JLR No.: 25205-100
Revision: 02

February 7, 2020

Prepared for:

BRIGIL CONSTRUCTION INC.
98 Rue Lois
Gatineau, QC
J8Y 3R7

Prepared by:

J.L. RICHARDS & ASSOCIATES LIMITED
864 Lady Ellen Place
Ottawa, ON
K1Z 5M2
Tel: 613-728-3571
Fax: 613-728-6012

TRANSPORTATION IMPACT ASSESSMENT

99 PARKDALE AVENUE
OTTAWA, ONTARIO

J.L.Richards
ENGINEERS · ARCHITECTS · PLANNERS

Table of Contents

List of Figures

List of Tables

List of Appendices

1.0 INTRODUCTION

J.L. Richards & Associates Limited (JLR) has been retained by Brigil Construction Inc. (Brigil) to complete a Transportation Impact Assessment (TIA) in support of the proposed development at 99 Parkdale Avenue in Ottawa, Ontario.

The scope of this TIA was discussed with Mike Giampa, Senior Engineer with the City of Ottawa, via phone call and email on September 13, 2019. The latest traffic data available for the study area was obtained from Ibrahim Conteh, Transportation Data Technician, on September 19, 2019.

2.0 SCREENING AND SCOPING

2.1 Screening Form

A Screening Form for the proposed development was submitted to the City on June 4, 2019 (refer to Appendix 'A'). The Screening Form indicated that the proposed development triggers the requirement to complete a TIA. It should be noted that a Community Transportation Study (CTS) was completed for this property in 2012. The City has indicated that given the age of CTS, a new TIA based on the 2017 City of Ottawa TIA Guidelines will need to be completed.

2.2 Description of Proposed Development

Brigil is proposing to construct a 240 unit condominium building located at 99 Parkdale Avenue, Ottawa, Ontario. The 28-storey tower would be constructed on a vacant lot that previously contained 8 low-rise apartment units. Underground parking is proposed for the building with 207 vehicle spaces. There are 254 bicycle spaces proposed within the development. The underground parking will be connected to the existing underground parking of the adjacent property at 121 Parkdale Avenue. Access to the underground parking will be via the existing two-way ramp at 121 Parkdale Avenue.

The subject site fronts onto Parkdale Avenue, and abuts Tunney's Pasture to the west. It is on the western edge of the residential portion of the Mixed Use Centre designated in the City of Ottawa Official Plan, and is situated within 600 m of the Tunney's Pasture Transitway Station. A Location Plan (Figure 1) has been included.

Vehicle access to the site will be provided via the existing public laneway located east of the property. The laneway allows two-way operation and access from both Emmerson Avenue and Burnside Avenue. No direct vehicle access is proposed from the underground parking structure to Parkdale Avenue. Refer to the site plan included in Appendix 'B'.

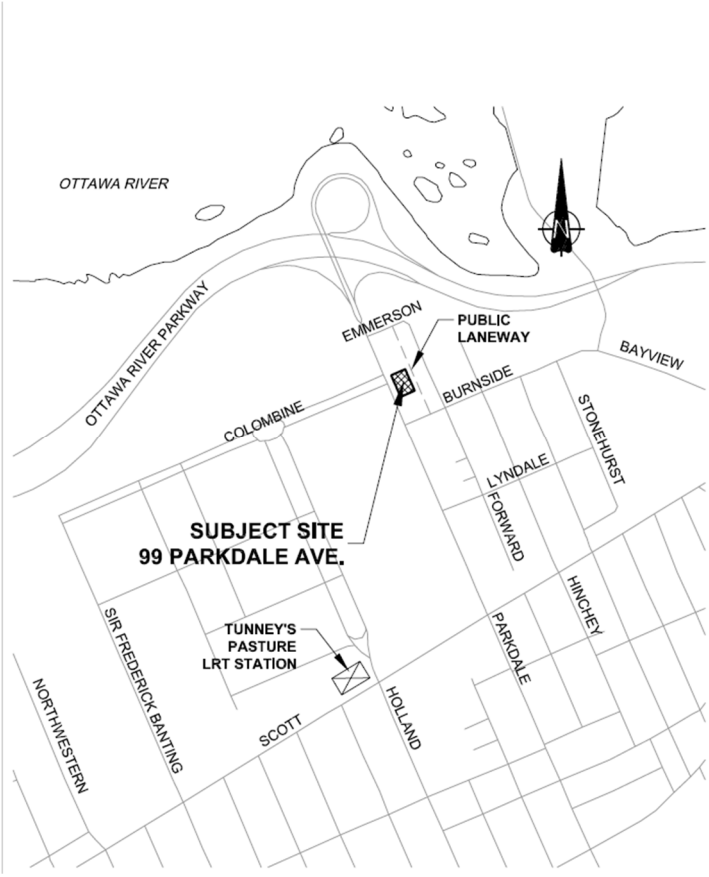


Figure 1: Location Plan

2.3 Existing Conditions

2.3.1 Existing Roadways

Parkdale Avenue is a 2-lane arterial road with a posted speed limit of 40 km/h between Emmerson Avenue and Scott Street. Parkdale Avenue provides a link to the Sir John A. Macdonald Parkway to the north and Highway 417 to the south. On-street parking is not permitted on the east side of Parkdale Avenue between Bullman Street and Emmerson Avenue. On the west side of Parkdale, it is permitted between the Lyndale Avenue and Burnside Avenue for 1 hour between 7:00 am and 7:00 pm.

Emmerson Avenue is a local road with a posted speed limit of 40 km/h. On-street parking is permitted on the north side of Emmerson Avenue for 2 hours between 7:00 am and 7:00 pm.

Colombine Driveway is a private internal roadway that serves as a collector roadway within the Tunney's Pasture Campus and intersects Parkdale Avenue just south of the

Emmerson Avenue intersection. A grassed median exists between the eastbound and westbound lane of Colombine Driveway. Some on-street parking is permitted for permit holders on Colombine Driveway. The posted speed limit is 30 km/h.

Burnside Avenue is a local road with a posted speed limit of 40 km/h. On-street parking is permitted on the north side of Burnside Avenue for 1 hour between 7:00 am and 7:00 pm.

Lyndale Avenue is a local road with a posted speed limit of 40 km/h. On-street parking is permitted on the south side of Lyndale Avenue for 1 hour between 7:00 am and 7:00 pm.

A 6.0 m wide public lane exists on the east side of the site with access to Emmerson Avenue and Burnside Avenue. Figure 1 presents a plan of the lane. While the City of Ottawa does not officially define public lanes in the Official Plan, the City of Ottawa Zoning By-law does include a definition. A public lane is a public right-of-way that provides a secondary means of access from a public street to abutting lots. According to the Transportation Association of Canada (TAC), a lane is characterized by the following:

- land access is the principal function;
- traffic movement is not a consideration and traffic flow is expected to be interrupted;
- typical daily traffic volumes are up to 500 vehicles;
- average running speeds during off peak hours are approximately 20 – 30 km/h;
- parking restrictions are typical.

2.3.2 Existing Intersections

There are four existing intersections within the study area:

- Parkdale Avenue / Emmerson Avenue
- Parkdale Avenue / Colombine Driveway
- Parkdale Avenue / Burnside Avenue
- Parkdale Avenue / Lyndale Avenue

The Parkdale / Emmerson and Parkdale / Colombine intersections are un-signalized tee intersections, with a stop control on the Emmerson Avenue and Colombine Driveway approaches. The eastbound and westbound travel lanes of Colombine Driveway are separated with a grassed median.

The Parkdale / Burnside and Parkdale / Lyndale intersections are three-legged signalized intersections. All approaches have a single combined through / turn lane. Pedestrian crosswalks are provided across each leg of the intersections. Refer to Figure 2 below for the existing conditions at the study area intersections.

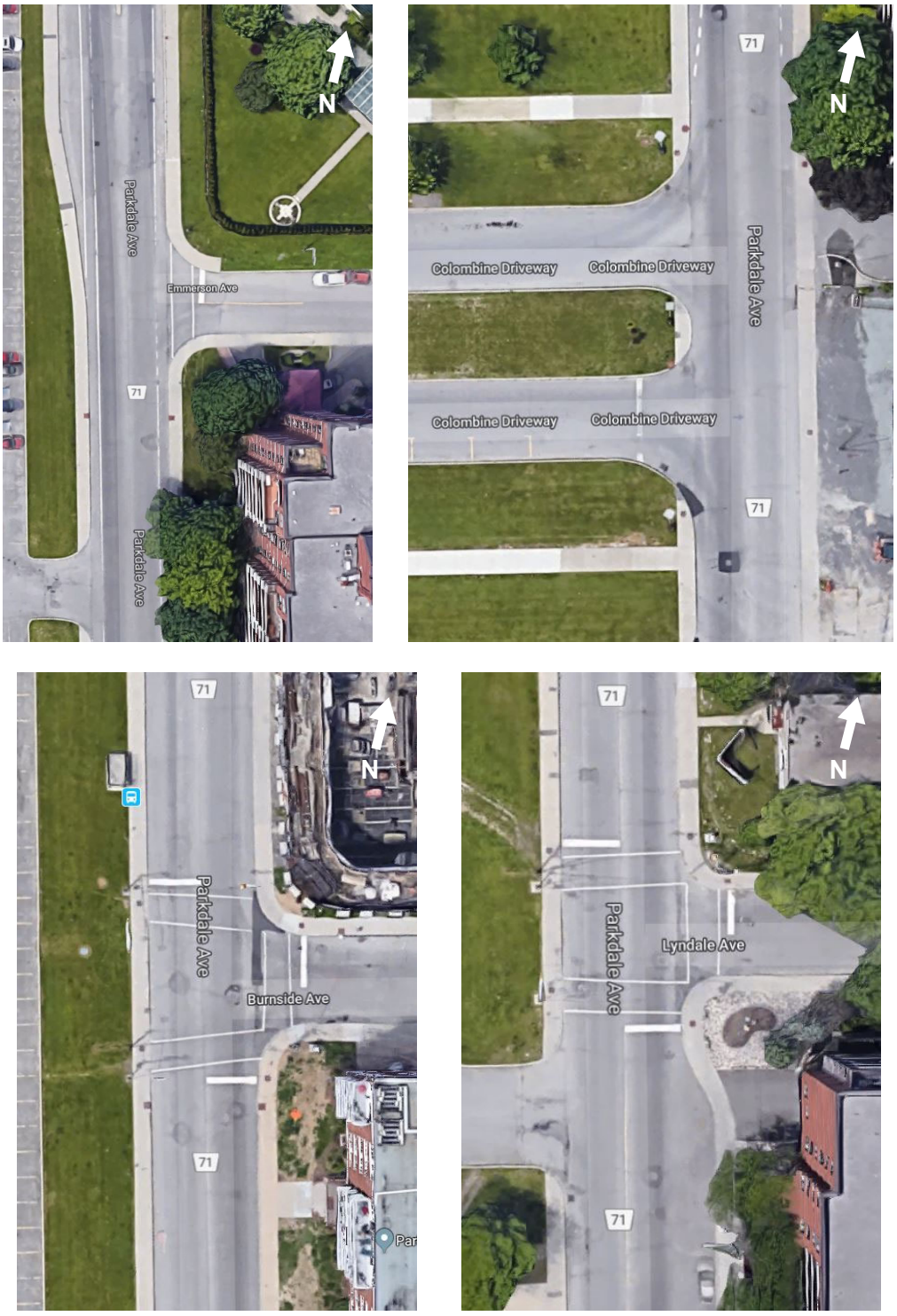


Figure 2: Existing Study Area Intersections

(Top Left – Parkdale / Emmerson, Top Right – Parkdale / Colombine, Bottom Left – Parkdale / Burnside, Bottom Right – Parkdale / Lyndale)

2.3.3 Existing Transit Services

OC Transpo currently operates route 54 (southbound only) along Parkdale Avenue. Tunney's Pasture is a major transit hub located about 750 m west of 99 Parkdale Avenue. Multiple routes offering frequent service stops at Tunney's Pasture, including the newly opened Light Rail Transit (LRT).

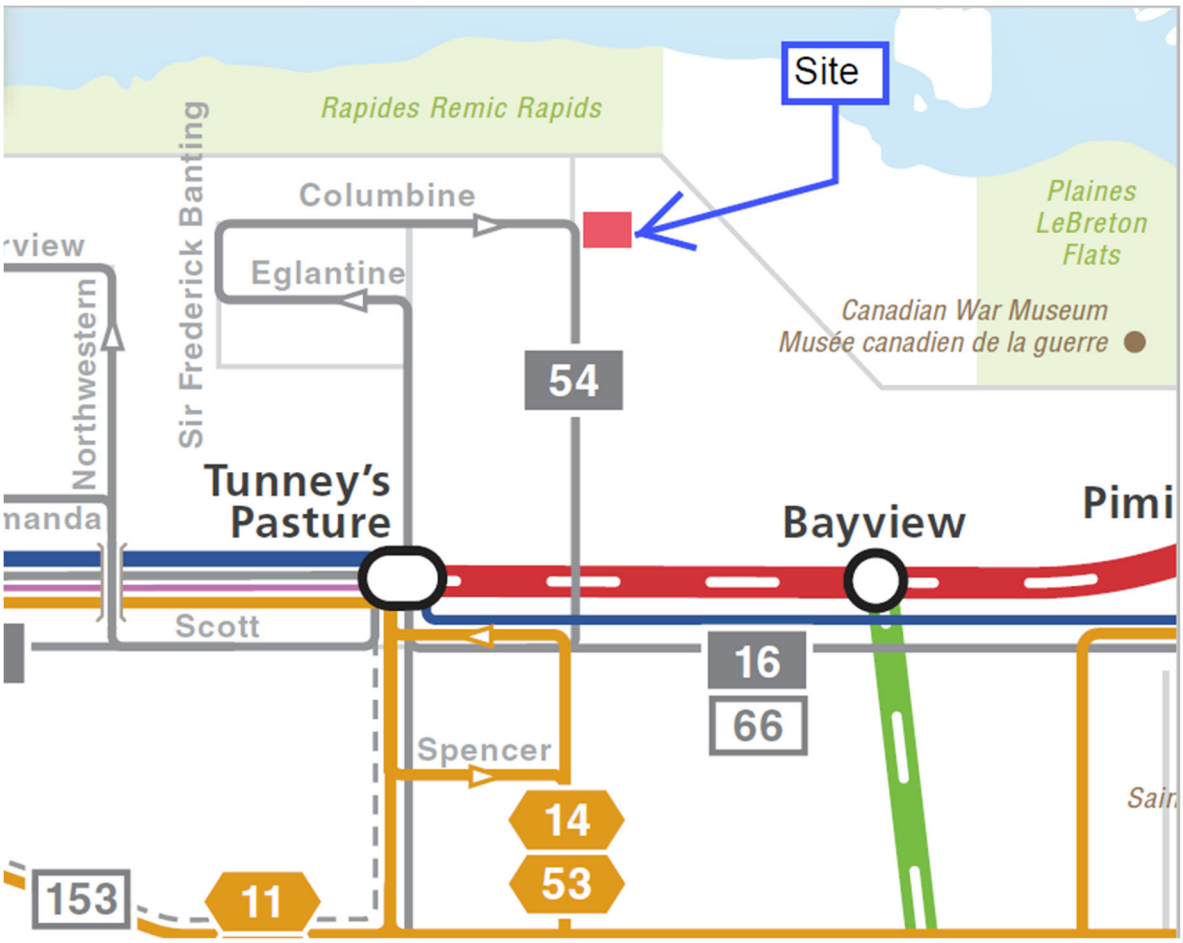


Figure 3: Existing Transit Services

2.3.4 Existing Pedestrian and Cycling Facilities

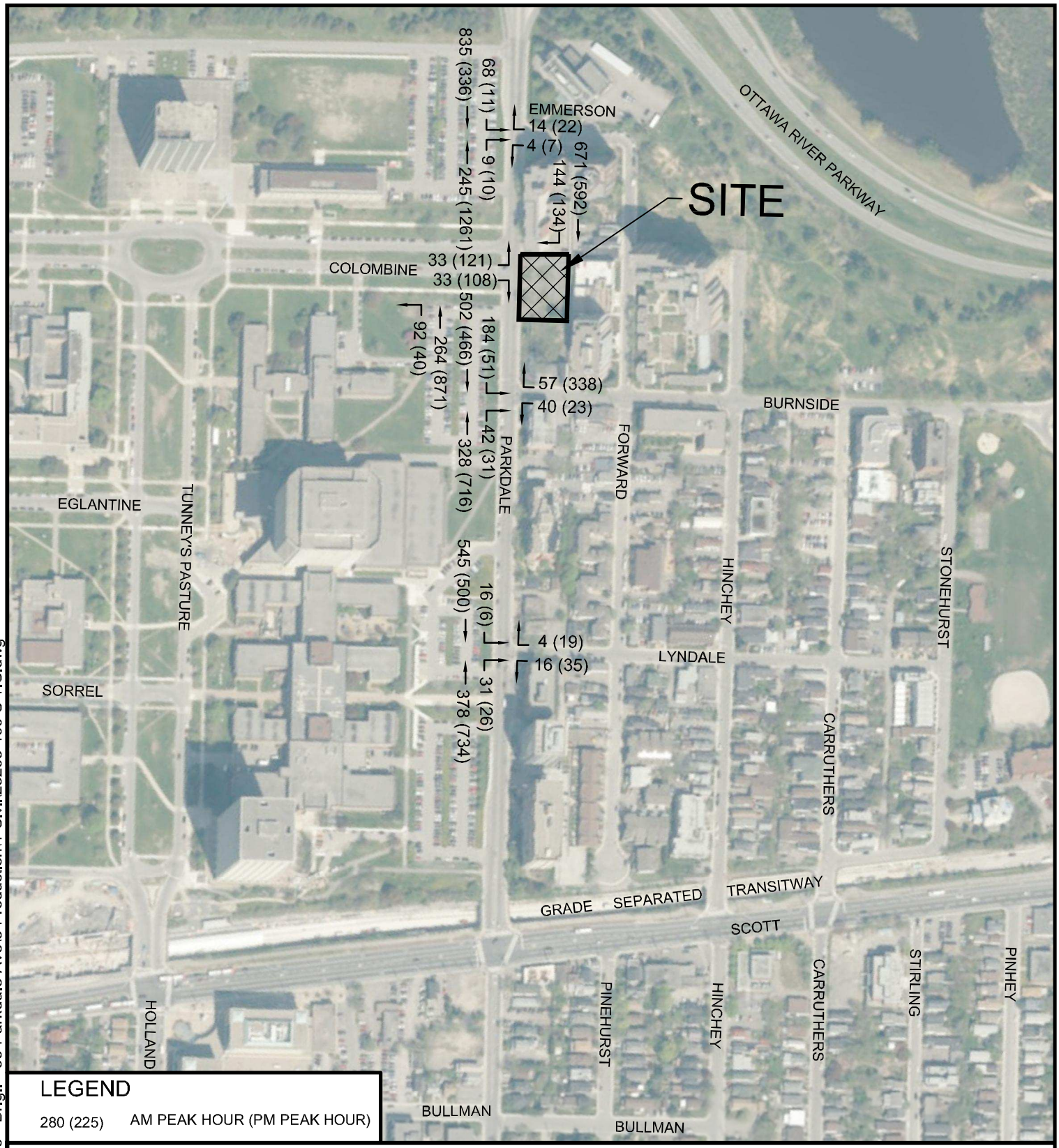
Concrete sidewalks are provided along both sides of Parkdale Avenue between the Sir John A. Macdonald Parkway and Scott Street. A concrete sidewalk exists on the south side of Emmerson Avenue. A concrete sidewalk, separated by a grassed median from the roadway, exists on the south side of the eastbound leg of Colombine Driveway. Burnside Avenue also has concrete sidewalks on each side of the roadway.

There are existing on-street bike lanes on both sides of Parkdale Avenue between Colombine Driveway and the Sir John A. Macdonald Parkway. There are no other dedicated cycling facilities within the study area and cyclists currently operate in mixed traffic. The City's Ultimate Cycling Network Plan identifies local cycling routes on

Colombine Driveway, Burnside Avenue and on Parkdale Avenue between Burnside Avenue and the Sir John A. Macdonald Parkway.

2.4 Existing Traffic Volumes

The existing traffic volumes for the Parkdale / Colombine, Parkdale / Burnside, and Parkdale Lyndale intersections were provided by the City of Ottawa. Traffic volumes for the unsignalized intersection at Parkdale / Emmerson were obtained from the 2012 CTS. The traffic volumes were projected to 2019 using a growth rate of 1.2%. This growth rate was calculated based on historical traffic volumes along Parkdale Avenue collected between 2012 and 2018. The 2019 background traffic volumes are presented in Figure 4. Refer to Appendix 'C' for the traffic count data.



LEGEND

280 (225) AM PEAK HOUR (PM PEAK HOUR)

PROJECT:

99 PARKDALE CONDOMINIUM BUILDING

99 PARKDALE AVENUE, OTTAWA, ON

DRAWING:

2019 EXISTING TRAFFIC

www.JLrichards.ca

J.L.Richards
ENGINEERS · ARCHITECTS · PLANNERS

DESIGN:	PM
DRAWN:	SC/TB
CHECKED:	MA
JLR #:	25205-100

DRAWING #:

FIGURE 4

File Location: P:\25000\25205-100 - Brigil - 99 Parkdale Ave\5-Production\1-Civil\25205-100 C TIS.dwg

PLOT DATE: Friday, October 18, 2019 2:16:52 PM

2.5 Collision History

The latest available collision data for the study area was obtained from the City of Ottawa website. This data included collision records spanning from 2014 to 2018. A total of 26 collisions were reported within the study area during this timeframe, including 21 collisions that resulted in property damage, and 5 collisions that resulted in non-fatal injuries. The majority of the collisions occurred along Parkdale Avenue between the studied intersections, where 12 collisions were reported. Four collisions occurred at the Colombine / Parkdale intersection, 5 collisions occurred at the Lyndale / Parkdale intersection, 2 collisions occurred at the Emmerson / Parkdale intersection, and 1 collision occurred at the Burnside / Parkdale intersection. The most common types of collision were rear ends (9 collisions), single motor vehicle (7 collisions), angle (6 collisions), and turning movements (4 collisions). Refer to Appendix 'D' for the detailed collision data for the study area.

2.6 Planned Conditions

The City of Ottawa has recently constructed Phase 1 of the LRT line from Tunney's Pasture to Blair Station. Phase 2 of the Ottawa LRT extending west from Tunney's Pasture Station is currently under construction and is anticipated to be completed by 2025.

There is a condominium development currently under construction at 121 Parkdale Avenue with expected occupancy in the fall of 2020. This condominium has 280 apartment units and 3,787 ft^2 of retail space. The site generated traffic from the condominium development at 121 Parkdale was calculated and incorporated into the background traffic at the studied intersections for the 2023 and 2028 scenarios.

The original TIS for 121 Parkdale was prepared by Stantec Consulting Limited in 2012 using the previous version of the City of Ottawa TIA Guidelines. To ensure consistency with the analysis contained in this report, the trip generation for 121 Parkdale was re-calculated using the same trip generation and modal share rates that were used for the proposed development at 99 Parkdale Avenue (refer to section 3.1.1). The trip generation rates for the residential units were based on the 2009 TRANS Report. To account for the retail space at 121 Parkdale Avenue, the ITE land use category "Specialty Retail Center" (land use code 826) was used. An ITE conversion factor of 1.3 was used to convert vehicle trips generated from the retail space to person trips. This conversion factor assumes an auto occupancy rate of 1.15 and a total auto vehicle modal share of 90%. Similar to the original 2012 TIS, a synergy reduction factor of 25% was used to account for the synergy between the residential uses and the retail uses of the condominium.

The trip distribution percentages for the site generated traffic from 121 Parkdale Avenue used in this TIA are based on the trip distribution identified in the 2012 TIS. Refer to Appendix 'I' for the updated travel demand calculations for 121 Parkdale Avenue, and the 2012 TIS by Stantec.

2.7 Study Area

The study area is the development property and the boundary roads. The intersections that will be subject to analysis will be the intersections of Burnside / Parkdale, Emmerson / Parkdale, Colombine / Parkdale and Lyndale / Parkdale.

2.8 Time Period and Horizon Year

The transportation impacts of the development were examined during the weekday morning and afternoon peak hours at full build out and at the 5 year horizon of the development. The build out and 5 year horizon for the development are 2023 and 2028, respectively.

2.9 Exemption Review

The exemptions table in the TIA Guidelines was reviewed to identify possible reductions to the scope of the analysis based on the characteristics of the proposed development. Refer to Table 1 for a summary of the exemption review.

Table 1: Exemption Review

MODULE	ELEMENT	EXEMPTION CONSIDERATIONS	REQUIRED
Design Review			
4.1 Development Design	**4.1.2** Circulation and Access	Only required for site plans	✓
	4.1.3 New Street Networks	Only required for plans of subdivision	✗
4.2 Parking	**4.2.1** Parking Supply	Only required for site plans	✓
	4.2.2 Spillover Parking	Only required for site plans where parking supply is 15% below unconstrained demand	✗
Network Impact			
4.5 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	✓
4.6 Neighbourhood Traffic Management	**4.6.1** Adjacent Neighbourhoods	Only required when the development relies on local or collector streets for access and total volume exceeds ATM capacity thresholds	✓
4.8 Network Concept		Only required when the proposed development generates more than 200 person-trips during the peak hour in excess of the equivalent volume permitted by established zoning	✗

3.0 FORECASTING

3.1 Development-Generated Traffic

As part of the TIA process, future travel demands associated with the proposed development need to be quantified, including the background travel demands and the development-generated demands. This information is used to evaluate the transportation impacts of the development and to identify any network modifications required to accommodate the development.

3.1.1 Trip Generation

The TRANS Trip Generation Residential Trip Rates Study Report (August 2009) was used to obtain the trip generation rates based on the land use. In this case, the number of trips generated by the development was calculated based on the number of condominium units that are proposed for the site using trip generation rates provided in Table 6.3 of the TRANS Report. Existing trips were estimated based on the number of low rise apartment units that previously occupied the site. The net trip generation was calculated by subtracting the existing from the proposed site trip generations. As per the City of Ottawa's 2017 TIA Guidelines, the auto trip generation rates were converted to person trips using the auto mode share rates outlined in Table 3.13 in the TRANS Report. Refer to Table 2 for the trip generation rates used and Table 3 for the volume of site-generated trips calculated for the development.

