analysis Period (min)	15					










Lanes, Volumes, Timings  
7: Colonnade Road South & Site Access #3

2025 AM Future Total

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	5	122	1	7	382
Future Volume (vph)	0	5	122	1	7	382
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865		0.999			
Flt Protected						0.999
Satd. Flow (prot)	1574	0	1543	0	0	1783
Flt Permitted						0.999
Satd. Flow (perm)	1574	0	1543	0	0	1783
Link Speed (k/h)	50		60			60
Link Distance (m)	34.9		115.6			46.7
Travel Time (s)	2.5		6.9			2.8
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	18%	0%	0%	2%
Adj. Flow (vph)	0	5	122	1	7	382
Shared Lane Traffic (%)						
Lane Group Flow (vph)	5	0	123	0	0	389
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.9		4.9			4.9
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	37.1%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis  
7: Colonnade Road South & Site Access #3

2025 AM Future Total

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	5	122	1	7	382
Future Volume (Veh/h)	0	5	122	1	7	382
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	5	122	1	7	382
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (m)						110
pX, platoon unblocked						
vC, conflicting volume	518	122			123	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	518	122			123	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			100	
cM capacity (veh/h)	518	934			1477	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	5	123	389			
Volume Left	0	0	7			
Volume Right	5	1	0			
cSH	934	1700	1477			
Volume to Capacity	0.01	0.07	0.00			
Queue Length 95th (m)	0.1	0.0	0.1			
Control Delay (s)	8.9	0.0	0.2			
Lane LOS	A		A			
Approach Delay (s)	8.9	0.0	0.2			
Approach LOS	A					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			37.1%		ICU Level of Service	A
Analysis Period (min)			15			

Intersection: 1: Prince of Wales Drive & Colonnade Road/Access

Movement	EB	EB	EB	WB	NB	NB	SB	SB
Directions Served	L	L	TR	R	L	TR	T	R
Maximum Queue (m)	40.5	46.4	51.2	7.2	167.3	180.0	212.1	95.2
Average Queue (m)	22.0	24.2	19.1	0.5	85.1	134.5	114.7	34.7
95th Queue (m)	37.2	39.9	38.3	3.8	184.6	217.2	174.8	68.3
Link Distance (m)	82.1	82.1	82.1	63.5		167.5	449.2	449.2
Upstream Blk Time (%)					0	8		
Queuing Penalty (veh)					0	0		
Storage Bay Dist (m)					85.0			
Storage Blk Time (%)					2	14		
Queuing Penalty (veh)					27	40		

Intersection: 1: Prince of Wales Drive & Colonnade Road/Access

Movement	EB	EB	EB	WB	NB	NB	SB	SB
Directions Served	L	L	TR	TR	L	TR	T	R
Maximum Queue (m)	41.4	45.3	47.6	5.3	167.3	176.4	323.1	222.8
Average Queue (m)	21.0	23.4	19.6	0.2	77.9	126.6	185.5	64.6
95th Queue (m)	36.6	39.0	37.9	2.6	166.4	204.7	338.2	175.0
Link Distance (m)	82.1	82.1	82.1	63.5		167.5	449.3	449.3
Upstream Blk Time (%)					0	5		
Queuing Penalty (veh)					0	0		
Storage Bay Dist (m)					85.0			
Storage Blk Time (%)					1	13		
Queuing Penalty (veh)					18	37		

Intersection: 2: Colonnade Road South/Colonnade Road North & Colonnade Road

Movement	WB	WB	NB	SB
Directions Served	L	R	TR	LT
Maximum Queue (m)	68.0	41.2	36.0	56.5
Average Queue (m)	52.9	21.4	11.2	27.9
95th Queue (m)	76.3	35.9	24.9	50.6
Link Distance (m)	64.0	64.0	41.8	167.0
Upstream Blk Time (%)	6		0	
Queuing Penalty (veh)	21		0	
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Colonnade Road North & Citiplace Drive

Movement	EB	EB	WB	SB	SB
Directions Served	L	T	TR	L	R
Maximum Queue (m)	15.0	48.6	47.8	16.6	11.4
Average Queue (m)	2.3	27.0	20.1	4.3	3.0
95th Queue (m)	9.5	43.2	36.4	13.0	9.9
Link Distance (m)		125.0	200.2	101.7	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)	50.0				20.0
Storage Blk Time (%)		0		0	0
Queuing Penalty (veh)		0		0	0

Intersection: 4: Prince of Wales Drive & Fisher Avenue

Movement	EB	NB	NB	SB
Directions Served	L	L	T	T
Maximum Queue (m)	10.0	102.8	50.0	171.0
Average Queue (m)	2.4	51.4	6.2	63.7
95th Queue (m)	8.4	89.9	28.2	160.4
Link Distance (m)	269.5	243.6	243.6	257.7
Upstream Blk Time (%)				0
Queuing Penalty (veh)				0
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 5: Site Access #1 & Colonnade Road

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (m)	47.6	3.3
Average Queue (m)	8.0	0.1
95th Queue (m)	31.1	1.7
Link Distance (m)	82.1	31.9
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 6: Colonnade Road South & Site Access #2

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (m)	11.9	3.0	5.1
Average Queue (m)	0.6	0.1	0.2
95th Queue (m)	5.4	2.1	2.7
Link Distance (m)	31.0	30.9	41.8
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 7: Colonnade Road South & Site Access #3

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (m)	9.0	1.8
Average Queue (m)	1.4	0.1
95th Queue (m)	6.7	1.8
Link Distance (m)	26.4	30.9
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary























Network wide Queuing Penalty: 77



Lanes, Volumes, Timings

2025 PM Future Total (alternate timing)

1: Prince of Wales Drive & Colonnade Road/Access

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 					 	 					
Traffic Volume (vph)	476	0	341	0	0	0	103	909	0	0	1406	314
Future Volume (vph)	476	0	341	0	0	0	103	909	0	0	1406	314
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	2000	1900
Storage Length (m)	0.0		0.0	0.0		0.0	85.0		0.0	0.0		0.0
Storage Lanes	2		0	0		1	1		0	0		1
Taper Length (m)	7.6			7.6			90.0			7.6		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850										0.850
Flt Protected	0.950						0.950					
Satd. Flow (prot)	3506	1617	0	0	0	1921	1690	1902	0	0	2002	1570
Flt Permitted	0.950						0.036					
Satd. Flow (perm)	3506	1617	0	0	0	1921	64	1902	0	0	2002	1570
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		127										211
Link Speed (k/h)		50			50			60				60
Link Distance (m)		98.6			76.2			181.6				473.7
Travel Time (s)		7.1			5.5			10.9				28.4
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	0%	1%	0%	0%	0%	8%	1%	0%	0%	1%	4%
Adj. Flow (vph)	476	0	341	0	0	0	103	909	0	0	1406	314
Shared Lane Traffic (%)												
Lane Group Flow (vph)	476	341	0	0	0	0	103	909	0	0	1406	314
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.4			7.4			3.7				3.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			4.9			4.9				4.9
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.92	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2				1	1	2			2	1
Detector Template	Left	Thru				Right	Left	Thru			Thru	Right
Leading Detector (m)	6.1	30.5				6.1	6.1	30.5			30.5	6.1
Trailing Detector (m)	0.0	0.0				0.0	0.0	0.0			0.0	0.0
Detector 1 Position(m)	0.0	0.0				0.0	0.0	0.0			0.0	0.0
Detector 1 Size(m)	6.1	1.8				6.1	6.1	1.8			1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex				Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0				0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)	0.0	0.0				0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)	0.0	0.0				0.0	0.0	0.0			0.0	0.0
Detector 2 Position(m)		28.7						28.7			28.7	
Detector 2 Size(m)		1.8						1.8			1.8	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA				Perm	pm+pt	NA			NA	Perm
Protected Phases		4					5	2			6	

Lanes, Volumes, Timings

2025 PM Future Total (alternate timing)

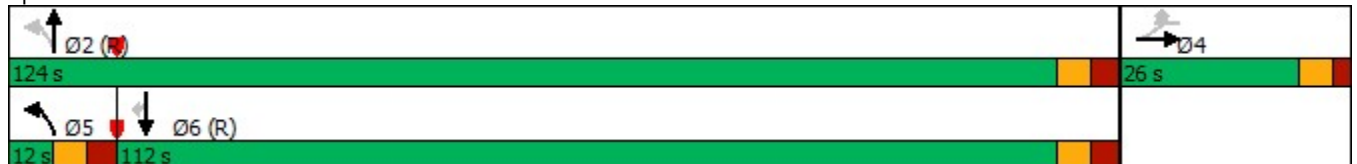
1: Prince of Wales Drive & Colonnade Road/Access

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Permitted Phases	4					4	2					6	
Detector Phase	4	4				4	5	2			6	6	
Switch Phase													
Minimum Initial (s)	5.0	5.0				5.0	5.0	5.0			5.0	5.0	
Minimum Split (s)	26.0	26.0				26.0	12.0	36.0			36.0	36.0	
Total Split (s)	26.0	26.0				26.0	12.0	124.0			112.0	112.0	
Total Split (%)	17.3%	17.3%				17.3%	8.0%	82.7%			74.7%	74.7%	
Maximum Green (s)	20.0	20.0				20.0	5.0	117.0			105.0	105.0	
Yellow Time (s)	3.7	3.7				3.7	3.7	3.7			3.7	3.7	
All-Red Time (s)	2.3	2.3				2.3	3.3	3.3			3.3	3.3	
Lost Time Adjust (s)	-2.0	-3.0				0.0	-2.0	-3.0			-3.0	-3.0	
Total Lost Time (s)	4.0	3.0				6.0	5.0	4.0			4.0	4.0	
Lead/Lag							Lead					Lag	Lag
Lead-Lag Optimize?							Yes					Yes	Yes
Vehicle Extension (s)	3.0	3.0				3.0	3.0	3.0			3.0	3.0	
Recall Mode	None	None				None	None	C-Max			C-Max	C-Max	
Walk Time (s)	7.0	7.0				7.0		7.0			7.0	7.0	
Flash Dont Walk (s)	13.0	13.0				13.0		22.0			22.0	22.0	
Pedestrian Calls (#/hr)	0	0				0		0			0	0	
Act Effct Green (s)	22.0	23.0					119.0	120.0			108.0	108.0	
Actuated g/C Ratio	0.15	0.15					0.79	0.80			0.72	0.72	
v/c Ratio	0.93	0.96					0.82	0.60			0.98	0.26	
Control Delay	87.8	77.6					73.8	7.7			38.9	2.8	
Queue Delay	0.0	0.0					0.0	0.0			0.0	0.0	
Total Delay	87.8	77.6					73.8	7.7			38.9	2.8	
LOS	F	E					E	A			D	A	
Approach Delay		83.5						14.4			32.3		
Approach LOS		F						B			C		

Intersection Summary




























Area Type:	Other
Cycle Length:	150
Actuated Cycle Length:	150
Offset:	0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle:	130
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.98
Intersection Signal Delay:	39.0
Intersection LOS:	D
Intersection Capacity Utilization:	108.0%
ICU Level of Service:	G
Analysis Period (min):	15

Splits and Phases: 1: Prince of Wales Drive & Colonnade Road/Access



Lanes, Volumes, Timings  
 1: Prince of Wales Drive & Colonnade Road/Access

2025 PM Future Total

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 			 	 		 	 			 	 
Traffic Volume (vph)	476	0	341	0	0	0	103	909	0	0	1406	314
Future Volume (vph)	476	0	341	0	0	0	103	909	0	0	1406	314
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	2000	1900
Storage Length (m)	0.0		0.0	0.0		0.0	85.0		0.0	0.0		0.0
Storage Lanes	2		0	1		0	1		0	0		1
Taper Length (m)	7.6			7.6			90.0			7.6		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850										0.850
Flt Protected	0.950						0.950					
Satd. Flow (prot)	3506	1617	0	1921	1921	0	1690	1902	0	0	2002	1570
Flt Permitted	0.950						0.040					
Satd. Flow (perm)	3506	1617	0	1921	1921	0	71	1902	0	0	2002	1570
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		157										161
Link Speed (k/h)		50			50			60				60
Link Distance (m)		98.6			76.2			181.6				473.7
Travel Time (s)		7.1			5.5			10.9				28.4
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	0%	1%	0%	0%	0%	8%	1%	0%	0%	1%	4%
Adj. Flow (vph)	476	0	341	0	0	0	103	909	0	0	1406	314
Shared Lane Traffic (%)												
Lane Group Flow (vph)	476	341	0	0	0	0	103	909	0	0	1406	314
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.4			7.4			3.7				3.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			4.9			4.9				4.9
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.92	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2			2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru			Thru	Right
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5			30.5	6.1
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8			1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot			pm+pt	NA			NA	Perm
Protected Phases	7	4		3	8		5	2			6	

Lanes, Volumes, Timings  
 1: Prince of Wales Drive & Colonnade Road/Access

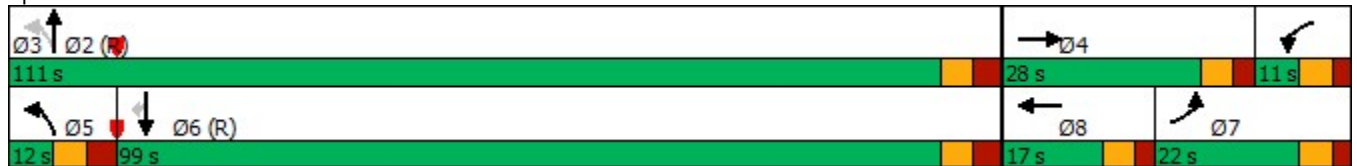
2025 PM Future Total

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases							2					6
Detector Phase	7	4		3	8		5	2			6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	5.0
Minimum Split (s)	11.0	26.0		11.0	17.0		12.0	36.0			36.0	36.0
Total Split (s)	22.0	28.0		11.0	17.0		12.0	111.0			99.0	99.0
Total Split (%)	14.7%	18.7%		7.3%	11.3%		8.0%	74.0%			66.0%	66.0%
Maximum Green (s)	16.0	22.0		5.0	11.0		5.0	104.0			92.0	92.0
Yellow Time (s)	3.7	3.7		3.7	3.7		3.7	3.7			3.7	3.7
All-Red Time (s)	2.3	2.3		2.3	2.3		3.3	3.3			3.3	3.3
Lost Time Adjust (s)	-2.0	-3.0		-2.0	-3.0		-2.0	-3.0			-3.0	-3.0
Total Lost Time (s)	4.0	3.0		4.0	3.0		5.0	4.0			4.0	4.0
Lead/Lag	Lag	Lead		Lag	Lead		Lead				Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes				Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Recall Mode	None	None		None	None		None	C-Max			C-Max	C-Max
Walk Time (s)		7.0						7.0			7.0	7.0
Flash Dont Walk (s)		13.0						22.0			22.0	22.0
Pedestrian Calls (#/hr)		0						0			0	0
Act Effct Green (s)	32.6	33.6					108.4	109.4			95.0	95.0
Actuated g/C Ratio	0.22	0.22					0.72	0.73			0.63	0.63
v/c Ratio	0.62	0.70					0.68	0.66			1.11	0.30
Control Delay	57.5	37.3					51.1	13.3			88.6	6.4
Queue Delay	0.0	0.0					0.0	0.0			0.0	0.0
Total Delay	57.5	37.3					51.1	13.3			88.6	6.4
LOS	E	D					D	B			F	A
Approach Delay		49.1						17.1			73.6	
Approach LOS		D						B			E	

Intersection Summary

Area Type: Other  
 Cycle Length: 150  
 Actuated Cycle Length: 150  
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green  
 Natural Cycle: 145  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.11  
 Intersection Signal Delay: 51.8      Intersection LOS: D  
 Intersection Capacity Utilization 108.0%      ICU Level of Service G  
 Analysis Period (min) 15

Splits and Phases: 1: Prince of Wales Drive & Colonnade Road/Access



2: Colonnade Road South/Colonnade Road North & Colonnade Road



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	171	314	21	398	430	13
Future Volume (vph)	171	314	21	398	430	13
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>		0.850	0.872			
Fl <sub>t</sub> Protected	0.950					0.954
Satd. Flow (prot)	1530	1502	1536	0	0	1708
Fl <sub>t</sub> Permitted	0.950					0.460
Satd. Flow (perm)	1530	1502	1536	0	0	824
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		314	398			
Link Speed (k/h)	50		60			60
Link Distance (m)	80.2		62.9			186.0
Travel Time (s)	5.8		3.8			11.2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	13%	3%	10%	3%	1%	23%
Adj. Flow (vph)	171	314	21	398	430	13
Shared Lane Traffic (%)						
Lane Group Flow (vph)	171	314	419	0	0	443
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.9		4.9			4.9
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2		1	2
Detector Template	Left	Right	Thru		Left	Thru
Leading Detector (m)	6.1	2.0	10.0		2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	6.1	2.0	0.6		2.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA		pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8			6	
Detector Phase	8	8	2		1	6
Switch Phase						

Lanes, Volumes, Timings  
 2: Colonnade Road South/Colonnade Road North & Colonnade Road

2025 PM Future Total

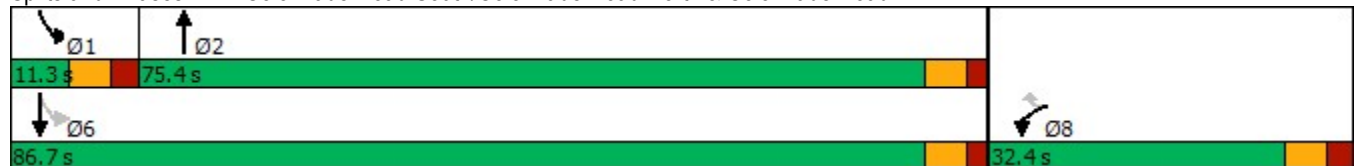


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	31.2	31.2	26.5		11.3	25.7
Total Split (s)	32.4	32.4	75.4		11.3	86.7
Total Split (%)	27.2%	27.2%	63.3%		9.5%	72.8%
Maximum Green (s)	26.2	26.2	69.7		5.1	81.0
Yellow Time (s)	3.7	3.7	3.7		3.7	3.7
All-Red Time (s)	2.5	2.5	2.0		2.5	2.0
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	6.2	6.2	5.7			5.7
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	Max		None	Max
Walk Time (s)	7.0	7.0	7.0			7.0
Flash Dont Walk (s)	18.0	18.0	13.0			13.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effect Green (s)	17.5	17.5	81.2			81.2
Actuated g/C Ratio	0.16	0.16	0.73			0.73
v/c Ratio	0.71	0.63	0.34			0.73
Control Delay	60.1	10.4	1.5			19.2
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	60.1	10.4	1.5			19.2
LOS	E	B	A			B
Approach Delay	27.9		1.5			19.2
Approach LOS	C		A			B

Intersection Summary

Area Type:	Other
Cycle Length:	119.1
Actuated Cycle Length:	110.6
Natural Cycle:	90
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.73
Intersection Signal Delay:	16.8
Intersection LOS:	B
Intersection Capacity Utilization	77.7%
ICU Level of Service	D
Analysis Period (min)	15

Splits and Phases: 2: Colonnade Road South/Colonnade Road North & Colonnade Road



Lanes, Volumes, Timings  
3: Colonnade Road North & Citiplace Drive

2025 PM Future Total



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	14	252	373	46	33	43
Future Volume (vph)	14	252	373	46	33	43
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0			0.0	0.0	20.0
Storage Lanes	1			0	1	1
Taper Length (m)	30.0				2.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.985			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1729	1767	1731	0	1729	1547
Flt Permitted	0.386				0.950	
Satd. Flow (perm)	703	1767	1731	0	1729	1547
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			14			43
Link Speed (k/h)		60	60		50	
Link Distance (m)		132.5	212.4		109.2	
Travel Time (s)		8.0	12.7		7.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	3%	4%	0%	0%	0%
Adj. Flow (vph)	14	252	373	46	33	43
Shared Lane Traffic (%)						
Lane Group Flow (vph)	14	252	419	0	33	43
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		3.7	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		1.6	1.6		1.6	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24			14	24	14
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	2.0	0.6	0.6		2.0	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		4	8		6	

Lanes, Volumes, Timings  
3: Colonnade Road North & Citiplace Drive

2025 PM Future Total

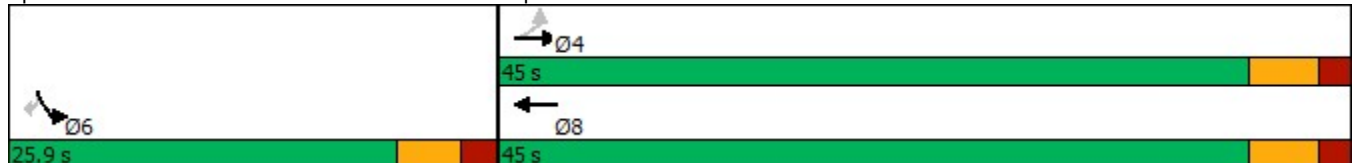


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Permitted Phases	4					6
Detector Phase	4	4	8		6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	40.5	40.5	40.5		23.4	23.4
Total Split (s)	45.0	45.0	45.0		25.9	25.9
Total Split (%)	63.5%	63.5%	63.5%		36.5%	36.5%
Maximum Green (s)	39.5	39.5	39.5		20.5	20.5
Yellow Time (s)	3.7	3.7	3.7		3.3	3.3
All-Red Time (s)	1.8	1.8	1.8		2.1	2.1
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5		5.4	5.4
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	None		Max	Max
Walk Time (s)	24.0	24.0	24.0		7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0		7.0	7.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)	16.1	16.1	16.1		20.7	20.7
Actuated g/C Ratio	0.34	0.34	0.34		0.43	0.43
v/c Ratio	0.06	0.42	0.71		0.04	0.06
Control Delay	10.5	14.2	20.2		9.9	4.4
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	10.5	14.2	20.2		9.9	4.4
LOS	B	B	C		A	A
Approach Delay		14.0	20.2		6.8	
Approach LOS		B	C		A	

Intersection Summary

Area Type: Other  
 Cycle Length: 70.9  
 Actuated Cycle Length: 47.8  
 Natural Cycle: 65  
 Control Type: Semi Act-Uncoord  
 Maximum v/c Ratio: 0.71  
 Intersection Signal Delay: 16.7  
 Intersection LOS: B  
 Intersection Capacity Utilization 36.9%  
 ICU Level of Service A  
 Analysis Period (min) 15

Splits and Phases: 3: Colonnade Road North & Citiplace Drive





Lanes, Volumes, Timings  
4: Prince of Wales Drive & Fisher Avenue

2025 PM Future Total



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	5	645	402	771	833	21
Future Volume (vph)	5	645	402	771	833	21
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>		0.850				0.850
Fl <sub>t</sub> Protected	0.950		0.950			
Satd. Flow (prot)	1441	1502	1712	1767	1767	1473
Fl <sub>t</sub> Permitted	0.950		0.213			
Satd. Flow (perm)	1441	1502	384	1767	1767	1473
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		501				8
Link Speed (k/h)	50			60	50	
Link Distance (m)	277.0			251.2	265.2	
Travel Time (s)	19.9			15.1	19.1	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	20%	3%	1%	3%	3%	5%
Adj. Flow (vph)	5	645	402	771	833	21
Shared Lane Traffic (%)						
Lane Group Flow (vph)	5	645	402	771	833	21
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (m)	2.0	2.0	2.0	10.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	2.0	2.0	0.6	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Free	pm+pt	NA	NA	Free
Protected Phases	4		5	2	6	
Permitted Phases		Free	2			Free
Detector Phase	4		5	2	6	
Switch Phase						

Lanes, Volumes, Timings  
4: Prince of Wales Drive & Fisher Avenue

2025 PM Future Total

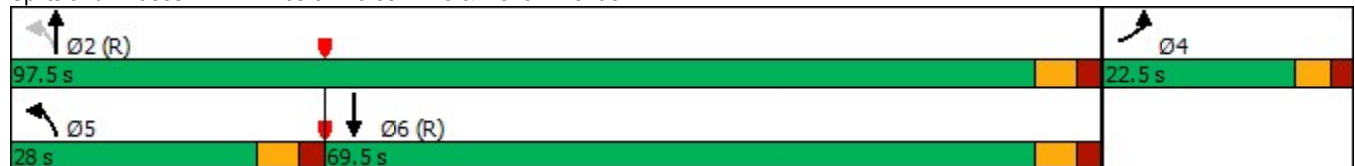


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Initial (s)	5.0		5.0	5.0	5.0	
Minimum Split (s)	22.5		11.0	32.5	32.0	
Total Split (s)	22.5		28.0	97.5	69.5	
Total Split (%)	18.8%		23.3%	81.3%	57.9%	
Maximum Green (s)	17.1		22.0	91.5	63.5	
Yellow Time (s)	3.3		3.7	3.7	3.7	
All-Red Time (s)	2.1		2.3	2.3	2.3	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	5.4		6.0	6.0	6.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	None		None	C-Max	C-Max	
Walk Time (s)	7.0			17.0	17.0	
Flash Dont Walk (s)	10.0			9.0	9.0	
Pedestrian Calls (#/hr)	0			0	0	
Act Effct Green (s)	6.1	120.0	111.5	116.3	84.6	120.0
Actuated g/C Ratio	0.05	1.00	0.93	0.97	0.70	1.00
v/c Ratio	0.07	0.43	0.68	0.45	0.67	0.01
Control Delay	55.8	0.9	12.9	1.7	14.6	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.8	0.9	12.9	1.7	14.6	0.0
LOS	E	A	B	A	B	A
Approach Delay	1.3			5.5	14.2	
Approach LOS	A			A	B	

Intersection Summary

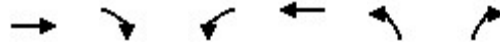
Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle:	90
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.68
Intersection Signal Delay:	7.3
Intersection LOS:	A
Intersection Capacity Utilization	88.5%
ICU Level of Service	E
Analysis Period (min)	15

Splits and Phases: 4: Prince of Wales Drive & Fisher Avenue



Lanes, Volumes, Timings  
5: Site Access #1 & Colonnade Road

2025 PM Future Total












Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↑↑	
Traffic Volume (vph)	828	0	1	484	1	2
Future Volume (vph)	828	0	1	484	1	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Flt					0.910	
Flt Protected					0.984	
Satd. Flow (prot)	3087	0	0	3325	1630	0
Flt Permitted					0.984	
Satd. Flow (perm)	3087	0	0	3325	1630	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	80.2			98.6	44.7	
Travel Time (s)	5.8			7.1	3.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	12%	0%	0%	4%	0%	0%
Adj. Flow (vph)	828	0	1	484	1	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	828	0	0	485	3	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)		14	24		24	14
Sign Control	Free			Free	Stop	

Intersection Summary

Area Type:	Other
Control Type:	Unsignalized
Intersection Capacity Utilization	34.2%
ICU Level of Service	A
Analysis Period (min)	15










HCM Unsignalized Intersection Capacity Analysis  
5: Site Access #1 & Colonnade Road

2025 PM Future Total

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	828	0	1	484	1	2
Future Volume (Veh/h)	828	0	1	484	1	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	828	0	1	484	1	2
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)	80			98		
pX, platoon unblocked						
vC, conflicting volume			828	1072	414	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			828	1072	414	
tC, single (s)			4.1	6.8	6.9	
tC, 2 stage (s)						
tF (s)			2.2	3.5	3.3	
p0 queue free %			100	100	100	
cM capacity (veh/h)			812	218	593	
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>EB 2</b>	<b>WB 1</b>	<b>WB 2</b>	<b>NB 1</b>	
Volume Total	552	276	162	323	3	
Volume Left	0	0	1	0	1	
Volume Right	0	0	0	0	2	
cSH	1700	1700	812	1700	377	
Volume to Capacity	0.32	0.16	0.00	0.19	0.01	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.2	
Control Delay (s)	0.0	0.0	0.1	0.0	14.6	
Lane LOS	A			B		
Approach Delay (s)	0.0		0.0		14.6	
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			0.0			
Intersection Capacity Utilization			34.2%	ICU Level of Service	A	
Analysis Period (min)			15			










Lanes, Volumes, Timings  
6: Colonnade Road South & Site Access #2

2025 PM Future Total

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	5	414	0	5	179
Future Volume (vph)	0	5	414	0	5	179
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>	0.865					
Fl <sub>t</sub> Protected	0.999					
Satd. Flow (prot)	1050	0	1767	0	0	1595
Fl <sub>t</sub> Permitted	0.999					
Satd. Flow (perm)	1050	0	1767	0	0	1595
Link Speed (k/h)	50		60		60	
Link Distance (m)	39.9		46.7		62.9	
Travel Time (s)	2.9		2.8		3.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	50%	3%	0%	50%	13%
Adj. Flow (vph)	0	5	414	0	5	179
Shared Lane Traffic (%)						
Lane Group Flow (vph)	5	0	414	0	0	184
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0		0.0	
Link Offset(m)	0.0		0.0		0.0	
Crosswalk Width(m)	4.9		4.9		4.9	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free		Free	
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	33.0%			ICU Level of Service A		
Analysis Period (min)	15					










HCM Unsignalized Intersection Capacity Analysis  
6: Colonnade Road South & Site Access #2

2025 PM Future Total

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	5	414	0	5	179
Future Volume (Veh/h)	0	5	414	0	5	179
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	5	414	0	5	179
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	63					
pX, platoon unblocked						
vC, conflicting volume	603	414			414	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	603	414			414	
tC, single (s)	6.4	6.7			4.6	
tC, 2 stage (s)						
tF (s)	3.5	3.8			2.7	
p0 queue free %	100	99			99	
cM capacity (veh/h)	463	547			929	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	5	414	184			
Volume Left	0	0	5			
Volume Right	5	0	0			
cSH	547	1700	929			
Volume to Capacity	0.01	0.24	0.01			
Queue Length 95th (m)	0.2	0.0	0.1			
Control Delay (s)	11.6	0.0	0.3			
Lane LOS	B		A			
Approach Delay (s)	11.6	0.0	0.3			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay	0.2					
Intersection Capacity Utilization	33.0%		ICU Level of Service		A	
Analysis Period (min)	15					










Lanes, Volumes, Timings  
7: Colonnade Road South & Site Access #3

2025 PM Future Total

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	1	7	407	1	5	174
Future Volume (vph)	1	7	407	1	5	174
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>	0.882					
Fl <sub>t</sub> Protected	0.994					0.999
Satd. Flow (prot)	1596	0	1767	0	0	1614
Fl <sub>t</sub> Permitted	0.994					0.999
Satd. Flow (perm)	1596	0	1767	0	0	1614
Link Speed (k/h)	50		60			60
Link Distance (m)	34.9		115.6			46.7
Travel Time (s)	2.5		6.9			2.8
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	3%	0%	0%	13%
Adj. Flow (vph)	1	7	407	1	5	174
Shared Lane Traffic (%)						
Lane Group Flow (vph)	8	0	408	0	0	179
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.9		4.9			4.9
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	32.7%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis  
 7: Colonnade Road South & Site Access #3

2025 PM Future Total

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	1	7	407	1	5	174
Future Volume (Veh/h)	1	7	407	1	5	174
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1	7	407	1	5	174
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)	110					
pX, platoon unblocked						
vC, conflicting volume	592	408			408	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	592	408			408	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			100	
cM capacity (veh/h)	471	648			1162	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	8	408	179			
Volume Left	1	0	5			
Volume Right	7	1	0			
cSH	619	1700	1162			
Volume to Capacity	0.01	0.24	0.00			
Queue Length 95th (m)	0.3	0.0	0.1			
Control Delay (s)	10.9	0.0	0.3			
Lane LOS	B		A			
Approach Delay (s)	10.9	0.0	0.3			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay			0.2			
Intersection Capacity Utilization			32.7%		ICU Level of Service	A
Analysis Period (min)			15			



Intersection: 1: Prince of Wales Drive & Colonnade Road/Access

Movement	EB	EB	EB	NB	NB	SB	SB	B15	B15
Directions Served	L	L	TR	L	TR	T	R	T	T
Maximum Queue (m)	90.7	89.6	84.9	60.9	124.6	470.7	448.3	71.7	57.7
Average Queue (m)	77.9	72.9	75.6	27.3	54.0	390.4	232.1	10.9	8.2
95th Queue (m)	101.4	101.3	99.0	50.4	100.2	498.6	485.6	53.2	47.4
Link Distance (m)	82.1	82.1	82.1		167.5	449.2	449.2	243.6	243.6
Upstream Blk Time (%)	46	32	41			15	1		
Queuing Penalty (veh)	128	90	113			111	6		
Storage Bay Dist (m)				85.0					
Storage Blk Time (%)						1			
Queuing Penalty (veh)						1			

Intersection: 1: Prince of Wales Drive & Colonnade Road/Access

Movement	EB	EB	EB	NB	NB	SB	SB	B15	B15
Directions Served	L	L	TR	L	TR	T	R	T	T
Maximum Queue (m)	85.2	85.4	84.9	47.7	136.6	479.2	476.9	239.4	281.2
Average Queue (m)	58.9	54.9	76.0	23.8	70.0	465.5	436.8	155.1	160.1
95th Queue (m)	86.8	80.2	96.1	41.1	123.3	491.2	564.4	299.3	330.5
Link Distance (m)	82.1	82.1	82.1		167.5	449.3	449.3	243.6	243.6
Upstream Blk Time (%)	3	1	19		0	83	31	9	16
Queuing Penalty (veh)	8	4	52		0	614	231	67	118
Storage Bay Dist (m)				85.0					
Storage Blk Time (%)					4				
Queuing Penalty (veh)					4				

Intersection: 2: Colonnade Road South/Colonnade Road North & Colonnade Road

Movement	WB	WB	NB	SB
Directions Served	L	R	TR	LT
Maximum Queue (m)	59.8	41.7	42.5	120.0
Average Queue (m)	31.7	20.8	18.5	53.7
95th Queue (m)	53.4	34.2	34.2	103.4
Link Distance (m)	64.0	64.0	41.8	167.0
Upstream Blk Time (%)	0		1	0
Queuing Penalty (veh)	1		3	0
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Colonnade Road North & Citiplace Drive

Movement	EB	EB	WB	SB	SB
Directions Served	L	T	TR	L	R
Maximum Queue (m)	14.2	44.4	53.9	15.4	10.4
Average Queue (m)	3.6	21.6	30.5	4.2	4.0
95th Queue (m)	11.5	36.3	48.8	12.7	11.1
Link Distance (m)		125.0	200.2	101.7	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)	50.0			20.0	
Storage Blk Time (%)		0		0	0
Queuing Penalty (veh)		0		0	0

Intersection: 4: Prince of Wales Drive & Fisher Avenue

Movement	EB	EB	NB	NB	SB	SB
Directions Served	L	R	L	T	T	R
Maximum Queue (m)	9.6	23.7	77.8	20.9	217.5	161.2
Average Queue (m)	1.2	1.4	34.6	1.8	95.6	52.4
95th Queue (m)	6.2	21.8	64.6	12.4	263.8	225.5
Link Distance (m)	269.5	269.5	243.6	243.6	257.7	257.7
Upstream Blk Time (%)					19	13
Queuing Penalty (veh)					0	0
Storage Bay Dist (m)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 5: Site Access #1 & Colonnade Road

Movement	EB	EB	WB	NB
Directions Served	T	TR	LT	LR
Maximum Queue (m)	60.0	69.3	3.0	8.2
Average Queue (m)	15.1	26.1	0.1	1.2
95th Queue (m)	53.6	69.9	2.1	5.8
Link Distance (m)	64.0	64.0	82.1	31.9
Upstream Blk Time (%)	0	3		
Queuing Penalty (veh)	1	13		
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Colonnade Road South & Site Access #2

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (m)	14.1	15.3	19.5
Average Queue (m)	1.9	1.0	1.6
95th Queue (m)	9.7	9.1	11.3
Link Distance (m)	31.0	30.9	41.8
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		0	
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 7: Colonnade Road South & Site Access #3

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (m)	9.0	17.8
Average Queue (m)	2.1	0.8
95th Queue (m)	8.3	7.5
Link Distance (m)	26.4	30.9
Upstream Blk Time (%)		0
Queuing Penalty (veh)		0
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		




















Network Summary

Network wide Queuing Penalty: 1115

Lanes, Volumes, Timings

2030 AM Future Total (alternate timing)

1: Prince of Wales Drive & Colonnade Road/Access

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	219	0	116	0	0	1	285	1429	0	0	878	465
Future Volume (vph)	219	0	116	0	0	1	285	1429	0	0	878	465
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000	1900
Storage Length (m)	0.0		0.0	0.0		0.0	85.0		0.0	0.0		0.0
Storage Lanes	2		0	0		1	1		0	0		1
Taper Length (m)	7.6			7.6			90.0			7.6		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850				0.865						0.850
Flt Protected	0.950						0.950					
Satd. Flow (prot)	3372	1396	0	0	0	1662	1755	1983	0	0	1963	1617
Flt Permitted	0.950						0.169					
Satd. Flow (perm)	3372	1396	0	0	0	1662	312	1983	0	0	1963	1617
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		305				91						428
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		98.6			76.2			181.6			473.7	
Travel Time (s)		7.1			5.5			10.9			28.4	
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 (%)	5%	0%	17%	0%	0%	0%	4%	2%	0%	0%	3%	1%
Adj. Flow (vph)	219	0	116	0	0	1	285	1429	0	0	878	465
Shared Lane Traffic (%)												
Lane Group Flow (vph)	219	116	0	0	0	1	285	1429	0	0	878	465
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.4			7.4			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.92	0.99	0.99	0.92	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2				1	1	2			2	1
Detector Template	Left	Thru				Right	Left	Thru			Thru	Right
Leading Detector (m)	6.1	30.5				6.1	6.1	30.5			30.5	6.1
Trailing Detector (m)	0.0	0.0				0.0	0.0	0.0			0.0	0.0
Detector 1 Position(m)	0.0	0.0				0.0	0.0	0.0			0.0	0.0
Detector 1 Size(m)	6.1	1.8				6.1	6.1	1.8			1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex				Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0				0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)	0.0	0.0				0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)	0.0	0.0				0.0	0.0	0.0			0.0	0.0
Detector 2 Position(m)		28.7						28.7			28.7	
Detector 2 Size(m)		1.8						1.8			1.8	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA				Perm	pm+pt	NA			NA	Perm
Protected Phases		4					5	2			6	

Lanes, Volumes, Timings

2030 AM Future Total (alternate timing)

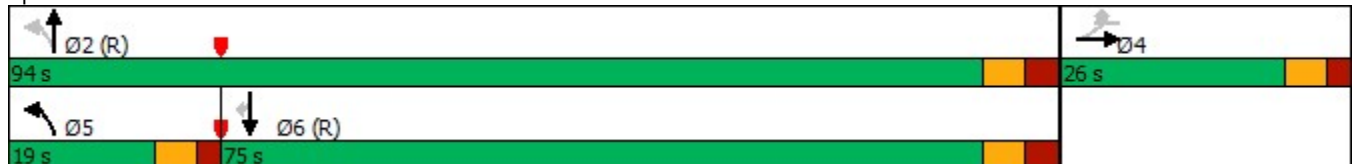
1: Prince of Wales Drive & Colonnade Road/Access

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	4					4	2					6
Detector Phase	4	4				4	5	2			6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0				5.0	5.0	5.0			5.0	5.0
Minimum Split (s)	26.0	26.0				26.0	11.0	36.0			36.0	36.0
Total Split (s)	26.0	26.0				26.0	19.0	94.0			75.0	75.0
Total Split (%)	21.7%	21.7%				21.7%	15.8%	78.3%			62.5%	62.5%
Maximum Green (s)	20.0	20.0				20.0	13.0	87.0			68.0	68.0
Yellow Time (s)	3.7	3.7				3.7	3.7	3.7			3.7	3.7
All-Red Time (s)	2.3	2.3				2.3	2.3	3.3			3.3	3.3
Lost Time Adjust (s)	-2.0	-3.0				0.0	-2.0	-3.0			-3.0	-3.0
Total Lost Time (s)	4.0	3.0				6.0	4.0	4.0			4.0	4.0
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?							Yes				Yes	Yes
Vehicle Extension (s)	3.0	3.0				3.0	3.0	3.0			3.0	3.0
Recall Mode	None	None				None	None	C-Max			C-Max	C-Max
Walk Time (s)	7.0	7.0				7.0		7.0			7.0	7.0
Flash Dont Walk (s)	13.0	13.0				13.0		22.0			22.0	22.0
Pedestrian Calls (#/hr)	0	0				0		0			0	0
Act Effct Green (s)	15.3	16.3				13.3	96.7	96.7			77.6	77.6
Actuated g/C Ratio	0.13	0.14				0.11	0.81	0.81			0.65	0.65
v/c Ratio	0.51	0.26				0.00	0.66	0.89			0.69	0.39
Control Delay	52.7	1.4				0.0	14.4	18.2			18.5	2.5
Queue Delay	0.0	0.0				0.0	0.0	0.0			0.0	0.0
Total Delay	52.7	1.4				0.0	14.4	18.2			18.5	2.5
LOS	D	A				A	B	B			B	A
Approach Delay		34.9						17.6			13.0	
Approach LOS		C						B			B	

Intersection Summary



























Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green  
 Natural Cycle: 100  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.89  
 Intersection Signal Delay: 17.5      Intersection LOS: B  
 Intersection Capacity Utilization 93.5%      ICU Level of Service F  
 Analysis Period (min) 15

Splits and Phases: 1: Prince of Wales Drive & Colonnade Road/Access



Lanes, Volumes, Timings  
1: Prince of Wales Drive & Colonnade Road/Access

2030 AM Future Total

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 			 	 		 	 				 
Traffic Volume (vph)	219	0	116	0	0	1	285	1429	0	0	878	465
Future Volume (vph)	219	0	116	0	0	1	285	1429	0	0	878	465
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000	1900
Storage Length (m)	0.0		0.0	0.0		0.0	85.0		0.0	0.0		0.0
Storage Lanes	2		0	1		0	1		0	0		1
Taper Length (m)	7.6			7.6			90.0			7.6		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.850							0.850
Flt Protected	0.950						0.950					
Satd. Flow (prot)	3372	1396	0	1921	1633	0	1755	1983	0	0	1963	1617
Flt Permitted	0.950						0.062					
Satd. Flow (perm)	3372	1396	0	1921	1633	0	115	1983	0	0	1963	1617
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		343			155							344
Link Speed (k/h)		50			50			60				60
Link Distance (m)		98.6			76.2			181.6				473.7
Travel Time (s)		7.1			5.5			10.9				28.4
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 (%)	5%	0%	17%	0%	0%	0%	4%	2%	0%	0%	3%	1%
Adj. Flow (vph)	219	0	116	0	0	1	285	1429	0	0	878	465
Shared Lane Traffic (%)												
Lane Group Flow (vph)	219	116	0	0	1	0	285	1429	0	0	878	465
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.4			7.4			3.7				3.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			4.9			4.9				4.9
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.92	0.99	0.99	0.92	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2				2
Detector Template	Left	Thru		Left	Thru		Left	Thru				Thru
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5				30.5
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0				0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0				0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8				1.8
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex				Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0				0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0				0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0				0.0
Detector 2 Position(m)		28.7			28.7			28.7				28.7
Detector 2 Size(m)		1.8			1.8			1.8				1.8
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				Cl+Ex
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				0.0
Turn Type	Prot	NA		Prot	NA		pm+pt	NA			NA	Perm
Protected Phases	7	4		3	8		5	2			6	

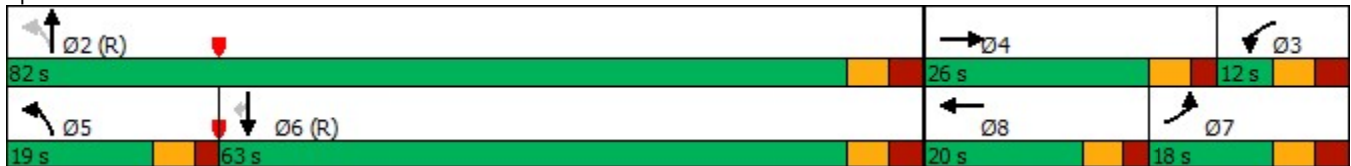
Lanes, Volumes, Timings  
1: Prince of Wales Drive & Colonnade Road/Access

2030 AM Future Total

	↖	→	↘	↙	←	↖	↙	↑	↗	↘	↓	↘
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases								2				6
Detector Phase	7	4		3	8		5	2			6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	5.0
Minimum Split (s)	12.0	26.0		12.0	17.0		11.0	36.0			36.0	36.0
Total Split (s)	18.0	26.0		12.0	20.0		19.0	82.0			63.0	63.0
Total Split (%)	15.0%	21.7%		10.0%	16.7%		15.8%	68.3%			52.5%	52.5%
Maximum Green (s)	11.0	20.0		5.0	14.0		13.0	75.0			56.0	56.0
Yellow Time (s)	3.7	3.7		3.7	3.7		3.7	3.7			3.7	3.7
All-Red Time (s)	3.3	2.3		3.3	2.3		2.3	3.3			3.3	3.3
Lost Time Adjust (s)	-2.0	-3.0		-2.0	-3.0		-2.0	-3.0			-3.0	-3.0
Total Lost Time (s)	5.0	3.0		5.0	3.0		4.0	4.0			4.0	4.0
Lead/Lag	Lag	Lead		Lag	Lead		Lead				Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes				Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Recall Mode	None	None		None	None		None	C-Max			C-Max	C-Max
Walk Time (s)		7.0						7.0			7.0	7.0
Flash Dont Walk (s)		13.0						22.0			22.0	22.0
Pedestrian Calls (#/hr)		0						0			0	0
Act Effct Green (s)	15.0	19.3			8.5		93.7	93.7			66.7	66.7
Actuated g/C Ratio	0.12	0.16			0.07		0.78	0.78			0.56	0.56
v/c Ratio	0.52	0.23			0.00		0.71	0.92			0.81	0.44
Control Delay	53.2	1.0			0.0		39.4	23.5			29.9	5.8
Queue Delay	0.0	0.0			0.0		0.0	0.0			0.0	0.0
Total Delay	53.2	1.0			0.0		39.4	23.5			29.9	5.8
LOS	D	A			A		D	C			C	A
Approach Delay		35.1						26.2			21.5	
Approach LOS		D						C			C	

Intersection Summary	
Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	120
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green	
Natural Cycle:	145
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.92
Intersection Signal Delay:	25.2
Intersection LOS:	C
Intersection Capacity Utilization:	91.0%
ICU Level of Service:	F
Analysis Period (min):	15

Splits and Phases: 1: Prince of Wales Drive & Colonnade Road/Access





2: Colonnade Road South/Colonnade Road North & Colonnade Road



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	372	359	10	119	229	21
Future Volume (vph)	372	359	10	119	229	21
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>		0.850	0.875			
Fl <sub>t</sub> Protected	0.950					0.956
Satd. Flow (prot)	1695	1517	1307	0	0	1637
Fl <sub>t</sub> Permitted	0.950					0.654
Satd. Flow (perm)	1695	1517	1307	0	0	1120
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		359	119			
Link Speed (k/h)	50		60			60
Link Distance (m)	80.2		62.9			186.0
Travel Time (s)	5.8		3.8			11.2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	2%	2%	67%	18%	3%	42%
Adj. Flow (vph)	372	359	10	119	229	21
Shared Lane Traffic (%)						
Lane Group Flow (vph)	372	359	129	0	0	250
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.9		4.9			4.9
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2		1	2
Detector Template	Left	Right	Thru		Left	Thru
Leading Detector (m)	6.1	2.0	10.0		2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	6.1	2.0	0.6		2.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA		pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8			6	
Detector Phase	8	8	2		1	6
Switch Phase						