The subject site is located within approximately 750 m of the newly constructed Tunney's Pasture LRT station and is on the edge of the Transit-Oriented Development Zone (TOD). Following discussions with City of Ottawa staff, the following TOD modal share values were used to distribute the person trips that were calculated for the site:

- 15% Auto Driver
- 5% Auto Passenger
- 65% Transit
- 15% Active Transportation (walking, cycling, etc.)

100% Total

Refer to Table 4 for a summary of the development-generated travel demands.

3.1.2 Trip Distribution and Assignment

The trip distribution percentages used in this TIA are based on the trip distribution identified in the 2012 CTS. Figure 5 shows the percentages used on each street within the study area, and Figure 6 shows the total site-generated trip volumes.

Table 2: TRANS Trip Generation and Distribution Rates for 99 Parkdale

Land Use	AM Peak		PM Peak	
High Rise Condo	0.38		0.34	
Existing Low Rise Apartment	0.31		0.34	
Land Use	**AM Peak**		**PM Peak**	
	In	**Out**	**In**	**Out**
High Rise Condo	28%	72%	58%	42%
Existing Low Rise Apartment	22%	78%	64%	36%

Table 3: Site-Generated Person Trips for 99 Parkdale

Land Use	Units	AM Peak			PM Peak		
		In	Out	Total	In	Out	Total
High Rise Condo	240	69	178	**247**	117	84	**201**
Ex. Low Rise Apartment	8	2	4	**6**	4	2	**6**
Total		**67**	**174**	**241**	**113**	**82**	**195**

Table 4: Updated Development-Generated Travel Demand for 99 Parkdale

Travel Mode	Modal Share	AM Peak			PM Peak		
		In	Out	Total	In	Out	Total
Auto Driver	15%	10	26	**36**	17	12	**29**
Auto Passenger	5%	3	9	**12**	6	4	**10**
Transit	65%	44	113	**157**	73	54	**127**
Non-Motorized	15%	10	26	**36**	17	12	**29**
Total	**100%**	**67**	**174**	**241**	**113**	**82**	**195**

3.2 Background Network Travel Demand

Existing traffic counts were analyzed at all subject intersections within the study area. The traffic count data was collected between 2012 and 2018. An annual background traffic growth rate of 1.2% was calculated based on historical traffic count data for the intersections along Parkdale Avenue. This annual growth rate was used to project the background traffic to the base study year (2019), build out year (2023), and the 5 year horizon year (2028). Refer to Figure 4, 7 and 8 for a summary of the AM and PM peak hour background traffic at the subject intersections. The site-generated traffic volumes were then added to the 2023 and 2028 projected background volumes. Refer to Figures 9-10 for the combined background and site-generated volumes for 2023 and 2028.

3.3 Demand Rationalization

Demand Rationalization is applied where the projected travel demand exceeds the capacity of the existing network. As the projected background traffic volumes are within the capacity of the existing road network adjacent to the proposed development, the application of demand rationalization is not required. It should be noted that existing traffic congestion on the Sir John A. Macdonald Parkway has been reported in the PM peak period, which could result in northbound queues along Parkdale Avenue. Similarly, existing congestion at the Parkdale / Scott intersection, located south of the study area, could lead to additional queuing along Parkdale Avenue.

LEGEND

280 (225) AM PEAK HOUR (PM PEAK HOUR)

PROJECT:

99 PARKDALE CONDOMINIUM BUILDING

99 PARKDALE AVENUE, OTTAWA, ON

DRAWING:

SITE GENERATED TRAFFIC TRIP DISTRIBUTION

www.jlrichards.ca

J.L.Richards
ENGINEERS · ARCHITECTS · PLANNERS

DESIGN:	PM
DRAWN:	TB
CHECKED:	MA
JLR #:	25205-100

DRAWING #:

FIGURE 5

File Location: P:\25000\25205-100 - Brigil - 99 Parkdale Ave\5-Production\1-Civil\25205-100 C TIS.dwg

PLOT DATE: Friday, October 18, 2019 2:16:56 PM

LEGEND

280 (225) AM PEAK HOUR (PM PEAK HOUR)

PROJECT:

99 PARKDALE CONDOMINIUM BUILDING

99 PARKDALE AVENUE, OTTAWA, ON

DRAWING:

SITE GENERATED TRAFFIC

www.jlrichards.ca

J.L.Richards ENGINEERS · ARCHITECTS · PLANNERS

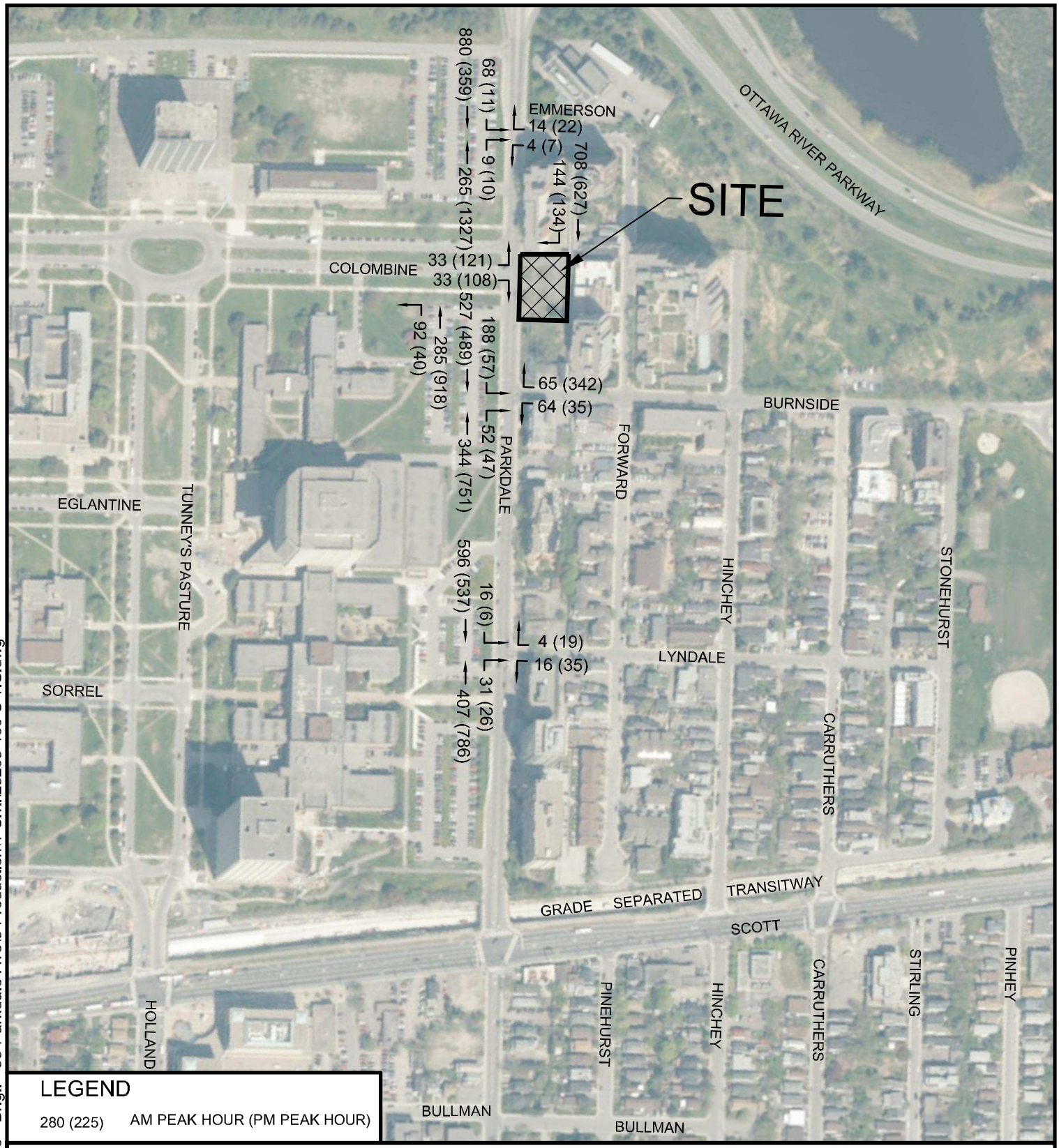
DESIGN:	PM
DRAWN:	TB
CHECKED:	MA
JLR #:	25205-100

DRAWING #:

FIGURE 6

File Location: P:\25000\25205-100 - Brigil - 99 Parkdale Ave\5-Production\1-Civil\25205-100 C TIS.dwg

PLOT DATE: Thursday, November 7, 2019 11:56:27 AM



LEGEND

280 (225) AM PEAK HOUR (PM PEAK HOUR)

PROJECT:

99 PARKDALE CONDOMINIUM BUILDING

99 PARKDALE AVENUE, OTTAWA, ON

DRAWING:

2023 BACKGROUND TRAFFIC

www.JLrichards.ca

J.L.Richards
ENGINEERS · ARCHITECTS · PLANNERS

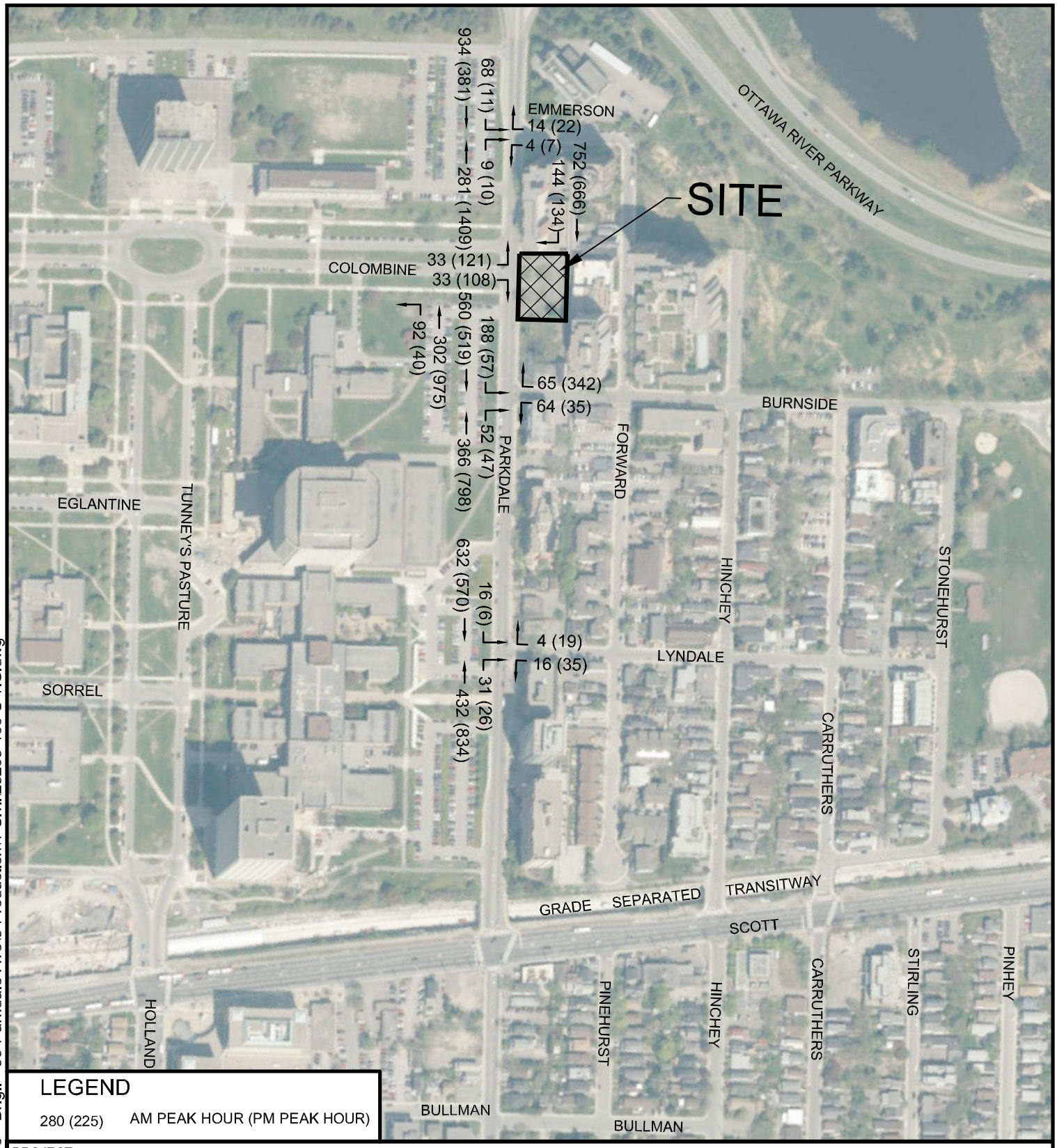
DESIGN:	PM
DRAWN:	SC/TB
CHECKED:	MA
JLR #:	25205-100

DRAWING #:

FIGURE 7

File Location: P:\25000\25205-100 - Brigil - 99 Parkdale Ave\5-Production\1-Civil\25205-100 C TIS.dwg

PLOT DATE: Monday, January 27, 2020 8:43:58 AM



LEGEND

280 (225) AM PEAK HOUR (PM PEAK HOUR)

PROJECT:

99 PARKDALE CONDOMINIUM BUILDING

99 PARKDALE AVENUE, OTTAWA, ON

DRAWING:

2028 BACKGROUND TRAFFIC

www.jlrichards.ca

J.L.Richards
ENGINEERS · ARCHITECTS · PLANNERS

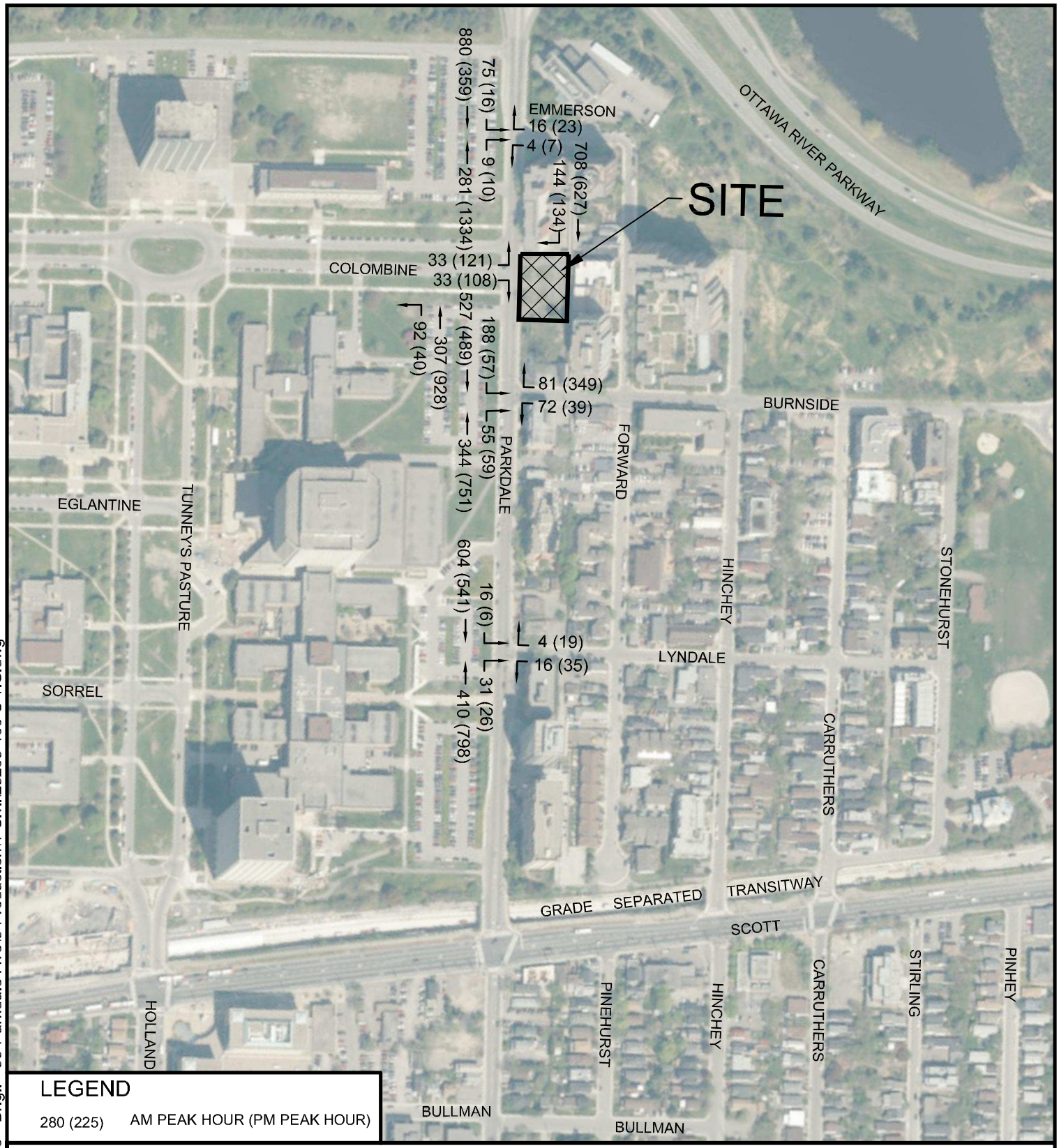
DESIGN:	MA
DRAWN:	SC/TB
CHECKED:	MA/LJ
JLR #:	25205-100

DRAWING #:

FIGURE 8

File Location: P:\25000\25205-100 - Brigil - 99 Parkdale Ave\5-Production\1-Civil\25205-100 C TIS.dwg

PLOT DATE: Monday, January 27, 2020 8:44:03 AM



LEGEND

280 (225) AM PEAK HOUR (PM PEAK HOUR)

PROJECT:

99 PARKDALE CONDOMINIUM BUILDING

99 PARKDALE AVENUE, OTTAWA, ON

DRAWING:

2023 BACKGROUND TRAFFIC PLUS SITE GENERATED TRAFFIC

www.jlrichards.ca

J.L.Richards ENGINEERS · ARCHITECTS · PLANNERS

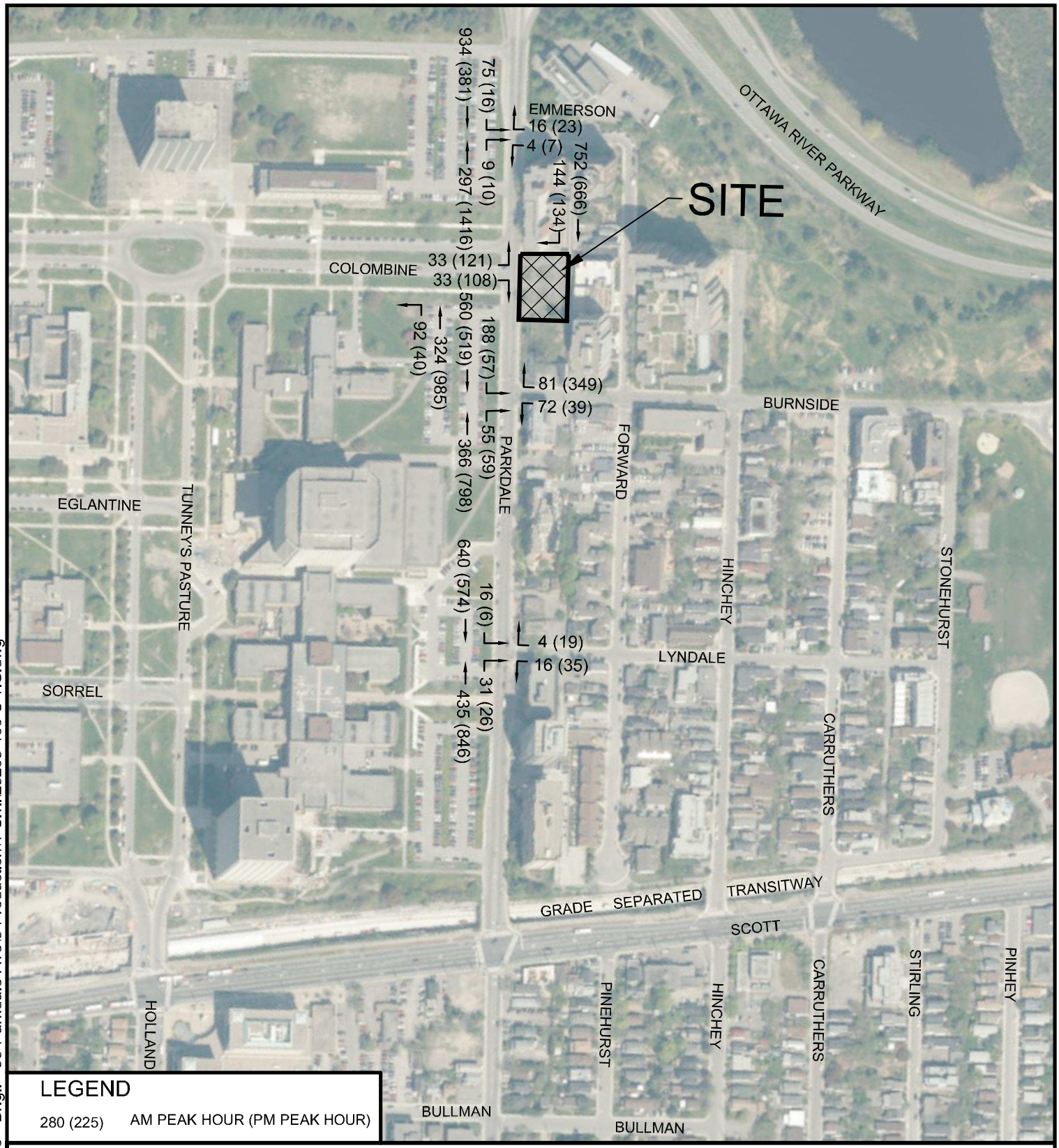
DESIGN:	MA
DRAWN:	TB
CHECKED:	MA/LJ
JLR #:	25205-100

DRAWING #:

FIGURE 9

File Location: P:\25000\25205-100 - Brigil - 99 Parkdale Ave\5-Production\1-Civil\25205-100 C TIS.dwg

PLOT DATE: Monday, January 27, 2020 8:44:08 AM



LEGEND

280 (225) AM PEAK HOUR (PM PEAK HOUR)

PROJECT:

99 PARKDALE CONDOMINIUM BUILDING

99 PARKDALE AVENUE, OTTAWA, ON

DRAWING:

2028 BACKGROUND TRAFFIC PLUS SITE GENERATED TRAFFIC

www.jlrichards.ca

J.L.Richards ENGINEERS · ARCHITECTS · PLANNERS

DESIGN:	MA
DRAWN:	TB
CHECKED:	MA/LJ
JLR #:	25205-100

DRAWING #:

FIGURE 10

File Location: P:\25000\25205-100 - Brigil - 99 Parkdale Ave\5-Production\1-Civil\25205-100 C TIS.dwg

PLOT DATE: Monday, January 27, 2020 8:44:13 AM

4.0 STRATEGY

4.1 Development Design

4.1.1 Design for Sustainable Modes

The proposed development integrates well with the existing pedestrian and cycling facilities within the study area. The existing sidewalks on both sides of Burnside Avenue, and the southern sidewalk on Emmerson Avenue provide a direct link to the existing sidewalks on Parkdale Avenue. The main entrance of the site will also have a direct pedestrian link to the existing sidewalk on the east side of Parkdale Avenue. There are existing bike lanes on Parkdale Avenue between the Sir John A. Macdonald Parkway and Colombine Driveway.

The existing sidewalks along Parkdale Avenue facilitate access to the existing transit stops at the Colombine / Parkdale and Burnside / Parkdale intersections for transit route 54, as well as other community destinations to the west, including the newly constructed Tunney's Pasture LRT station.

The City of Ottawa's TDM-Supportive Development Design and Infrastructure Checklist also requires residents to be within a safe 600 m walking distance to major transit routes. This requirement is met by the front entrance of the building being approximately 110 m to the bus stop located at the Burnside / Parkdale intersection and 200 m to the bus stop located at the Colombine / Parkdale intersection. The two rear end exit doors of the development are approximately 145 m from the Burnside / Parkdale intersection bus stop and 235 m to the Colombine / Parkdale intersection bus stop.

Referring to OC Transpo's service design guideline for peak period service, it is required to provide service within a 400 m walk of the home, school or work location of 95% of urban residents. This is achieved by 100% of the units from the development being within a 400 m walk to the bus stops located at the Parkdale / Burnside and Parkdale / Colombine intersections.

4.1.2 Circulation and Access

Vehicle access to the underground parking lot will be provided via an existing two-way ramp located at the adjacent property at 121 Parkdale Avenue. This existing entrance is approximately 6.0m wide with a 12m wide curb depression to accommodate turning movements from/to the existing public laneway. This entrance has been previously designed as part of the 121 Parkdale Avenue development.

4.2 Parking

4.2.1 Parking Supply

According to the City of Ottawa By-Law, the proposed development is required to provide 23 parking spaces for visitors and 0 parking spaces for residents. The proposed development is providing 23 parking spaces for visitors, and 184 parking spaces for residents, totalling 207 parking spaces, which meets the City By-Law requirement.

According to the City of Ottawa By-Law, the proposed development is required to provide 120 bicycle parking spaces. The proposed development is providing 254 bicycle parking spaces, which meets the City By-Law requirement. An additional requirement is to ensure that the bicycle parking spaces are located in well used, accessible, lit areas and protected from weather, if possible. This requirement is met by 248 bicycle parking spaces being located within the proposed development; in 2 separate bicycle rooms.

As per section 113 of the City of Ottawa Parking provisions By-Law, the proposed development is not required to provide any loading spaces.

4.3 Boundary Street Design

The boundary street for the development is Parkdale Avenue. At this time, there has not been any complete street concepts prepared for Parkdale Avenue. The existing roadway geometry consist of the following features:

- Two 5.5 m wide vehicle lanes;
- Existing 1.8 m sidewalks on both sides of the roadway;
- An existing bicycle lane on the west and east side of the roadway from Sir John A. Macdonald Parkway to Colombine Driveway;
- Average Annual Daily Traffic volume of approximately 12,000 vehicles;
- Posted speed limit of 40 km/h, assumed operating speed of 40 km/h;
- Limited on-street parking on the west side of the roadway

The Multi-Modal Level of Service (MMLOS) analysis for the road segment along Parkdale Avenue adjacent to the site, and the Parkdale / Burnside intersection are summarized in Table 5. Given the development is approximately within 600 m of a rapid transit station, the target levels of service for pedestrians and cyclists are PLoS ‘A’ and BLoS ‘B’. The TLoS target is ‘D’. Parkdale and Burnside are not designated truck routes, therefore, there is no applicable TkLOS target. Refer to Appendix ‘E’ for the MMLOS target and evaluation tables.