2: Colonnade Road South/Colonnade Road North & Colonnade Road

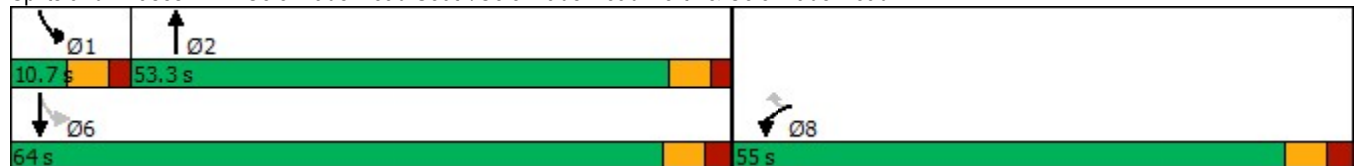


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	10.0	10.0	5.0		5.0	5.0
Minimum Split (s)	31.2	31.2	25.7		10.7	26.2
Total Split (s)	55.0	55.0	53.3		10.7	64.0
Total Split (%)	46.2%	46.2%	44.8%		9.0%	53.8%
Maximum Green (s)	48.8	48.8	47.6		5.0	57.8
Yellow Time (s)	3.7	3.7	3.7		3.7	3.7
All-Red Time (s)	2.5	2.5	2.0		2.0	2.5
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	6.2	6.2	5.7			6.2
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	Max		None	Max
Walk Time (s)	7.0	7.0	7.0			7.0
Flash Dont Walk (s)	18.0	18.0	13.0			13.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effct Green (s)	26.6	26.6	58.6			58.1
Actuated g/C Ratio	0.27	0.27	0.60			0.60
v/c Ratio	0.80	0.53	0.15			0.37
Control Delay	46.3	5.9	3.0			13.7
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	46.3	5.9	3.0			13.7
LOS	D	A	A			B
Approach Delay	26.5		3.0			13.7
Approach LOS	C		A			B

Intersection Summary

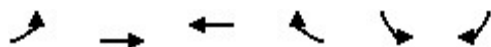
Area Type:	Other
Cycle Length:	119
Actuated Cycle Length:	97.2
Natural Cycle:	70
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.80
Intersection Signal Delay:	20.9
Intersection LOS:	C
Intersection Capacity Utilization:	59.7%
ICU Level of Service:	B
Analysis Period (min):	15

Splits and Phases: 2: Colonnade Road South/Colonnade Road North & Colonnade Road



Lanes, Volumes, Timings  
3: Colonnade Road North & Citiplace Drive

2030 AM Future Total



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	10	320	216	13	42	25
Future Volume (vph)	10	320	216	13	42	25
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0			0.0	0.0	20.0
Storage Lanes	1			0	1	1
Taper Length (m)	30.0				2.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.992			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1572	1750	1724	0	1729	1547
Flt Permitted	0.616				0.950	
Satd. Flow (perm)	1019	1750	1724	0	1729	1547
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			7			25
Link Speed (k/h)		60	60		50	
Link Distance (m)		132.5	212.4		109.2	
Travel Time (s)		8.0	12.7		7.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	10%	4%	5%	0%	0%	0%
Adj. Flow (vph)	10	320	216	13	42	25
Shared Lane Traffic (%)						
Lane Group Flow (vph)	10	320	229	0	42	25
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		3.7	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		1.6	1.6		1.6	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24			14	24	14
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	2.0	0.6	0.6		2.0	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		4	8		6	

Lanes, Volumes, Timings  
 3: Colonnade Road North & Citiplace Drive

2030 AM Future Total

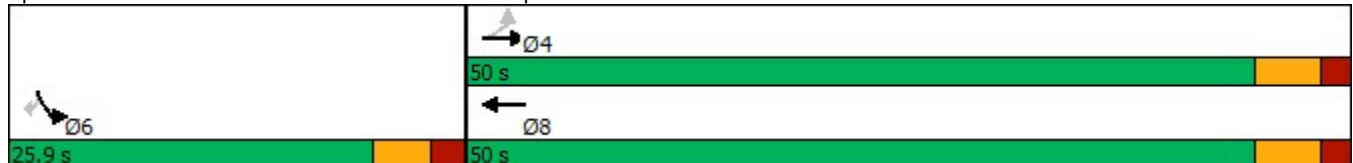


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Permitted Phases	4					6
Detector Phase	4	4	8		6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	40.5	40.5	40.5		22.5	22.5
Total Split (s)	50.0	50.0	50.0		25.9	25.9
Total Split (%)	65.9%	65.9%	65.9%		34.1%	34.1%
Maximum Green (s)	44.5	44.5	44.5		20.5	20.5
Yellow Time (s)	3.7	3.7	3.7		3.3	3.3
All-Red Time (s)	1.8	1.8	1.8		2.1	2.1
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5		5.4	5.4
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	None		Max	Max
Walk Time (s)	24.0	24.0	24.0		7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0		7.0	7.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)	13.1	13.1	13.1		20.6	20.6
Actuated g/C Ratio	0.29	0.29	0.29		0.46	0.46
v/c Ratio	0.03	0.62	0.45		0.05	0.03
Control Delay	10.8	19.3	15.2		8.2	4.3
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	10.8	19.3	15.2		8.2	4.3
LOS	B	B	B		A	A
Approach Delay		19.1	15.2		6.7	
Approach LOS		B	B		A	

Intersection Summary













Area Type: Other  
 Cycle Length: 75.9  
 Actuated Cycle Length: 44.7  
 Natural Cycle: 65  
 Control Type: Semi Act-Uncoord  
 Maximum v/c Ratio: 0.62  
 Intersection Signal Delay: 16.3  
 Intersection Capacity Utilization 31.0%  
 Analysis Period (min) 15  
 Intersection LOS: B  
 ICU Level of Service A

Splits and Phases: 3: Colonnade Road North & Citiplace Drive



Lanes, Volumes, Timings  
4: Prince of Wales Drive & Fisher Avenue

2030 AM Future Total

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	9	550	583	1151	807	22
Future Volume (vph)	9	550	583	1151	807	22
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>		0.850				0.850
Fl <sub>t</sub> Protected	0.950		0.950			
Satd. Flow (prot)	1729	1517	1679	1784	1802	1419
Fl <sub>t</sub> Permitted	0.950		0.085			
Satd. Flow (perm)	1729	1517	150	1784	1802	1419
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		550				11
Link Speed (k/h)	50			60	50	
Link Distance (m)	277.0			251.2	265.2	
Travel Time (s)	19.9			15.1	19.1	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	2%	3%	2%	1%	9%
Adj. Flow (vph)	9	550	583	1151	807	22
Shared Lane Traffic (%)						
Lane Group Flow (vph)	9	550	583	1151	807	22
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (m)	2.0	2.0	2.0	10.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	2.0	2.0	0.6	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Free	pm+pt	NA	NA	Free
Protected Phases	4		5	2	6	
Permitted Phases		Free	2			Free
Detector Phase	4		5	2	6	
Switch Phase						

Lanes, Volumes, Timings  
4: Prince of Wales Drive & Fisher Avenue

2030 AM Future Total

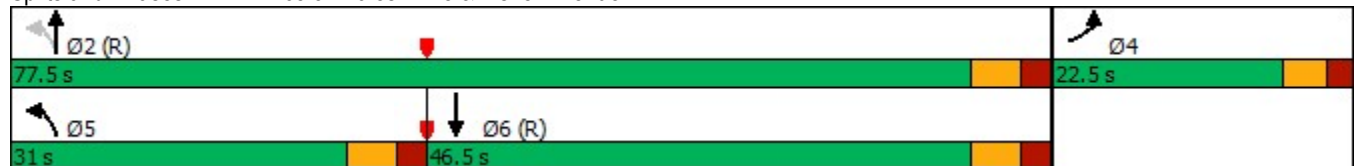


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Initial (s)	5.0		5.0	5.0	5.0	
Minimum Split (s)	22.5		11.0	32.5	32.5	
Total Split (s)	22.5		31.0	77.5	46.5	
Total Split (%)	22.5%		31.0%	77.5%	46.5%	
Maximum Green (s)	17.1		25.0	71.5	40.5	
Yellow Time (s)	3.3		3.7	3.7	3.7	
All-Red Time (s)	2.1		2.3	2.3	2.3	
Lost Time Adjust (s)	-2.0		-2.0	-3.0	-3.0	
Total Lost Time (s)	3.4		4.0	3.0	3.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	None		None	C-Max	C-Max	
Walk Time (s)	7.0			17.0	17.0	
Flash Dont Walk (s)	10.0			9.0	9.0	
Pedestrian Calls (#/hr)	0			0	0	
Act Effect Green (s)	8.1	100.0	93.5	96.9	48.4	100.0
Actuated g/C Ratio	0.08	1.00	0.94	0.97	0.48	1.00
v/c Ratio	0.06	0.36	0.74	0.67	0.93	0.02
Control Delay	43.0	0.7	26.4	3.5	42.5	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.0	0.7	26.4	3.5	42.5	0.0
LOS	D	A	C	A	D	A
Approach Delay	1.4			11.2	41.4	
Approach LOS	A			B	D	

Intersection Summary

Area Type: Other  
 Cycle Length: 100  
 Actuated Cycle Length: 100  
 Offset: 26 (26%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 120  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.93  
 Intersection Signal Delay: 17.4  
 Intersection LOS: B  
 Intersection Capacity Utilization 93.1%  
 ICU Level of Service F  
 Analysis Period (min) 15

Splits and Phases: 4: Prince of Wales Drive & Fisher Avenue












Lanes, Volumes, Timings  
5: Site Access #1 & Colonnade Road

2030 AM Future Total

	→	↘	↙	←	↖	↗
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↘↙	
Traffic Volume (vph)	348	0	3	731	0	1
Future Volume (vph)	348	0	3	731	0	1
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Fr <sub>t</sub>					0.865	
Fl <sub>t</sub> Protected						
Satd. Flow (prot)	3087	0	0	3326	1574	0
Fl <sub>t</sub> Permitted						
Satd. Flow (perm)	3087	0	0	3326	1574	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	80.2			98.6	44.7	
Travel Time (s)	5.8			7.1	3.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	12%	0%	0%	4%	0%	0%
Adj. Flow (vph)	348	0	3	731	0	1
Shared Lane Traffic (%)						
Lane Group Flow (vph)	348	0	0	734	1	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)		14	24		24	14
Sign Control	Free			Free	Stop	
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	33.5%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis  
5: Site Access #1 & Colonnade Road










2030 AM Future Total

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	348	0	3	731	0	1
Future Volume (Veh/h)	348	0	3	731	0	1
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	348	0	3	731	0	1
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)	80			98		
pX, platoon unblocked						
vC, conflicting volume			348	720	174	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			348	720	174	
tC, single (s)			4.1	6.8	6.9	
tC, 2 stage (s)						
tF (s)			2.2	3.5	3.3	
p0 queue free %			100	100	100	
cM capacity (veh/h)			1222	366	846	
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	
Volume Total	232	116	247	487	1	
Volume Left	0	0	3	0	0	
Volume Right	0	0	0	0	1	
cSH	1700	1700	1222	1700	846	
Volume to Capacity	0.14	0.07	0.00	0.29	0.00	
Queue Length 95th (m)	0.0	0.0	0.1	0.0	0.0	
Control Delay (s)	0.0	0.0	0.1	0.0	9.3	
Lane LOS			A	A		
Approach Delay (s)	0.0	0.0		9.3		
Approach LOS			A			
<b>Intersection Summary</b>						
Average Delay			0.0			
Intersection Capacity Utilization			33.5%	ICU Level of Service		A
Analysis Period (min)			15			












Lanes, Volumes, Timings  
6: Colonnade Road South & Site Access #2

2030 AM Future Total

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	2	127	0	4	389
Future Volume (vph)	0	2	127	0	4	389
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865					
Flt Protected	0.999					
Satd. Flow (prot)	787	0	1542	0	0	1783
Flt Permitted	0.999					
Satd. Flow (perm)	787	0	1542	0	0	1783
Link Speed (k/h)	50		60		60	
Link Distance (m)	39.9		46.7		62.9	
Travel Time (s)	2.9		2.8		3.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	100%	18%	0%	0%	2%
Adj. Flow (vph)	0	2	127	0	4	389
Shared Lane Traffic (%)						
Lane Group Flow (vph)	2	0	127	0	0	393
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0		0.0	
Link Offset(m)	0.0		0.0		0.0	
Crosswalk Width(m)	4.9		4.9		4.9	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free		Free	
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	35.0%			ICU Level of Service A		
Analysis Period (min)	15					










HCM Unsignalized Intersection Capacity Analysis  
6: Colonnade Road South & Site Access #2

2030 AM Future Total

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	2	127	0	4	389
Future Volume (Veh/h)	0	2	127	0	4	389
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	2	127	0	4	389
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	63					
pX, platoon unblocked						
vC, conflicting volume	524	127			127	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	524	127			127	
tC, single (s)	6.4	7.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	4.2			2.2	
p0 queue free %	100	100			100	
cM capacity (veh/h)	516	715			1472	
<b>Direction, Lane #</b>	<b>WB 1</b>	<b>NB 1</b>	<b>SB 1</b>			
Volume Total	2	127	393			
Volume Left	0	0	4			
Volume Right	2	0	0			
cSH	715	1700	1472			
Volume to Capacity	0.00	0.07	0.00			
Queue Length 95th (m)	0.1	0.0	0.1			
Control Delay (s)	10.0	0.0	0.1			
Lane LOS	B		A			
Approach Delay (s)	10.0	0.0	0.1			
Approach LOS	B					
<b>Intersection Summary</b>						
Average Delay	0.1					
Intersection Capacity Utilization	35.0%		ICU Level of Service		A	
Analysis Period (min)	15					










Lanes, Volumes, Timings  
7: Colonnade Road South & Site Access #3

2030 AM Future Total

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	5	122	1	7	382
Future Volume (vph)	0	5	122	1	7	382
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.865		0.999			
Flt Protected						0.999
Satd. Flow (prot)	1574	0	1543	0	0	1783
Flt Permitted						0.999
Satd. Flow (perm)	1574	0	1543	0	0	1783
Link Speed (k/h)	50		60			60
Link Distance (m)	34.9		115.6			46.7
Travel Time (s)	2.5		6.9			2.8
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	18%	0%	0%	2%
Adj. Flow (vph)	0	5	122	1	7	382
Shared Lane Traffic (%)						
Lane Group Flow (vph)	5	0	123	0	0	389
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.9		4.9			4.9
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	37.1%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis  
7: Colonnade Road South & Site Access #3

2030 AM Future Total

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	5	122	1	7	382
Future Volume (Veh/h)	0	5	122	1	7	382
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	5	122	1	7	382
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	518	122			123	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	518	122			123	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			100	
cM capacity (veh/h)	518	934			1477	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	5	123	389			
Volume Left	0	0	7			
Volume Right	5	1	0			
cSH	934	1700	1477			
Volume to Capacity	0.01	0.07	0.00			
Queue Length 95th (m)	0.1	0.0	0.1			
Control Delay (s)	8.9	0.0	0.2			
Lane LOS	A		A			
Approach Delay (s)	8.9	0.0	0.2			
Approach LOS	A					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			37.1%		ICU Level of Service	A
Analysis Period (min)			15			

Intersection: 1: Prince of Wales Drive & Colonnade Road/Access

Movement	EB	EB	EB	WB	NB	NB	SB	SB
Directions Served	L	L	TR	R	L	TR	T	R
Maximum Queue (m)	47.7	45.4	48.3	6.7	167.4	179.2	251.9	108.8
Average Queue (m)	21.7	23.5	19.7	0.3	106.5	162.5	128.7	33.6
95th Queue (m)	39.2	39.4	38.4	3.2	208.7	208.1	226.4	72.5
Link Distance (m)	82.1	82.1	82.1	63.5		167.5	449.2	449.2
Upstream Blk Time (%)					0	11		
Queuing Penalty (veh)					0	0		
Storage Bay Dist (m)					85.0			
Storage Blk Time (%)					1	19		
Queuing Penalty (veh)					16	53		

Intersection: 1: Prince of Wales Drive & Colonnade Road/Access

Movement	EB	EB	EB	WB	NB	NB	SB	SB
Directions Served	L	L	TR	TR	L	TR	T	R
Maximum Queue (m)	50.0	48.2	48.0	7.2	167.4	180.9	311.2	197.3
Average Queue (m)	23.1	25.7	19.7	0.4	111.4	157.6	172.3	63.1
95th Queue (m)	40.4	42.0	39.2	3.5	215.4	209.4	328.6	187.2
Link Distance (m)	82.1	82.1	82.1	63.5		167.5	449.3	449.3
Upstream Blk Time (%)					0	13		
Queuing Penalty (veh)					0	0		
Storage Bay Dist (m)					85.0			
Storage Blk Time (%)					1	19		
Queuing Penalty (veh)					13	55		

Intersection: 2: Colonnade Road South/Colonnade Road North & Colonnade Road

Movement	WB	WB	NB	SB
Directions Served	L	R	TR	LT
Maximum Queue (m)	67.4	43.8	30.8	64.3
Average Queue (m)	49.0	21.0	12.3	27.4
95th Queue (m)	72.8	35.5	25.0	51.3
Link Distance (m)	64.0	64.0	41.8	167.0
Upstream Blk Time (%)	4	0		
Queuing Penalty (veh)	13	0		
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Colonnade Road North & Citiplace Drive

Movement	EB	EB	WB	SB	SB
Directions Served	L	T	TR	L	R
Maximum Queue (m)	13.8	51.2	41.4	13.2	10.1
Average Queue (m)	1.9	26.2	18.9	4.4	2.0
95th Queue (m)	8.5	43.4	34.2	12.4	8.1
Link Distance (m)		125.0	200.2	101.7	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)	50.0				20.0
Storage Blk Time (%)		0		0	0
Queuing Penalty (veh)		0		0	0

Intersection: 4: Prince of Wales Drive & Fisher Avenue

Movement	EB	NB	NB	SB
Directions Served	L	L	T	T
Maximum Queue (m)	10.2	112.0	50.7	166.0
Average Queue (m)	2.4	58.0	7.8	63.6
95th Queue (m)	8.5	101.0	32.0	142.7
Link Distance (m)	269.5	243.6	243.6	257.7
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 5: Site Access #1 & Colonnade Road

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (m)	37.3	5.0
Average Queue (m)	4.1	0.2
95th Queue (m)	20.0	2.4
Link Distance (m)	82.1	31.9
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 6: Colonnade Road South & Site Access #2

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (m)	14.8	5.5
Average Queue (m)	1.3	0.2
95th Queue (m)	8.1	2.3
Link Distance (m)	31.0	41.8
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 7: Colonnade Road South & Site Access #3

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (m)	9.0	3.7
Average Queue (m)	1.4	0.1
95th Queue (m)	6.8	1.9
Link Distance (m)	26.4	30.9
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary




















Network wide Queuing Penalty: 82



Lanes, Volumes, Timings

2030 PM Future Total (alternate timing)

1: Prince of Wales Drive & Colonnade Road/Access

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	476	0	341	0	0	0	103	909	0	0	1477	314
Future Volume (vph)	476	0	341	0	0	0	103	909	0	0	1477	314
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	2000	1900
Storage Length (m)	0.0		0.0	0.0		0.0	85.0		0.0	0.0		0.0
Storage Lanes	2		0	0		1	1		0	0		1
Taper Length (m)	7.6			7.6			90.0			7.6		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850										0.850
Flt Protected	0.950						0.950					
Satd. Flow (prot)	3506	1617	0	0	0	1921	1690	1902	0	0	2002	1570
Flt Permitted	0.950						0.036					
Satd. Flow (perm)	3506	1617	0	0	0	1921	64	1902	0	0	2002	1570
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		117										200
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		98.6			76.2			181.6			473.7	
Travel Time (s)		7.1			5.5			10.9			28.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	0%	1%	0%	0%	0%	8%	1%	0%	0%	1%	4%
Adj. Flow (vph)	476	0	341	0	0	0	103	909	0	0	1477	314
Shared Lane Traffic (%)												
Lane Group Flow (vph)	476	341	0	0	0	0	103	909	0	0	1477	314
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.4			7.4			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.92	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2				1	1	2			2	1
Detector Template	Left	Thru				Right	Left	Thru			Thru	Right
Leading Detector (m)	6.1	30.5				6.1	6.1	30.5			30.5	6.1
Trailing Detector (m)	0.0	0.0				0.0	0.0	0.0			0.0	0.0
Detector 1 Position(m)	0.0	0.0				0.0	0.0	0.0			0.0	0.0
Detector 1 Size(m)	6.1	1.8				6.1	6.1	1.8			1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex				Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0				0.0	0.0	0.0			0.0	0.0
Detector 1 Queue (s)	0.0	0.0				0.0	0.0	0.0			0.0	0.0
Detector 1 Delay (s)	0.0	0.0				0.0	0.0	0.0			0.0	0.0
Detector 2 Position(m)		28.7						28.7			28.7	
Detector 2 Size(m)		1.8						1.8			1.8	
Detector 2 Type		Cl+Ex						Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0						0.0			0.0	
Turn Type	Perm	NA				Perm	pm+pt	NA			NA	Perm
Protected Phases		4					5	2			6	

Lanes, Volumes, Timings

2030 PM Future Total (alternate timing)

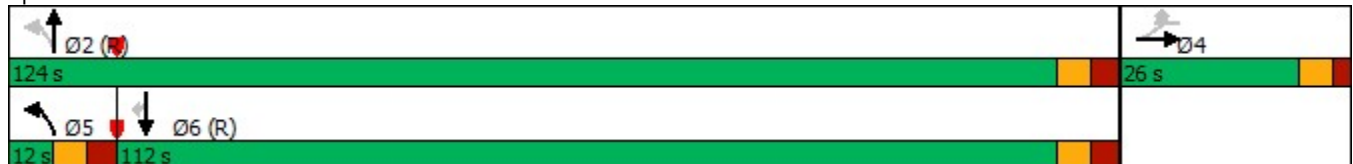
1: Prince of Wales Drive & Colonnade Road/Access

	↖		→		↘		↙		←		↖		↗		↑		↘		↓		↙	
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR										
Permitted Phases	4					4	2					6										6
Detector Phase	4	4				4	5	2				6	6									
Switch Phase																						
Minimum Initial (s)	5.0	5.0				5.0	5.0	5.0				5.0	5.0									
Minimum Split (s)	26.0	26.0				26.0	12.0	36.0				36.0	36.0									
Total Split (s)	26.0	26.0				26.0	12.0	124.0				112.0	112.0									
Total Split (%)	17.3%	17.3%				17.3%	8.0%	82.7%				74.7%	74.7%									
Maximum Green (s)	20.0	20.0				20.0	5.0	117.0				105.0	105.0									
Yellow Time (s)	3.7	3.7				3.7	3.7	3.7				3.7	3.7									
All-Red Time (s)	2.3	2.3				2.3	3.3	3.3				3.3	3.3									
Lost Time Adjust (s)	-2.0	-3.0				0.0	-2.0	-3.0				-3.0	-3.0									
Total Lost Time (s)	4.0	3.0				6.0	5.0	4.0				4.0	4.0									
Lead/Lag									Lead											Lag	Lag	
Lead-Lag Optimize?									Yes											Yes	Yes	
Vehicle Extension (s)	3.0	3.0				3.0	3.0	3.0				3.0	3.0									
Recall Mode	None	None				None	None	C-Max				C-Max	C-Max									
Walk Time (s)	7.0	7.0				7.0		7.0				7.0	7.0									
Flash Dont Walk (s)	13.0	13.0				13.0		22.0				22.0	22.0									
Pedestrian Calls (#/hr)	0	0				0		0				0	0									
Act Effct Green (s)	22.0	23.0					119.0	120.0				108.0	108.0									
Actuated g/C Ratio	0.15	0.15					0.79	0.80				0.72	0.72									
v/c Ratio	0.93	0.98					0.82	0.60				1.02	0.26									
Control Delay	87.8	84.9					73.8	7.7				51.7	3.0									
Queue Delay	0.0	0.0					0.0	0.0				0.0	0.0									
Total Delay	87.8	84.9					73.8	7.7				51.7	3.0									
LOS	F	F					E	A				D	A									
Approach Delay		86.6						14.4				43.2										
Approach LOS		F						B				D										

Intersection Summary




























Area Type:	Other
Cycle Length:	150
Actuated Cycle Length:	150
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle:	150
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	1.02
Intersection Signal Delay:	44.9
Intersection LOS:	D
Intersection Capacity Utilization:	111.5%
ICU Level of Service:	H
Analysis Period (min):	15

Splits and Phases: 1: Prince of Wales Drive & Colonnade Road/Access



Lanes, Volumes, Timings  
 1: Prince of Wales Drive & Colonnade Road/Access

2030 PM Future Total

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 			 	 		 	 			 	 
Traffic Volume (vph)	476	0	341	0	0	0	103	909	0	0	1477	314
Future Volume (vph)	476	0	341	0	0	0	103	909	0	0	1477	314
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	2000	1900
Storage Length (m)	0.0		0.0	0.0		0.0	85.0		0.0	0.0		0.0
Storage Lanes	2		0	1		0	1		0	0		1
Taper Length (m)	7.6			7.6			90.0			7.6		
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850										0.850
Flt Protected	0.950						0.950					
Satd. Flow (prot)	3506	1617	0	1921	1921	0	1690	1902	0	0	2002	1570
Flt Permitted	0.950						0.040					
Satd. Flow (perm)	3506	1617	0	1921	1921	0	71	1902	0	0	2002	1570
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		150										160
Link Speed (k/h)		50			50			60				60
Link Distance (m)		98.6			76.2			181.6				473.7
Travel Time (s)		7.1			5.5			10.9				28.4
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	0%	1%	0%	0%	0%	8%	1%	0%	0%	1%	4%
Adj. Flow (vph)	476	0	341	0	0	0	103	909	0	0	1477	314
Shared Lane Traffic (%)												
Lane Group Flow (vph)	476	341	0	0	0	0	103	909	0	0	1477	314
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		7.4			7.4			3.7				3.7
Link Offset(m)		0.0			0.0			0.0				0.0
Crosswalk Width(m)		4.9			4.9			4.9				4.9
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.92	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2			2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru			Thru	Right
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5			30.5	6.1
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8			1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot			pm+pt	NA			NA	Perm
Protected Phases	7	4		3	8		5	2			6	

Lanes, Volumes, Timings  
1: Prince of Wales Drive & Colonnade Road/Access

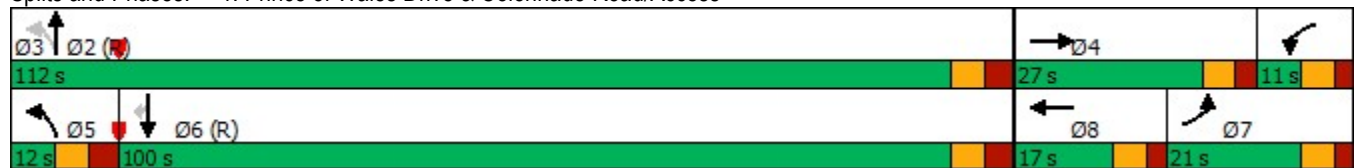
2030 PM Future Total

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases							2					6
Detector Phase	7	4		3	8		5	2			6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0			5.0	5.0
Minimum Split (s)	11.0	26.0		11.0	17.0		12.0	36.0			36.0	36.0
Total Split (s)	21.0	27.0		11.0	17.0		12.0	112.0			100.0	100.0
Total Split (%)	14.0%	18.0%		7.3%	11.3%		8.0%	74.7%			66.7%	66.7%
Maximum Green (s)	15.0	21.0		5.0	11.0		5.0	105.0			93.0	93.0
Yellow Time (s)	3.7	3.7		3.7	3.7		3.7	3.7			3.7	3.7
All-Red Time (s)	2.3	2.3		2.3	2.3		3.3	3.3			3.3	3.3
Lost Time Adjust (s)	-2.0	-3.0		-2.0	-3.0		-2.0	-3.0			-3.0	-3.0
Total Lost Time (s)	4.0	3.0		4.0	3.0		5.0	4.0			4.0	4.0
Lead/Lag	Lag	Lead		Lag	Lead		Lead				Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes				Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	3.0
Recall Mode	None	None		None	None		None	C-Max			C-Max	C-Max
Walk Time (s)		7.0						7.0			7.0	7.0
Flash Dont Walk (s)		13.0						22.0			22.0	22.0
Pedestrian Calls (#/hr)		0						0			0	0
Act Effct Green (s)	33.0	34.0					108.0	109.0			96.0	96.0
Actuated g/C Ratio	0.22	0.23					0.72	0.73			0.64	0.64
v/c Ratio	0.62	0.71					0.75	0.66			1.15	0.30
Control Delay	57.0	38.4					60.4	13.5			105.3	6.2
Queue Delay	0.0	0.0					0.0	0.0			0.0	0.0
Total Delay	57.0	38.4					60.4	13.5			105.3	6.2
LOS	E	D					E	B			F	A
Approach Delay		49.2						18.3			88.0	
Approach LOS		D						B			F	

Intersection Summary

Area Type: Other  
 Cycle Length: 150  
 Actuated Cycle Length: 150  
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green  
 Natural Cycle: 145  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 1.15  
 Intersection Signal Delay: 59.7      Intersection LOS: E  
 Intersection Capacity Utilization 111.5%      ICU Level of Service H  
 Analysis Period (min) 15

Splits and Phases: 1: Prince of Wales Drive & Colonnade Road/Access



2: Colonnade Road South/Colonnade Road North & Colonnade Road



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	171	314	21	398	430	13
Future Volume (vph)	171	314	21	398	430	13
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>		0.850	0.872			
Fl <sub>t</sub> Protected	0.950					0.954
Satd. Flow (prot)	1530	1502	1536	0	0	1708
Fl <sub>t</sub> Permitted	0.950					0.460
Satd. Flow (perm)	1530	1502	1536	0	0	824
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		314	398			
Link Speed (k/h)	50		60			60
Link Distance (m)	80.2		62.9			186.0
Travel Time (s)	5.8		3.8			11.2
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	13%	3%	10%	3%	1%	23%
Adj. Flow (vph)	171	314	21	398	430	13
Shared Lane Traffic (%)						
Lane Group Flow (vph)	171	314	419	0	0	443
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.9		4.9			4.9
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2		1	2
Detector Template	Left	Right	Thru		Left	Thru
Leading Detector (m)	6.1	2.0	10.0		2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	6.1	2.0	0.6		2.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA		pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8			6	
Detector Phase	8	8	2		1	6
Switch Phase						

2: Colonnade Road South/Colonnade Road North & Colonnade Road



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	31.2	31.2	26.5		11.3	25.7
Total Split (s)	32.4	32.4	75.4		11.3	86.7
Total Split (%)	27.2%	27.2%	63.3%		9.5%	72.8%
Maximum Green (s)	26.2	26.2	69.7		5.1	81.0
Yellow Time (s)	3.7	3.7	3.7		3.7	3.7
All-Red Time (s)	2.5	2.5	2.0		2.5	2.0
Lost Time Adjust (s)	0.0	0.0	0.0			0.0
Total Lost Time (s)	6.2	6.2	5.7			5.7
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	Max		None	Max
Walk Time (s)	7.0	7.0	7.0			7.0
Flash Dont Walk (s)	18.0	18.0	13.0			13.0
Pedestrian Calls (#/hr)	0	0	0			0
Act Effect Green (s)	17.5	17.5	81.2			81.2
Actuated g/C Ratio	0.16	0.16	0.73			0.73
v/c Ratio	0.71	0.63	0.34			0.73
Control Delay	60.1	10.4	1.5			19.2
Queue Delay	0.0	0.0	0.0			0.0
Total Delay	60.1	10.4	1.5			19.2
LOS	E	B	A			B
Approach Delay	27.9		1.5			19.2
Approach LOS	C		A			B

Intersection Summary

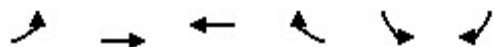
Area Type:	Other
Cycle Length:	119.1
Actuated Cycle Length:	110.6
Natural Cycle:	90
Control Type:	Semi Act-Uncoord
Maximum v/c Ratio:	0.73
Intersection Signal Delay:	16.8
Intersection LOS:	B
Intersection Capacity Utilization	77.7%
ICU Level of Service	D
Analysis Period (min)	15

Splits and Phases: 2: Colonnade Road South/Colonnade Road North & Colonnade Road



Lanes, Volumes, Timings  
3: Colonnade Road North & Citiplace Drive

2030 PM Future Total



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	14	252	373	46	33	43
Future Volume (vph)	14	252	373	46	33	43
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	50.0			0.0	0.0	20.0
Storage Lanes	1			0	1	1
Taper Length (m)	30.0				2.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.985			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1729	1767	1731	0	1729	1547
Flt Permitted	0.386				0.950	
Satd. Flow (perm)	703	1767	1731	0	1729	1547
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)			14			43
Link Speed (k/h)		60	60		50	
Link Distance (m)		132.5	212.4		109.2	
Travel Time (s)		8.0	12.7		7.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	3%	4%	0%	0%	0%
Adj. Flow (vph)	14	252	373	46	33	43
Shared Lane Traffic (%)						
Lane Group Flow (vph)	14	252	419	0	33	43
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.7	3.7		3.7	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		1.6	1.6		1.6	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24			14	24	14
Number of Detectors	1	2	2		1	1
Detector Template	Left	Thru	Thru		Left	Right
Leading Detector (m)	2.0	10.0	10.0		2.0	2.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	2.0	0.6	0.6		2.0	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)		9.4	9.4			
Detector 2 Size(m)		0.6	0.6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type	Perm	NA	NA		Prot	Perm
Protected Phases		4	8		6	

Lanes, Volumes, Timings  
3: Colonnade Road North & Citiplace Drive

2030 PM Future Total

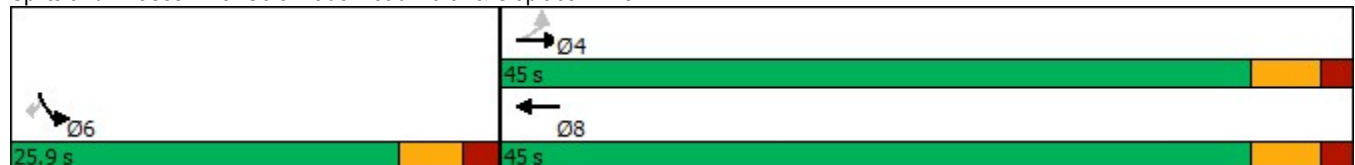


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Permitted Phases	4					6
Detector Phase	4	4	8		6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0		5.0	5.0
Minimum Split (s)	40.5	40.5	40.5		23.4	23.4
Total Split (s)	45.0	45.0	45.0		25.9	25.9
Total Split (%)	63.5%	63.5%	63.5%		36.5%	36.5%
Maximum Green (s)	39.5	39.5	39.5		20.5	20.5
Yellow Time (s)	3.7	3.7	3.7		3.3	3.3
All-Red Time (s)	1.8	1.8	1.8		2.1	2.1
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.5	5.5	5.5		5.4	5.4
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	None		Max	Max
Walk Time (s)	24.0	24.0	24.0		7.0	7.0
Flash Dont Walk (s)	11.0	11.0	11.0		7.0	7.0
Pedestrian Calls (#/hr)	0	0	0		0	0
Act Effct Green (s)	16.1	16.1	16.1		20.7	20.7
Actuated g/C Ratio	0.34	0.34	0.34		0.43	0.43
v/c Ratio	0.06	0.42	0.71		0.04	0.06
Control Delay	10.5	14.2	20.2		9.9	4.4
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	10.5	14.2	20.2		9.9	4.4
LOS	B	B	C		A	A
Approach Delay		14.0	20.2		6.8	
Approach LOS		B	C		A	

Intersection Summary

Area Type: Other  
 Cycle Length: 70.9  
 Actuated Cycle Length: 47.8  
 Natural Cycle: 65  
 Control Type: Semi Act-Uncoord  
 Maximum v/c Ratio: 0.71  
 Intersection Signal Delay: 16.7  
 Intersection LOS: B  
 Intersection Capacity Utilization 36.9%  
 ICU Level of Service A  
 Analysis Period (min) 15

Splits and Phases: 3: Colonnade Road North & Citiplace Drive





Lanes, Volumes, Timings  
4: Prince of Wales Drive & Fisher Avenue

2030 PM Future Total



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	5	678	402	771	876	21
Future Volume (vph)	5	678	402	771	876	21
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>		0.850				0.850
Fl <sub>t</sub> Protected	0.950		0.950			
Satd. Flow (prot)	1441	1502	1712	1767	1767	1473
Fl <sub>t</sub> Permitted	0.950		0.185			
Satd. Flow (perm)	1441	1502	333	1767	1767	1473
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		492				8
Link Speed (k/h)	50			60	50	
Link Distance (m)	277.0			251.2	265.2	
Travel Time (s)	19.9			15.1	19.1	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	20%	3%	1%	3%	3%	5%
Adj. Flow (vph)	5	678	402	771	876	21
Shared Lane Traffic (%)						
Lane Group Flow (vph)	5	678	402	771	876	21
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			3.7	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (m)	2.0	2.0	2.0	10.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	2.0	2.0	0.6	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Free	pm+pt	NA	NA	Free
Protected Phases	4		5	2	6	
Permitted Phases		Free	2			Free
Detector Phase	4		5	2	6	
Switch Phase						

Lanes, Volumes, Timings  
4: Prince of Wales Drive & Fisher Avenue

2030 PM Future Total

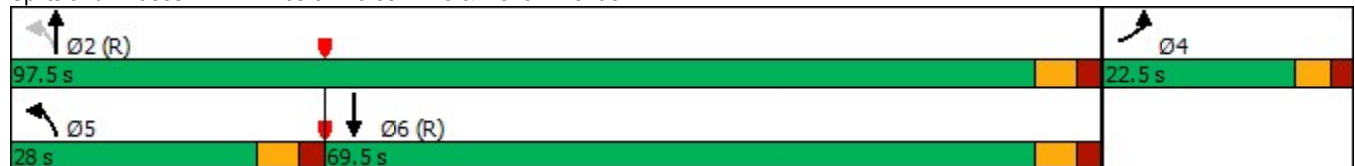


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Minimum Initial (s)	5.0		5.0	5.0	5.0	
Minimum Split (s)	22.5		11.0	32.5	32.0	
Total Split (s)	22.5		28.0	97.5	69.5	
Total Split (%)	18.8%		23.3%	81.3%	57.9%	
Maximum Green (s)	17.1		22.0	91.5	63.5	
Yellow Time (s)	3.3		3.7	3.7	3.7	
All-Red Time (s)	2.1		2.3	2.3	2.3	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	5.4		6.0	6.0	6.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	None		None	C-Max	C-Max	
Walk Time (s)	7.0			17.0	17.0	
Flash Dont Walk (s)	10.0			9.0	9.0	
Pedestrian Calls (#/hr)	0			0	0	
Act Effct Green (s)	6.1	120.0	111.5	116.3	83.5	120.0
Actuated g/C Ratio	0.05	1.00	0.93	0.97	0.70	1.00
v/c Ratio	0.07	0.45	0.72	0.45	0.71	0.01
Control Delay	55.8	1.0	18.0	1.7	16.3	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.8	1.0	18.0	1.7	16.3	0.0
LOS	E	A	B	A	B	A
Approach Delay	1.4			7.2	15.9	
Approach LOS	A			A	B	

Intersection Summary













Area Type:	Other
Cycle Length:	120
Actuated Cycle Length:	120
Offset:	0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green
Natural Cycle:	100
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.72
Intersection Signal Delay:	8.6
Intersection LOS:	A
Intersection Capacity Utilization:	90.8%
ICU Level of Service:	E
Analysis Period (min):	15

Splits and Phases: 4: Prince of Wales Drive & Fisher Avenue



Lanes, Volumes, Timings  
5: Site Access #1 & Colonnade Road

2030 PM Future Total

						
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	 			 	 	
Traffic Volume (vph)	828	0	1	484	1	2
Future Volume (vph)	828	0	1	484	1	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Fr <sub>t</sub>					0.910	
Fl <sub>t</sub> Protected					0.984	
Satd. Flow (prot)	3087	0	0	3325	1630	0
Fl <sub>t</sub> Permitted					0.984	
Satd. Flow (perm)	3087	0	0	3325	1630	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	80.2			98.6	44.7	
Travel Time (s)	5.8			7.1	3.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	12%	0%	0%	4%	0%	0%
Adj. Flow (vph)	828	0	1	484	1	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	828	0	0	485	3	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.7	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)		14	24		24	14
Sign Control	Free			Free	Stop	
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	34.2%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis  
5: Site Access #1 & Colonnade Road










2030 PM Future Total



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑			↑↑	↘	
Traffic Volume (veh/h)	828	0	1	484	1	2
Future Volume (Veh/h)	828	0	1	484	1	2
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	828	0	1	484	1	2
<b>Pedestrians</b>						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)	80			98		
pX, platoon unblocked						
vC, conflicting volume			828	1072		414
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			828	1072		414
tC, single (s)			4.1	6.8	6.9	
tC, 2 stage (s)						
tF (s)			2.2	3.5	3.3	
p0 queue free %			100	100	100	
cM capacity (veh/h)			812	218	593	
<b>Direction, Lane #</b>	<b>EB 1</b>	<b>EB 2</b>	<b>WB 1</b>	<b>WB 2</b>	<b>NB 1</b>	
Volume Total	552	276	162	323	3	
Volume Left	0	0	1	0	1	
Volume Right	0	0	0	0	2	
cSH	1700	1700	812	1700	377	
Volume to Capacity	0.32	0.16	0.00	0.19	0.01	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.2	
Control Delay (s)	0.0	0.0	0.1	0.0	14.6	
Lane LOS	A			B		
Approach Delay (s)	0.0	0.0		14.6		
Approach LOS				B		
<b>Intersection Summary</b>						
Average Delay			0.0			
Intersection Capacity Utilization			34.2%	ICU Level of Service		A
Analysis Period (min)			15			










Lanes, Volumes, Timings  
6: Colonnade Road South & Site Access #2

2030 PM Future Total

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	5	414	0	5	179
Future Volume (vph)	0	5	414	0	5	179
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Fr <sub>t</sub>	0.865					
Fl <sub>t</sub> Protected	0.999					
Satd. Flow (prot)	1050	0	1767	0	0	1595
Fl <sub>t</sub> Permitted	0.999					
Satd. Flow (perm)	1050	0	1767	0	0	1595
Link Speed (k/h)	50		60		60	
Link Distance (m)	39.9		46.7		62.9	
Travel Time (s)	2.9		2.8		3.8	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	50%	3%	0%	50%	13%
Adj. Flow (vph)	0	5	414	0	5	179
Shared Lane Traffic (%)						
Lane Group Flow (vph)	5	0	414	0	0	184
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0		0.0	
Link Offset(m)	0.0		0.0		0.0	
Crosswalk Width(m)	4.9		4.9		4.9	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free		Free	
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	33.0%			ICU Level of Service A		
Analysis Period (min)	15					










HCM Unsignalized Intersection Capacity Analysis  
6: Colonnade Road South & Site Access #2

2030 PM Future Total

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	5	414	0	5	179
Future Volume (Veh/h)	0	5	414	0	5	179
Sign Control	Stop		Free		Free	
Grade	0%		0%		0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	5	414	0	5	179
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (m)	63					
pX, platoon unblocked						
vC, conflicting volume	603	414			414	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	603	414			414	
tC, single (s)	6.4	6.7			4.6	
tC, 2 stage (s)						
tF (s)	3.5	3.8			2.7	
p0 queue free %	100	99			99	
cM capacity (veh/h)	463	547			929	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	5	414	184			
Volume Left	0	0	5			
Volume Right	5	0	0			
cSH	547	1700	929			
Volume to Capacity	0.01	0.24	0.01			
Queue Length 95th (m)	0.2	0.0	0.1			
Control Delay (s)	11.6	0.0	0.3			
Lane LOS	B		A			
Approach Delay (s)	11.6	0.0	0.3			
Approach LOS	B					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			33.0%		ICU Level of Service	A
Analysis Period (min)			15			










Lanes, Volumes, Timings  
7: Colonnade Road South & Site Access #3

2030 PM Future Total

						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	1	7	407	1	5	174
Future Volume (vph)	1	7	407	1	5	174
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.882					
Flt Protected	0.994					0.999
Satd. Flow (prot)	1596	0	1767	0	0	1614
Flt Permitted	0.994					0.999
Satd. Flow (perm)	1596	0	1767	0	0	1614
Link Speed (k/h)	50		60			60
Link Distance (m)	34.9		115.6			46.7
Travel Time (s)	2.5		6.9			2.8
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	0%	3%	0%	0%	13%
Adj. Flow (vph)	1	7	407	1	5	174
Shared Lane Traffic (%)						
Lane Group Flow (vph)	8	0	408	0	0	179
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	4.9		4.9			4.9
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Sign Control	Stop		Free			Free
<b>Intersection Summary</b>						
Area Type:	Other					
Control Type:	Unsignalized					
Intersection Capacity Utilization	32.7%			ICU Level of Service A		
Analysis Period (min)	15					

HCM Unsignalized Intersection Capacity Analysis  
7: Colonnade Road South & Site Access #3

2030 PM Future Total

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	1	7	407	1	5	174
Future Volume (Veh/h)	1	7	407	1	5	174
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1	7	407	1	5	174
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type						
Median storage veh						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	592	408			408	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	592	408			408	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	99			100	
cM capacity (veh/h)	471	648			1162	
Direction, Lane #						
	WB 1	NB 1	SB 1			
Volume Total	8	408	179			
Volume Left	1	0	5			
Volume Right	7	1	0			
cSH	619	1700	1162			
Volume to Capacity	0.01	0.24	0.00			
Queue Length 95th (m)	0.3	0.0	0.1			
Control Delay (s)	10.9	0.0	0.3			
Lane LOS	B		A			
Approach Delay (s)	10.9	0.0	0.3			
Approach LOS	B					
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			32.7%		ICU Level of Service	A
Analysis Period (min)			15			



Intersection: 1: Prince of Wales Drive & Colonnade Road/Access

Movement	EB	EB	EB	NB	NB	SB	SB	B15	B15
Directions Served	L	L	TR	L	TR	T	R	T	T
Maximum Queue (m)	89.5	88.3	85.1	59.7	134.2	477.4	475.8	220.2	260.6
Average Queue (m)	77.6	70.6	79.6	26.7	52.7	460.6	417.3	132.0	136.2
95th Queue (m)	99.7	96.7	94.7	49.4	107.4	497.3	578.2	296.4	322.6
Link Distance (m)	82.1	82.1	82.1		167.5	449.2	449.2	243.6	243.6
Upstream Blk Time (%)	39	20	48		0	71	22	5	13
Queuing Penalty (veh)	108	55	133		0	555	175	41	101
Storage Bay Dist (m)				85.0					
Storage Blk Time (%)					2				
Queuing Penalty (veh)					2				

Intersection: 1: Prince of Wales Drive & Colonnade Road/Access

Movement	EB	EB	EB	NB	NB	SB	SB	B15	B15	
Directions Served	L	L	TR	L	TR	T	R	T	T	
Maximum Queue (m)	85.3	86.0	84.7	67.5	147.4	478.9	479.9	248.2	300.0	
Average Queue (m)	59.9	58.0	71.8	23.6	76.6	469.5	464.2	216.0	238.1	
95th Queue (m)	89.7	82.6	96.7	49.0	136.8	474.9	501.5	311.3	368.4	
Link Distance (m)	82.1	82.1	82.1		167.5	449.3	449.3	243.6	243.6	
Upstream Blk Time (%)	4	1	14	0	0	93	41	17	35	
Queuing Penalty (veh)	12	4	38	0	0	722	319	136	274	
Storage Bay Dist (m)				85.0						
Storage Blk Time (%)					5					
Queuing Penalty (veh)					5					

Intersection: 2: Colonnade Road South/Colonnade Road North & Colonnade Road























Movement	WB	WB	NB	SB
Directions Served	L	R	TR	LT
Maximum Queue (m)	62.7	43.2	38.6	118.0
Average Queue (m)	31.5	19.1	19.0	52.5
95th Queue (m)	54.4	32.9	33.1	103.1
Link Distance (m)	64.0	64.0	41.8	167.0
Upstream Blk Time (%)	0		1	0
Queuing Penalty (veh)	1		2	1
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Colonnade Road North & Citiplace Drive

Movement	EB	EB	WB	SB	SB
Directions Served	L	T	TR	L	R
Maximum Queue (m)	15.4	43.0	57.1	12.8	9.0
Average Queue (m)	3.5	19.6	31.2	3.5	4.2
95th Queue (m)	11.5	34.8	49.2	11.1	11.1
Link Distance (m)		125.0	200.2	101.7	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)	50.0				20.0
Storage Blk Time (%)		0		0	
Queuing Penalty (veh)		0		0	