The MMLOS road segment analysis shows that existing conditions for Parkdale Avenue meet the MMLOS area target for cyclists, but do not meet the area target for pedestrians. To meet the PLoS target of ‘A’, 2.0 m sidewalks would need to be provided and the operating speed would need to be reduced to 30 km/h.

The MMLOS results for the existing conditions at the Parkdale / Burnside intersection are presented in Table 5. No minimum MMLOS targets have been established in the MMLOS Guidelines for intersections, and as such, are not provided in Table 5.

Table 5: Existing MMLOS – Parkdale Avenue and Parkdale / Burnside Intersection

Road Segment / Intersection		Pedestrian		Bicycle		Transit		Auto	
		PLoS	Target	BLoS	Target	TLoS	Target	ALoS	Target
Parkdale Ave.		C	A	B	B	D	D	N/A	N/A
Parkdale & Burnside	N Leg	A	N/A	B	N/A	F	N/A	D	E
	S Leg	A	N/A	F	N/A	F	N/A		
	E Leg	B	N/A	F	N/A	F	N/A		

4.4 Access Intersections

4.4.1 Location and Design of Access

The point of access for the development will be the existing parking garage entrance located at 121 Parkdale Avenue. This existing entrance has previously been designed to accommodate vehicle access to the shared underground parking garage of 121 Parkdale and 99 Parkdale. As a result, no further design/analysis of this existing entrance will be required.

4.5 Transportation Demand Management (TDM)

Transportation demand management (TDM) initiatives encourage individuals to reduce the number of trips they make, to travel more often by non-driving alternatives, to travel outside peak periods, and to reduce the length of their trips. As noted in the Transportation Master Plan (November 2013), a key goal of TDM is to minimize peak hour automobile travel and reduce the need for new or wider roads. The City of Ottawa is focusing its efforts on a comprehensive TDM plan in order to reduce automobile dependency within the City. TDM measures can reduce transportation infrastructure requirements by encouraging individuals to change their travel mode, timing or destination. These measures make alternatives to driving more attractive, build a positive public attitude towards those alternatives, and provide information and incentives that encourage responsible travel behaviours.

The proximity of the site to the Tunney's Pasture transitway and LRT stations provide residents of the proposed development with excellent access to mass transit opportunities. By placing the main entrance at the front of the building with vehicular access to the rear, a direct pedestrian connection is provided to the existing sidewalk on Parkdale Avenue. This sidewalk in turn provides access to the multi-use pathway on Scott Street (heading to the transitway or towards Downtown) and to the pathway situated along the Ottawa River Parkway. The City of Ottawa TDM Measures Checklist and Supportive Infrastructure Checklist were reviewed to identify the need / opportunity for TDM measures for the proposed development (refer to Appendix F).

4.6 Neighbourhood Traffic Management (NTM)

The NTM module reviews the need for the application of neighbourhood traffic management measures in cases where access to the proposed development is provided via local or collector roads.

4.6.1 Adjacent Neighbourhoods

Traffic generated by the site will be directed to Parkdale Avenue via two local streets: Burnside Avenue and Emmerson Avenue. The peak hour volume of site generated traffic directed to Emmerson Avenue and Burnside Avenue is projected to be 1-2 vehicles and 11-24 vehicles, respectively. It is further noted that site generated traffic will only be required to travel a distance of approximately 40 m along each street in order to reach Parkdale Avenue. Based on the above, it is anticipated that site-generated traffic will not have a significant impact on the existing traffic conditions on Burnside Avenue and Emmerson Avenue, and will not warrant the application of NTM measures.

4.7 Transit

4.7.1 Route Capacity

The proposed development is anticipated to generate approximately 157 and 127 AM and PM peak hour transit trips, respectively. Given the close proximity of the development to the Tunney's Pasture LRT station, transit uses will have access to high-capacity service provided by Line 1 and the additional bus routes that service this station. It is assumed that there will be existing transit capacity to support the additional transit trips generated by the development when it is completed in 2023.

4.8 Review of Network Concept

The Network Concept module reviews the road and transit network concepts identified in the Transportation Master Plan to determine if changes to the network concepts are required in order to accommodate development-generated traffic. This module is only required for developments that generate more than 200 peak-hour person trips beyond the equivalent volume permitted by established zoning. As the proposed development is not anticipated to exceed this threshold, this module does not need to be completed.

4.9 Intersection Design

4.9.1 Intersection Design & Control

The performance of four intersections within the study area were reviewed using Synchro 10 software. The following parameters were applied to the Synchro model based on Appendix 'C' of the TIA Guidelines:

- Saturated Flow Rate = 1800 passenger cars / hour
- Heavy Vehicle Equivalent = 1.7
- Peak Hour Factor (Existing Conditions) = 0.90
- Peak Hour Factor (Future Conditions) = 1.00
- Analysis Period = 15 minutes

- Signal Timing as per the existing timing cards provided by the City (refer to Appendix 'C')

The City of Ottawa LOS criteria for signalized intersections are based on the volume to capacity ratio and are listed in Table 6 below. The City considers a LOS A through D acceptable for a signalized intersection. Special measures, such as signal timing and phasing adjustments, may be taken for a signalized intersection that operates at a LOS E. An intersection with a v/c ratio of 1.0 or greater represents an intersection at or exceeding design capacity and, therefore, is considered unacceptable.

The City does not have specific criteria for analyzing the LOS of an unsignalized intersection. In this Report, unsignalized intersections have been analyzed based on the Average Control Delay criteria for two-way stop controlled intersections, as per the Highway Capacity Manual (refer to Table 6).

Table 6: Level of Service Criteria for Signalized Intersections

LEVEL OF SERVICE (LOS)	SIGNALIZED INTERSECTIONS	UNSIGNALIZED INTERSECTIONS
	Volume to Capacity Ratio (v / c)	Average Control Delay (s/veh)
A	0 to 0.60	0 to 10
B	0.61 to 0.70	> 10 to 15
C	0.71 to 0.80	> 15 to 25
D	0.81 to 0.90	> 25 to 35
E	0.91 to 1.00	> 35 to 50
F	> 1.01	> 50

The subject intersections were evaluated under the background 2019, 2023 and 2028 traffic volumes to establish a baseline performance level. The intersections were then analyzed under the combined background and site generated volumes for 2023 and 2028 to determine the impact of the proposed development. A summary of the critical movements at each intersection is presented in Table 7 below. The full intersection performance results and Synchro reports are included in Appendix 'G'.

The signalized intersection at Parkdale / Lyndale operates at a LOS of A under all scenarios including under the 2028 background and site generated traffic. The signalized intersection at Parkdale / Burnside operates at a LOS of A to D under all scenarios including under the 2028 background and site generated traffic. Both of the signalized intersections exhibit no change in LOS as a result of the addition of site generated traffic.

The stop-controlled intersection at Parkdale / Colombine currently operates with a LOS of F for the 2019 PM peak hour, as governed by the EB-L movement. This movement continues to operate a LOS of F under all traffic scenarios up to the 2028 background and site generated traffic scenario. It should be noted that this movement operates an acceptable LOS of C to D during the AM peak for all traffic scenarios.

Similar to the Parkdale / Colombine intersection, the stop-controlled intersection at Parkdale / Emmerson currently operates at a LOS of F under the 2019 background traffic during the PM peak hour, as governed by the WB approach. This movement continues to operate at a LOS of F for the 2028 background and site generated traffic scenario for the PM peak. The WB approach operates at an acceptable LOS of B during the AM peak hour under all traffic scenarios.

Table 7: Intersection Analysis Summary (AM Peak / PM Peak)

	Intersection	Critical Movement	LOS	v/c Ratio	Delay (s)	95% Queue (m)
2019 Background Traffic	**Parkdale / Lyndale**	**NB**	A / A	0.27 / 0.56	1.4 / 5.5	24.9 / 80.5
	Parkdale / Burnside	**WB**	A / D	0.40 / 0.86	15.2 / 33.9	14.4 / #71.8
	Parkdale / Colombine	**EB-L**	D / **F**	-	25.1 / 680.8	4.6 / 98.1
	Parkdale / Emmerson	**WB**	B / **F**	-	13.8 / 60.4	1.1 / 9.8
2023 Background Traffic	**Parkdale / Lyndale**	**NB**	A / A	0.26 / 0.53	1.4 / 5.1	23.6 / 72.4
	Parkdale / Burnside	**WB**	A / D	0.45 / 0.83	16.8 / 28.6	17.4 / #55.3
	Parkdale / Colombine	**EB-L**	C / F	-	22.8 / 373	3.6 / 74.1
	Parkdale / Emmerson	**WB**	B / E	-	13.6 / 44.5	1.0 / 6.8
2028 Background Traffic	**Parkdale / Lyndale**	**NB**	A / A	0.27 / 0.57	1.4 / 5.5	25.2 / 81.8
	Parkdale / Burnside	**WB**	A / D	0.45 / 0.83	16.8 / 30.8	17.4 / #63.1
	Parkdale / Colombine	**EB-L**	C / F	-	24.8 / 618.8	4.0 / 87.7
	Parkdale / Emmerson	**WB**	B / F	-	14.2 / 60.9	1.0 / 9.1
2023 Background & Site Traffic	**Parkdale / Lyndale**	**NB**	A / A	0.26 / 0.54	1.4 / 5.2	23.6 / 74.4
	Parkdale / Burnside	**WB**	A / D	0.50 / 0.84	16.7 / 29.8	19.2 / #62.7
	Parkdale / Colombine	**EB-L**	C / F	-	23.5 / 409.8	3.8 / 76.6
	Parkdale / Emmerson	**WB**	B / E	-	13.6 / 46.6	1.1 / 7.3
2028 Background & Site Traffic	**Parkdale / Lyndale**	**NB**	A / A	0.28 / 0.57	1.5 / 5.6	25.4 / 84.4
	Parkdale / Burnside	**WB**	A / D	0.50 / 0.85	16.7 / 32.0	19.2 / #66.7
	Parkdale / Colombine	**EB-L**	D / F	-	25.6 / 683.9	4.2 / 90.4
	Parkdale / Emmerson	**WB**	B / F	-	14.2 / 65.0	1.2 / 9.9

The "#" footnote indicates that the volume for the 95th percentile cycle exceeds capacity.

A traffic warrant analysis was carried out for the two unsignalized intersections at Parkdale / Colombine and Parkdale / Emmerson. The analysis was done based on Justification 7 using the following traffic scenarios:

- 2028 background traffic
- 2028 background and site generated traffic

The justification for traffic signals at the Parkdale / Colombine and Parkdale / Emmerson intersections was met to only 51% and 7% of the criteria, respectively. This is below the 120% threshold, indicating that traffic signals are not warranted. Refer to Appendix 'H' for the warrant analysis tables.

Based on the intersection analysis that was carried out it is noted that the proposed development would have a negligible impact on the operation of the intersections within the study limits.

4.10 Summary of Recommended Improvements

Based on the analysis carried out in this TIA, no roadway improvements are recommended to accommodate the proposed development at 99 Parkdale Avenue to mitigate roadway traffic growth.

5.0 FINDINGS AND CONCLUSIONS

This TIA was prepared in support of the site plan application for the residential condominium development at 99 Parkdale Avenue. As part of the TIA, the transportation impacts of the proposed development on the adjacent transportation network were reviewed.

The proposed developed is comprised of 240 residential condominium units and is expected to generate 241 and 195 person trips during the AM and PM peak hour, respectively. The site is well positioned with convenient access to the recently-opened LRT station at Tunney's Pasture and is within walking distance of a major employment centre (Tunney's Pasture government complex). The modal share for Transit Oriented Developments (TODs) was applied to the site, resulting in an AM and PM peak hour vehicle volume of 36 and 29, respectively.

A Synchro model of the adjacent intersections was used to evaluate the impacts of the additional vehicle traffic on the existing road network. The results of the Synchro analysis indicate that the addition of site-generated traffic has negligible impact on the operation of the signalized intersections at Parkdale / Lyndale and Parkdale / Burnside. These intersections operate at an acceptable LOS of A to D under existing 2019 background volumes and under the projected 2028 background and site-generated volumes.

The two unsignalized intersections at Parkdale / Colombine and Parkdale / Emmerson were found to operate at an acceptable LOS of B to D for all AM peak hour traffic scenarios, including under the 2028 background and site generated traffic. Both of these intersections operate at a LOS of F under current 2019 background traffic for the PM peak hour. These intersections continue to operate at an LOS of F under the projected 2028 background and site-generated volumes.

The warrant for the installation of traffic signals at the two stop-controlled intersection was reviewed. This analysis was carried out based on OTM Justification 7 using the projected 2028 background volumes, and the combined 2028 background and site generated volumes. The analysis indicates that the warrant for the installation of traffic signals was not met at either one of the two intersections.

Based on the analysis undertaken in this TIA, it was determined that no road modifications will be required to accommodate development-generated traffic from 99 Parkdale Avenue.

This report has been prepared for the exclusive use of Brigil Construction Inc. (Brigil) for the stated purpose, for the named property. Its discussions and conclusions are summary in nature and cannot be properly used, interpreted or extended to other purposes without a detailed understanding and discussions with the client as to its mandated purpose, scope and limitations. This report was prepared for the sole benefit and use of Brigil and may not be used or relied on by any other party without the express written consent of J.L. Richards & Associates Limited.

Prepared by:

P. McGrath

Patrick McGrath, E.I.T.
Civil Engineering Intern

Reviewed by:

Maksim Apelfeld, P.Eng.
Civil Engineer

Appendix A

- TIA Screening Form

City of Ottawa 2017 TIA Guidelines Screening Form

1. Description of Proposed Development

Municipal Address	99 Parkdale Avenue, Ottawa, ON
Description of Location	Proposed 28 storey commercial / condominium building
Land Use Classification	Residential
Development Size (units)	additional 62 residential condominium units (see note below)
Development Size (m^2)	449 m2 of commercial retail space in addition to residential units
Number of Accesses and Locations	One access to a laneway located between Parkdale Av. and Forward Av.
Phase of Development	N/A (one phase)
Buildout Year	2023

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 vs. 62 units
Office	3,500 m^2
Industrial	5,000 m^2
Fast-food restaurant or coffee shop	100 m^2
Destination retail	1,000 m^2 vs. 449 m2
Gas station or convenience market	75 m^2

** 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.

A Community Transportation Study (CTS) was prepared in 2012 for a development with 176 residential condominium units. The current proposal represents an increase of 62 units compared to the original development reviewed in the CTS (total of 238 units versus 176 units)

3. Location Triggers

	Yes	No
Does the development propose a new driveway to a boundary street that is designated as part of the City's Transit Priority, Rapid Transit or Spine Bicycle Networks?		✓
Is the development in a Design Priority Area (DPA) or Transit-oriented Development (TOD) zone?* Mixed use DPA along Parkdale Av.	✓	

**DPA and TOD are identified in the City of Ottawa Official Plan (DPA in Section 2.5.1 and Schedules A and B; TOD in Annex 6). See Chapter 4 for a list of City of Ottawa Planning and Engineering documents that support the completion of TIA).*

If any of the above questions were answered with 'Yes,' the Location Trigger is satisfied.

4. Safety Triggers

	Yes	No
Are posted speed limits on a boundary street are 80 km/hr or greater?		✓
Are there any horizontal/vertical curvatures on a boundary street limits sight lines at a proposed driveway?		✓
Is the proposed driveway within the area of influence of an adjacent traffic signal or roundabout (i.e. within 300 m of intersection in rural conditions, or within 150 m of intersection in urban/ suburban conditions)?	✓	
Is the proposed driveway within auxiliary lanes of an intersection?		✓
Does the proposed driveway make use of an existing median break that serves an existing site?		✓
Is there is a documented history of traffic operations or safety concerns on the boundary streets within 500 m of the development?		✓
Does the development include a drive-thru facility?		✓

If any of the above questions were answered with 'Yes,' the Safety Trigger is satisfied.

5. Summary

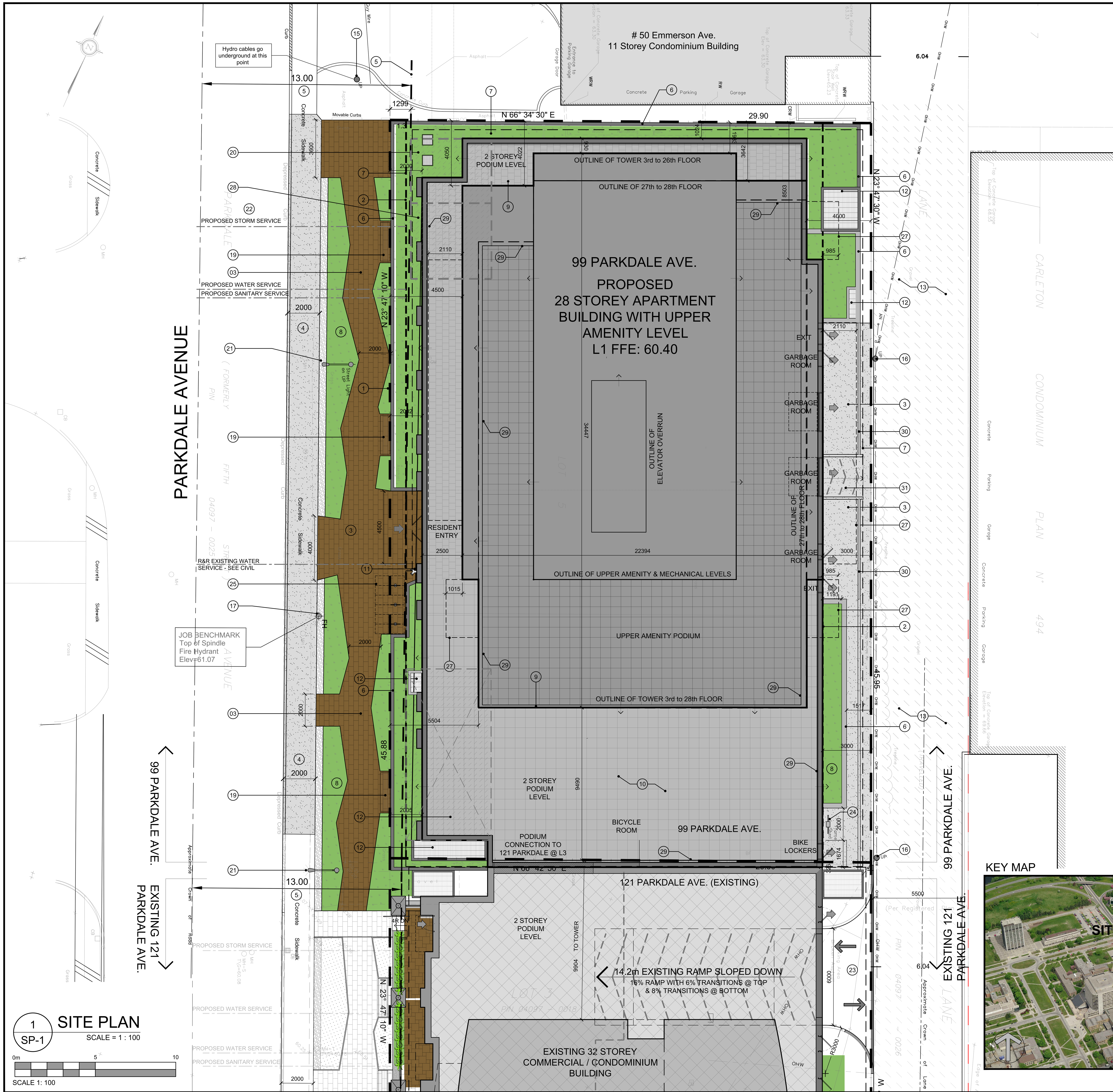
	Yes	No
Does the development satisfy the Trip Generation Trigger?		✓
Does the development satisfy the Location Trigger?	✓	
Does the development satisfy the Safety Trigger?	✓	

If none of the triggers are satisfied, the TIA Study is complete. If one or more of the triggers is satisfied, the TIA Study must continue into the next stage (Screening and Scoping).

Completed By: Maksim Apelfeld, P. Eng.
Date: June 4, 2019

Appendix B

- Site Plan



1 SP-1 SITE PLAN

SCALE = 1 : 100

SCALE 1: 100

SITE PLAN SYMBOLS

- CONCRETE UNIT PAVERS SURFACE
- CONCRETE WALK / DRIVING SURFACE
- 3rd FLOOR EXTERIOR AMENITY SPACE
- 29th FLOOR EXTERIOR AMENITY SPACE
- ASPHALT LANE WAY
- SOFT LANDSCAPING
- OVERFLOW ROOF SCUPPER
- TWO WAY VEHICLE CIRCULATION
- MAIN ENTRANCE
- SERVICE / FIRE EXIT
- PROPERTY LINE
- PROPOSED ROAD WIDENING / BUILDING SETBACKS

DRAWING NOTES

1. PROPERTY LINE
2. BUILDING SETBACKS
3. HARD SURFACE PAVING, SEE LANDSCAPE PLAN FOR PATTERN AND TYPE
4. 2000mm WIDE SIDEWALK WITH STREET CURB TO CITY OF OTTAWA STANDARDS
5. ROAD ALLOWANCE (ROW)
6. LOW PLANTER WALL
7. OUTLINE OF UNDERGROUND PARKING LEVELS
8. SOFT LANDSCAPING, SEE LANDSCAPE PLAN
9. OUTLINE OF TOWER ABOVE
10. EXTERIOR AMENITY AT 3rd FLOOR
11. SIAMESE CONNECTION
12. AIR INTAKE / EXHAUST GRILL
13. EXISTING GRAVEL LANE WAY TO BE PAVED
14. CONCRETE WALK, WIDTH AS SHOWN
15. EXISTING OVERHEAD HYDRO LINES
16. EXISTING UTILITY POLE (BELL / ROGERS)
17. EXISTING FIRE HYDRANT RELOCATE AS REQUIRED
18. OUTLINE OF PRIVATE TERRACE ABOVE
19. SITE FURNITURE (AS PER LANDSCAPE PLAN)
20. CISTERN IN P1 PARKING LEVEL WITH ACCESS C.B.
21. EXISTING STREET LIGHT
22. PROPOSED U/G BUILDING SERVICE LINE - SEE CIVIL
23. EXISTING VEHICLE ENTRANCE RAMP TO U/G GARAGE LOCATED AT 121 PARKDALE
24. GAS PRESSURE RELEASE STATION
25. BICYCLE RACKS, SEE LANDSCAPE PLAN FOR EXACT LOCATION AND SPEC
26. ELECTRICAL VAULT BELOW
27. LINE OF L4-26 BALCONIES ABOVE
28. P1 LEVEL SERVICES & WATER ENTRY ROOM
29. 1.07M H. GLASS GUARD @ PODIUM FLOOR
30. DEPRESSED CURB AS PER CITY STANDARDS. SEE CIVIL
31. 10% SLOPED RAMP FROM GARBAGE ROOM

URBAN PLANNER

J.L. Richards & Associates Ltd.
1565 Carling Avenue, Suite 700,
Ottawa, ON K1Z 8R1
Tel: (613) 728-3571
Fax: (613) 728-6012
E-Mail: mrivet@jlrichards.ca

CIVIL ENGINEER

J.L. Richards & Associates Ltd.
1565 Carling Avenue, Suite 700,
Ottawa, ON K1Z 8R1
Tel: (613) 728-3571
Fax: (613) 728-6012
E-Mail: ldalrymple@jlrichards.ca

LANDSCAPE ARCHITECT

Levstek Consulting
5871 Hugh Crescent
Ottawa, (Osgoode) ON K0A 2W0
Tel: (613) 826-0518
E-Mail: rlevstek@larocquelevstek.com

KEY MAP

PROJECT INFORMATION

ZONING	R5B[1929] S284-h
SITE AREA	1,372.7 sq. m. (14,776 sq. ft.)

PROJECT STATISTICS

GRADE (ZONING DEFINITION)		60.50 M (geo.)
BUILDING HEIGHT		84.0 M
YARD SETBACKS - AS PER ZONING SCHEDULE		S284
LANDSCAPE OPEN SPACE (REQ'D)	30.0%	(411.81 sq. m.)
PROVIDED:	50.5%	(693.50 sq. m.)
AMENITY SPACE REQUIRED	6 sq.m x 238 units =	1,440 sq.m
PROVIDED:		3,329 sq.m

GROSS BUILDING - AREAS

(CITY OF OTTAWA ZONING DEFINITION)

PARKING LEVEL (P1 to P6)		0 sq. m. 000 sq. ft.
GROUND FLOOR		0 sq. m. 000 sq. ft.
2nd FLOOR		792.0 sq. m. 8,525 sq. ft.
3rd FLOOR		503.3 sq. m. 5,417 sq. ft.
4th to 26th FLOOR	23 x 577.21 sq. m. 23 x 6,213 sq. ft.	13,275.7 sq. m. 142,899 sq. ft.
27th to 28th FLOOR	2 x 506 sq. m. 2 x 5,447 sq. ft.	1,012 sq. m. 10,894 sq. ft.
29th & 30th LEVEL MECHANICAL & AMENITY PENTHOUSE		0 sq. m. 000 sq. ft.
TOTAL BUILDING AREA		15,583.1 sq. m. 167,735 sq. ft.

UNIT STATISTICS

STUDIO UNIT	06
1 BEDROOM	127
2+ BEDROOM UNIT	107
TOTAL	240

CAR PARKING

ZONING - AREA 'Z' ON SCHD. 1A

REQUIRED

RESIDENCE	- NOT REQUIRED	0
VISITOR	- 0.1 PER DWELLING UNIT (AFTER 12 UNITS)	23
TOTAL		23

PROVIDED

RESIDENCE	- 0.76 PER UNIT (240 UNITS)	184
VISITOR	- 0.1 PER DWELLING UNIT (AFTER 12 UNITS)	23
TOTAL		207

NOTE:
2 TYPE 'A' & 2 TYPE 'B' B/F SPACES PROVIDED. (3 REQUIRED TOTAL)
78 PROVIDED STALLS (38%) ARE REDUCED SIZE

BICYCLE PARKING

REQUIRED

RESIDENCE	- 0.5 PER UNIT (240 UNITS)	120

PROVIDED

INTERIOR	248
EXTERIOR	6
TOTAL	254

LOT COVERAGE

PAVED SURFACE =	103.0 sq. m.	7.5%
BUILDING FOOTPRINT =	1,120.5 sq. m.	81.6%
LANDSCAPE OPEN SPACE :	149.2 sq. m.	10.9%
TOTAL =	1,372.7 sq. m.	100.0%
TOTAL LANDSCAPED AREA:		
GROUND FLOOR =	149.2 sq. m.	10.9%
3rd FLOOR PODIUM =	248.9 sq. m.	18.1%
AMENITY ROOF TERRACE =	295.4 sq. m.	21.5%
TOTAL =	693.5 sq. m.	50.1%

AMENITY SPACE

PRIVATE BALCONIES =	2,179.0 sq. m.
PRIVATE PATIOS =	122.0 sq. m.
1st FLOOR COMMUNAL INTERIOR =	320.2 sq. m.
3rd FLOOR COMMUNAL INTERIOR =	69.3 sq. m.
3rd FLOOR COMMUNAL EXTERIOR =	229.7 sq. m.
29th FLOOR COMMUNAL INTERIOR =	170.0 sq. m.
29th FLOOR COMMUNAL EXTERIOR =	295.4 sq. m.
TOTAL =	3,385.6 sq. m.
(TOTAL COMMUNAL) =	1,084.6 sq. m.
REQUIRED - 6.0M² PER UNIT (240) =	1,440.0 sq. m.
REQUIRED COMMUNAL @ 50% =	720.0 sq. m.

LEGAL DESCRIPTION

TOPOGRAPHICAL PLAN OF THE

LOTS 4, 5 and 6
EAST PARKDALE AVENUE
(Formerly Firth Street)
REGISTERED PLAN 41
CITY OF OTTAWA
Prepared by Annis, O'Sullivan, Vollebekk Ltd.
&
TOPOGRAPHICAL PLAN OF THE LANE
(BETWEEN FORWARD AVE. & PARKDALE AVE.)
REGISTERED PLAN 41
CITY OF OTTAWA
Prepared by Annis, O'Sullivan, Vollebekk Ltd.

PROJECT DEVELOPER

BRIGIL Construction
98, Lois street
Gatineau, Qc, J8Y 3R7
Tel: (819) 243-7392
Fax: (819) 243-5126
E-Mail: brigil@brigil.com

SURVEYOR

Annis O'Sullivan Vollebekk Ltd.
Ontario Land Surveyors
14 Concourse Gate, Suite 500,
Nepean, Ontario K2E 7S6
Tel: (613) 727-0850
Fax: (613) 727-1079
E-Mail: EdH@aovltd.com

NOTATION SYMBOLS:

- 00 — INDICATES DRAWING NOTES, LISTED ON EACH SHEET.
- 00 — INDICATES ASSEMBLIE TYPE; REFER TO TYPICAL ASSEMBLIES SCHEDUAL.
- 00 — INDICATES WINDOW TYPE; REFER TO WINDOW ELEVATIONS AND DETAILS ON A900 SERIES.
- 000 — INDICATES DOOR TYPE; REFER TO DOOR SCHEDULE AND DETAILS ON A900 SERIES.
- DETAIL NUMBER
- TITLE / SCALE
- DETAIL REFERENCE PAGE
- DETAIL CROSS REFERENCE PAGE

GENERAL NOTES:

- A. REFER TO TYPICAL ASSEMBLIES SHEET FOR WALL, PARTITION, ROOF CEILING & FLOOR TYPES.
- B. FOR DOOR TYPES AND HARDWARE REQUIREMENTS REFER TO DOOR SCHEDULE ON A900 SERIES.
- C. ALL INTERIOR DIMENSIONS ARE TAKEN FROM THE FACE OF DRYWALL.
- D. ALL EXTERIOR DIMENSIONS ARE TAKEN FROM THE FACE OF CLADDING.
- E. ALL EXTERIOR WALLS ARE TO BE TYPE 'W1' UNLESS NOTED OTHER WISE.
- F. ALL INTERIOR PARTITIONS ARE TO BE TYPE 'P1' UNLESS NOTED OTHER WISE.

REVISIONS:

No.	DESCRIPTION	DATE
9		
8		
7		
6		
5	ISSUED FOR REVISED SPC - R2	Feb.07, 20
4	ISSUED FOR SITE PLAN CONTROL	Oct. 22, 19
3	ISSUED FOR CONSULTANT COORDINATION	Oct. 10, 19
2	ISSUED FOR REVISED LAYOUT	July 16, 19
1	ISSUED FOR DESIGN CONCEPT	Ap. 08, 19

ARCHITECT SEAL: ONTARIO ASSOCIATION OF ARCHITECTS — RODERICK I. LAHEY LICENCE 4375

SEAL DATE: STAMP DATE

NORTH ARROW:

CLIENT:

BRIGIL

ARCHITECT:

RODERICKLAHEY
ARCHITECT INC
56 Beech Street, Ottawa, Ontario K1S 3J6
t.613.724.9932 f.613.724.1209 www.rodericklahey.ca

PROJECT TITLE:

99 PARKDALE

OTTAWA ONTARIO

SHEET TITLE:

SITE PLAN

DRAWN: RV	CHECKED: R.L.A.
SCALE: 1:100	SHEET No. SP-1
PROJECT No. 1918	

D07-12-19-0176

Appendix C

- Traffic Counts
- Traffic Signal Timing

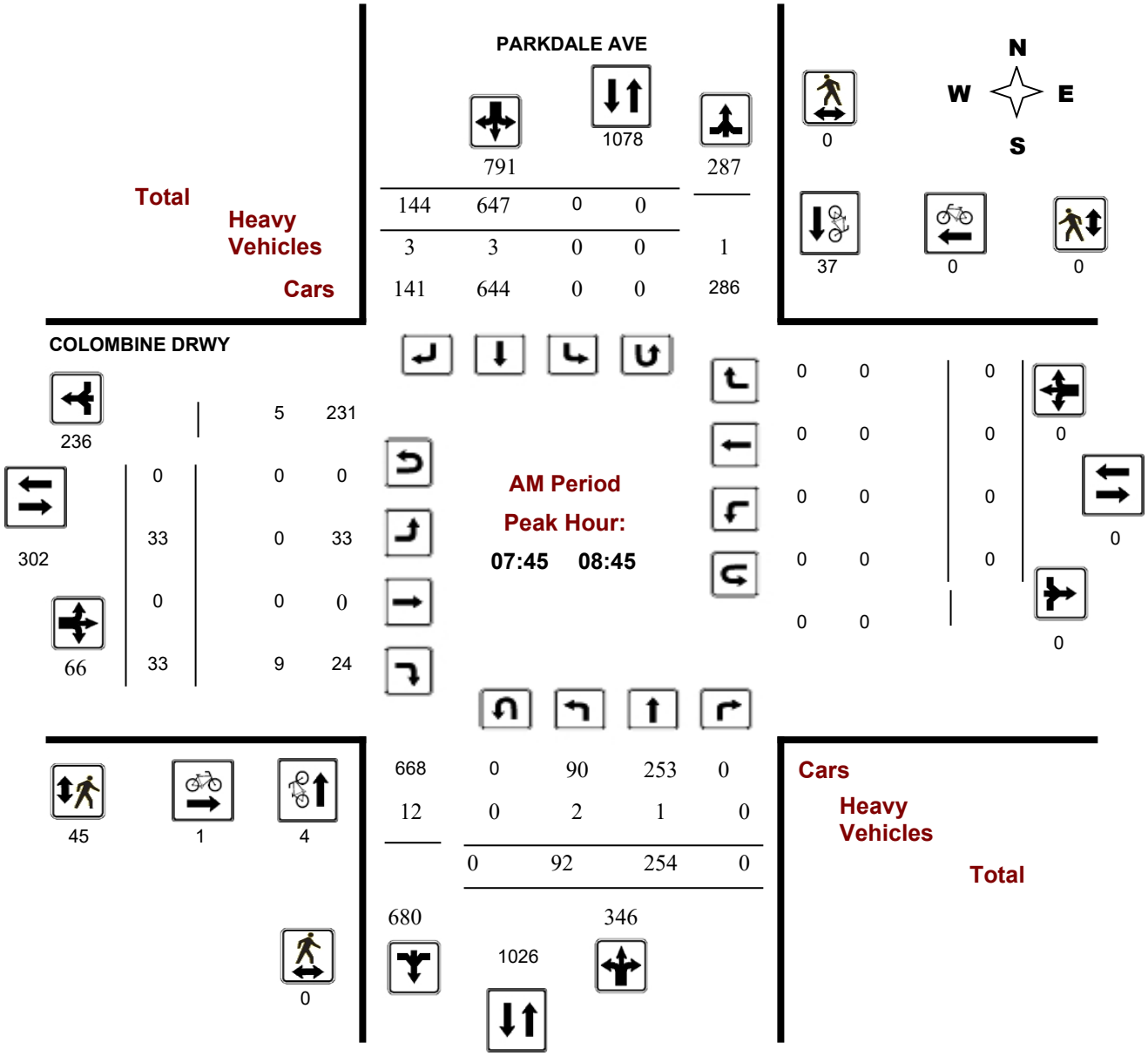
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

COLOMBINE DRWY @ PARKDALE AVE

Survey Date: Wednesday, October 19, 2016 **WO No:** 36398

Start Time: 07:00 **Device:** Miovision



Comments

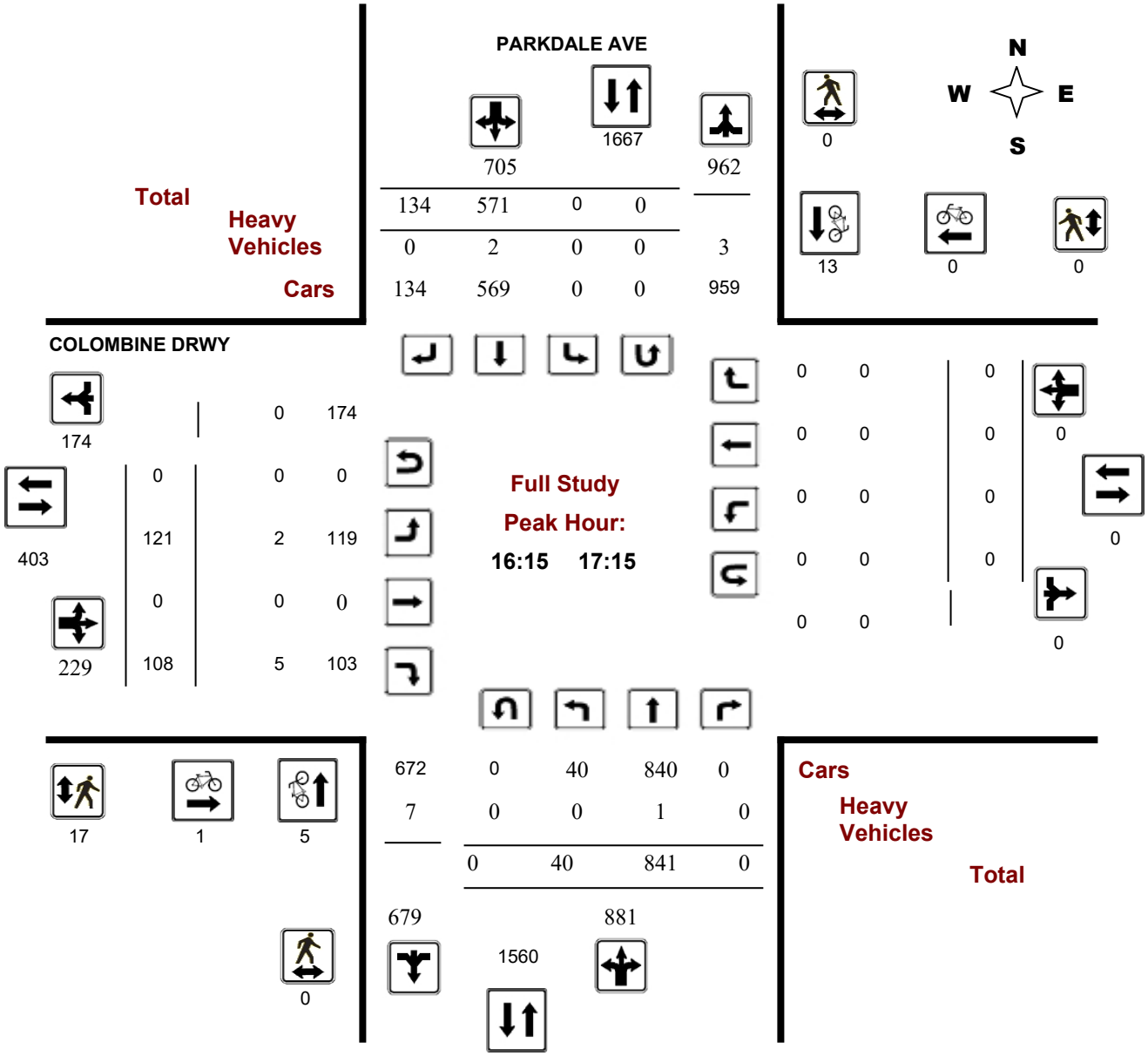
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

COLOMBINE DRWY @ PARKDALE AVE

Survey Date: Wednesday, October 19, 2016 **WO No:** 36398

Start Time: 07:00 **Device:** Miovision



Comments

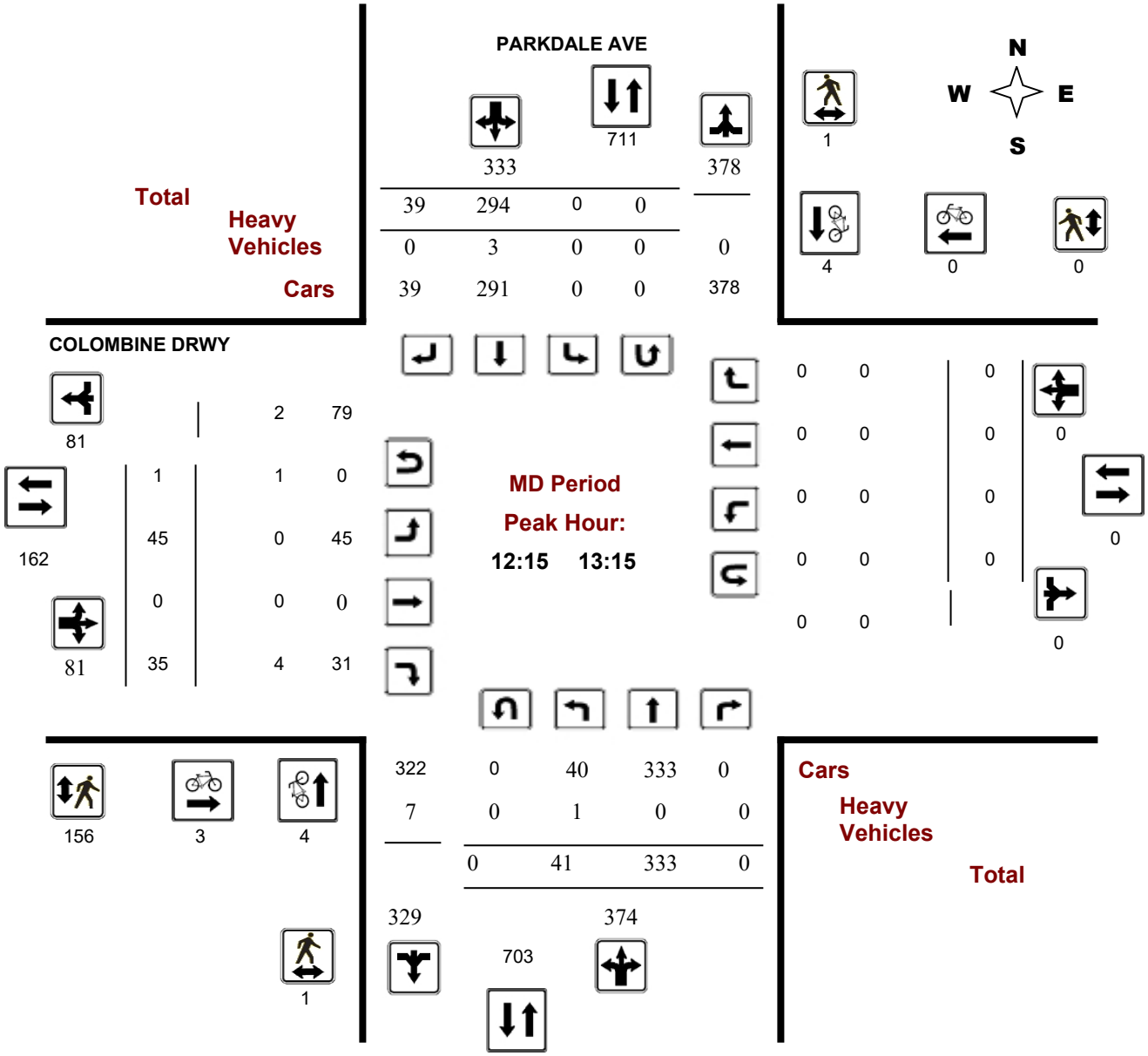
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

COLOMBINE DRWY @ PARKDALE AVE

Survey Date: Wednesday, October 19, 2016 **WO No:** 36398

Start Time: 07:00 **Device:** Miovision



Comments

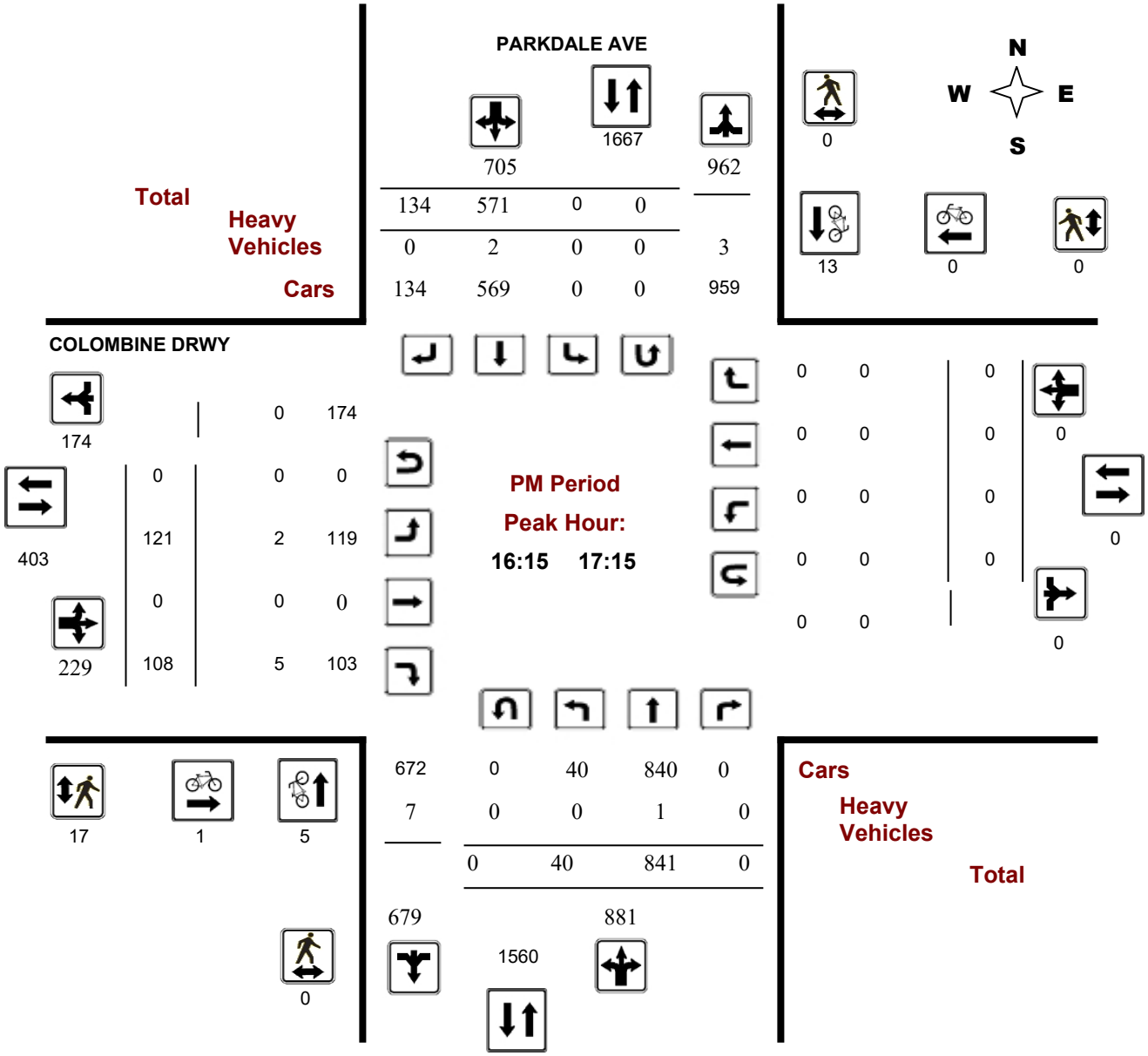
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

COLOMBINE DRWY @ PARKDALE AVE

Survey Date: Wednesday, October 19, 2016 **WO No:** 36398

Start Time: 07:00 **Device:** Miovision



Comments

Transportation Services - Traffic Services

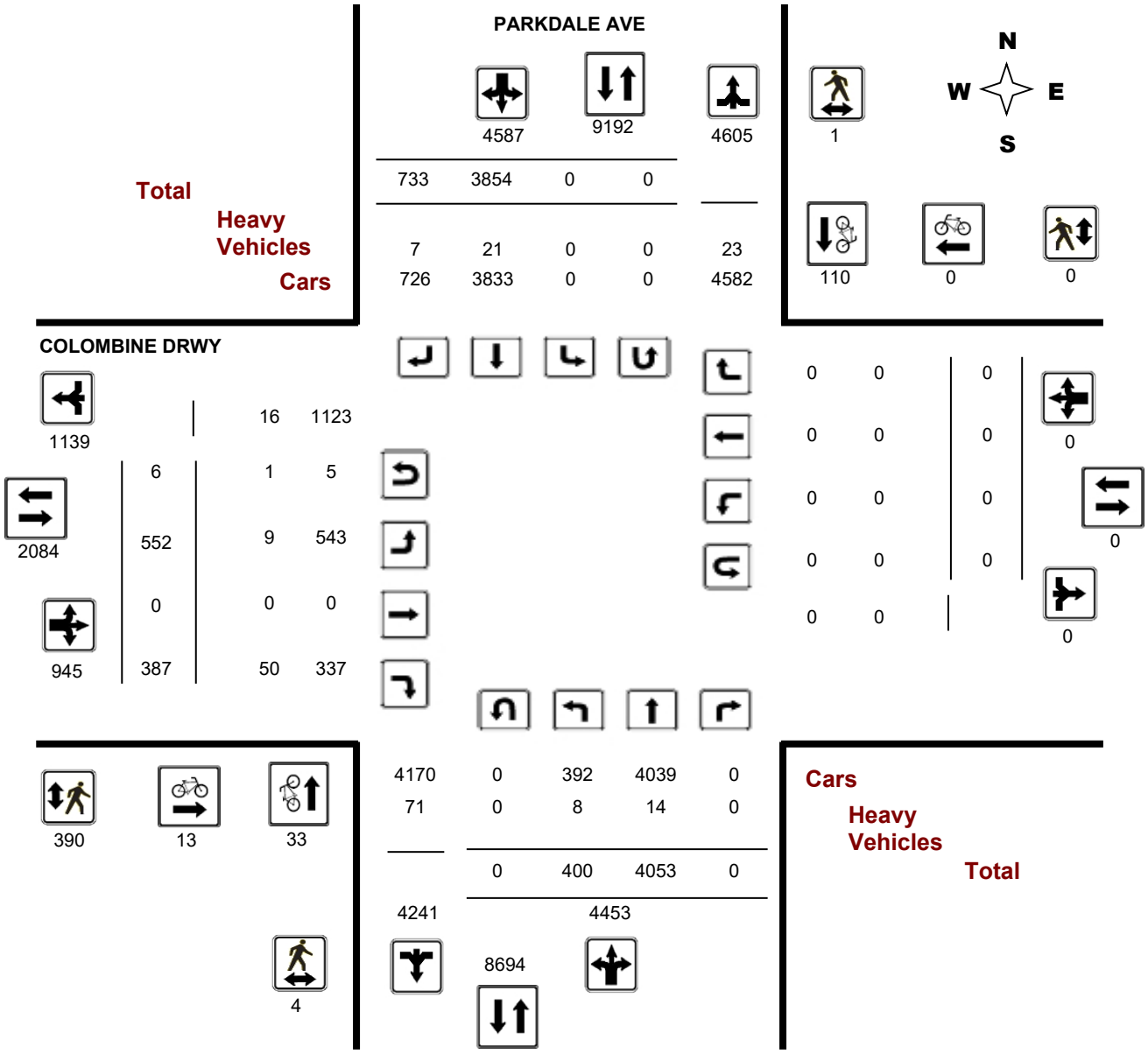
Turning Movement Count - Full Study Diagram