Lanes, Volumes, Timings  
 1: Prince of Wales Drive & Colonnade Road/Access

2030 AM Future Total - Sensitivity

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	219	0	116	0	0	1	285	1429	0	0	878	465
Future Volume (vph)	219	0	116	0	0	1	285	1429	0	0	878	465
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	2000	1900	1900	2000	1900
Storage Length (m)	0.0		0.0	0.0		0.0	130.0		0.0	50.0		50.0
Storage Lanes	1		1	0		0	1		0	1		1
Taper Length (m)	7.6			7.6			75.0			50.0		
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Frt			0.850		0.865							0.850
Flt Protected	0.950	0.950					0.950					
Satd. Flow (prot)	1651	1651	1396	0	1662	0	1755	3767	0	1921	3730	1617
Flt Permitted	0.950	0.757					0.222					
Satd. Flow (perm)	1651	1316	1396	0	1662	0	410	3767	0	1921	3730	1617
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			155		209							371
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		98.6			76.2			234.7			473.7	
Travel Time (s)		7.1			5.5			14.1			28.4	
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 (%)	5%	0%	17%	0%	0%	0%	4%	2%	0%	0%	3%	1%
Adj. Flow (vph)	219	0	116	0	0	1	285	1429	0	0	878	465
Shared Lane Traffic (%)	50%											
Lane Group Flow (vph)	109	110	116	0	1	0	285	1429	0	0	878	465
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.92	0.99	0.99	0.92	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2		1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1	30.5		6.1	30.5		6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1	1.8		6.1	1.8		6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm		NA		pm+pt	NA		Perm	NA	Perm
Protected Phases	7	4			8		5	2			6	

Lanes, Volumes, Timings  
1: Prince of Wales Drive & Colonnade Road/Access

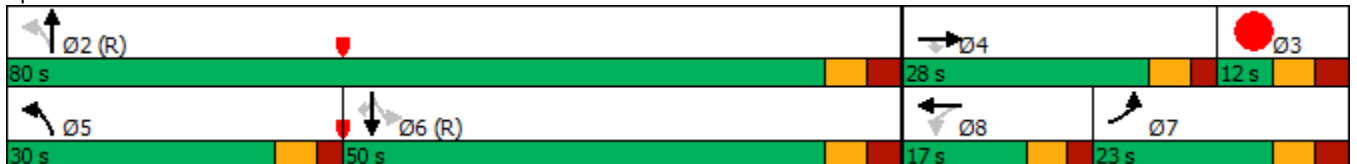
2030 AM Future Total - Sensitivity

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases			4	8			2			6		6
Detector Phase	7	4	4	8	8		5	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	12.0	26.0	26.0	17.0	17.0		11.0	36.0		36.0	36.0	36.0
Total Split (s)	23.0	28.0	28.0	17.0	17.0		30.0	80.0		50.0	50.0	50.0
Total Split (%)	19.2%	23.3%	23.3%	14.2%	14.2%		25.0%	66.7%		41.7%	41.7%	41.7%
Maximum Green (s)	16.0	22.0	22.0	11.0	11.0		24.0	73.0		43.0	43.0	43.0
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7		3.7	3.7		3.7	3.7	3.7
All-Red Time (s)	3.3	2.3	2.3	2.3	2.3		2.3	3.3		3.3	3.3	3.3
Lost Time Adjust (s)	-2.0	-3.0	0.0		-3.0		-2.0	-3.0		0.0	-3.0	-3.0
Total Lost Time (s)	5.0	3.0	6.0		3.0		4.0	4.0		7.0	4.0	4.0
Lead/Lag	Lag	Lead	Lead	Lead	Lead		Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	C-Max		C-Max	C-Max	C-Max
Walk Time (s)		7.0	7.0					7.0		7.0	7.0	7.0
Flash Dont Walk (s)		13.0	13.0					22.0		22.0	22.0	22.0
Pedestrian Calls (#/hr)		0	0					0		0	0	0
Act Effct Green (s)	22.5	24.5	23.8		8.5		86.2	86.2			66.4	66.4
Actuated g/C Ratio	0.19	0.20	0.20		0.07		0.72	0.72			0.55	0.55
v/c Ratio	0.35	0.33	0.29		0.00		0.60	0.53			0.43	0.44
Control Delay	46.6	44.3	4.0		0.0		11.8	8.9			19.6	7.1
Queue Delay	0.0	0.0	0.0		0.0		0.0	0.0			0.0	0.0
Total Delay	46.6	44.3	4.0		0.0		11.8	8.9			19.6	7.1
LOS	D	D	A		A		B	A			B	A
Approach Delay		31.1						9.4			15.3	
Approach LOS		C						A			B	

Intersection Summary














Area Type: Other  
 Cycle Length: 120  
 Actuated Cycle Length: 120  
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green  
 Natural Cycle: 85  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.60  
 Intersection Signal Delay: 13.8 Intersection LOS: B  
 Intersection Capacity Utilization 66.9% ICU Level of Service C  
 Analysis Period (min) 15

Splits and Phases: 1: Prince of Wales Drive & Colonnade Road/Access



Lanes, Volumes, Timings  
4: Prince of Wales Drive & Fisher Avenue

2030 AM Future Total - Sensitivity

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations			 			
Traffic Volume (vph)	9	550	583	1151	807	22
Future Volume (vph)	9	550	583	1151	807	22
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0	0.0	120.0			0.0
Storage Lanes	1	1	1			1
Taper Length (m)	2.5		50.0			
Lane Util. Factor	1.00	1.00	0.97	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1729	1517	3257	1784	1802	1419
Flt Permitted	0.950		0.212			
Satd. Flow (perm)	1729	1517	727	1784	1802	1419
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		399				18
Link Speed (k/h)	50			60	50	
Link Distance (m)	277.0			251.2	265.2	
Travel Time (s)	19.9			15.1	19.1	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	0%	2%	3%	2%	1%	9%
Adj. Flow (vph)	9	550	583	1151	807	22
Shared Lane Traffic (%)						
Lane Group Flow (vph)	9	550	583	1151	807	22
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			7.4	7.4	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (m)	2.0	2.0	2.0	10.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	2.0	2.0	0.6	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Free	pm+pt	NA	NA	Free
Protected Phases	7		5	2	6	

Lanes, Volumes, Timings  
4: Prince of Wales Drive & Fisher Avenue

2030 AM Future Total - Sensitivity

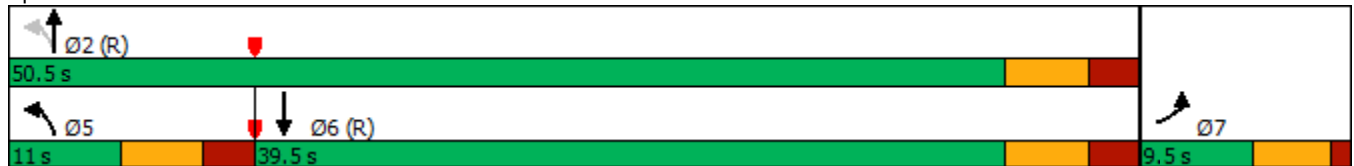


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases		Free	2			Free
Detector Phase	7		5	2	6	
Switch Phase						
Minimum Initial (s)	5.0		5.0	5.0	5.0	
Minimum Split (s)	9.5		11.0	32.5	32.5	
Total Split (s)	9.5		11.0	50.5	39.5	
Total Split (%)	15.8%		18.3%	84.2%	65.8%	
Maximum Green (s)	5.0		5.0	44.5	33.5	
Yellow Time (s)	3.5		3.7	3.7	3.7	
All-Red Time (s)	1.0		2.3	2.3	2.3	
Lost Time Adjust (s)	-2.0		-2.0	-3.0	-3.0	
Total Lost Time (s)	2.5		4.0	3.0	3.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	None		None	C-Max	C-Max	
Walk Time (s)				17.0	17.0	
Flash Dont Walk (s)				9.0	9.0	
Pedestrian Calls (#/hr)				0	0	
Act Effct Green (s)	7.0	60.0	54.1	57.5	43.2	60.0
Actuated g/C Ratio	0.12	1.00	0.90	0.96	0.72	1.00
v/c Ratio	0.04	0.36	0.59	0.67	0.62	0.02
Control Delay	24.2	0.7	8.5	7.9	7.9	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.2	0.7	8.5	7.9	7.9	0.0
LOS	C	A	A	A	A	A
Approach Delay	1.1			8.1	7.7	
Approach LOS	A			A	A	

Intersection Summary

Area Type:	Other
Cycle Length:	60
Actuated Cycle Length:	60
Offset:	0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle:	60
Control Type:	Actuated-Coordinated
Maximum v/c Ratio:	0.67
Intersection Signal Delay:	6.7
Intersection LOS:	A
Intersection Capacity Utilization:	76.6%
ICU Level of Service:	D
Analysis Period (min):	15

Splits and Phases: 4: Prince of Wales Drive & Fisher Avenue



Intersection: 1: Prince of Wales Drive & Colonnade Road/Access

Movement	EB	EB	WB	NB	NB	NB	SB	SB	SB	
Directions Served	L	LT	LTR	L	T	TR	T	T	R	
Maximum Queue (m)	50.8	50.5	4.0	69.4	75.4	71.4	73.4	70.7	58.0	
Average Queue (m)	23.1	25.7	0.4	32.9	35.4	36.5	40.4	42.4	27.0	
95th Queue (m)	41.4	42.2	2.8	56.8	62.6	62.9	67.0	68.0	49.2	
Link Distance (m)	77.9	77.9	59.6		221.4	221.4	451.0	451.0		
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (m)				130.0						50.0
Storage Blk Time (%)							4	5	1	
Queuing Penalty (veh)							0	22	5	

Intersection: 4: Prince of Wales Drive & Fisher Avenue
























Movement	EB	NB	NB	NB	B15	SB
Directions Served	L	L	L	T	T	T
Maximum Queue (m)	10.9	47.2	52.0	48.1	3.4	122.3
Average Queue (m)	2.0	22.4	27.3	6.8	0.1	49.6
95th Queue (m)	8.0	39.3	44.8	31.2	2.4	100.2
Link Distance (m)	267.5		243.9	243.9	451.0	253.9
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)			120.0			
Storage Blk Time (%)						
Queuing Penalty (veh)						

Zone Summary

Zone wide Queuing Penalty: 27
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Lanes, Volumes, Timings  
 1: Prince of Wales Drive & Colonnade Road/Access

2030 PM Future Total - Sensitivity

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	476	0	341	0	0	0	103	909	0	0	1477	314
Future Volume (vph)	476	0	341	0	0	0	103	909	0	0	1477	314
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	2000	1900
Storage Length (m)	0.0		0.0	0.0		0.0	130.0		0.0	50.0		50.0
Storage Lanes	1		1	1		0	1		0	1		1
Taper Length (m)	7.6			7.6			75.0			50.0		
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	1.00
Frt			0.850									0.850
Flt Protected	0.950	0.950					0.950					
Satd. Flow (prot)	1717	1717	1617	1921	1921	0	1690	3614	0	1921	3804	1570
Flt Permitted	0.950	0.950					0.082					
Satd. Flow (perm)	1717	1717	1617	1921	1921	0	146	3614	0	1921	3804	1570
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			203									160
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		98.6			76.2			220.5			473.7	
Travel Time (s)		7.1			5.5			13.2			28.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	1%	0%	1%	0%	0%	0%	8%	1%	0%	0%	1%	4%
Adj. Flow (vph)	476	0	341	0	0	0	103	909	0	0	1477	314
Shared Lane Traffic (%)	50%											
Lane Group Flow (vph)	238	238	341	0	0	0	103	909	0	0	1477	314
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.9			4.9			4.9			4.9	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.92	0.99
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2		1	2		1	2	1
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1	30.5		6.1	30.5		6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1	1.8		6.1	1.8		6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot			pm+pt	NA		Perm	NA	Perm
Protected Phases	7	4		3	8		5	2			6	



Lanes, Volumes, Timings  
 1: Prince of Wales Drive & Colonnade Road/Access

2030 PM Future Total - Sensitivity

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases			4				2			6		6
Detector Phase	7	4	4	3	8		5	2		6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	5.0
Minimum Split (s)	11.0	26.0	26.0	11.0	17.0		12.0	36.0		36.0	36.0	36.0
Total Split (s)	36.0	42.0	42.0	11.0	17.0		17.0	97.0		80.0	80.0	80.0
Total Split (%)	24.0%	28.0%	28.0%	7.3%	11.3%		11.3%	64.7%		53.3%	53.3%	53.3%
Maximum Green (s)	30.0	36.0	36.0	5.0	11.0		10.0	90.0		73.0	73.0	73.0
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7		3.7	3.7		3.7	3.7	3.7
All-Red Time (s)	2.3	2.3	2.3	2.3	2.3		3.3	3.3		3.3	3.3	3.3
Lost Time Adjust (s)	-2.0	-3.0	0.0	-2.0	-3.0		-2.0	-3.0		0.0	-3.0	-3.0
Total Lost Time (s)	4.0	3.0	6.0	4.0	3.0		5.0	4.0		7.0	4.0	4.0
Lead/Lag	Lag	Lead	Lead	Lag	Lead		Lead			Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes			Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	None	None	None		None	C-Max		C-Max	C-Max	C-Max
Walk Time (s)		7.0	7.0					7.0		7.0	7.0	7.0
Flash Dont Walk (s)		13.0	13.0					22.0		22.0	22.0	22.0
Pedestrian Calls (#/hr)		0	0					0		0	0	0
Act Effct Green (s)	38.0	39.0	36.0				103.0	104.0			86.9	86.9
Actuated g/C Ratio	0.25	0.26	0.24				0.69	0.69			0.58	0.58
v/c Ratio	0.55	0.53	0.63				0.46	0.36			0.67	0.32
Control Delay	54.2	52.9	25.6				16.8	9.9			24.0	8.8
Queue Delay	0.0	0.0	0.0				0.0	0.0			0.0	0.0
Total Delay	54.2	52.9	25.6				16.8	9.9			24.0	8.8
LOS	D	D	C				B	A			C	A
Approach Delay		41.9						10.6			21.4	
Approach LOS		D						B			C	

Intersection Summary














Area Type: Other  
 Cycle Length: 150  
 Actuated Cycle Length: 150  
 Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green  
 Natural Cycle: 85  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.67  
 Intersection Signal Delay: 23.0      Intersection LOS: C  
 Intersection Capacity Utilization 68.5%      ICU Level of Service C  
 Analysis Period (min) 15

Splits and Phases: 1: Prince of Wales Drive & Colonnade Road/Access



Lanes, Volumes, Timings  
4: Prince of Wales Drive & Fisher Avenue

2030 PM Future Total - Sensitivity

						
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations			 			
Traffic Volume (vph)	5	678	402	771	876	21
Future Volume (vph)	5	678	402	771	876	21
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0	0.0	120.0			0.0
Storage Lanes	1	1	1			1
Taper Length (m)	2.5		50.0			
Lane Util. Factor	1.00	1.00	0.97	1.00	1.00	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1441	1502	3321	1767	1767	1473
Flt Permitted	0.950		0.227			
Satd. Flow (perm)	1441	1502	794	1767	1767	1473
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		438				11
Link Speed (k/h)	50			60	50	
Link Distance (m)	277.0			251.2	265.2	
Travel Time (s)	19.9			15.1	19.1	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	20%	3%	1%	3%	3%	5%
Adj. Flow (vph)	5	678	402	771	876	21
Shared Lane Traffic (%)						
Lane Group Flow (vph)	5	678	402	771	876	21
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	3.7			7.4	7.4	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	1.6			1.6	1.6	
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14	24			14
Number of Detectors	1	1	1	2	2	1
Detector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (m)	2.0	2.0	2.0	10.0	10.0	2.0
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0	2.0	2.0	0.6	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot	Free	pm+pt	NA	NA	Free
Protected Phases	4		5	2	6	

Lanes, Volumes, Timings  
4: Prince of Wales Drive & Fisher Avenue

2030 PM Future Total - Sensitivity



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases	Free		2			Free
Detector Phase	4		5	2	6	
Switch Phase						
Minimum Initial (s)	5.0		5.0	5.0	5.0	
Minimum Split (s)	22.5		11.0	32.5	32.0	
Total Split (s)	22.5		12.0	67.5	55.5	
Total Split (%)	25.0%		13.3%	75.0%	61.7%	
Maximum Green (s)	17.1		6.0	61.5	49.5	
Yellow Time (s)	3.3		3.7	3.7	3.7	
All-Red Time (s)	2.1		2.3	2.3	2.3	
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	
Total Lost Time (s)	5.4		6.0	6.0	6.0	
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0		3.0	3.0	3.0	
Recall Mode	None		None	C-Max	C-Max	
Walk Time (s)	7.0			17.0	17.0	
Flash Dont Walk (s)	10.0			9.0	9.0	
Pedestrian Calls (#/hr)	0			0	0	
Act Effct Green (s)	6.0	90.0	81.6	86.4	69.6	90.0
Actuated g/C Ratio	0.07	1.00	0.91	0.96	0.77	1.00
v/c Ratio	0.05	0.45	0.45	0.45	0.64	0.01
Control Delay	40.2	1.0	2.5	2.0	8.4	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.2	1.0	2.5	2.0	8.4	0.0
LOS	D	A	A	A	A	A
Approach Delay	1.3			2.1	8.2	
Approach LOS	A			A	A	

Intersection Summary

Area Type: Other  
 Cycle Length: 90  
 Actuated Cycle Length: 90  
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green  
 Natural Cycle: 90  
 Control Type: Actuated-Coordinated  
 Maximum v/c Ratio: 0.64  
 Intersection Signal Delay: 3.9  
 Intersection LOS: A  
 Intersection Capacity Utilization 79.4%  
 ICU Level of Service D  
 Analysis Period (min) 15

Splits and Phases: 4: Prince of Wales Drive & Fisher Avenue



Intersection: 1: Prince of Wales Drive & Colonnade Road/Access

Movement	EB	EB	NB	NB	NB	SB	SB	SB
Directions Served	L	LT	L	T	TR	T	T	R
Maximum Queue (m)	82.3	80.8	48.6	65.7	65.9	136.0	149.0	100.0
Average Queue (m)	55.8	54.7	19.2	31.8	30.8	74.2	78.5	34.3
95th Queue (m)	83.0	79.2	38.0	59.4	61.2	124.5	131.8	95.8
Link Distance (m)	77.9	77.9		207.4	207.4	451.0	451.0	
Upstream Blk Time (%)	3	1						
Queuing Penalty (veh)	7	3						
Storage Bay Dist (m)			130.0					50.0
Storage Blk Time (%)						14	16	
Queuing Penalty (veh)						0	49	

Intersection: 2: Colonnade Road South/Colonnade Road North & Colonnade Road

Movement	WB	WB	NB	SB
Directions Served	L	R	TR	LT
Maximum Queue (m)	63.8	37.5	35.2	106.8
Average Queue (m)	38.2	21.3	16.9	48.4
95th Queue (m)	61.2	33.1	30.1	89.8
Link Distance (m)	64.0	64.0	41.8	167.0
Upstream Blk Time (%)	1		0	
Queuing Penalty (veh)	2		1	
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Colonnade Road North & Citiplace Drive

Movement	EB	EB	WB	SB	SB
Directions Served	L	T	TR	L	R
Maximum Queue (m)	11.7	44.2	64.5	13.8	12.7
Average Queue (m)	3.2	20.8	35.1	4.2	4.9
95th Queue (m)	10.4	36.6	54.0	12.1	12.2
Link Distance (m)		125.0	200.2	101.7	
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)	50.0				20.0
Storage Blk Time (%)		0		0	0
Queuing Penalty (veh)		0		0	0

Intersection: 4: Prince of Wales Drive & Fisher Avenue

Movement	EB	NB	NB	NB	B15	SB
Directions Served	L	L	L	T	T	T
Maximum Queue (m)	11.1	35.0	37.4	31.3	1.3	94.7
Average Queue (m)	1.2	16.1	20.1	3.3	0.0	21.9
95th Queue (m)	6.3	29.2	33.7	18.0	0.9	62.8
Link Distance (m)	267.5		243.9	243.9	451.0	253.9
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)		120.0				
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 5: Site Access #1 & Colonnade Road

Movement	EB	EB	WB	NB
Directions Served	T	TR	LT	LR
Maximum Queue (m)	38.5	19.6	10.9	6.6
Average Queue (m)	3.7	0.9	0.6	0.5
95th Queue (m)	20.2	8.1	5.9	3.9
Link Distance (m)	64.0	64.0	77.9	31.9
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Colonnade Road South & Site Access #2

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (m)	18.3	5.1	35.1
Average Queue (m)	1.7	0.2	2.3
95th Queue (m)	9.8	3.0	15.6
Link Distance (m)	31.0	30.9	41.8
Upstream Blk Time (%)			0
Queuing Penalty (veh)			0
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 7: Colonnade Road South & Site Access #3

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (m)	9.0	19.4
Average Queue (m)	2.3	1.1
95th Queue (m)	8.7	9.3
Link Distance (m)	26.4	30.9
Upstream Blk Time (%)		0
Queuing Penalty (veh)		0
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 62

Intersection: 4: Prince of Wales Drive & Fisher Avenue

Movement	EB	EB	NB	NB	SB	SB
Directions Served	L	R	L	T	T	R
Maximum Queue (m)	17.7	75.8	94.8	42.2	268.6	272.6
Average Queue (m)	2.6	5.7	38.2	2.8	188.9	152.8
95th Queue (m)	11.0	46.1	75.3	18.2	358.6	367.4
Link Distance (m)	269.5	269.5	243.6	243.6	257.7	257.7
Upstream Blk Time (%)					57	40
Queuing Penalty (veh)					0	0
Storage Bay Dist (m)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 5: Site Access #1 & Colonnade Road

Movement	EB	EB	WB	NB
Directions Served	T	TR	LT	LR
Maximum Queue (m)	60.4	70.6	3.6	9.4
Average Queue (m)	11.4	20.0	0.2	0.7
95th Queue (m)	45.0	61.2	2.2	4.7
Link Distance (m)	64.0	64.0	82.1	31.9
Upstream Blk Time (%)	0	2		
Queuing Penalty (veh)	0	8		
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Colonnade Road South & Site Access #2

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (m)	19.2	13.6	27.4
Average Queue (m)	2.4	1.1	1.6
95th Queue (m)	11.7	10.0	12.3
Link Distance (m)	31.0	30.9	41.8
Upstream Blk Time (%)	0	0	0
Queuing Penalty (veh)	0	1	0
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 7: Colonnade Road South & Site Access #3

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (m)	10.3	7.3	17.0
Average Queue (m)	2.2	0.3	1.2
95th Queue (m)	8.6	4.7	9.6
Link Distance (m)	26.4	105.5	30.9
Upstream Blk Time (%)			0
Queuing Penalty (veh)			0
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 1522



# APPENDIX M

## TMD-SDDI and TDM Measures Checklists

## 125 Colonnade Road

### TDM-Supportive Development Design and Infrastructure Checklist: *Non-Residential Developments (office, institutional, retail or industrial)*

<b>Legend</b>	
<b>REQUIRED</b>	The Official Plan or Zoning By-law provides related guidance that must be followed
<b>BASIC</b>	The measure is generally feasible and effective, and in most cases would benefit the development and its users
<b>BETTER</b>	The measure could maximize support for users of sustainable modes, and optimize development performance

TDM-supportive design & infrastructure measures: <i>Non-residential developments</i>		Check if completed & add descriptions, explanations or plan/drawing references
<b>1. WALKING &amp; CYCLING: ROUTES</b>		
<b>1.1 Building location &amp; access points</b>		
<b>BASIC</b>	1.1.1 Locate building close to the street, and do not locate parking areas between the street and building entrances	<input type="checkbox"/>
<b>BASIC</b>	1.1.2 Locate building entrances in order to minimize walking distances to sidewalks and transit stops/stations	<input checked="" type="checkbox"/> Refer to Site Plan.
<b>BASIC</b>	1.1.3 Locate building doors and windows to ensure visibility of pedestrians from the building, for their security and comfort	<input type="checkbox"/>
<b>1.2 Facilities for walking &amp; cycling</b>		
<b>REQUIRED</b>	1.2.1 Provide convenient, direct access to stations or major stops along rapid transit routes within 600 metres; minimize walking distances from buildings to rapid transit; provide pedestrian-friendly, weather-protected (where possible) environment between rapid transit accesses and building entrances; ensure quality linkages from sidewalks through building entrances to integrated stops/stations ( <i>see Official Plan policy 4.3.3</i> )	<input checked="" type="checkbox"/> Refer to Site Plan. Transit stops within 400m of all building entrance/exit points.
<b>REQUIRED</b>	1.2.2 Provide safe, direct and attractive pedestrian access from public sidewalks to building entrances through such measures as: reducing distances between public sidewalks and major building entrances; providing walkways from public streets to major building entrances; within a site, providing walkways along the front of adjoining buildings, between adjacent buildings, and connecting areas where people may congregate, such as courtyards and transit stops; and providing weather protection through canopies, colonnades, and other design elements wherever possible ( <i>see Official Plan policy 4.3.12</i> )	<input checked="" type="checkbox"/> Refer to Site Plan. To be provided as applicable.