COLOMBINE DRWY @ PARKDALE AVE

Survey Date: Wednesday, October 19, 2016

WO#: 36398

Device: Miovision



Comments

Transportation Services - Traffic Services

Work Order
36398

Turning Movement Count - Full Study Summary Report

COLOMBINE DRWY @ PARKDALE AVE

Survey Date: Wednesday, October 19, 201

Total Observed U-Turns

Northbound: 0 Southbound: 0
Eastbound: 6 Westbound: 0

AADT Factor
.90

Full Study

	PARKDALE AVE									COLOMBINE DRWY									
	Northbound				Southbound					Eastbound				Westbound					
Period	LT	ST	RT	**NB TOT**	LT	ST	RT	**SB TOT**	**STR TOT**	LT	ST	RT	**EB TOT**	LT	ST	RT	**WB TOT**	**STR TOT**	**Grand Total**
07:00 08:00	79	218	0	**297**	0	682	169	**851**	**1148**	26	0	18	**44**	0	0	0	**0**	**44**	**1192**
08:00 09:00	96	245	0	**341**	0	624	134	**758**	**1099**	38	0	39	**77**	0	0	0	**0**	**77**	**1176**
09:00 10:00	63	236	0	**299**	0	523	75	**598**	**897**	31	0	37	**68**	0	0	0	**0**	**68**	**965**
11:30 12:30	27	320	0	**347**	0	309	33	**342**	**689**	49	0	41	**90**	0	0	0	**0**	**90**	**779**
12:30 13:30	36	320	0	**356**	0	294	43	**337**	**693**	36	0	27	**63**	0	0	0	**0**	**63**	**756**
15:00 16:00	25	1089	0	**1114**	0	337	58	**395**	**1509**	137	0	50	**187**	0	0	0	**0**	**187**	**1696**
16:00 17:00	37	843	0	**880**	0	573	119	**692**	**1572**	124	0	115	**239**	0	0	0	**0**	**239**	**1811**
17:00 18:00	37	782	0	**819**	0	512	102	**614**	**1433**	111	0	60	**171**	0	0	0	**0**	**171**	**1604**
Sub Total	400	4053	0	**4453**	0	3854	733	**4587**	**9040**	552	0	387	**939**	0	0	0	**0**	**939**	**9979**
U Turns				**0**				**0**	**0**				**6**				**0**	**6**	**6**
Total	400	4053	0	**4453**	0	3854	733	**4587**	**9040**	552	0	387	**945**	0	0	0	**0**	**945**	**9985**
EQ 12Hr	556	5634	0	**6190**	0	5357	1019	**6376**	**12566**	767	0	538	**1314**	0	0	0	**0**	**1314**	**13880**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.													**1.39**						
AVG 12Hr	500	5070	0	**5571**	0	4821	917	**5738**	**11309**	691	0	484	**1182**	0	0	0	**0**	**1182**	**12491**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.													**.90**						
AVG 24Hr	656	6642	0	**7298**	0	6316	1201	**7517**	**14815**	905	0	634	**1549**	0	0	0	**0**	**1549**	**16364**
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.													**1.31**						

Comments:

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

Transportation Services - Traffic Services

W.O. 36398

Turning Movement Count - 15 Minute Summary Report

COLOMBINE DRWY @ PARKDALE AVE

Survey Date: Wednesday, October 19, 2016

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 6 Westbound: 0

		PARKDALE AVE									COLOMBINE DRWY									
		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	24	46	0	**70**	0	189	46	**235**	**305**	2	0	3	**5**	0	0	0	**0**	**5**	**310**
07:15	07:30	14	45	0	**59**	0	159	36	**195**	**254**	8	0	6	**14**	0	0	0	**0**	**14**	**268**
07:30	07:45	23	65	0	**88**	0	153	39	**192**	**280**	7	0	5	**12**	0	0	0	**0**	**12**	**292**
07:45	08:00	18	62	0	**80**	0	181	48	**229**	**309**	9	0	4	**13**	0	0	0	**0**	**13**	**322**
08:00	08:15	25	71	0	**96**	0	151	33	**184**	**280**	4	0	6	**10**	0	0	0	**0**	**10**	**290**
08:15	08:30	23	58	0	**81**	0	160	28	**188**	**269**	11	0	11	**22**	0	0	0	**0**	**22**	**291**
08:30	08:45	26	63	0	**89**	0	155	35	**190**	**279**	9	0	12	**21**	0	0	0	**0**	**21**	**300**
08:45	09:00	22	53	0	**75**	0	158	38	**196**	**271**	14	0	10	**24**	0	0	0	**0**	**24**	**295**
09:00	09:15	23	57	0	**80**	0	157	28	**185**	**265**	6	0	10	**16**	0	0	0	**0**	**16**	**281**
09:15	09:30	19	73	0	**92**	0	137	21	**158**	**250**	10	0	7	**19**	0	0	0	**0**	**19**	**269**
09:30	09:45	10	48	0	**58**	0	123	19	**142**	**200**	9	0	12	**21**	0	0	0	**0**	**21**	**221**
09:45	10:00	11	58	0	**69**	0	106	7	**113**	**182**	6	0	8	**15**	0	0	0	**0**	**15**	**197**
11:30	11:45	5	82	0	**87**	0	74	11	**85**	**172**	3	0	9	**12**	0	0	0	**0**	**12**	**184**
11:45	12:00	8	69	0	**77**	0	91	9	**100**	**177**	17	0	7	**24**	0	0	0	**0**	**24**	**201**
12:00	12:15	5	82	0	**87**	0	69	6	**75**	**162**	12	0	13	**25**	0	0	0	**0**	**25**	**187**
12:15	12:30	9	87	0	**96**	0	75	7	**82**	**178**	17	0	12	**29**	0	0	0	**0**	**29**	**207**
12:30	12:45	9	84	0	**93**	0	75	7	**82**	**175**	8	0	7	**16**	0	0	0	**0**	**16**	**191**
12:45	13:00	12	87	0	**99**	0	75	15	**90**	**189**	7	0	7	**14**	0	0	0	**0**	**14**	**203**
13:00	13:15	11	75	0	**86**	0	69	10	**79**	**165**	13	0	9	**22**	0	0	0	**0**	**22**	**187**
13:15	13:30	4	74	0	**78**	0	75	11	**86**	**164**	8	0	4	**13**	0	0	0	**0**	**13**	**177**
15:00	15:15	3	293	0	**296**	0	66	16	**82**	**378**	40	0	12	**52**	0	0	0	**0**	**52**	**430**
15:15	15:30	9	286	0	**295**	0	74	14	**88**	**383**	38	0	12	**51**	0	0	0	**0**	**51**	**434**
15:30	15:45	4	291	0	**295**	0	88	11	**99**	**394**	39	0	10	**49**	0	0	0	**0**	**49**	**443**
15:45	16:00	9	219	0	**228**	0	109	17	**126**	**354**	20	0	16	**36**	0	0	0	**0**	**36**	**390**
16:00	16:15	9	211	0	**220**	0	155	19	**174**	**394**	25	0	29	**54**	0	0	0	**0**	**54**	**448**
16:15	16:30	9	197	0	**206**	0	150	42	**192**	**398**	30	0	29	**59**	0	0	0	**0**	**59**	**457**
16:30	16:45	10	253	0	**263**	0	142	25	**167**	**430**	30	0	28	**58**	0	0	0	**0**	**58**	**488**
16:45	17:00	9	182	0	**191**	0	126	33	**159**	**350**	39	0	29	**68**	0	0	0	**0**	**68**	**418**
17:00	17:15	12	209	0	**221**	0	153	34	**187**	**408**	22	0	22	**44**	0	0	0	**0**	**44**	**452**
17:15	17:30	9	210	0	**219**	0	129	30	**159**	**378**	29	0	19	**48**	0	0	0	**0**	**48**	**426**
17:30	17:45	10	188	0	**198**	0	146	24	**170**	**368**	38	0	11	**49**	0	0	0	**0**	**49**	**417**
17:45	18:00	6	175	0	**181**	0	84	14	**98**	**279**	22	0	8	**30**	0	0	0	**0**	**30**	**309**
TOTAL:		400	4053	0	**4453**	0	3854	733	**4587**	**9040**	552	0	387	**945**	0	0	0	**0**	**945**	**9985**

Note: U-Turns are included in Totals.

Comment:

Transportation Services - Traffic Services

Turning Movement Count - Cyclist Volume Report

Work Order
36398

COLOMBINE DRWY @ PARKDALE AVE

Count Date: Wednesday, October 19, 2016 **Start Time:** 07:00

	PARKDALE AVE			COLOMBINE DRWY			
Time Period	Northbound	Southbound	**Street Total**	Eastbound	Westbound	**Street Total**	**Grand Total**
07:00 08:00	2	25	**27**	1	0	**1**	**28**
08:00 09:00	5	27	**32**	1	0	**1**	**33**
09:00 10:00	4	18	**22**	1	0	**1**	**23**
11:30 12:30	2	5	**7**	2	0	**2**	**9**
12:30 13:30	5	2	**7**	2	0	**2**	**9**
15:00 16:00	3	5	**8**	2	0	**2**	**10**
16:00 17:00	3	12	**15**	0	0	**0**	**15**
17:00 18:00	9	16	**25**	4	0	**4**	**29**
Total	33	110	**143**	13	0	**13**	**156**

Comment:

Note: These volumes consists of bicycles only (no mopeds or motorcycles) and ARE NOT included in the Turning Movement Count Summary.

Transportation Services - Traffic Services

Turning Movement Count - Cyclist Volume Report

Work Order
36398

COLOMBINE DRWY @ PARKDALE AVE

Count Date: Wednesday, October 19, 2016 **Start Time:** 07:00

	PARKDALE AVE			COLOMBINE DRWY			
Time Period	Northbound	Southbound	**Street Total**	Eastbound	Westbound	**Street Total**	**Grand Total**
07:00 08:00	2	25	**27**	1	0	**1**	**28**
08:00 09:00	5	27	**32**	1	0	**1**	**33**
09:00 10:00	4	18	**22**	1	0	**1**	**23**
11:30 12:30	2	5	**7**	2	0	**2**	**9**
12:30 13:30	5	2	**7**	2	0	**2**	**9**
15:00 16:00	3	5	**8**	2	0	**2**	**10**
16:00 17:00	3	12	**15**	0	0	**0**	**15**
17:00 18:00	9	16	**25**	4	0	**4**	**29**
Total	33	110	**143**	13	0	**13**	**156**

Comment:

Note: These volumes consists of bicycles only (no mopeds or motorcycles) and ARE NOT included in the Turning Movement Count Summary.

Transportation Services - Traffic Services

Work Order
36398

Turning Movement Count - 15 Min U-Turn Total Report

COLOMBINE DRWY @ PARKDALE AVE

Survey Date: Wednesday, October 19, 2016

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	2	0	2
09:30	09:45	0	0	0	0	0
09:45	10:00	0	0	1	0	1
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	1	0	1
15:00	15:15	0	0	0	0	0
15:15	15:30	0	0	1	0	1
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	6	0	6

Transportation Services - Traffic Services

Work Order
36398

Turning Movement Count - Pedestrian Volume Report

COLOMBINE DRWY @ PARKDALE AVE

Count Date: Wednesday, October 19, 2016 **Start Time:** 07:00

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	11	0	11	11
07:15 07:30	0	0	0	11	0	11	11
07:30 07:45	0	0	0	16	0	16	16
07:45 08:00	0	0	0	16	0	16	16
07:00 08:00	0	0	0	54	0	54	54
08:00 08:15	0	0	0	16	0	16	16
08:15 08:30	0	0	0	6	0	6	6
08:30 08:45	0	0	0	7	0	7	7
08:45 09:00	1	0	1	3	0	3	4
08:00 09:00	1	0	1	32	0	32	33
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	5	0	5	5
09:45 10:00	0	0	0	0	0	0	0
09:00 10:00	0	0	0	6	0	6	6
11:30 11:45	2	0	2	17	0	17	19
11:45 12:00	0	0	0	17	0	17	17
12:00 12:15	0	0	0	38	0	38	38
12:15 12:30	0	0	0	52	0	52	52
11:30 12:30	2	0	2	124	0	124	126
12:30 12:45	1	1	2	47	0	47	49
12:45 13:00	0	0	0	44	0	44	44
13:00 13:15	0	0	0	13	0	13	13
13:15 13:30	0	0	0	14	0	14	14
12:30 13:30	1	1	2	118	0	118	120
15:00 15:15	0	0	0	4	0	4	4
15:15 15:30	0	0	0	5	0	5	5
15:30 15:45	0	0	0	7	0	7	7
15:45 16:00	0	0	0	5	0	5	5
15:00 16:00	0	0	0	21	0	21	21
16:00 16:15	0	0	0	8	0	8	8
16:15 16:30	0	0	0	4	0	4	4
16:30 16:45	0	0	0	3	0	3	3
16:45 17:00	0	0	0	6	0	6	6
16:00 17:00	0	0	0	21	0	21	21
17:00 17:15	0	0	0	4	0	4	4
17:15 17:30	0	0	0	3	0	3	3
17:30 17:45	0	0	0	3	0	3	3
17:45 18:00	0	0	0	4	0	4	4
17:00 18:00	0	0	0	14	0	14	14
Total	4	1	5	390	0	390	395

Comment:

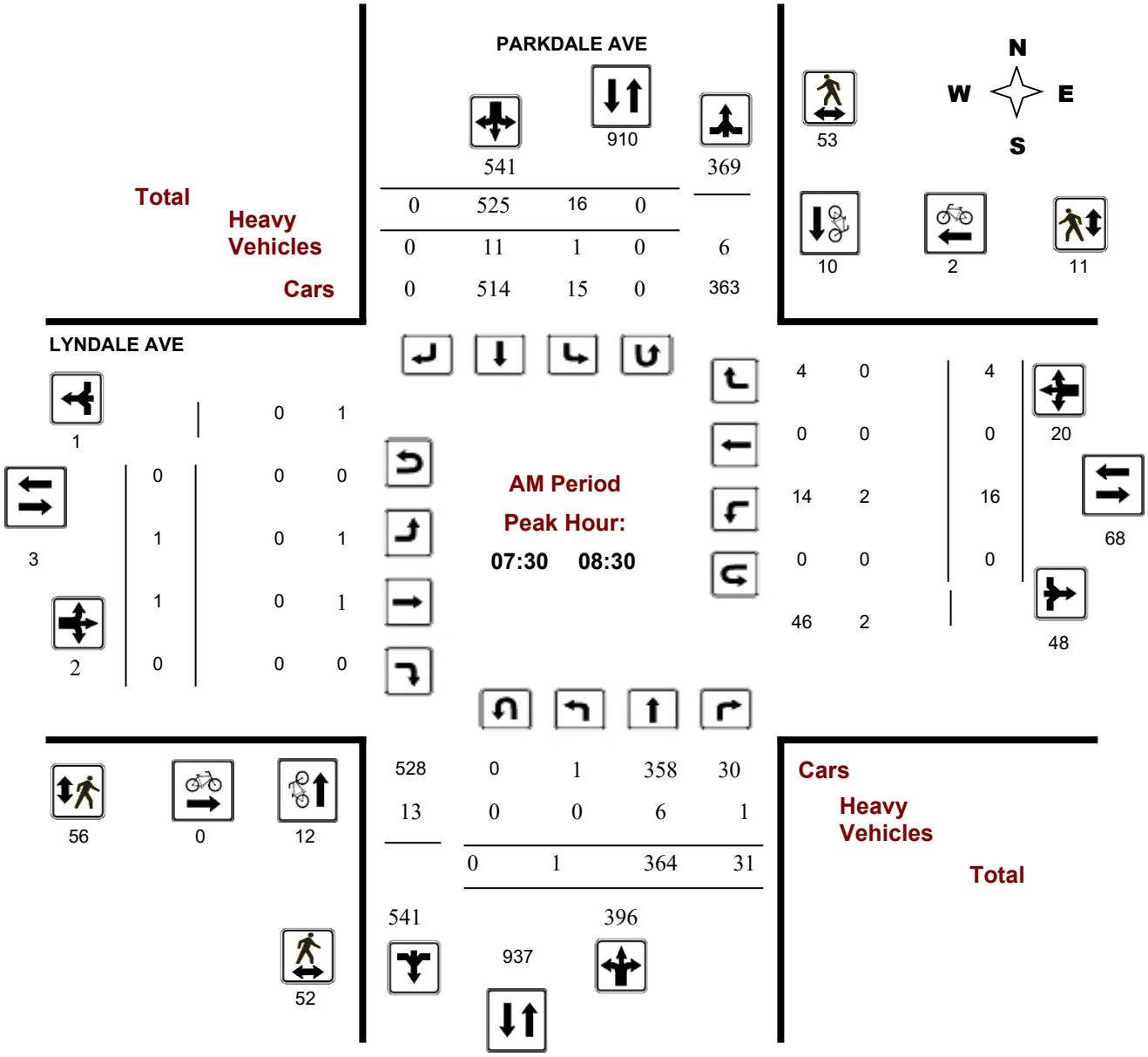
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

LYNDALE AVE @ PARKDALE AVE

Survey Date: Thursday, August 25, 2016 **WO No:** 36254

Start Time: 07:00 **Device:** Miovision



Comments

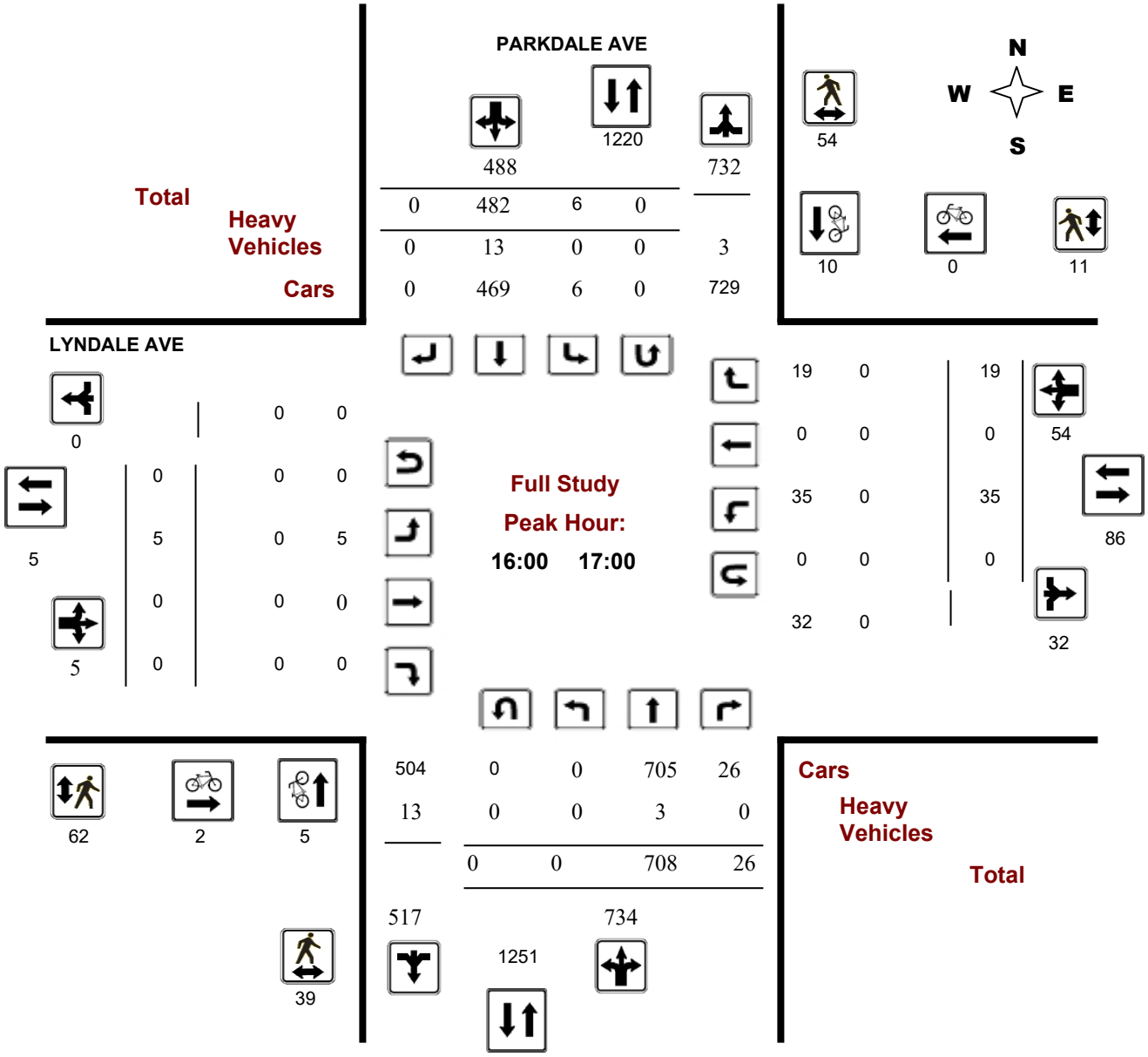
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

LYNDALE AVE @ PARKDALE AVE

Survey Date: Thursday, August 25, 2016 **WO No:** 36254

Start Time: 07:00 **Device:** Miovision



Comments

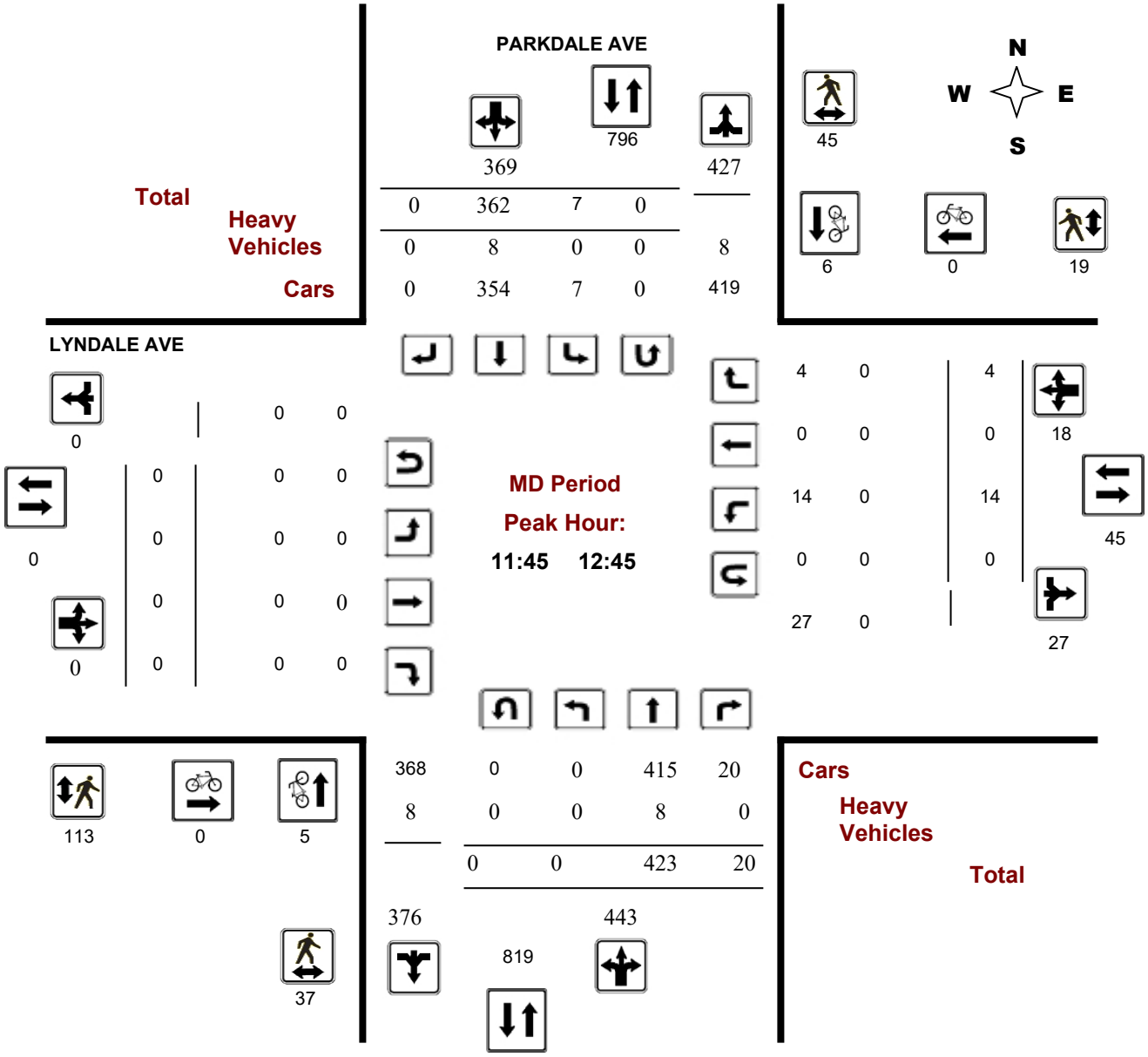
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

LYNDALE AVE @ PARKDALE AVE

Survey Date: Thursday, August 25, 2016 **WO No:** 36254

Start Time: 07:00 **Device:** Miovision



Comments

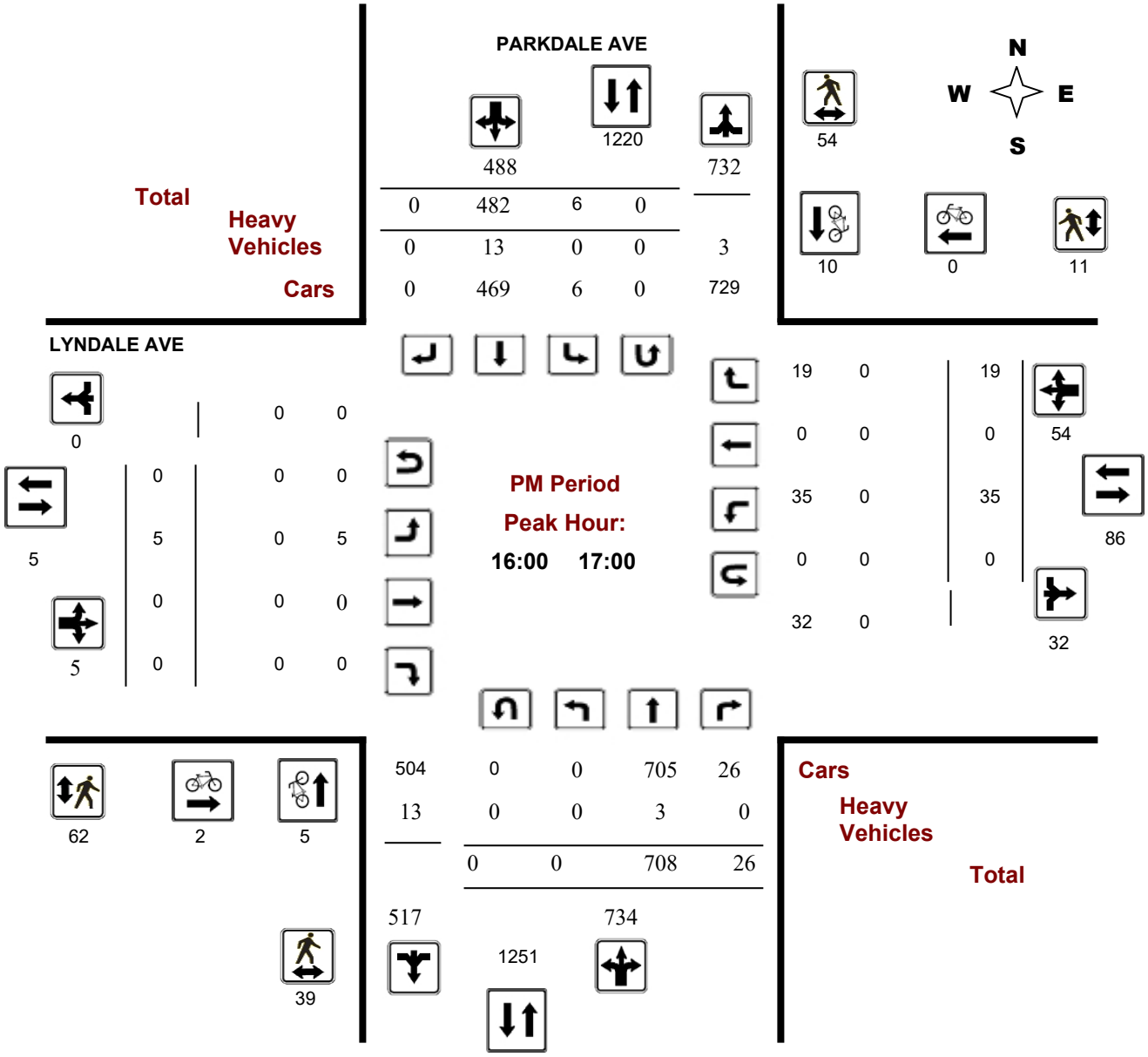
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

LYNDALE AVE @ PARKDALE AVE

Survey Date: Thursday, August 25, 2016 **WO No:** 36254

Start Time: 07:00 **Device:** Miovision



Comments

Transportation Services - Traffic Services

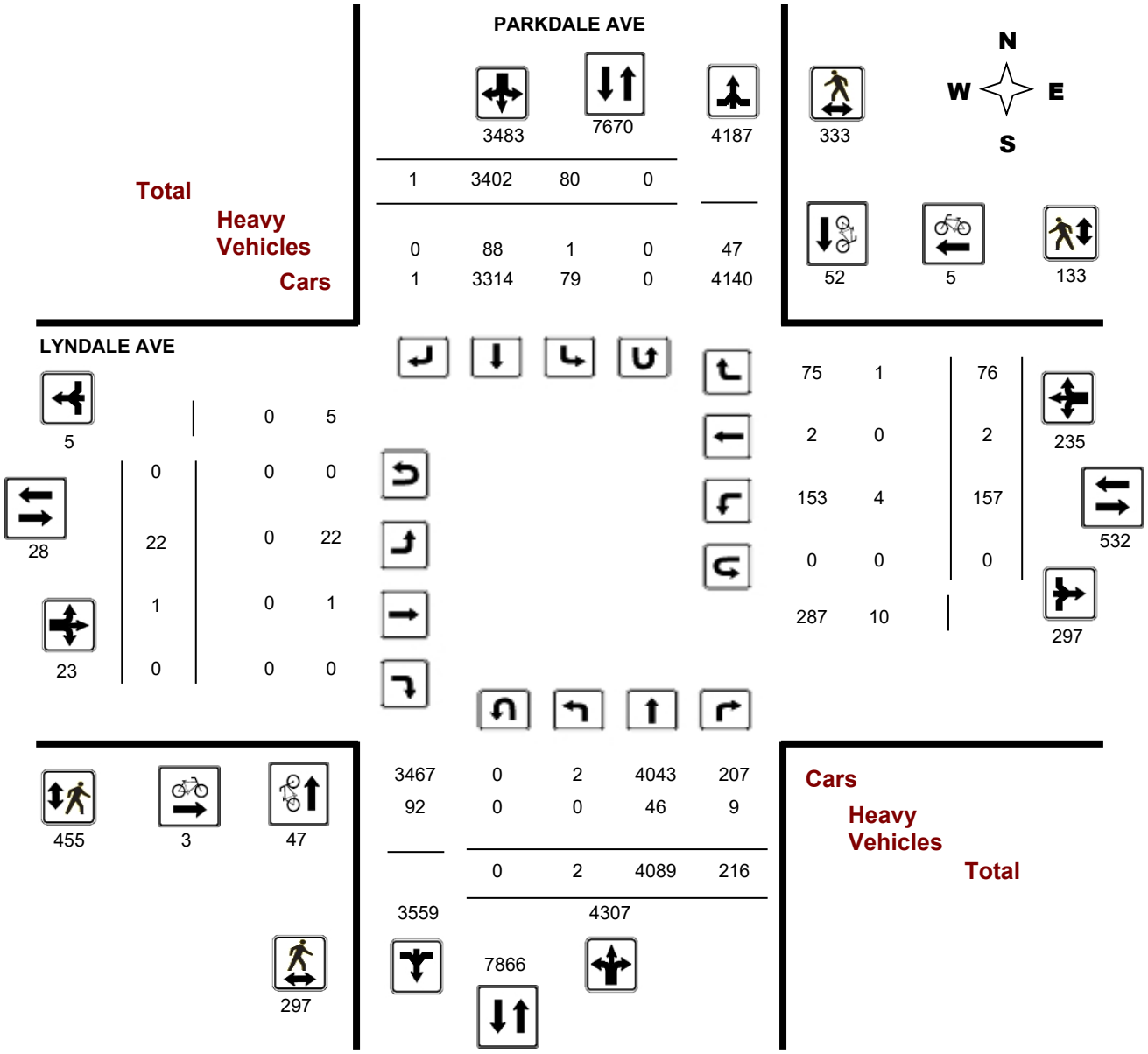
Turning Movement Count - Full Study Diagram

LYNDALE AVE @ PARKDALE AVE

Survey Date: Thursday, August 25, 2016

WO#: 36254

Device: Miovision



Comments

Transportation Services - Traffic Services

Work Order 36254

Turning Movement Count - Full Study Summary Report

LYNDALE AVE @ PARKDALE AVE

Survey Date: Thursday, August 25, 2016

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 0 Westbound: 0

AADT Factor .90

Full Study

	PARKDALE AVE									LYNDALE AVE									
	Northbound				Southbound					Eastbound				Westbound					
Period	LT	ST	RT	**NB TOT**	LT	ST	RT	**SB TOT**	**STR TOT**	LT	ST	RT	**EB TOT**	LT	ST	RT	**WB TOT**	**STR TOT**	**Grand Total**
07:00 08:00	1	339	25	**365**	6	538	0	**544**	**909**	1	0	0	**1**	12	0	2	**14**	**15**	**924**
08:00 09:00	0	387	36	**423**	24	475	0	**499**	**922**	0	1	0	**1**	17	0	8	**25**	**26**	**948**
09:00 10:00	0	310	31	**341**	18	403	0	**421**	**762**	1	0	0	**1**	14	0	4	**18**	**19**	**781**
11:30 12:30	0	398	19	**417**	7	377	0	**384**	**801**	0	0	0	**0**	18	0	4	**22**	**22**	**823**
12:30 13:30	0	448	22	**470**	8	327	0	**335**	**805**	0	0	0	**0**	9	0	3	**12**	**12**	**817**
15:00 16:00	1	800	24	**825**	4	350	1	**355**	**1180**	12	0	0	**12**	26	2	20	**48**	**60**	**1240**
16:00 17:00	0	708	26	**734**	6	482	0	**488**	**1222**	5	0	0	**5**	35	0	19	**54**	**59**	**1281**
17:00 18:00	0	699	33	**732**	7	450	0	**457**	**1189**	3	0	0	**3**	26	0	16	**42**	**45**	**1234**
Sub Total	2	4089	216	**4307**	80	3402	1	**3483**	**7790**	22	1	0	**23**	157	2	76	**235**	**258**	**8048**
U Turns				**0**				**0**	**0**				**0**				**0**	**0**	**0**
Total	2	4089	216	**4307**	80	3402	1	**3483**	**7790**	22	1	0	**23**	157	2	76	**235**	**258**	**8048**
EQ 12Hr	3	5684	300	**5987**	111	4729	1	**4841**	**10828**	31	1	0	**32**	218	3	106	**327**	**359**	**11187**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.													**1.39**						
AVG 12Hr	3	5115	270	**5388**	100	4256	1	**4357**	**9745**	28	1	0	**29**	196	3	95	**294**	**323**	**10068**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.													**.90**						
AVG 24Hr	3	6701	354	**7058**	131	5575	2	**5708**	**12766**	36	2	0	**38**	257	3	125	**385**	**423**	**13189**
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.													**1.31**						

Comments:

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

Transportation Services - Traffic Services

W.O. 36254

Turning Movement Count - 15 Minute Summary Report

LYNDALE AVE @ PARKDALE AVE

Survey Date: Thursday, August 25, 2016

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 0 Westbound: 0

		PARKDALE AVE									LYNDALE 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	0	80	9	**89**	1	134	0	**135**	**224**	0	0	0	**0**	2	0	0	**2**	**2**	**226**
07:15	07:30	0	90	6	**96**	2	129	0	**131**	**227**	0	0	0	**0**	6	0	1	**7**	**7**	**234**
07:30	07:45	0	84	4	**88**	2	152	0	**154**	**242**	0	0	0	**0**	3	0	0	**3**	**3**	**245**
07:45	08:00	1	85	6	**92**	1	123	0	**124**	**216**	1	0	0	**1**	1	0	1	**2**	**3**	**219**
08:00	08:15	0	91	15	**106**	9	133	0	**142**	**248**	0	0	0	**0**	5	0	2	**7**	**7**	**255**
08:15	08:30	0	104	6	**110**	4	117	0	**121**	**231**	0	1	0	**1**	7	0	1	**8**	**9**	**240**
08:30	08:45	0	82	12	**94**	6	112	0	**118**	**212**	0	0	0	**0**	3	0	4	**7**	**7**	**219**
08:45	09:00	0	110	3	**113**	5	113	0	**118**	**231**	0	0	0	**0**	2	0	1	**3**	**3**	**234**
09:00	09:15	0	76	11	**87**	4	105	0	**109**	**196**	0	0	0	**0**	3	0	1	**4**	**4**	**200**
09:15	09:30	0	83	9	**92**	4	111	0	**115**	**207**	1	0	0	**1**	4	0	1	**5**	**6**	**213**
09:30	09:45	0	68	3	**71**	5	97	0	**102**	**173**	0	0	0	**0**	3	0	0	**3**	**3**	**176**
09:45	10:00	0	83	8	**91**	5	90	0	**95**	**186**	0	0	0	**0**	4	0	2	**6**	**6**	**192**
11:30	11:45	0	93	3	**96**	2	86	0	**88**	**184**	0	0	0	**0**	4	0	1	**5**	**5**	**189**
11:45	12:00	0	101	4	**105**	1	104	0	**105**	**210**	0	0	0	**0**	2	0	2	**4**	**4**	**214**
12:00	12:15	0	105	6	**111**	4	85	0	**89**	**200**	0	0	0	**0**	9	0	0	**9**	**9**	**209**
12:15	12:30	0	99	6	**105**	0	102	0	**102**	**207**	0	0	0	**0**	3	0	1	**4**	**4**	**211**
12:30	12:45	0	118	4	**122**	2	71	0	**73**	**195**	0	0	0	**0**	0	0	1	**1**	**1**	**196**
12:45	13:00	0	113	4	**117**	0	87	0	**87**	**204**	0	0	0	**0**	5	0	0	**5**	**5**	**209**
13:00	13:15	0	100	8	**108**	3	83	0	**86**	**194**	0	0	0	**0**	3	0	1	**4**	**4**	**198**
13:15	13:30	0	117	6	**123**	3	86	0	**89**	**212**	0	0	0	**0**	1	0	1	**2**	**2**	**214**
15:00	15:15	0	198	11	**209**	2	93	0	**95**	**304**	5	0	0	**5**	11	0	8	**19**	**24**	**328**
15:15	15:30	0	213	6	**219**	0	83	0	**83**	**302**	0	0	0	**0**	8	0	5	**13**	**13**	**315**
15:30	15:45	1	197	5	**203**	2	80	1	**83**	**286**	1	0	0	**1**	5	2	4	**11**	**12**	**298**
15:45	16:00	0	192	2	**194**	0	94	0	**94**	**288**	6	0	0	**6**	2	0	3	**5**	**11**	**299**
16:00	16:15	0	198	5	**203**	1	105	0	**106**	**309**	3	0	0	**3**	8	0	3	**11**	**14**	**323**
16:15	16:30	0	191	8	**199**	3	113	0	**116**	**315**	1	0	0	**1**	13	0	5	**18**	**19**	**334**
16:30	16:45	0	166	5	**171**	1	113	0	**114**	**285**	1	0	0	**1**	8	0	7	**15**	**16**	**301**
16:45	17:00	0	153	8	**161**	1	151	0	**152**	**313**	0	0	0	**0**	6	0	4	**10**	**10**	**323**
17:00	17:15	0	143	9	**152**	3	113	0	**116**	**268**	0	0	0	**0**	6	0	6	**12**	**12**	**280**
17:15	17:30	0	190	11	**201**	2	119	0	**121**	**322**	1	0	0	**1**	5	0	5	**10**	**11**	**333**
17:30	17:45	0	178	6	**184**	0	108	0	**108**	**292**	1	0	0	**1**	9	0	3	**12**	**13**	**305**
17:45	18:00	0	188	7	**195**	2	110	0	**112**	**307**	1	0	0	**1**	6	0	2	**8**	**9**	**316**
TOTAL:		2	4089	216	**4307**	80	3402	1	**3483**	**7790**	22	1	0	**23**	157	2	76	**235**	**258**	**8048**

Note: U-Turns are included in Totals.

Comment:

Transportation Services - Traffic Services

Turning Movement Count - Cyclist Volume Report

Work Order
36254

LYNDALE AVE @ PARKDALE AVE

Count Date: Thursday, August 25, 2016

Start Time: 07:00

	PARKDALE AVE			LYNDALE AVE			
Time Period	Northbound	Southbound	**Street Total**	Eastbound	Westbound	**Street Total**	**Grand Total**
07:00 08:00	7	5	**12**	0	1	**1**	**13**
08:00 09:00	10	12	**22**	0	3	**3**	**25**
09:00 10:00	5	2	**7**	0	0	**0**	**7**
11:30 12:30	5	6	**11**	0	0	**0**	**11**
12:30 13:30	1	1	**2**	0	0	**0**	**2**
15:00 16:00	2	4	**6**	0	1	**1**	**7**
16:00 17:00	5	10	**15**	2	0	**2**	**17**
17:00 18:00	12	12	**24**	1	0	**1**	**25**
Total	47	52	**99**	3	5	**8**	**107**

Comment:

Note: These volumes consists of bicycles only (no mopeds or motorcycles) and ARE NOT included in the Turning Movement Count Summary.

Transportation Services - Traffic Services

W.O. 36254

Turning Movement Count - Heavy Vehicle Report

LYNDALE AVE @ PARKDALE AVE

Survey Date: Thursday, August 25, 2016

		PARKDALE AVE									LYNDALE 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	08:00	0	3	0	**3**	0	11	0	**11**	**14**	0	0	0	**0**	0	0	0	**0**	**0**	**14**
08:00	09:00	0	6	1	**7**	1	17	0	**18**	**25**	0	0	0	**0**	2	0	1	**3**	**3**	**28**
09:00	10:00	0	9	5	**14**	0	13	0	**13**	**27**	0	0	0	**0**	2	0	0	**2**	**2**	**29**
11:30	12:30	0	9	0	**9**	0	5	0	**5**	**14**	0	0	0	**0**	0	0	0	**0**	**0**	**14**
12:30	13:30	0	4	2	**6**	0	12	0	**12**	**18**	0	0	0	**0**	0	0	0	**0**	**0**	**18**
15:00	16:00	0	7	0	**7**	0	10	0	**10**	**17**	0	0	0	**0**	0	0	0	**0**	**0**	**17**
16:00	17:00	0	3	0	**3**	0	13	0	**13**	**16**	0	0	0	**0**	0	0	0	**0**	**0**	**16**
17:00	18:00	0	5	1	**6**	0	7	0	**7**	**13**	0	0	0	**0**	0	0	0	**0**	**0**	**13**
Sub Total		0	46	9	**55**	1	88	0	**89**	**144**	0	0	0	**0**	4	0	1	**5**	**5**	**149**
U-Turns (Heavy Vehicles)					**0**				**0**	**0**				**0**				**0**	**0**	**0**
Total		0	46	9	**0**	1	88	0	**89**	**144**	0	0	0	**0**	4	0	1	**5**	**5**	**149**

Heavy Vehicles include Buses, Single-Unit Trucks and Articulated Trucks. Further, they ARE included in the Turning Movement Count Summary.

Transportation Services - Traffic Services

Work Order
36254

Turning Movement Count - 15 Min U-Turn Total Report

LYNDALE AVE @ PARKDALE AVE

Survey Date: Thursday, August 25, 2016

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	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	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	0	0

Transportation Services - Traffic Services

Work Order
36254

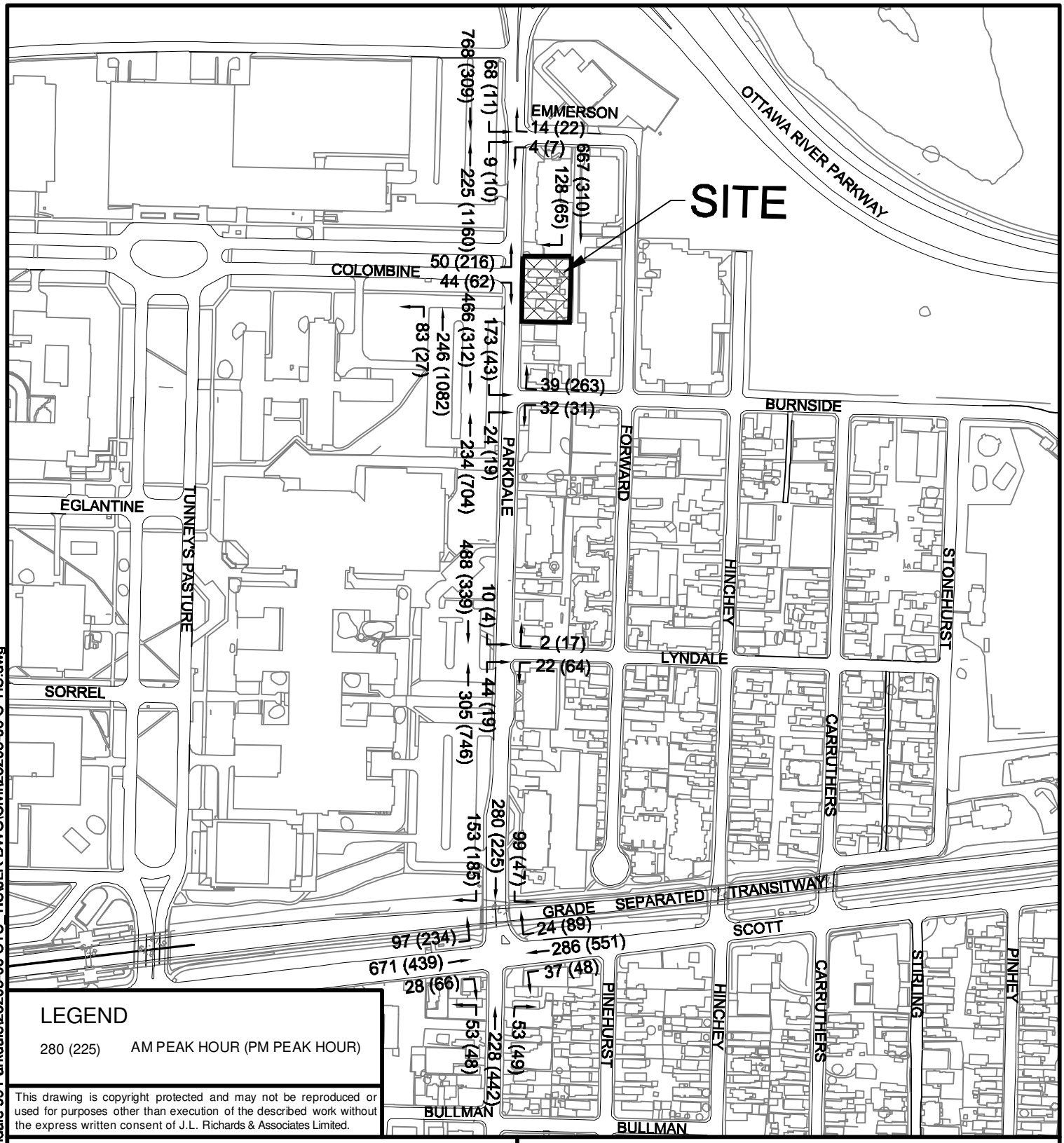
Turning Movement Count - Pedestrian Volume Report

LYNDALE AVE @ PARKDALE AVE

Count Date: Thursday, August 25, 2016 **Start Time:** 07:00

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	8	8	**16**	3	4	**7**	**23**
07:15 07:30	6	14	**20**	11	1	**12**	**32**
07:30 07:45	13	9	**22**	8	0	**8**	**30**
07:45 08:00	8	16	**24**	11	0	**11**	**35**
07:00 08:00	35	47	**82**	33	5	**38**	**120**
08:00 08:15	18	12	**30**	16	8	**24**	**54**
08:15 08:30	13	16	**29**	21	3	**24**	**53**
08:30 08:45	15	15	**30**	15	6	**21**	**51**
08:45 09:00	11	12	**23**	14	3	**17**	**40**
08:00 09:00	57	55	**112**	66	20	**86**	**198**
09:00 09:15	5	8	**13**	8	3	**11**	**24**
09:15 09:30	10	10	**20**	11	7	**18**	**38**
09:30 09:45	9	3	**12**	5	5	**10**	**22**
09:45 10:00	2	5	**7**	4	1	**5**	**12**
09:00 10:00	26	26	**52**	28	16	**44**	**96**
11:30 11:45	7	9	**16**	14	6	**20**	**36**
11:45 12:00	5	5	**10**	24	2	**26**	**36**
12:00 12:15	18	19	**37**	40	6	**46**	**83**
12:15 12:30	6	13	**19**	29	7	**36**	**55**
11:30 12:30	36	46	**82**	107	21	**128**	**210**
12:30 12:45	8	8	**16**	20	4	**24**	**40**
12:45 13:00	2	5	**7**	16	2	**18**	**25**
13:00 13:15	10	6	**16**	17	4	**21**	**37**
13:15 13:30	6	7	**13**	8	5	**13**	**26**
12:30 13:30	26	26	**52**	61	15	**76**	**128**
15:00 15:15	15	20	**35**	13	5	**18**	**53**
15:15 15:30	10	8	**18**	13	4	**17**	**35**
15:30 15:45	6	11	**17**	9	6	**15**	**32**
15:45 16:00	9	11	**20**	12	2	**14**	**34**
15:00 16:00	40	50	**90**	47	17	**64**	**154**
16:00 16:15	7	16	**23**	10	2	**12**	**35**
16:15 16:30	10	16	**26**	18	2	**20**	**46**
16:30 16:45	9	13	**22**	15	3	**18**	**40**
16:45 17:00	13	9	**22**	19	4	**23**	**45**
16:00 17:00	39	54	**93**	62	11	**73**	**166**
17:00 17:15	10	10	**20**	11	7	**18**	**38**
17:15 17:30	5	6	**11**	9	5	**14**	**25**
17:30 17:45	12	7	**19**	12	10	**22**	**41**
17:45 18:00	11	6	**17**	19	6	**25**	**42**
17:00 18:00	38	29	**67**	51	28	**79**	**146**
Total	297	333	**630**	455	133	**588**	**1218**

Comment:



LEGEND

280 (225) AM PEAK HOUR (PM PEAK HOUR)

File Location: P:\25000\25205 Urbandale 99 Parkdale\25205-06 CTS_TISJLR DWG\Civil\25205-06 C TIS.dwg

PROJECT:

99-107 PARKDALE AVENUE CONDOMINIUM
BUILDING URBANDALE CONSTRUCTION
CITY OF OTTAWA

DRAWING:

2012 EXISTING TRAFFIC

J.L.Richards
ENGINEERS·ARCHITECTS·PLANNERS

J.L. Richards
& Associates Limited
864 Lady Ellen Place
Ottawa, ON Canada
K1Z 5M2
Tel: 613 728 3571
Fax: 613 728 6012

DESIGN:	L.J.
DRAWN:	D.M.
CHECKED:	L.J.
PLOTTED:	Feb 06, 2012

DRAWING NO.: **FIGURE 4**

JLR NO: 25205-06

EMMERSON AVENUE AND PARKDALE AVENUE

Survey Date: 16-Jan-12

Vehicular Volume Summary Sheet - 15min. Volume

	Parkdale Avenue							Emmerson Avenue			
	Northbound			Southbound			STR TOT	Westbound			
Time Period	RT	ST	**SUB TOT**	LT	ST	**SUB TOT**		RT	LT	**SUB TOT**	**Grand Total**
6:30-6:45	0	23	**23**	2	196	**198**	**221**	2	0	**2**	**223**
6:45-7:00	0	35	**35**	6	194	**200**	**235**	1	1	**2**	**237**
7:00-7:15	1	31	**32**	7	188	**195**	**227**	1	0	**1**	**228**
7:15-7:30	0	51	**51**	14	199	**213**	**264**	2	0	**2**	**266**
7:30-7:45	0	44	**44**	13	199	**212**	**256**	2	1	**3**	**259**
7:45-8:00	1	43	**44**	18	196	**214**	**258**	3	1	**4**	**262**
8:00-8:15	1	50	**51**	19	178	**197**	**248**	1	1	**2**	**250**
8:15-8:30	2	52	**54**	18	209	**227**	**281**	5	1	**6**	**287**
8:30-8:45	1	63	**64**	27	183	**210**	**274**	3	1	**4**	**278**
8:45-9:00	0	58	**58**	10	189	**199**	**257**	5	0	**5**	**262**
9:00-9:15	6	52	**58**	13	187	**200**	**258**	1	2	**3**	**261**
9:15-9:30	2	61	**63**	8	185	**193**	**256**	1	2	**3**	**259**
11:00-11:15	4	46	**50**	4	70	**74**	**124**	3	5	**8**	**132**
11:15-11:30	3	53	**56**	1	57	**58**	**114**	3	3	**6**	**120**
11:30-11:45	2	65	**67**	0	57	**57**	**124**	3	8	**11**	**135**
11:45-12:00	2	52	**54**	1	64	**65**	**119**	1	6	**7**	**126**
12:00-12:15	2	50	**52**	1	56	**57**	**109**	2	4	**6**	**115**
12:15-12:30	4	65	**69**	1	67	**68**	**137**	6	2	**8**	**145**
12:30-12:45	1	66	**67**	1	75	**76**	**143**	4	1	**5**	**148**
12:45-13:00	4	60	**64**	2	69	**71**	**135**	0	4	**4**	**139**
15:30-15:45	2	355	**357**	2	60	**62**	**419**	4	0	**4**	**423**
15:45-16:00	4	245	**249**	1	82	**83**	**332**	7	0	**7**	**339**
16:00-16:15	2	301	**303**	2	78	**80**	**383**	4	3	**7**	**390**
16:15-16:30	2	259	**261**	6	89	**95**	**356**	7	4	**11**	**367**
16:30-16:45	2	256	**258**	2	88	**90**	**348**	3	2	**5**	**353**
16:45-17:00	6	205	**211**	4	95	**99**	**310**	4	0	**4**	**314**
17:00-17:15	3	218	**221**	2	85	**87**	**308**	6	1	**7**	**315**
17:15-17:30	3	223	**226**	10	104	**114**	**340**	4	2	**6**	**346**
17:30-17:45	0	190	**190**	3	91	**94**	**284**	6	2	**8**	**292**
17:45-18:00	1	157	**158**	2	75	**77**	**235**	5	4	**9**	**244**
18:00-18:15	2	141	**143**	1	58	**59**	**202**	4	5	**9**	**211**
18:15-18:30	1	121	**122**	3	58	**61**	**183**	3	4	**7**	**190**
Total Study	64	3691	3755	204	3781	3985	7740	106	70	176	**7916**