## 125 Colonnade Road

TDM-supportive design & infrastructure measures: <i>Non-residential developments</i>		Check if completed & add descriptions, explanations or plan/drawing references
REQUIRED	1.2.3 Provide sidewalks of smooth, well-drained walking surfaces of contrasting materials or treatments to differentiate pedestrian areas from vehicle areas, and provide marked pedestrian crosswalks at intersection sidewalks ( <i>see Official Plan policy 4.3.10</i> )	<input checked="" type="checkbox"/> To be provided as applicable for site location.
REQUIRED	1.2.4 Make sidewalks and open space areas easily accessible through features such as gradual grade transition, depressed curbs at street corners and convenient access to extra-wide parking spaces and ramps ( <i>see Official Plan policy 4.3.10</i> )	<input checked="" type="checkbox"/> To be provided as applicable for site location.
REQUIRED	1.2.5 Include adequately spaced inter-block/street cycling and pedestrian connections to facilitate travel by active transportation. Provide links to the existing or planned network of public sidewalks, multi-use pathways and on-road cycle routes. Where public sidewalks and multi-use pathways intersect with roads, consider providing traffic control devices to give priority to cyclists and pedestrians ( <i>see Official Plan policy 4.3.11</i> )	<input checked="" type="checkbox"/> To be provided as applicable for site location.
BASIC	1.2.6 Provide safe, direct and attractive walking routes from building entrances to nearby transit stops	<input checked="" type="checkbox"/>
BASIC	1.2.7 Ensure that walking routes to transit stops are secure, visible, lighted, shaded and wind-protected wherever possible	<input checked="" type="checkbox"/>
BASIC	1.2.8 Design roads used for access or circulation by cyclists using a target operating speed of no more than 30 km/h, or provide a separated cycling facility	<input type="checkbox"/>
<b>1.3 Amenities for walking &amp; cycling</b>		
BASIC	1.3.1 Provide lighting, landscaping and benches along walking and cycling routes between building entrances and streets, sidewalks and trails	<input type="checkbox"/>
BASIC	1.3.2 Provide wayfinding signage for site access (where required, e.g. when multiple buildings or entrances exist) and egress (where warranted, such as when directions to reach transit stops/stations, trails or other common destinations are not obvious)	<input type="checkbox"/>

## 125 Colonnade Road

TDM-supportive design & infrastructure measures: <i>Non-residential developments</i>		Check if completed & add descriptions, explanations or plan/drawing references
<b>2. WALKING &amp; CYCLING: END-OF-TRIP FACILITIES</b>		
<b>2.1 Bicycle parking</b>		
REQUIRED	2.1.1 Provide bicycle parking in highly visible and lighted areas, sheltered from the weather wherever possible (see <i>Official Plan policy 4.3.6</i> )	<input checked="" type="checkbox"/>
REQUIRED	2.1.2 Provide the number of bicycle parking spaces specified for various land uses in different parts of Ottawa; provide convenient access to main entrances or well-used areas (see <i>Zoning By-law Section 111</i> )	<input checked="" type="checkbox"/> 18 Bicycle Parking Spaces are proposed to be provided, in compliance with the City of Ottawa Zoning By-Law Requirements.
REQUIRED	2.1.3 Ensure that bicycle parking spaces and access aisles meet minimum dimensions; that no more than 50% of spaces are vertical spaces; and that parking racks are securely anchored (see <i>Zoning By-law Section 111</i> )	<input checked="" type="checkbox"/>
BASIC	2.1.4 Provide bicycle parking spaces equivalent to the expected number of commuter cyclists (assuming the cycling mode share target is met), plus the expected peak number of customer/visitor cyclists	<input checked="" type="checkbox"/> Bicycle parking supply is expected to adequately accommodate peak demands.
BETTER	2.1.5 Provide bicycle parking spaces equivalent to the expected number of commuter and customer/visitor cyclists, plus an additional buffer (e.g. 25 percent extra) to encourage other cyclists and ensure adequate capacity in peak cycling season	<input type="checkbox"/>
<b>2.2 Secure bicycle parking</b>		
REQUIRED	2.2.1 Where more than 50 bicycle parking spaces are provided for a single office building, locate at least 25% of spaces within a building/structure, a secure area (e.g. supervised parking lot or enclosure) or bicycle lockers (see <i>Zoning By-law Section 111</i> )	<input type="checkbox"/> Not Applicable
BETTER	2.2.2 Provide secure bicycle parking spaces equivalent to the expected number of commuter cyclists (assuming the cycling mode share target is met)	<input type="checkbox"/>
<b>2.3 Shower &amp; change facilities</b>		
BASIC	2.3.1 Provide shower and change facilities for the use of active commuters	<input type="checkbox"/>
BETTER	2.3.2 In addition to shower and change facilities, provide dedicated lockers, grooming stations, drying racks and laundry facilities for the use of active commuters	<input type="checkbox"/>
<b>2.4 Bicycle repair station</b>		
BETTER	2.4.1 Provide a permanent bike repair station, with commonly used tools and an air pump, adjacent to the main bicycle parking area (or secure bicycle parking area, if provided)	<input type="checkbox"/>

## 125 Colonnade Road

TDM-supportive design & infrastructure measures: <i>Non-residential developments</i>		Check if completed & add descriptions, explanations or plan/drawing references
<b>3. TRANSIT</b>		
<b>3.1 Customer amenities</b>		
BASIC	3.1.1 Provide shelters, lighting and benches at any on-site transit stops	<input type="checkbox"/>
BASIC	3.1.2 Where the site abuts an off-site transit stop and insufficient space exists for a transit shelter in the public right-of-way, protect land for a shelter and/or install a shelter	<input type="checkbox"/>
BETTER	3.1.3 Provide a secure and comfortable interior waiting area by integrating any on-site transit stops into the building	<input type="checkbox"/>
<b>4. RIDESHARING</b>		
<b>4.1 Pick-up &amp; drop-off facilities</b>		
BASIC	4.1.1 Provide a designated area for carpool drivers (plus taxis and ride-hailing services) to drop off or pick up passengers without using fire lanes or other no-stopping zones	<input type="checkbox"/>
<b>4.2 Carpool parking</b>		
BASIC	4.2.1 Provide signed parking spaces for carpools in a priority location close to a major building entrance, sufficient in number to accommodate the mode share target for carpools	<input type="checkbox"/>
BETTER	4.2.2 At large developments, provide spaces for carpools in a separate, access-controlled parking area to simplify enforcement	<input type="checkbox"/>
<b>5. CARSHARING &amp; BIKESHARING</b>		
<b>5.1 Carshare parking spaces</b>		
BETTER	5.1.1 Provide carshare parking spaces in permitted non-residential zones, occupying either required or provided parking spaces ( <i>see Zoning By-law Section 94</i> )	<input type="checkbox"/>
<b>5.2 Bikeshare station location</b>		
BETTER	5.2.1 Provide a designated bikeshare station area near a major building entrance, preferably lighted and sheltered with a direct walkway connection	<input type="checkbox"/>

125 Colonnade Road

TDM-supportive design & infrastructure measures: <i>Non-residential developments</i>		Check if completed & add descriptions, explanations or plan/drawing references
<b>6. PARKING</b>		
<b>6.1 Number of parking spaces</b>		
<b>REQUIRED</b>	6.1.1 Do not provide more parking than permitted by zoning, nor less than required by zoning, unless a variance is being applied for	<input checked="" type="checkbox"/> Noted
<b>BASIC</b>	6.1.2 Provide parking for long-term and short-term users that is consistent with mode share targets, considering the potential for visitors to use off-site public parking	<input type="checkbox"/>
<b>BASIC</b>	6.1.3 Where a site features more than one use, provide shared parking and reduce the cumulative number of parking spaces accordingly ( <i>see Zoning By-law Section 104</i> )	<input type="checkbox"/>
<b>BETTER</b>	6.1.4 Reduce the minimum number of parking spaces required by zoning by one space for each 13 square metres of gross floor area provided as shower rooms, change rooms, locker rooms and other facilities for cyclists in conjunction with bicycle parking ( <i>see Zoning By-law Section 111</i> )	<input type="checkbox"/>
<b>6.2 Separate long-term &amp; short-term parking areas</b>		
<b>BETTER</b>	6.2.1 Separate short-term and long-term parking areas using signage or physical barriers, to permit access controls and simplify enforcement (i.e. to discourage employees from parking in visitor spaces, and vice versa)	<input type="checkbox"/>
<b>7. OTHER</b>		
<b>7.1 On-site amenities to minimize off-site trips</b>		
<b>BETTER</b>	7.1.1 Provide on-site amenities to minimize mid-day or mid-commute errands	<input type="checkbox"/>

125 Colonnade Road

**TDM Measures Checklist:**

*Non-Residential Developments (office, institutional, retail or industrial)*

**Legend**

<b>BASIC</b>	The measure is generally feasible and effective, and in most cases would benefit the development and its users
<b>BETTER</b>	The measure could maximize support for users of sustainable modes, and optimize development performance
★	The measure is one of the most dependably effective tools to encourage the use of sustainable modes

TDM measures: <i>Non-residential developments</i>		Check if proposed & add descriptions
<b>1. TDM PROGRAM MANAGEMENT</b>		
<b>1.1 Program coordinator</b>		
<b>BASIC</b>	★	1.1.1 Designate an internal coordinator, or contract with an external coordinator <input checked="" type="checkbox"/> To be considered by proponent or future tenants.
<b>1.2 Travel surveys</b>		
<b>BETTER</b>		1.2.1 Conduct periodic surveys to identify travel-related behaviours, attitudes, challenges and solutions, and to track progress <input type="checkbox"/>
<b>2. WALKING AND CYCLING</b>		
<b>2.1 Information on walking/cycling routes &amp; destinations</b>		
<b>BASIC</b>		2.1.1 Display local area maps with walking/cycling access routes and key destinations at major entrances <input checked="" type="checkbox"/> To be provided as applicable for site location
<b>2.2 Bicycle skills training</b>		
<i>Commuter travel</i>		
<b>BETTER</b>	★	2.2.1 Offer on-site cycling courses for commuters, or subsidize off-site courses <input type="checkbox"/>
<b>2.3 Valet bike parking</b>		
<i>Visitor travel</i>		
<b>BETTER</b>		2.3.1 Offer secure valet bike parking during public events when demand exceeds fixed supply (e.g. for festivals, concerts, games) <input type="checkbox"/>

125 Colonnade Road

TDM measures: <i>Non-residential developments</i>		Check if proposed & add descriptions
<b>3. TRANSIT</b>		
<b>3.1 Transit information</b>		
BASIC	3.1.1 Display relevant transit schedules and route maps at entrances	<input checked="" type="checkbox"/> To be coordination with OC Transpo & STO.
BASIC	3.1.2 Provide online links to OC Transpo and STO information	<input checked="" type="checkbox"/> To be provided by proponent or future tenant.
BETTER	3.1.3 Provide real-time arrival information display at entrances	<input type="checkbox"/>
<b>3.2 Transit fare incentives</b>		
<i>Commuter travel</i>		
BETTER	3.2.1 Offer preloaded PRESTO cards to encourage commuters to use transit	<input type="checkbox"/>
BETTER ★	3.2.2 Subsidize or reimburse monthly transit pass purchases by employees	<input type="checkbox"/>
<i>Visitor travel</i>		
BETTER	3.2.3 Arrange inclusion of same-day transit fare in price of tickets (e.g. for festivals, concerts, games)	<input type="checkbox"/>
<b>3.3 Enhanced public transit service</b>		
<i>Commuter travel</i>		
BETTER	3.3.1 Contract with OC Transpo to provide enhanced transit services (e.g. for shift changes, weekends)	<input type="checkbox"/>
<i>Visitor travel</i>		
BETTER	3.3.2 Contract with OC Transpo to provide enhanced transit services (e.g. for festivals, concerts, games)	<input type="checkbox"/>
<b>3.4 Private transit service</b>		
<i>Commuter travel</i>		
BETTER	3.4.1 Provide shuttle service when OC Transpo cannot offer sufficient quality or capacity to serve demand (e.g. for shift changes, weekends)	<input type="checkbox"/>
<i>Visitor travel</i>		
BETTER	3.4.2 Provide shuttle service when OC Transpo cannot offer sufficient quality or capacity to serve demand (e.g. for festivals, concerts, games)	<input type="checkbox"/>



## 125 Colonnade Road

TDM measures: <i>Non-residential developments</i>		Check if proposed & add descriptions
<b>4. RIDESHARING</b>		
<b>4.1 Ridematching service</b>		
<i>Commuter travel</i>		
BASIC	★ 4.1.1 Provide a dedicated ridematching portal at OttawaRideMatch.com	<input checked="" type="checkbox"/> To be explored by future tenants.
<b>4.2 Carpool parking price incentives</b>		
<i>Commuter travel</i>		
BETTER	4.2.1 Provide discounts on parking costs for registered carpools	<input type="checkbox"/>
<b>4.3 Vanpool service</b>		
<i>Commuter travel</i>		
BETTER	4.3.1 Provide a vanpooling service for long-distance commuters	<input type="checkbox"/>
<b>5. CARSHARING &amp; BIKESHARING</b>		
<b>5.1 Bikeshare stations &amp; memberships</b>		
BETTER	5.1.1 Contract with provider to install on-site bikeshare station for use by commuters and visitors	<input type="checkbox"/>
<i>Commuter travel</i>		
BETTER	5.1.2 Provide employees with bikeshare memberships for local business travel	<input type="checkbox"/>
<b>5.2 Carshare vehicles &amp; memberships</b>		
<i>Commuter travel</i>		
BETTER	5.2.1 Contract with provider to install on-site carshare vehicles and promote their use by tenants	<input type="checkbox"/>
BETTER	5.2.2 Provide employees with carshare memberships for local business travel	<input type="checkbox"/>
<b>6. PARKING</b>		
<b>6.1 Priced parking</b>		
<i>Commuter travel</i>		
BASIC	★ 6.1.1 Charge for long-term parking (daily, weekly, monthly)	<input type="checkbox"/>
BASIC	6.1.2 Unbundle parking cost from lease rates at multi-tenant sites	<input type="checkbox"/>
<i>Visitor travel</i>		
BETTER	6.1.3 Charge for short-term parking (hourly)	<input type="checkbox"/>

125 Colonnade Road

TDM measures: <i>Non-residential developments</i>		Check if proposed & add descriptions
<b>7. TDM MARKETING &amp; COMMUNICATIONS</b>		
<b>7.1 Multimodal travel information</b>		
<i>Commuter travel</i>		
BASIC ★	7.1.1 Provide a multimodal travel option information package to new/relocating employees and students	<input checked="" type="checkbox"/> To be provided.
<i>Visitor travel</i>		
BETTER ★	7.1.2 Include multimodal travel option information in invitations or advertising that attract visitors or customers (e.g. for festivals, concerts, games)	<input type="checkbox"/>
<b>7.2 Personalized trip planning</b>		
<i>Commuter travel</i>		
BETTER ★	7.2.1 Offer personalized trip planning to new/relocating employees	<input type="checkbox"/>
<b>7.3 Promotions</b>		
<i>Commuter travel</i>		
BETTER	7.3.1 Deliver promotions and incentives to maintain awareness, build understanding, and encourage trial of sustainable modes	<input type="checkbox"/>
<b>8. OTHER INCENTIVES &amp; AMENITIES</b>		
<b>8.1 Emergency ride home</b>		
<i>Commuter travel</i>		
BETTER ★	8.1.1 Provide emergency ride home service to non-driving commuters	<input type="checkbox"/>
<b>8.2 Alternative work arrangements</b>		
<i>Commuter travel</i>		
BASIC ★	8.2.1 Encourage flexible work hours	<input checked="" type="checkbox"/> As applicable for the development
BETTER	8.2.2 Encourage compressed workweeks	<input type="checkbox"/>
BETTER ★	8.2.3 Encourage telework	<input type="checkbox"/>
<b>8.3 Local business travel options</b>		
<i>Commuter travel</i>		
BASIC ★	8.3.1 Provide local business travel options that minimize the need for employees to bring a personal car to work	<input type="checkbox"/>
<b>8.4 Commuter incentives</b>		
<i>Commuter travel</i>		
BETTER	8.4.1 Offer employees a taxable, mode-neutral commuting allowance	<input type="checkbox"/>
<b>8.5 On-site amenities</b>		
<i>Commuter travel</i>		
BETTER	8.5.1 Provide on-site amenities/services to minimize mid-day or mid-commute errands	<input type="checkbox"/>

# FIGURES



125 COLONNADE ROAD  
 CORBETT LAND STRATEGIES INC.  
 CITY OF OTTAWA

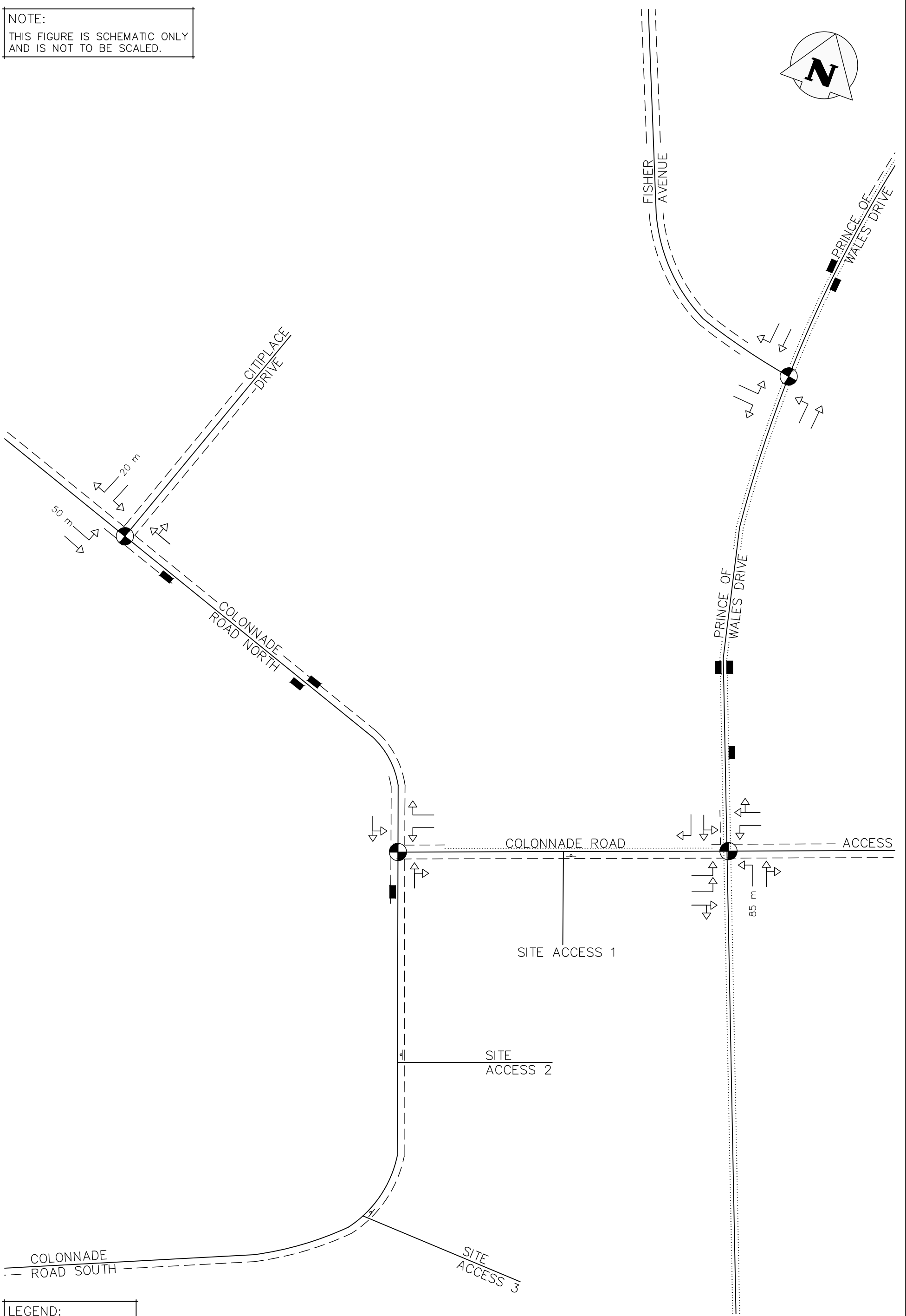
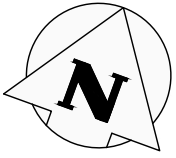


211 YONGE STREET  
 SUITE 301  
 TORONTO, ON M5B 1M4  
 416-477-3392 T  
 WWW.CFCROZIER.CA

SITE LOCATION PLAN

Drawn	R.L.	Design	A.H.	Project No.	2112-6218
Date	2022/03/11	Check	A.H.	Scale	N.T.S.
				Dwg.	FIG. 01

NOTE:  
THIS FIGURE IS SCHEMATIC ONLY  
AND IS NOT TO BE SCALED.



LEGEND:

	SIGNAL CONTROL
	STOP CONTROL
	BUS STOP
	PEDESTRIAN SIDEWALK
	CYCLING PATH

125 COLONNADE ROAD  
CORBETT LAND STRATEGIES INC.  
CITY OF OTTAWA

BOUNDARY ROAD NETWORK

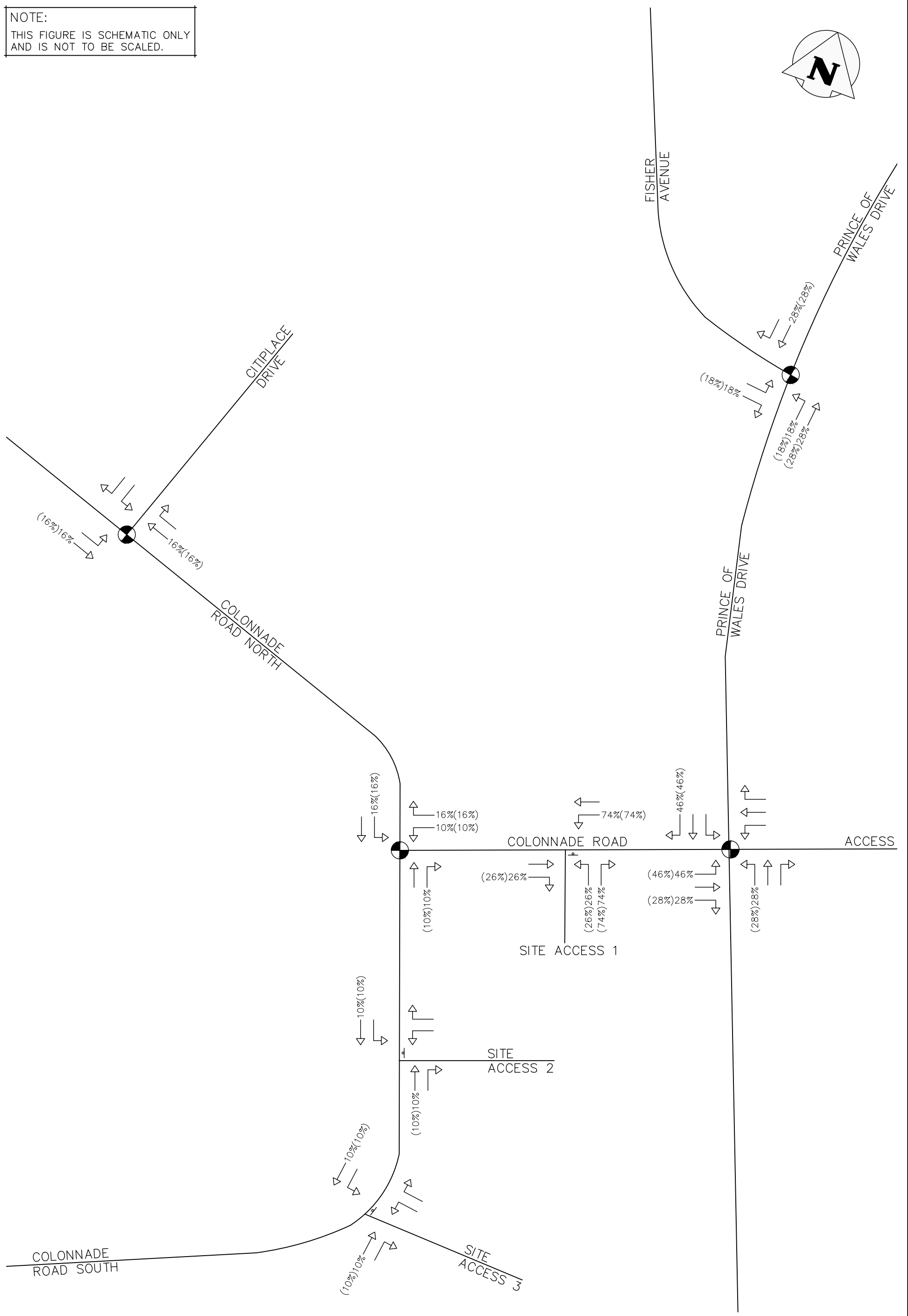
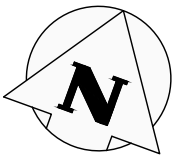


**CROZIER**  
CONSULTING ENGINEERS

211 YONGE STREET  
SUITE 301  
TORONTO, ON M5B 1M4  
416-477-3392 T  
WWW.CFCROZIER.CA

Drawn	R.L.	Design	A.H.	Project No.	2112-6218
Date	2022/03/11	Check	A.H.	Scale	N.T.S.
					Dwg. FIG. 02

NOTE:  
THIS FIGURE IS SCHEMATIC ONLY  
AND IS NOT TO BE SCALED.