PEAK PERIOD SUMMARIES (VEHICULAR MOVEMENTS)

AM PEAK PERIOD (8:15-9:15)										
8:15-8:30	2	52	**54**	18	209	**227**	**281**	5	1	**6**
8:30-8:45	1	63	**64**	27	183	**210**	**274**	3	1	**4**
8:45-9:00	0	58	**58**	10	189	**199**	**257**	5	0	**5**
9:00-9:15	6	52	**58**	13	187	**200**	**258**	1	2	**3**
TOTALS	9	225	**234**	68	768	**836**	**1070**	14	4	**18**

OFF PEAK PERIOD (12:00-13:00)										
12:00-12:15	2	50	**52**	1	56	**57**	**109**	2	4	**6**
12:15-12:30	4	65	**69**	1	67	**68**	**137**	6	2	**8**
12:30-12:45	1	66	**67**	1	75	**76**	**143**	4	1	**5**
12:45-13:00	4	60	**64**	2	69	**71**	**135**	0	4	**4**
TOTALS	11	241	**252**	5	267	**272**	**524**	12	11	**23**

PM PEAK PERIOD (15:45-16:45)										
15:30-15:45	2	355	**357**	2	60	**62**	**419**	4	0	**4**
15:45-16:00	4	245	**249**	1	82	**83**	**332**	7	0	**7**
16:00-16:15	2	301	**303**	2	78	**80**	**383**	4	3	**7**
16:15-16:30	2	259	**261**	6	89	**95**	**356**	7	4	**11**
TOTALS	10	1160	**1170**	11	309	**320**	**1490**	22	7	**29**

Pedestrian Volume Summary Sheet - Hourly Volume

	Parkdale Avenue			Emmerson Avenue	
Time Period	Crossing Southside of intersection	Crossing Northside of intersection	**SUB TOT**	Crossing Eastside of intersection	**GRAND TOTAL**
6:30-7:30	0	0	**0**	1	**1**
7:30-8:30	3	0	**3**	0	**3**
8:30-9:30	2	1	**3**	4	**7**
11:00-12:00	2	0	**2**	2	**4**
12:00-13:00	4	0	**4**	9	**13**
15:30-16:30	2	0	**2**	5	**7**
16:30-17:30	11	0	**11**	0	**11**
17:30-18:30	3	0	**3**	0	**3**
Total Study	27	1	**28**	21	**49**

Bicycle Volume Summary Sheet - Hourly Volume

	Parkdale Avenue			Emmerson Avenue	
Time Period	Northbound	Southbound	**SUB TOT**	Westbound	**GRAND TOTAL**
6:30-7:30	0	0	**0**	0	**0**
7:30-8:30	0	0	**0**	0	**0**
8:30-9:30	0	0	**0**	0	**0**
11:00-12:00	0	0	**0**	0	**0**
12:00-13:00	0	0	**0**	0	**0**
15:30-16:30	0	0	**0**	0	**0**
16:30-17:30	0	0	**0**	0	**0**
17:30-18:30	0	0	**0**	0	**0**
Total Study	0	0	**0**	0	**0**

Heavy Transport Volume Summary Sheet - Hourly Volume

	Parkdale Avenue			Emmerson Avenue	
Time Period	Northbound	Southbound	**SUB TOT**	Westbound	**GRAND TOTAL**
6:30-7:30	0	0	**0**	0	**0**
7:30-8:30	0	0	**0**	0	**0**
8:30-9:30	0	0	**0**	0	**0**
11:00-12:00	0	0	**0**	0	**0**
12:00-13:00	0	1	**1**	0	**1**
15:30-16:30	0	0	**0**	0	**0**
16:30-17:30	0	1	**1**	0	**1**
17:30-18:30	0	2	**2**	0	**2**
Total Study	0	4	**4**	0	**4**

Heavy Transport Volume Summary Sheet - Hourly Volume Percentage (%)

	Parkdale Avenue		Emmerson Avenue
Time Period	Northbound	Southbound	Westbound
6:30-7:30	0.00%	0.00%	0.00%
7:30-8:30	0.00%	0.00%	0.00%
8:30-9:30	0.00%	0.00%	0.00%
11:00-12:00	0.00%	0.00%	0.00%
12:00-13:00	0.00%	0.37%	0.00%
15:30-16:30	0.00%	0.00%	0.00%
16:30-17:30	0.00%	0.26%	0.00%
17:30-18:30	0.00%	0.69%	0.00%

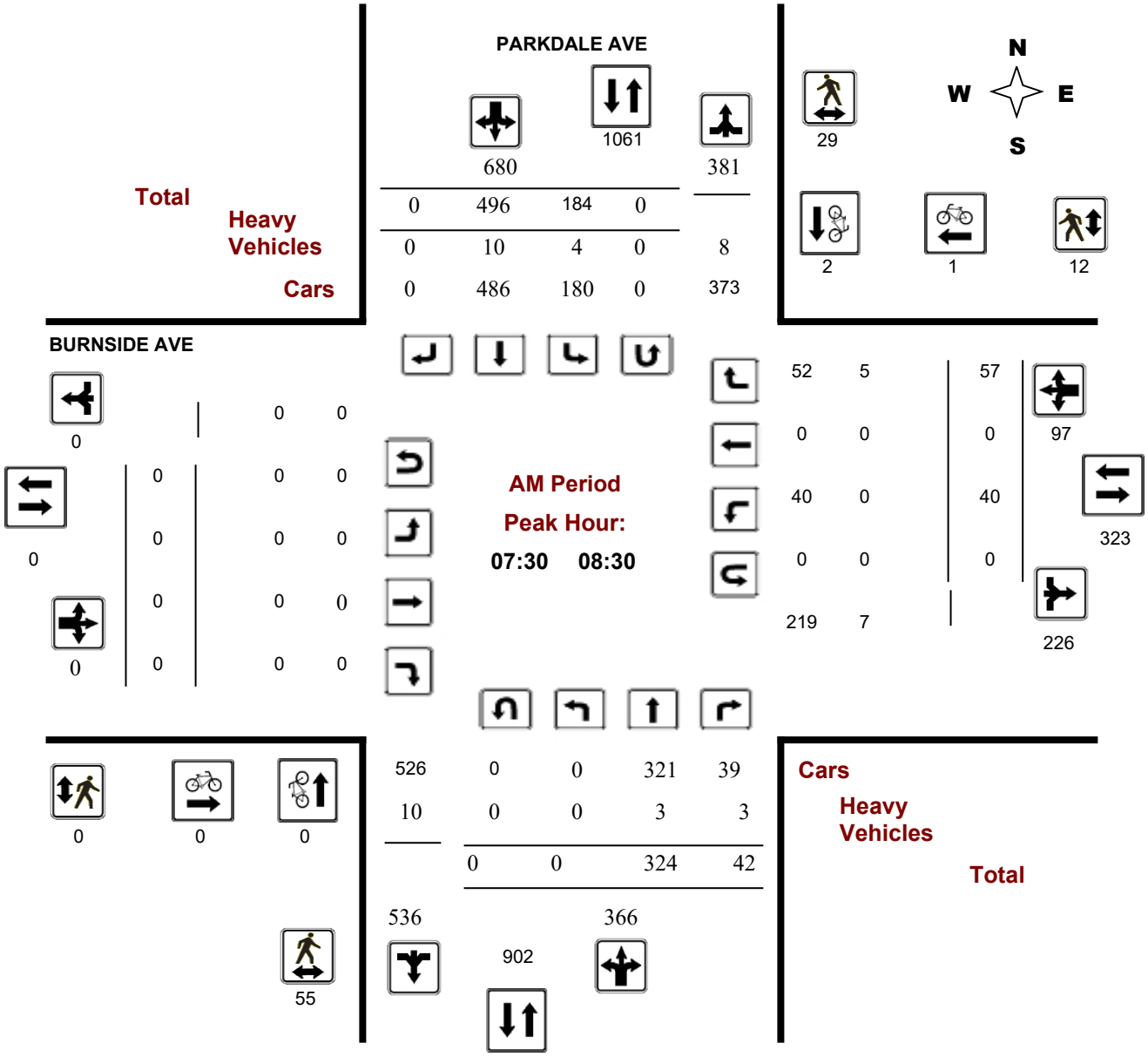
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

PARKDALE AVE @ BURNSIDE AVE

Survey Date: Thursday, February 22, 2018 **WO No:** 37573

Start Time: 07:00 **Device:** Miovision



Comments

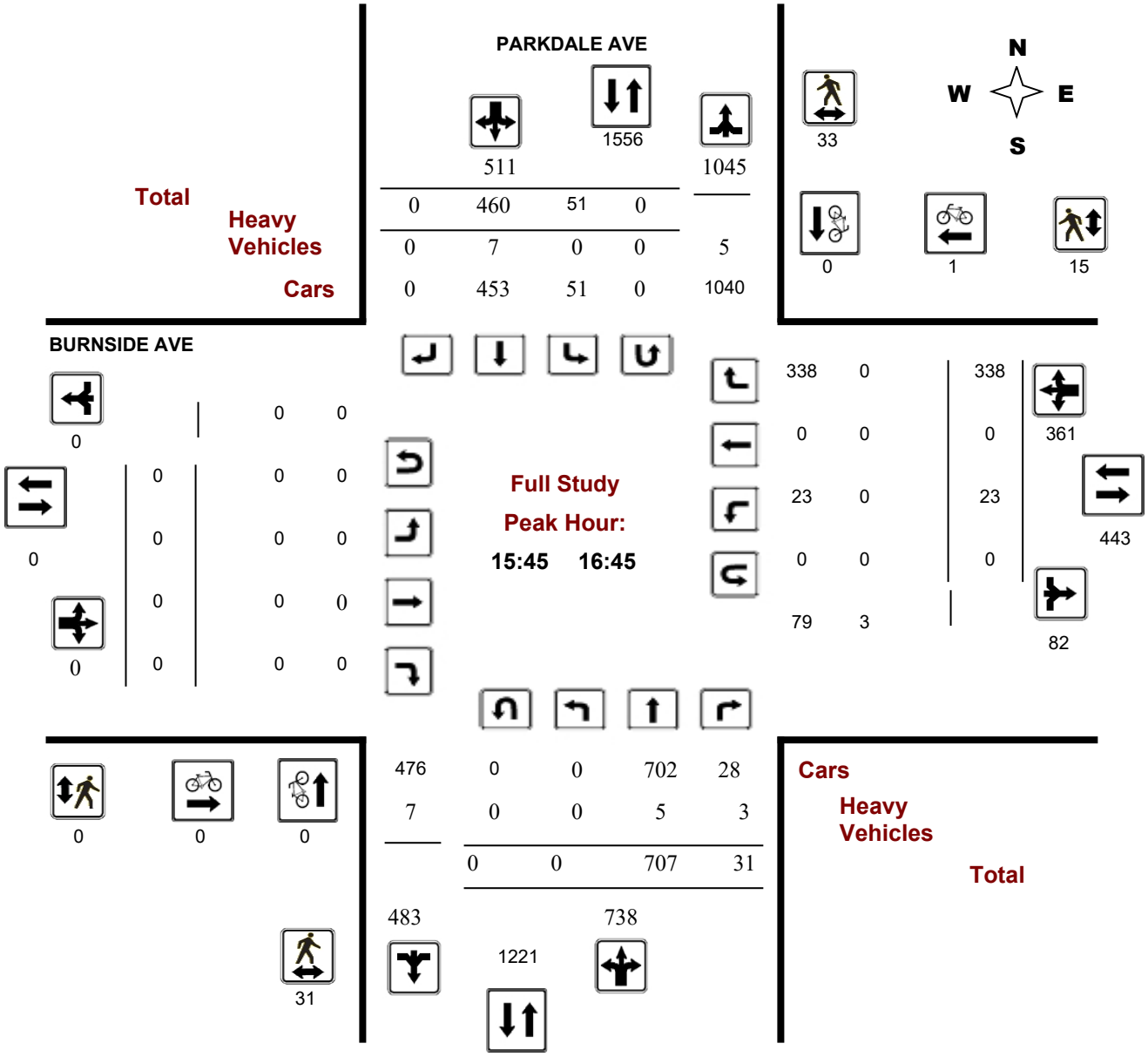
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

PARKDALE AVE @ BURNSIDE AVE

Survey Date: Thursday, February 22, 2018 **WO No:** 37573

Start Time: 07:00 **Device:** Miovision



Comments

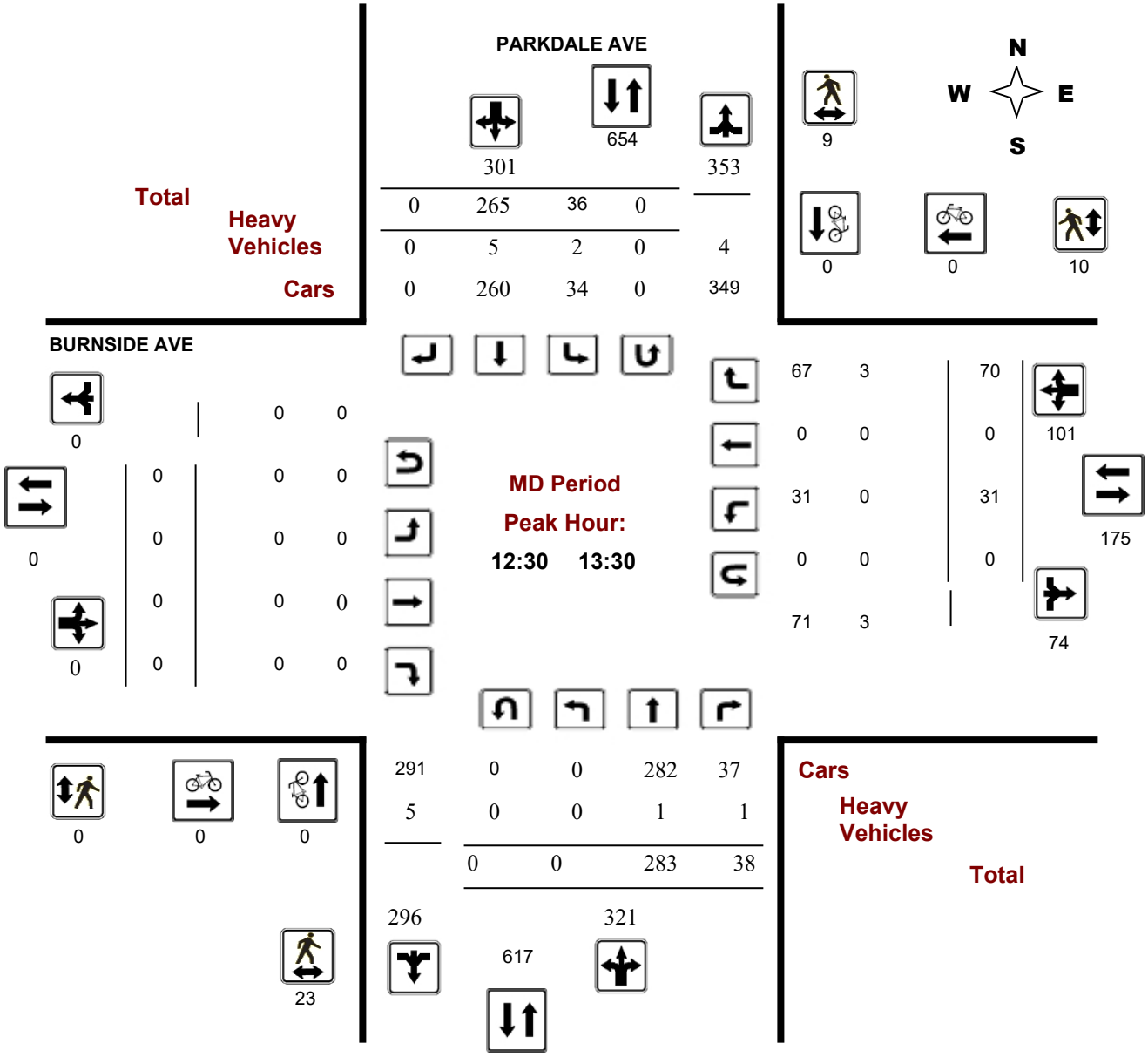
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

PARKDALE AVE @ BURNSIDE AVE

Survey Date: Thursday, February 22, 2018 **WO No:** 37573

Start Time: 07:00 **Device:** Miovision



Comments

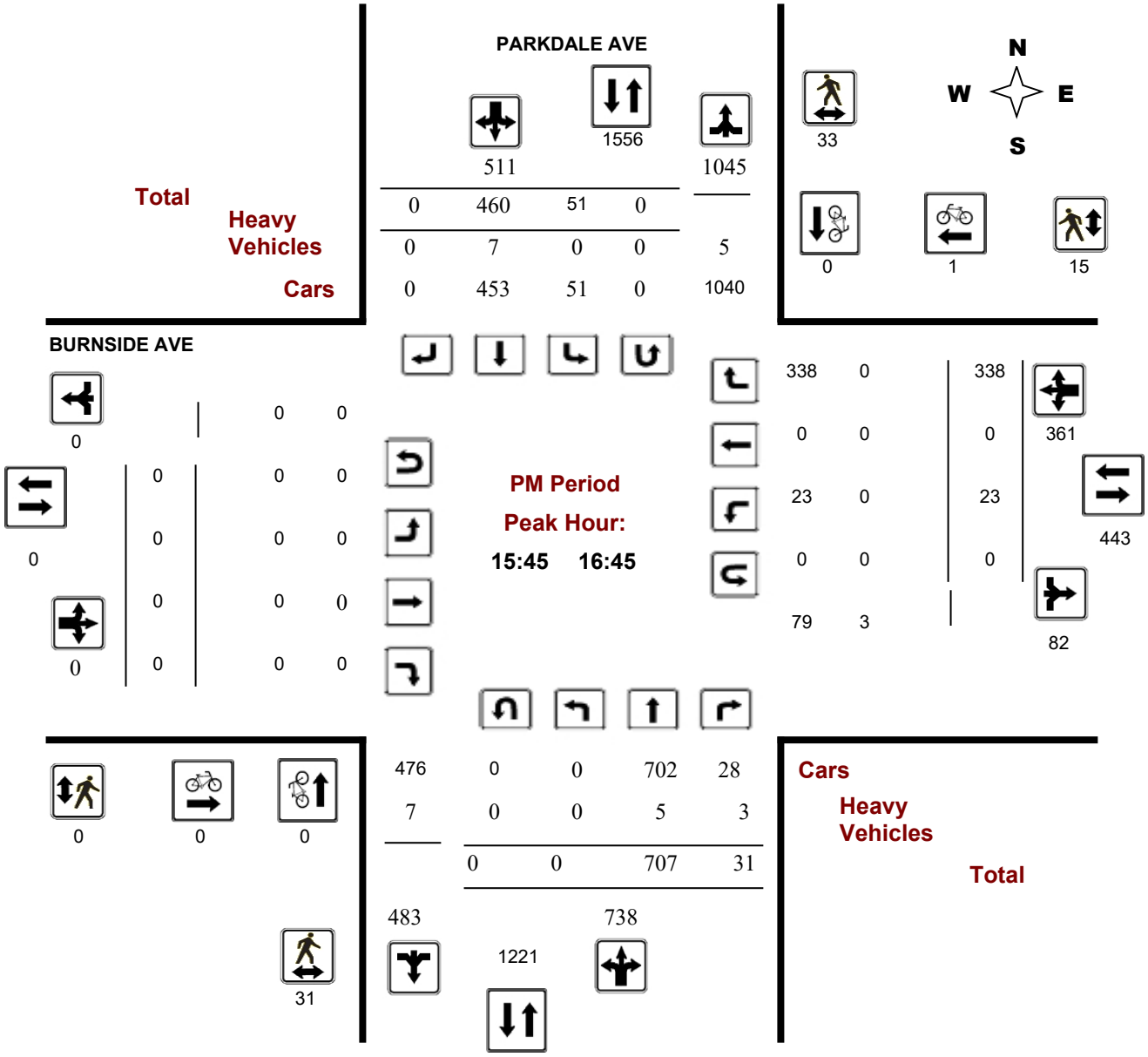
Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

PARKDALE AVE @ BURNSIDE AVE

Survey Date: Thursday, February 22, 2018 **WO No:** 37573

Start Time: 07:00 **Device:** Miovision



Comments

Transportation Services - Traffic Services

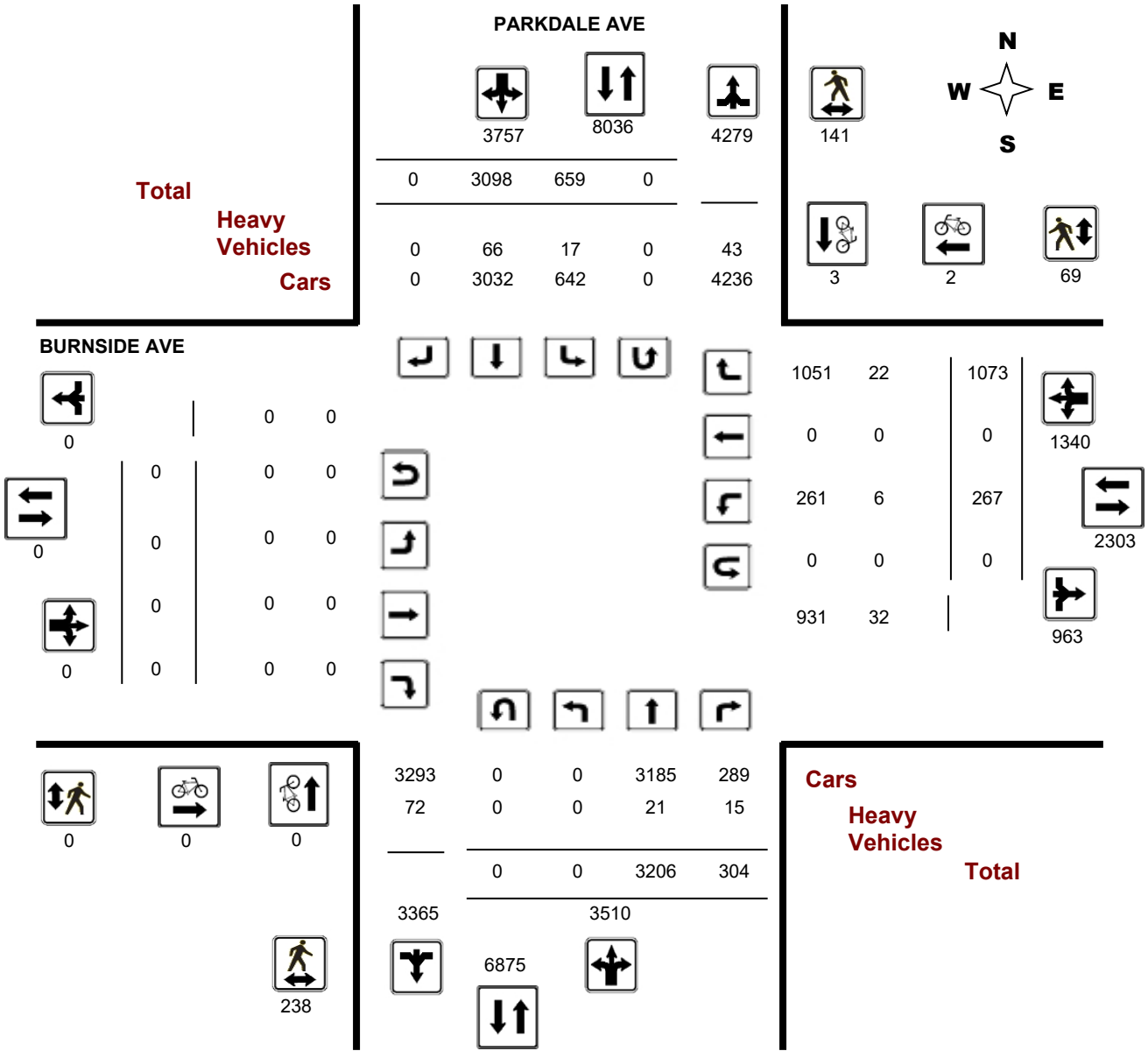
Turning Movement Count - Full Study Diagram