LEGEND:

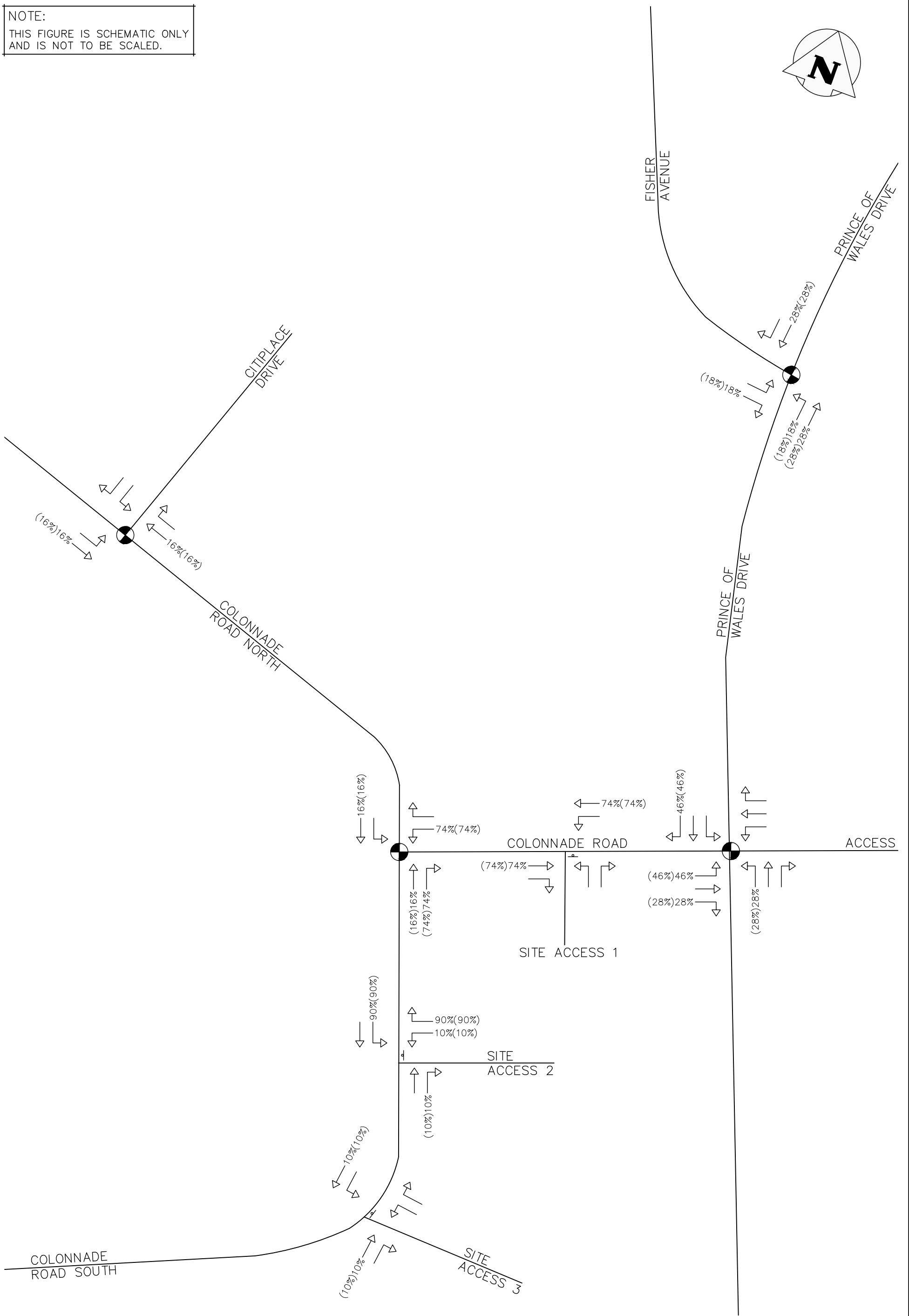
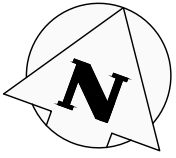
	SIGNAL CONTROL
	STOP CONTROL
AM(PM)	WEEKDAY AM(PM) TRIP DISTRIBUTION

125 COLONNADE ROAD  
CORBETT LAND STRATEGIES INC.  
CITY OF OTTAWA

TRIP DISTRIBUTION – SITE ACCESS #1

<b>CROZIER</b> CONSULTING ENGINEERS		211 YONGE STREET SUITE 301 TORONTO, ON M5B 1M4 416-477-3392 T WWW.CFCROZIER.CA	
		Drawn R.L. Design A.H. Project No. 2112-6218 Date 2022/03/11 Check A.H. Scale N.T.S. Dwg. FIG. 03	

NOTE:  
THIS FIGURE IS SCHEMATIC ONLY  
AND IS NOT TO BE SCALED.



LEGEND:

	SIGNAL CONTROL
	STOP CONTROL
AM(PM)	WEEKDAY AM(PM) TRIP DISTRIBUTION

125 COLONNADE ROAD  
CORBETT LAND STRATEGIES INC.  
CITY OF OTTAWA

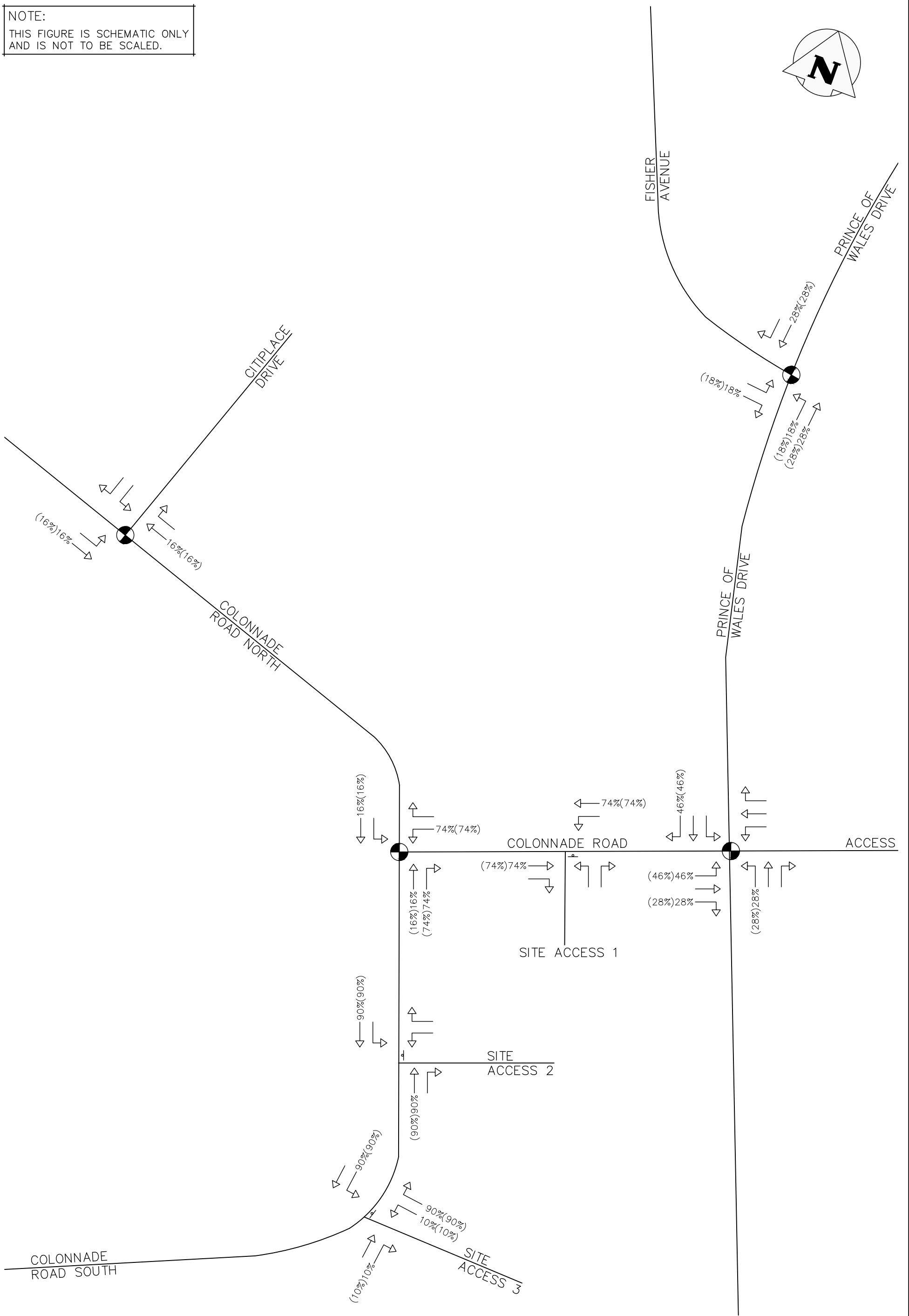
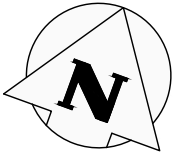
TRIP DISTRIBUTION – SITE ACCESS #2



211 YONGE STREET  
SUITE 301  
TORONTO, ON M5B 1M4  
416-477-3392 T  
WWW.CFCROZIER.CA

Drawn	R.L.	Design	A.H.	Project No.	2112-6218	
Date	2022/03/11	Check	A.H.	Scale	N.T.S	
					Dwg.	FIG. 04

NOTE:  
THIS FIGURE IS SCHEMATIC ONLY  
AND IS NOT TO BE SCALED.



LEGEND:

	SIGNAL CONTROL
	STOP CONTROL
AM(PM)	WEEKDAY AM(PM) TRIP DISTRIBUTION

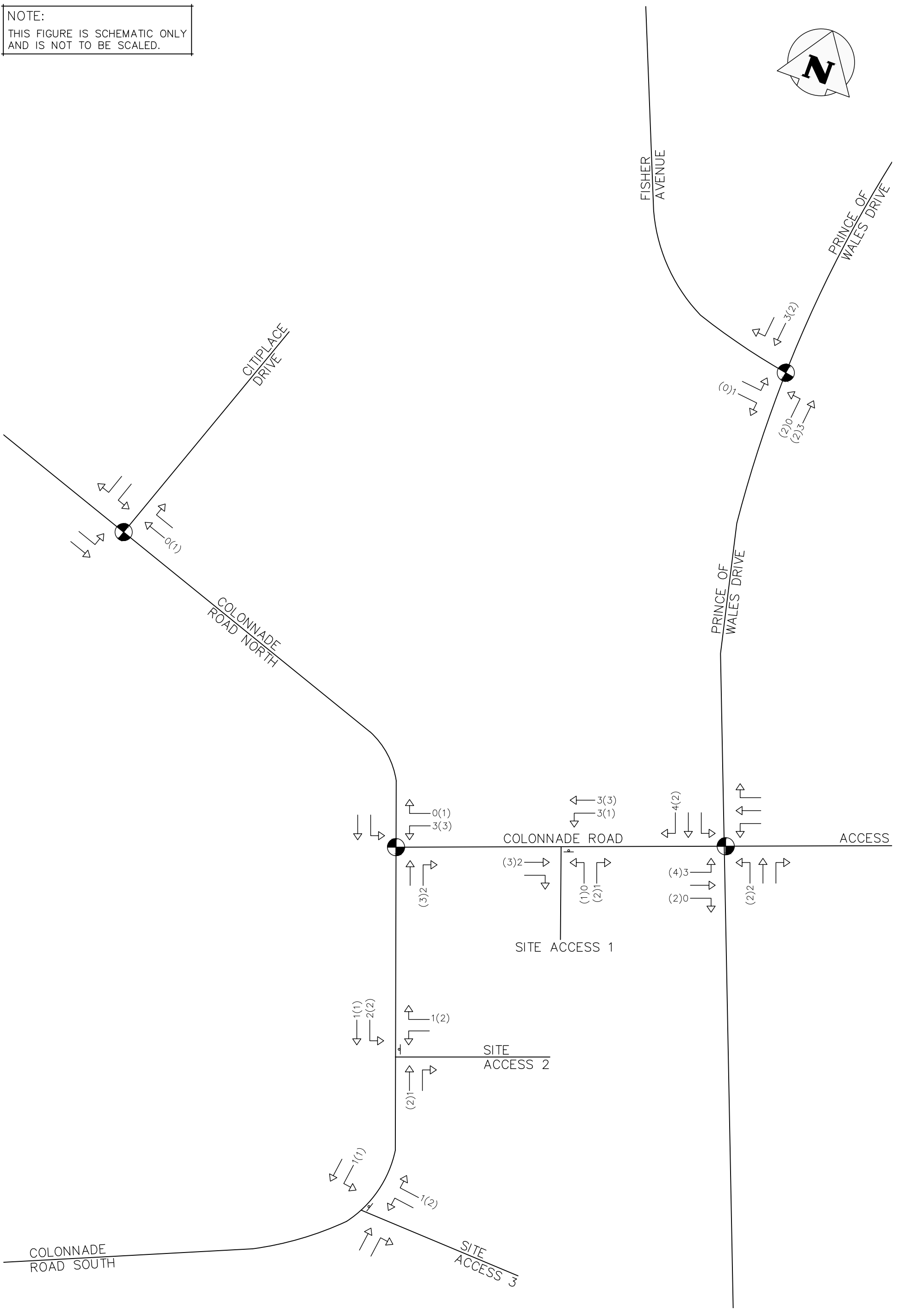
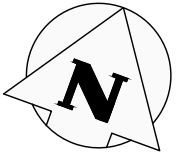
125 COLONNADE ROAD  
CORBETT LAND STRATEGIES INC.  
CITY OF OTTAWA

TRIP DISTRIBUTION – SITE ACCESS #3

	<b>CROZIER</b> CONSULTING ENGINEERS		211 YONGE STREET SUITE 301 TORONTO, ON M5B 1M4 416-477-3392 T WWW.CFCROZIER.CA	
	Drawn 2022/03/11	Design R.L.	Project No. A.H. 2112-6218	Scale N.T.S.



NOTE:  
THIS FIGURE IS SCHEMATIC ONLY  
AND IS NOT TO BE SCALED.



LEGEND:

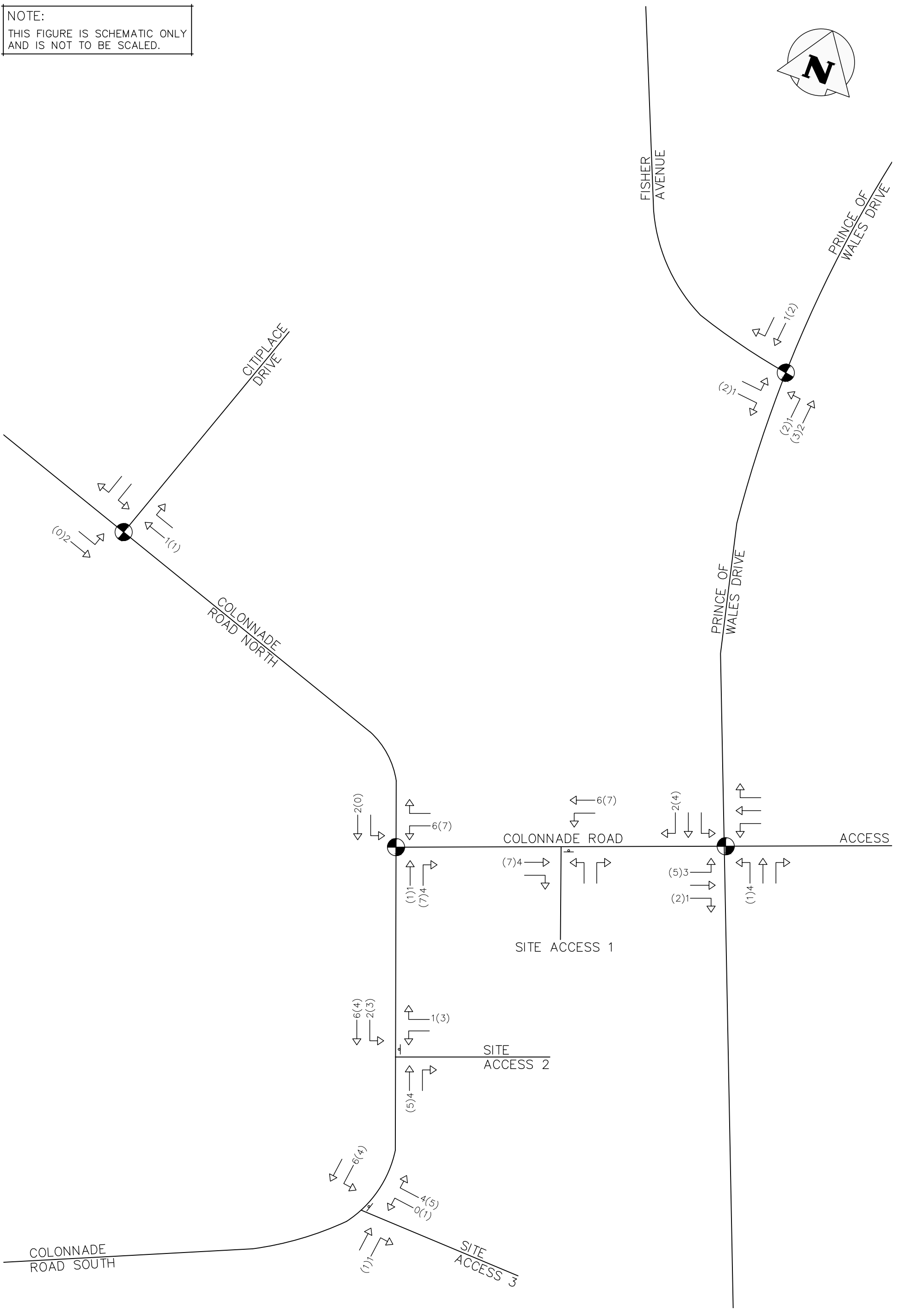
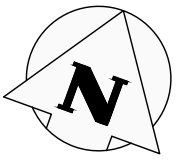
	SIGNAL CONTROL
	STOP CONTROL
AM(PM)	WEEKDAY AM(PM) TRIP DISTRIBUTION

125 COLONNADE ROAD  
CORBETT LAND STRATEGIES INC.  
CITY OF OTTAWA

SITE TRIP ASSIGNMENT –  
EXISTING BUILDING

		211 YONGE STREET SUITE 301 TORONTO, ON M5B 1M4 416-477-3392 T WWW.CFCROZIER.CA				
Drawn	R.L.	Design	A.H.	Project No.	2112-6218	
Date	2022/03/11	Check	A.H.	Scale	N.T.S.	
					Dwg.	FIG. 06

NOTE:  
THIS FIGURE IS SCHEMATIC ONLY  
AND IS NOT TO BE SCALED.



LEGEND:

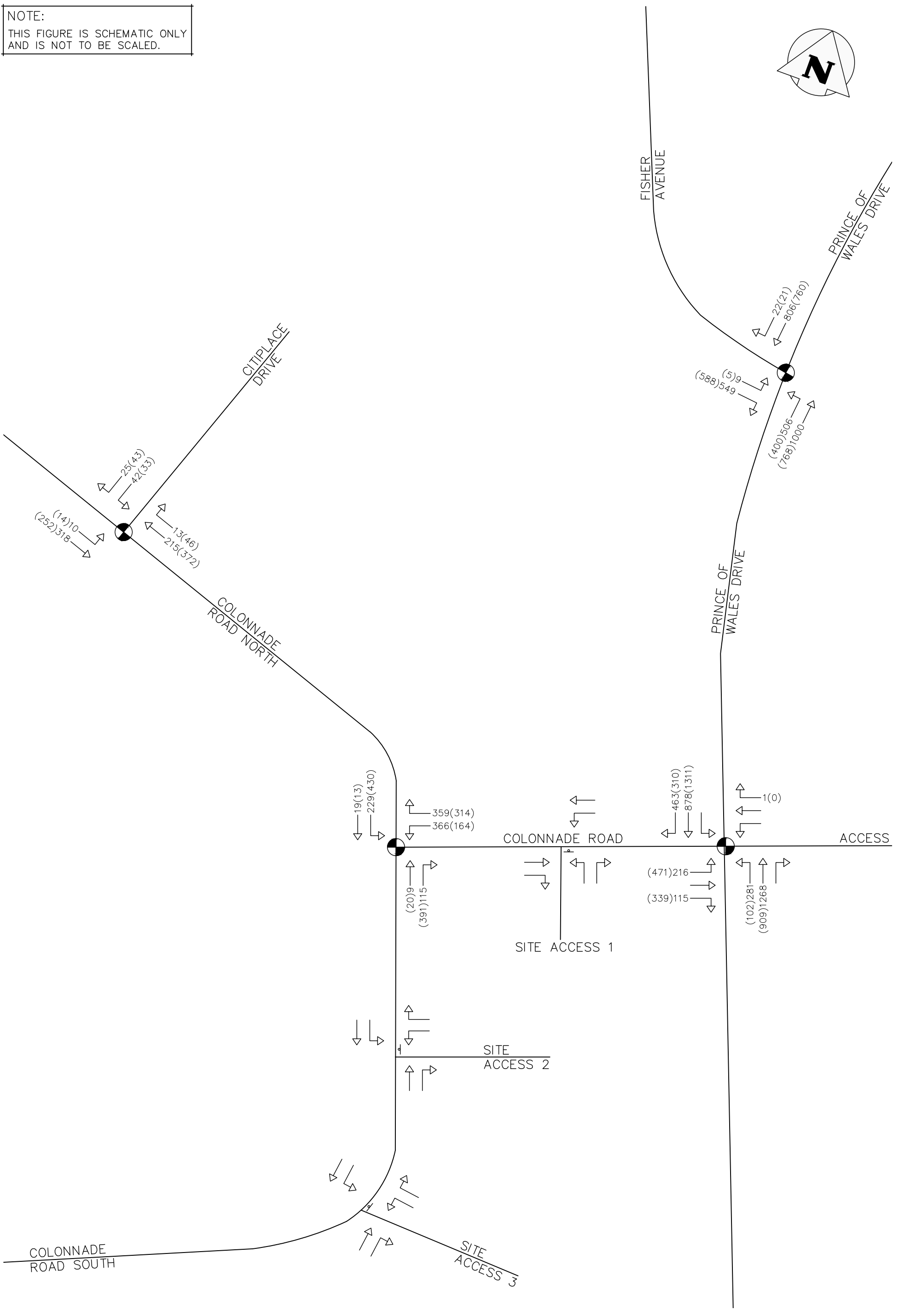
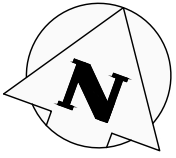
	SIGNAL CONTROL
	STOP CONTROL
AM(PM)	WEEKDAY AM(PM) TRIP DISTRIBUTION

125 COLONNADE ROAD  
CORBETT LAND STRATEGIES INC.  
CITY OF OTTAWA

SITE TRIP ASSIGNMENT –  
NEW SITE TRIPS

		211 YONGE STREET SUITE 301 TORONTO, ON M5B 1M4 416-477-3392 T WWW.CFCROZIER.CA				
Drawn	R.L.	Design	A.H.	Project No.	2112-6218	
Date	2022/03/11	Check	A.H.	Scale	N.T.S.	
					Dwg.	FIG. 07

NOTE:  
THIS FIGURE IS SCHEMATIC ONLY  
AND IS NOT TO BE SCALED.



**LEGEND:**

- SIGNAL CONTROL
- STOP CONTROL
- AM(PM) WEEKDAY AM(PM) TRIP DISTRIBUTION

125 COLONNADE ROAD  
CORBETT LAND STRATEGIES INC.  
CITY OF OTTAWA

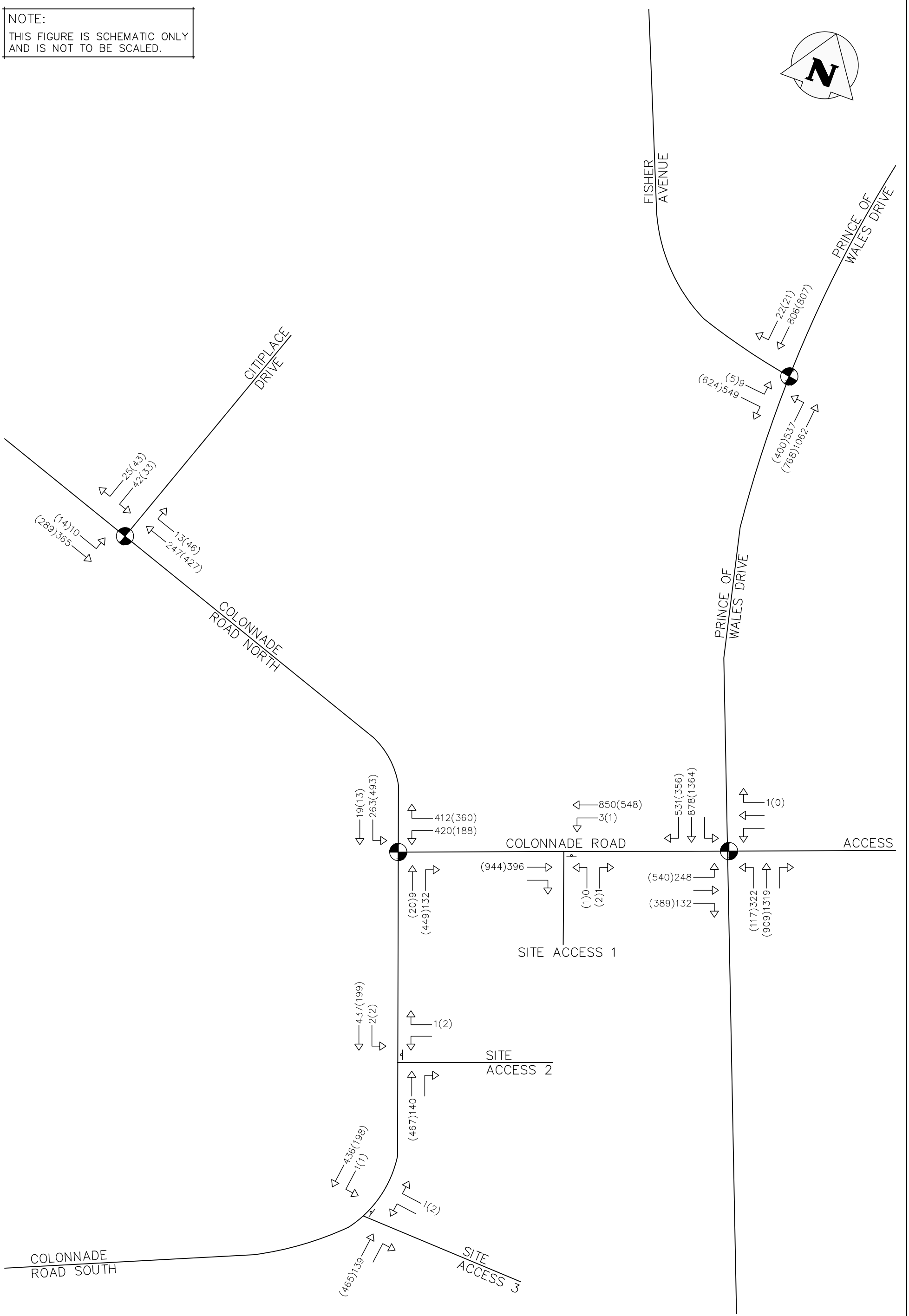
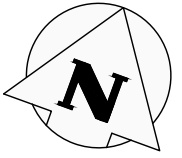
TURNING MOVEMENT COUNTS  
PEAK HOUR SUMMARY

**CROZIER**  
CONSULTING ENGINEERS

211 YONGE STREET  
SUITE 301  
TORONTO, ON M5B 1M4  
416-477-3392 T  
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Drawn	R.L.	Design	A.H.	Project No.	2112-6218	
Date	2022/03/11	Check	A.H.	Scale	N.T.S	
					Dwg.	FIG. 08

NOTE:  
THIS FIGURE IS SCHEMATIC ONLY  
AND IS NOT TO BE SCALED.



LEGEND:

- SIGNAL CONTROL
- STOP CONTROL
- AM(PM) WEEKDAY AM(PM) TRIP DISTRIBUTION

125 COLONNADE ROAD  
CORBETT LAND STRATEGIES INC.  
CITY OF OTTAWA

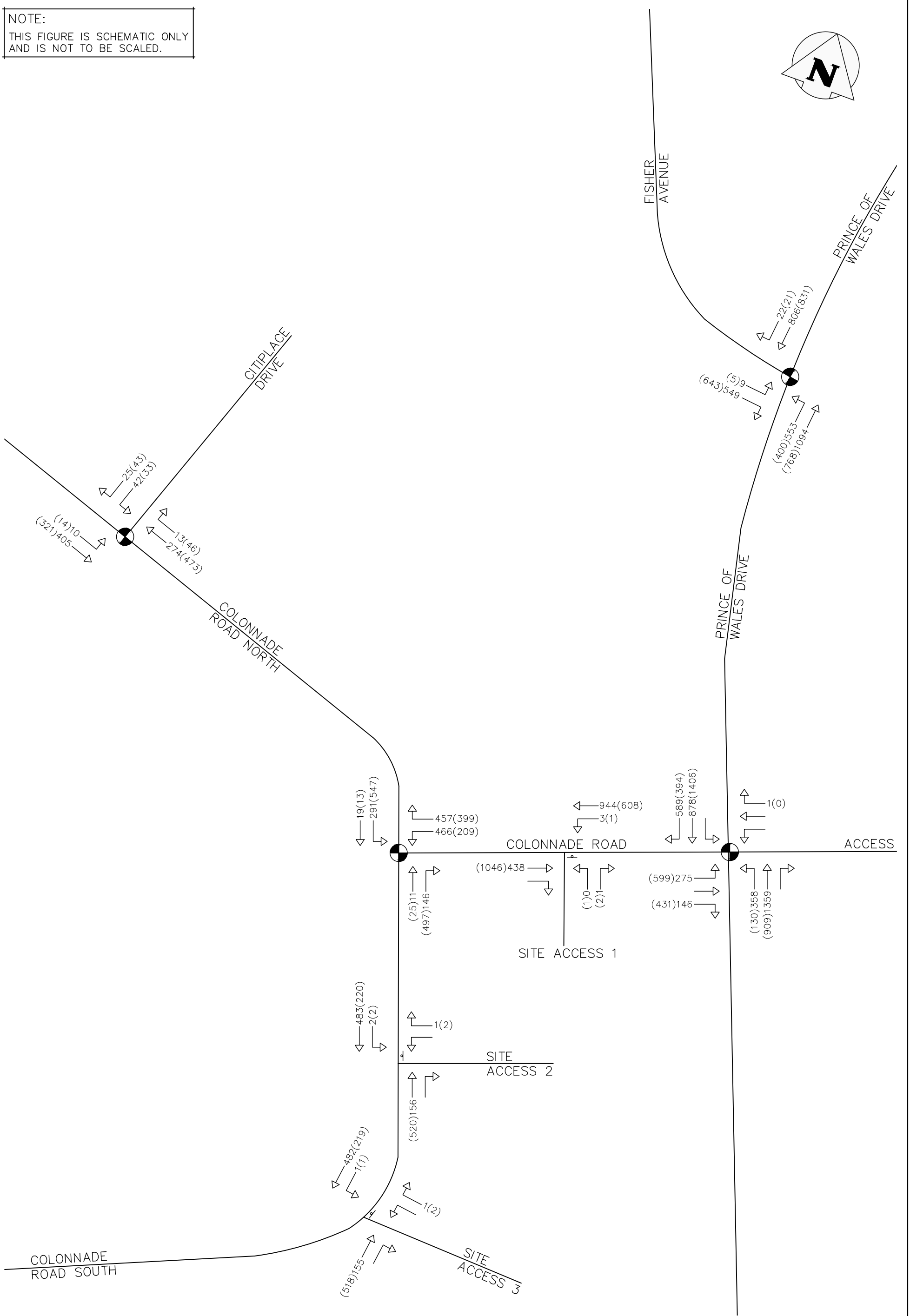
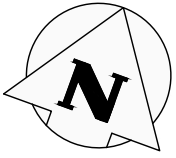
2022 ADJUSTED EXISTING  
TRAFFIC VOLUMES

**CROZIER**  
CONSULTING ENGINEERS

211 YONGE STREET  
SUITE 301  
TORONTO, ON M5B 1M4  
416-477-3392 T  
WWW.CFCROZIER.CA

Drawn	R.L.	Design	A.H.	Project No.	2112-6218
Date	2022/03/11	Check	A.H.	Scale	N.T.S
					Dwg. FIG. 09

NOTE:  
THIS FIGURE IS SCHEMATIC ONLY  
AND IS NOT TO BE SCALED.



LEGEND:

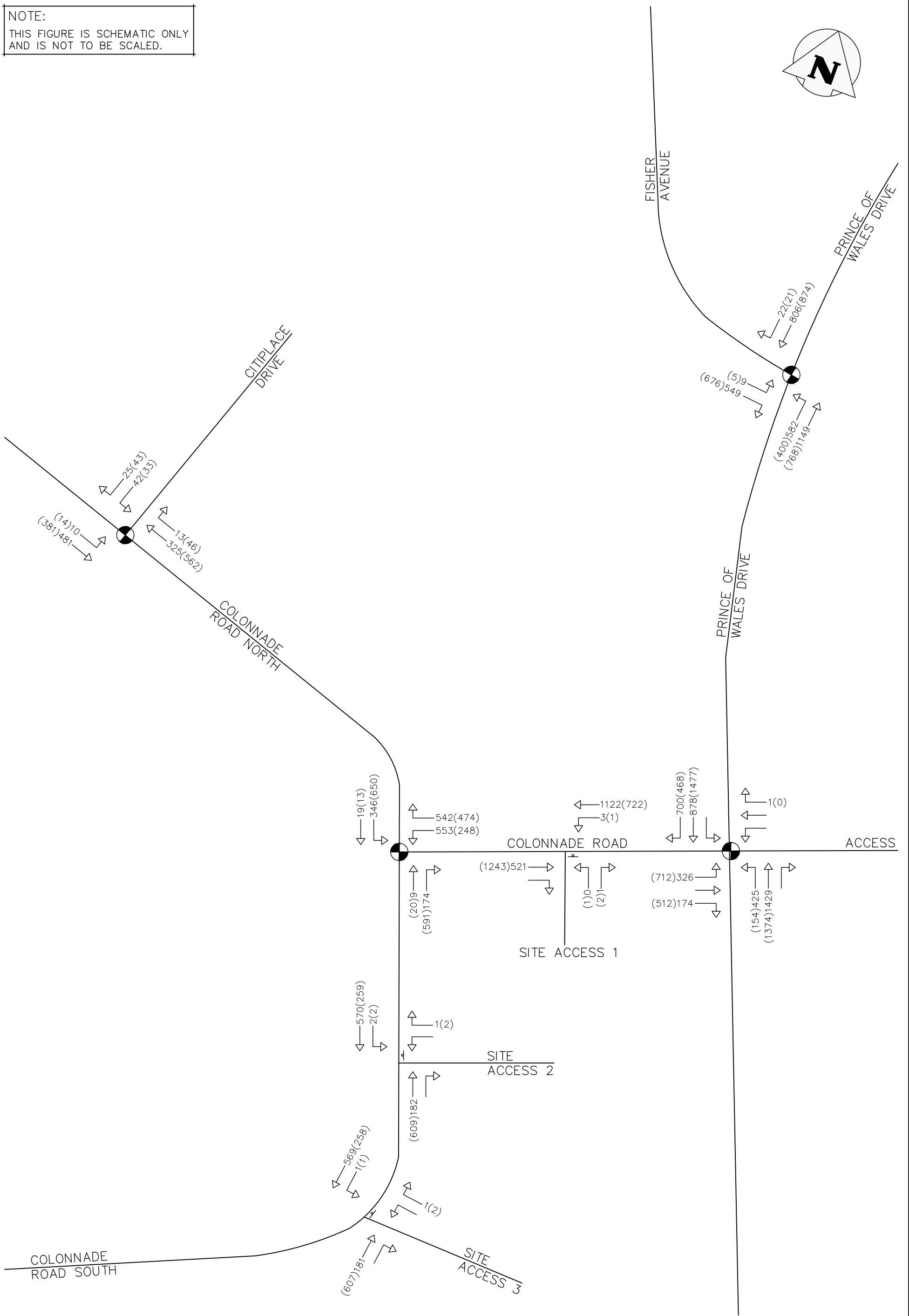
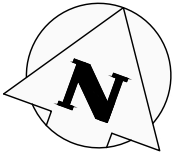
- SIGNAL CONTROL
- STOP CONTROL
- AM(PM) WEEKDAY AM(PM) TRIP DISTRIBUTION

125 COLONNADE ROAD  
CORBETT LAND STRATEGIES INC.  
CITY OF OTTAWA

2025 FUTURE BACKGROUND  
TRAFFIC VOLUMES

		211 YONGE STREET SUITE 301 TORONTO, ON M5B 1M4 416-477-3392 T WWW.CFCROZIER.CA				
Drawn	R.L.	Design	A.H.	Project No.	2112-6218	
Date	2022/03/11	Check	A.H.	Scale	N.T.S.	
					Dwg.	FIG. 10

NOTE:  
THIS FIGURE IS SCHEMATIC ONLY  
AND IS NOT TO BE SCALED.



LEGEND:

	SIGNAL CONTROL
	STOP CONTROL
AM(PM)	WEEKDAY AM(PM) TRIP DISTRIBUTION

125 COLONNADE ROAD  
CORBETT LAND STRATEGIES INC.  
CITY OF OTTAWA

2030 FUTURE BACKGROUND  
TRAFFIC VOLUMES

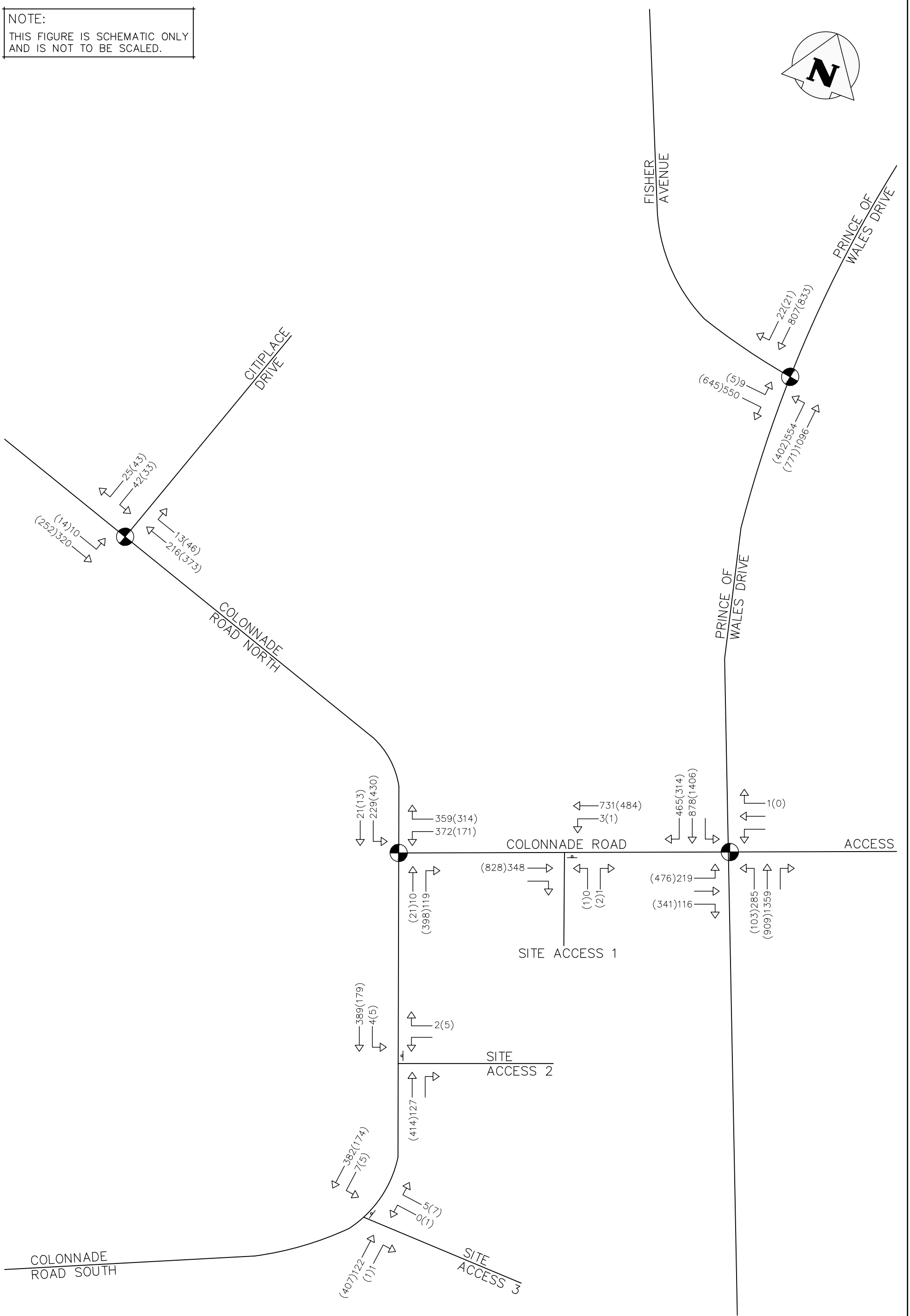
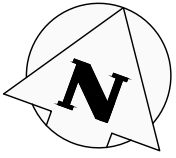


**CROZIER**  
CONSULTING ENGINEERS

211 YONGE STREET  
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TORONTO, ON M5B 1M4  
416-477-3392 T  
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Drawn	R.L.	Design	A.H.	Project No.	2112-6218	
Date	2022/03/11	Check	A.H.	Scale	N.T.S	
					Dwg.	FIG. 11

NOTE:  
THIS FIGURE IS SCHEMATIC ONLY  
AND IS NOT TO BE SCALED.




**LEGEND:**

- SIGNAL CONTROL
- STOP CONTROL
- AM(PM) WEEKDAY AM(PM) TRIP DISTRIBUTION

125 COLONNADE ROAD  
CORBETT LAND STRATEGIES INC.  
CITY OF OTTAWA

2025 FUTURE TOTAL  
TRAFFIC VOLUMES



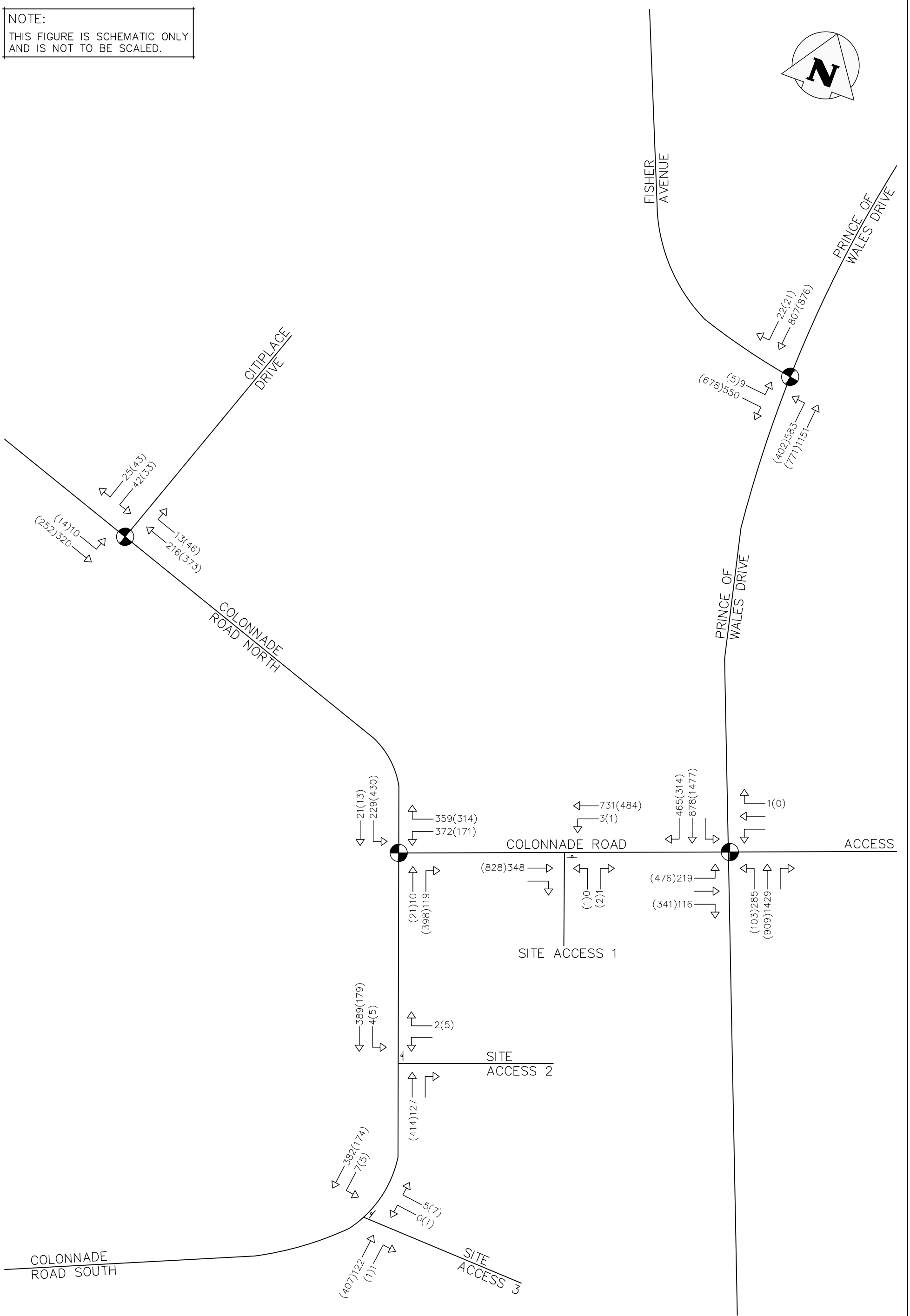
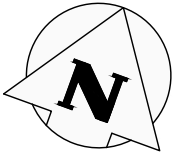
**CROZIER**  
CONSULTING ENGINEERS

211 YONGE STREET  
SUITE 301  
TORONTO, ON M5B 1M4  
416-477-3392 T  
WWW.CFCROZIER.CA

Drawn	R.L.	Design	A.H.	Project No.	2112-6218
Date	2022/03/11	Check	A.H.	Scale	N.T.S

Dwg. FIG. 12

NOTE:  
THIS FIGURE IS SCHEMATIC ONLY  
AND IS NOT TO BE SCALED.



LEGEND:

	SIGNAL CONTROL
	STOP CONTROL
AM(PM)	WEEKDAY AM(PM) TRIP DISTRIBUTION

125 COLONNADE ROAD  
CORBETT LAND STRATEGIES INC.  
CITY OF OTTAWA

2030 FUTURE TOTAL  
TRAFFIC VOLUMES



**CROZIER**  
CONSULTING ENGINEERS

211 YONGE STREET  
SUITE 301  
TORONTO, ON M5B 1M4  
416-477-3392 T  
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Drawn	R.L.	Design	A.H.	Project No.	2112-6218	
Date	2022/03/11	Check	A.H.	Scale	N.T.S.	
					Dwg.	FIG. 13