PARKDALE AVE @ BURNSIDE AVE

Survey Date: Thursday, February 22, 2018

WO#: 37573

Device: Miovision



Comments

Transportation Services - Traffic Services

Work Order 37573

Turning Movement Count - Full Study Summary Report

PARKDALE AVE @ BURNSIDE AVE

Survey Date: Thursday, February 22, 2018

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 0 Westbound: 0

AADT Factor .90

Full Study

	PARKDALE AVE									BURNSIDE AVE									
	Northbound				Southbound					Eastbound				Westbound					
Period	LT	ST	RT	**NB TOT**	LT	ST	RT	**SB TOT**	**STR TOT**	LT	ST	RT	**EB TOT**	LT	ST	RT	**WB TOT**	**STR TOT**	**Grand Total**
07:00 08:00	0	301	27	**328**	164	504	0	**668**	**996**	0	0	0	**0**	38	0	39	**77**	**77**	**1073**
08:00 09:00	0	308	50	**358**	189	466	0	**655**	**1013**	0	0	0	**0**	37	0	65	**102**	**102**	**1115**
09:00 10:00	0	204	49	**253**	70	338	0	**408**	**661**	0	0	0	**0**	33	0	32	**65**	**65**	**726**
11:30 12:30	0	214	37	**251**	43	257	0	**300**	**551**	0	0	0	**0**	33	0	59	**92**	**92**	**643**
12:30 13:30	0	283	38	**321**	36	265	0	**301**	**622**	0	0	0	**0**	31	0	70	**101**	**101**	**723**
15:00 16:00	0	718	28	**746**	42	360	0	**402**	**1148**	0	0	0	**0**	29	0	274	**303**	**303**	**1451**
16:00 17:00	0	659	30	**689**	61	497	0	**558**	**1247**	0	0	0	**0**	28	0	326	**354**	**354**	**1601**
17:00 18:00	0	519	45	**564**	54	411	0	**465**	**1029**	0	0	0	**0**	38	0	208	**246**	**246**	**1275**
Sub Total	0	3206	304	**3510**	659	3098	0	**3757**	**7267**	0	0	0	**0**	267	0	1073	**1340**	**1340**	**8607**
U Turns				**0**				**0**	**0**				**0**				**0**	**0**	**0**
Total	0	3206	304	**3510**	659	3098	0	**3757**	**7267**	0	0	0	**0**	267	0	1073	**1340**	**1340**	**8607**
EQ 12Hr	0	4456	423	**4879**	916	4306	0	**5222**	**10101**	0	0	0	**0**	371	0	1491	**1863**	**1863**	**11964**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.													**1.39**						
AVG 12Hr	0	4011	380	**4391**	824	3876	0	**4700**	**9091**	0	0	0	**0**	334	0	1342	**1676**	**1676**	**10767**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.													**.90**						
AVG 24Hr	0	5254	498	**5752**	1080	5077	0	**6157**	**11909**	0	0	0	**0**	438	0	1758	**2196**	**2196**	**14105**
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.													**1.31**						

Comments:

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

Transportation Services - Traffic Services

W.O. 37573

Turning Movement Count - 15 Minute Summary Report

PARKDALE AVE @ BURNSIDE AVE

Survey Date: Thursday, February 22, 2018

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 0 Westbound: 0

		PARKDALE AVE									BURNSIDE 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	0	75	6	**81**	39	142	0	**181**	**262**	0	0	0	**0**	9	0	5	**14**	**14**	**276**
07:15	07:30	0	67	6	**73**	45	116	0	**161**	**234**	0	0	0	**0**	11	0	11	**22**	**22**	**256**
07:30	07:45	0	80	8	**88**	42	137	0	**179**	**267**	0	0	0	**0**	8	0	8	**16**	**16**	**283**
07:45	08:00	0	79	7	**86**	38	109	0	**147**	**233**	0	0	0	**0**	10	0	15	**25**	**25**	**258**
08:00	08:15	0	80	15	**95**	58	121	0	**179**	**274**	0	0	0	**0**	14	0	18	**32**	**32**	**306**
08:15	08:30	0	85	12	**97**	46	129	0	**175**	**272**	0	0	0	**0**	8	0	16	**24**	**24**	**296**
08:30	08:45	0	67	9	**76**	46	128	0	**174**	**250**	0	0	0	**0**	4	0	13	**17**	**17**	**267**
08:45	09:00	0	76	14	**90**	39	88	0	**127**	**217**	0	0	0	**0**	11	0	18	**29**	**29**	**246**
09:00	09:15	0	62	20	**82**	21	90	0	**111**	**193**	0	0	0	**0**	9	0	10	**19**	**19**	**212**
09:15	09:30	0	48	13	**61**	23	95	0	**118**	**179**	0	0	0	**0**	5	0	10	**15**	**15**	**194**
09:30	09:45	0	49	10	**59**	16	89	0	**105**	**164**	0	0	0	**0**	10	0	7	**17**	**17**	**181**
09:45	10:00	0	45	6	**51**	10	64	0	**74**	**125**	0	0	0	**0**	9	0	5	**14**	**14**	**139**
11:30	11:45	0	53	8	**61**	10	63	0	**73**	**134**	0	0	0	**0**	11	0	14	**25**	**25**	**159**
11:45	12:00	0	48	10	**58**	12	58	0	**70**	**128**	0	0	0	**0**	5	0	14	**19**	**19**	**147**
12:00	12:15	0	62	11	**73**	15	74	0	**89**	**162**	0	0	0	**0**	8	0	11	**19**	**19**	**181**
12:15	12:30	0	51	8	**59**	6	62	0	**68**	**127**	0	0	0	**0**	9	0	20	**29**	**29**	**156**
12:30	12:45	0	74	15	**89**	7	82	0	**89**	**178**	0	0	0	**0**	9	0	19	**28**	**28**	**206**
12:45	13:00	0	64	10	**74**	13	68	0	**81**	**155**	0	0	0	**0**	5	0	20	**25**	**25**	**180**
13:00	13:15	0	78	9	**87**	9	62	0	**71**	**158**	0	0	0	**0**	10	0	11	**21**	**21**	**179**
13:15	13:30	0	67	4	**71**	7	53	0	**60**	**131**	0	0	0	**0**	7	0	20	**27**	**27**	**158**
15:00	15:15	0	168	3	**171**	12	77	0	**89**	**260**	0	0	0	**0**	8	0	54	**62**	**62**	**322**
15:15	15:30	0	183	12	**195**	12	92	0	**104**	**299**	0	0	0	**0**	5	0	67	**72**	**72**	**371**
15:30	15:45	0	179	4	**183**	12	89	0	**101**	**284**	0	0	0	**0**	11	0	72	**83**	**83**	**367**
15:45	16:00	0	188	9	**197**	6	102	0	**108**	**305**	0	0	0	**0**	5	0	81	**86**	**86**	**391**
16:00	16:15	0	166	7	**173**	17	111	0	**128**	**301**	0	0	0	**0**	6	0	94	**100**	**100**	**401**
16:15	16:30	0	175	10	**185**	9	118	0	**127**	**312**	0	0	0	**0**	8	0	96	**104**	**104**	**416**
16:30	16:45	0	178	5	**183**	19	129	0	**148**	**331**	0	0	0	**0**	4	0	67	**71**	**71**	**402**
16:45	17:00	0	140	8	**148**	16	139	0	**155**	**303**	0	0	0	**0**	10	0	69	**79**	**79**	**382**
17:00	17:15	0	147	11	**158**	16	108	0	**124**	**282**	0	0	0	**0**	14	0	54	**68**	**68**	**350**
17:15	17:30	0	134	6	**140**	18	104	0	**122**	**262**	0	0	0	**0**	6	0	61	**67**	**67**	**329**
17:30	17:45	0	130	13	**143**	14	103	0	**117**	**260**	0	0	0	**0**	9	0	49	**58**	**58**	**318**
17:45	18:00	0	108	15	**123**	6	96	0	**102**	**225**	0	0	0	**0**	9	0	44	**53**	**53**	**278**
TOTAL:		0	3206	304	**3510**	659	3098	0	**3757**	**7267**	0	0	0	**0**	267	0	1073	**1340**	**1340**	**8607**

Note: U-Turns are included in Totals.

Comment:

Transportation Services - Traffic Services

Turning Movement Count - Cyclist Volume Report

Work Order
37573

PARKDALE AVE @ BURNSIDE AVE

Count Date: Thursday, February 22, 2018 **Start Time:** 07:00

	PARKDALE AVE			BURNSIDE AVE			
Time Period	Northbound	Southbound	**Street Total**	Eastbound	Westbound	**Street Total**	**Grand Total**
07:00 08:00	0	0	**0**	0	1	**1**	**1**
08:00 09:00	0	2	**2**	0	0	**0**	**2**
09:00 10:00	0	1	**1**	0	0	**0**	**1**
11:30 12:30	0	0	**0**	0	0	**0**	**0**
12:30 13:30	0	0	**0**	0	0	**0**	**0**
15:00 16:00	0	0	**0**	0	0	**0**	**0**
16:00 17:00	0	0	**0**	0	1	**1**	**1**
17:00 18:00	0	0	**0**	0	0	**0**	**0**
Total	0	3	**3**	0	2	**2**	**5**

Comment:

Note: These volumes consists of bicycles only (no mopeds or motorcycles) and ARE NOT included in the Turning Movement Count Summary.

Transportation Services - Traffic Services

W.O. 37573

Turning Movement Count - Heavy Vehicle Report

PARKDALE AVE @ BURNSIDE AVE

Survey Date: Thursday, February 22, 2018

		PARKDALE AVE									BURNSIDE 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	08:00	0	2	1	**3**	2	13	0	**15**	**18**	0	0	0	**0**	1	0	4	**5**	**5**	**23**
08:00	09:00	0	2	3	**5**	2	13	0	**15**	**20**	0	0	0	**0**	1	0	4	**5**	**5**	**25**
09:00	10:00	0	6	3	**9**	5	8	0	**13**	**22**	0	0	0	**0**	3	0	5	**8**	**8**	**30**
11:30	12:30	0	2	2	**4**	4	6	0	**10**	**14**	0	0	0	**0**	1	0	4	**5**	**5**	**19**
12:30	13:30	0	1	1	**2**	2	5	0	**7**	**9**	0	0	0	**0**	0	0	3	**3**	**3**	**12**
15:00	16:00	0	5	2	**7**	2	8	0	**10**	**17**	0	0	0	**0**	0	0	2	**2**	**2**	**19**
16:00	17:00	0	2	2	**4**	0	7	0	**7**	**11**	0	0	0	**0**	0	0	0	**0**	**0**	**11**
17:00	18:00	0	1	1	**2**	0	6	0	**6**	**8**	0	0	0	**0**	0	0	0	**0**	**0**	**8**
Sub Total		0	21	15	**36**	17	66	0	**83**	**119**	0	0	0	**0**	6	0	22	**28**	**28**	**147**
U-Turns (Heavy Vehicles)					**0**				**0**	**0**				**0**				**0**	**0**	**0**
Total		0	21	15	**0**	17	66	0	**83**	**119**	0	0	0	**0**	6	0	22	**28**	**28**	**147**

Heavy Vehicles include Buses, Single-Unit Trucks and Articulated Trucks. Further, they ARE included in the Turning Movement Count Summary.

Transportation Services - Traffic Services

Work Order
37573

Turning Movement Count - Pedestrian Volume Report

PARKDALE AVE @ BURNSIDE AVE

Count Date: Thursday, February 22, 2018 **Start Time:** 07:00

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	10	8	**18**	0	1	**1**	**19**
07:15 07:30	9	4	**13**	0	2	**2**	**15**
07:30 07:45	8	4	**12**	0	4	**4**	**16**
07:45 08:00	18	9	**27**	0	3	**3**	**30**
07:00 08:00	45	25	**70**	0	10	**10**	**80**
08:00 08:15	14	10	**24**	0	2	**2**	**26**
08:15 08:30	15	6	**21**	0	3	**3**	**24**
08:30 08:45	13	8	**21**	0	3	**3**	**24**
08:45 09:00	13	4	**17**	0	0	**0**	**17**
08:00 09:00	55	28	**83**	0	8	**8**	**91**
09:00 09:15	6	5	**11**	0	1	**1**	**12**
09:15 09:30	5	3	**8**	0	2	**2**	**10**
09:30 09:45	4	3	**7**	0	2	**2**	**9**
09:45 10:00	4	1	**5**	0	0	**0**	**5**
09:00 10:00	19	12	**31**	0	5	**5**	**36**
11:30 11:45	1	1	**2**	0	2	**2**	**4**
11:45 12:00	6	1	**7**	0	3	**3**	**10**
12:00 12:15	7	2	**9**	0	2	**2**	**11**
12:15 12:30	1	3	**4**	0	2	**2**	**6**
11:30 12:30	15	7	**22**	0	9	**9**	**31**
12:30 12:45	6	0	**6**	0	4	**4**	**10**
12:45 13:00	9	3	**12**	0	0	**0**	**12**
13:00 13:15	6	4	**10**	0	2	**2**	**12**
13:15 13:30	2	2	**4**	0	4	**4**	**8**
12:30 13:30	23	9	**32**	0	10	**10**	**42**
15:00 15:15	5	7	**12**	0	1	**1**	**13**
15:15 15:30	4	2	**6**	0	2	**2**	**8**
15:30 15:45	9	2	**11**	0	0	**0**	**11**
15:45 16:00	6	3	**9**	0	4	**4**	**13**
15:00 16:00	24	14	**38**	0	7	**7**	**45**
16:00 16:15	8	14	**22**	0	3	**3**	**25**
16:15 16:30	7	5	**12**	0	5	**5**	**17**
16:30 16:45	10	11	**21**	0	3	**3**	**24**
16:45 17:00	7	5	**12**	0	3	**3**	**15**
16:00 17:00	32	35	**67**	0	14	**14**	**81**
17:00 17:15	10	3	**13**	0	3	**3**	**16**
17:15 17:30	9	2	**11**	0	2	**2**	**13**
17:30 17:45	4	4	**8**	0	0	**0**	**8**
17:45 18:00	2	2	**4**	0	1	**1**	**5**
17:00 18:00	25	11	**36**	0	6	**6**	**42**
Total	238	141	**379**	0	69	**69**	**448**

Comment:

Transportation Services - Traffic Services

Work Order
37573

Turning Movement Count - 15 Min U-Turn Total Report

PARKDALE AVE @ BURNSIDE AVE

Survey Date: Thursday, February 22, 2018

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	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	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	0	0

Traffic Signal Timing

City of Ottawa, Transportation Services Department

Traffic Signal Operations Unit

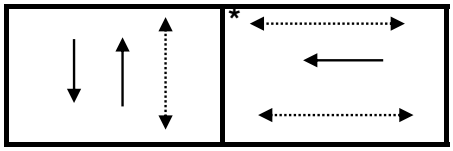
Intersection:	**Main:**	Parkdale	**Side:**	Burnside	
Controller:	**MS-3200**			**TSD:**	6108
Author:	Matthew Anderson			**Date:**	20-Sep-2019

Existing Timing Plans†

	Plan					**Ped Minimum Time**		
	AM Peak 1	**Off Peak** 2	**PM Peak** 3	**Night** 4	**Weekend** 5	***Walk***	***DW***	***A+R***
Cycle	60	55	70	50	55			
Offset	18	18	23	19	18			
NB Thru	40	35	45	30	35	15	6	3.3+1.9
SB Thru	40	35	45	30	35	-	-	3.3+1.9
WB Thru	20	20	25	20	20	7	7	3.0+2.4

Phasing Sequence‡

Plan: All



Note: 1) For plans 1,2,4,5, if the pedestrian phase is not actuated, the WB movement is forced off 4 seconds early

Schedule

Weekday

Time	Plan
0:15	4
6:30	1
9:30	2
15:00	3
18:30	2
22:30	4

Saturday

Time	Plan
0:15	4
6:30	2
9:00	5
18:30	2
22:30	4

Sunday

Time	Plan
0:15	4
6:30	2
9:00	5
18:00	2
22:30	4

Notes

†: Time for each direction includes amber and all red intervals

‡: Start of first phase should be used as reference point for offset

Asterisk (*) Indicates actuated phase

(fp): Fully Protected Left Turn

◄·····► Pedestrian signal

Cost is $57.63 ($51 + HST)

Traffic Signal Timing

City of Ottawa, Transportation Services Department

Traffic Signal Operations Unit

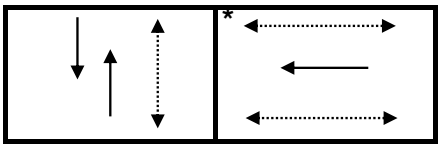
Intersection:	***Main:*** Parkdale	***Side:*** Lyndale	
Controller:	**MS - 3200**	**TSD:**	6109
Author:	Matthew Anderson	**Date:**	20-Sep-19

Existing Timing Plans†

	Plan					**Ped Minimum Time**		
	AM Peak 1	**Off Peak** 2	**PM Peak** 3	**Night** 4	**Weekend** 5	***Walk***	***DW***	***A+R***
Cycle	60	55	70	50	55			
Offset	18	18	18	X	18			
NB Thru	42	37	52	32	37	15	5	3.3+1.7
SB Thru	42	37	52	32	37	15	5	3.3+1.7
WB Thru	18	18	18	18	18	7	6	3.0+2.2

Phasing Sequence‡

Plans: All



Schedule

Weekday

Time	Plan
0:15	4
6:30	1
9:30	2
15:00	3
18:30	2
22:30	4

Saturday

Time	Plan
0:15	4
6:30	2
9:00	5
18:30	2
22:30	4

Sunday

Time	Plan
0:15	4
6:30	2
9:00	5
18:00	2
22:30	4

Notes

†: Time for each direction includes amber and all red intervals

‡: Start of first phase should be used as reference point for offset

Asterisk (*) Indicates actuated phase

(fp): Fully Protected Left Turn

◄·····► *Pedestrian signal*

Cost is $57.63 ($51 + HST)

Appendix D

- Collision Data

City of Ottawa Collision Data - 2014 to 2018

YEAR	LOCATION	DATE	TIME	ENVIRONMENT	LIGHT	SURFACE CONDITION	TRAFFIC CONTROL	COLLISION CLASSIFICATION	IMPACT TYPE	NO OF PEDS
2018	PARKDALE AVE btwn EMMERSON AVE & COLOMBINE DRWY (__3ZA326)	2018-01-17T00:00:00.000Z	12:00:00 PM	01 - Clear	01 - Daylight	03 - Loose snow	10 - No control	03 - P.D. only	06 - SMV unattended vehicle	0
2018	PARKDALE AVE btwn BURNSIDE AVE & LYNDALE AVE (__3ZA32H)	2018-03-20T00:00:00.000Z	4:15:00 PM	01 - Clear	01 - Daylight	01 - Dry	10 - No control	02 - Non-fatal injury	03 - Rear end	0
2018	PARKDALE AVE btwn BURNSIDE AVE & LYNDALE AVE (__3ZA32H)	2018-02-28T00:00:00.000Z	2:45:00 PM	01 - Clear	01 - Daylight	01 - Dry	10 - No control	03 - P.D. only	02 - Angle	0
2018	COLOMBINE DRWY @ PARKDALE AVE (0014553)	2018-11-05T00:00:00.000Z	3:45:00 PM	01 - Clear	01 - Daylight	01 - Dry	02 - Stop sign	03 - P.D. only	02 - Angle	0
2018	PARKDALE AVE btwn EMMERSON AVE & COLOMBINE DRWY (__3ZA326)	2018-11-07T00:00:00.000Z	7:50:00 AM	01 - Clear	01 - Daylight	01 - Dry	10 - No control	03 - P.D. only	03 - Rear end	0
2017	BURNSIDE AVE btwn PARKDALE AVE & FORWARD AVE	2017-12-07T05:00:00.000Z	1899-12-31T05:00:00.000Z	01 - Clear	00 - Unknown	01 - Dry	10 - No control	03 - P.D. only	06 - SMV unattended vehicle	0
2017	BURNSIDE AVE btwn PARKDALE AVE & FORWARD AVE	2017-04-12T04:00:00.000Z	1899-12-31T09:00:00.000Z	01 - Clear	07 - Dark	01 - Dry	10 - No control	03 - P.D. only	06 - SMV unattended vehicle	0
2017	COLOMBINE DRWY @ PARKDALE AVE	2017-07-27T04:00:00.000Z	1899-12-31T17:45:00.000Z	01 - Clear	01 - Daylight	01 - Dry	02 - Stop sign	03 - P.D. only	05 - Turning movement	0
2017	EMMERSON AVE @ PARKDALE AVE	2017-07-11T04:00:00.000Z	1899-12-31T20:43:00.000Z	02 - Rain	01 - Daylight	02 - Wet	02 - Stop sign	03 - P.D. only	03 - Rear end	0
2017	LYNDALE AVE @ PARKDALE AVE	2017-01-10T05:00:00.000Z	1899-12-31T22:58:00.000Z	01 - Clear	07 - Dark	01 - Dry	01 - Traffic signal	03 - P.D. only	06 - SMV unattended vehicle	0
2017	PARKDALE AVE btwn TO BE DETERMINED & EMMERSON AVE	2017-07-01T04:00:00.000Z	1899-12-31T20:06:00.000Z	01 - Clear	01 - Daylight	01 - Dry	10 - No control	02 - Non-fatal injury	05 - Turning movement	0
2016	PARKDALE AVE btwn BURNSIDE AVE & LYNDALE AVE	2016-03-16T04:00:00.000Z	1899-12-31T15:00:00.000Z	01 - Clear	01 - Daylight	01 - Dry	10 - No control	03 - P.D. only	02 - Angle	0
2016	PARKDALE AVE btwn TO BE DETERMINED & EMMERSON AVE	2016-06-14T04:00:00.000Z	1899-12-31T21:36:00.000Z	01 - Clear	01 - Daylight	01 - Dry	10 - No control	03 - P.D. only	03 - Rear end	0
2016	PARKDALE AVE btwn TO BE DETERMINED & EMMERSON AVE	2016-06-01T04:00:00.000Z	1899-12-31T19:45:00.000Z	01 - Clear	01 - Daylight	01 - Dry	10 - No control	03 - P.D. only	06 - SMV unattended vehicle	0
2016	LYNDALE AVE @ PARKDALE AVE	2016-09-07T04:00:00.000Z	1899-12-31T19:13:00.000Z	01 - Clear	01 - Daylight	01 - Dry	01 - Traffic signal	03 - P.D. only	03 - Rear end	0
2015	COLOMBINE DRWY @ PARKDALE AVE	2015-01-06T05:00:00.000Z	1899-12-31T12:41:00.000Z	01 - Clear	03 - Dawn	06 - Ice	02 - Stop sign	02 - Non-fatal injury	02 - Angle	0
2015	COLOMBINE DRWY @ PARKDALE AVE	2015-01-22T05:00:00.000Z	1899-12-31T21:10:00.000Z	01 - Clear	01 - Daylight	01 - Dry	02 - Stop sign	03 - P.D. only	02 - Angle	0
2015	EMMERSON AVE @ PARKDALE AVE	2015-01-29T05:00:00.000Z	1899-12-31T15:08:00.000Z	01 - Clear	01 - Daylight	01 - Dry	02 - Stop sign	03 - P.D. only	05 - Turning movement	0
2015	LYNDALE AVE @ PARKDALE AVE	2015-06-21T04:00:00.000Z	1899-12-31T18:57:00.000Z	01 - Clear	01 - Daylight	01 - Dry	01 - Traffic signal	03 - P.D. only	03 - Rear end	0
2015	PARKDALE AVE @ BURNSIDE AVE	2015-09-23T04:00:00.000Z	1899-12-31T20:49:00.000Z	01 - Clear	01 - Daylight	01 - Dry	01 - Traffic signal	03 - P.D. only	03 - Rear end	0
2015	LYNDALE AVE @ PARKDALE AVE	2015-09-10T04:00:00.000Z	1899-12-31T20:49:00.000Z	01 - Clear	01 - Daylight	01 - Dry	01 - Traffic signal	03 - P.D. only	03 - Rear end	0
2015	EMMERSON AVE btwn PARKDALE AVE & FORWARD AVE	2015-03-03T05:00:00.000Z	1899-12-31T14:58:00.000Z	01 - Clear	01 - Daylight	01 - Dry	10 - No control	03 - P.D. only	07 - SMV other	0
2014	LYNDALE AVE @ PARKDALE AVE	2014-02-19T05:00:00.000Z	1899-12-31T05:56:00.000Z	03 - Snow	07 - Dark	03 - Loose snow	01 - Traffic signal	03 - P.D. only	05 - Turning movement	0
2014	PARKDALE AVE btwn LYNDALE AVE & SCOTT ST	2014-06-20T04:00:00.000Z	1899-12-31T13:06:00.000Z	01 - Clear	01 - Daylight	01 - Dry	10 - No control	03 - P.D. only	03 - Rear end	0
2014	PARKDALE AVE btwn COLOMBINE DRWY & BURNSIDE AVE	2014-07-09T04:00:00.000Z	1899-12-31T23:07:00.000Z	01 - Clear	01 - Daylight	01 - Dry	10 - No control	02 - Non-fatal injury	07 - SMV other	0
2014	PARKDALE AVE btwn COLOMBINE DRWY & BURNSIDE AVE	2014-05-24T04:00:00.000Z	1899-12-31T21:05:00.000Z	01 - Clear	01 - Daylight	01 - Dry	10 - No control	02 - Non-fatal injury	02 - Angle	0

Appendix E

- MMLOS Tables

Exhibit 22 – Minimum Desirable MMLOS Targets by Official Plan Policy/Designation & Road Class

OP Designation / Policy Area	Road Class	PLOS	Bicycle - BLOS				Transit - TLOS[3]			Truck - TrLOS		Auto - LOS[4]
			Cross-town Bikeway	Spine Route	Local Route	Elsewhere	Rapid Transit Corridor	TP - Continuous Lanes	TP - Isolated Measures	Truck Route	Other	
Land-Use Designation												
Central Area	Arterial	A	A	C	B	D	A	C	D	D	E	E
	Collector	A	A	B	B	D	A	C	D	D	No target	E
	Local	A	A	B	B	D	A	C	D	E	No target	E
Developing Community	Arterial	C	B	C	B	D	B	C	D	D	No target	D
	Collector	C	B	C	B	D	B	C	D	D	No target	D
	Local	C	B	C	B	D	B	C	D	N/A	No target	D
Employment Area	Arterial	C	B	C	C	E	B	C	D	B	D	D
	Collector	C	B	C	C	E	B	C	D	B	D	D
	Local	C	B	D	C	No target	B	C	D	D	E	D
Entreprise Area	Arterial	C	B	C	B	D	B	C	D	B	E	D
	Collector	C	B	C	B	D	B	C	D	B	E	D
	Local	C	B	C	B	No target	B	C	D	D	No target	D
General Rural Area	Arterial	No target	N/A	D	D	No target	N/A	N/A	N/A	C	E	D
	Collector	No target	N/A	D	D	No target	N/A	N/A	N/A	C	No target	D
	Local	No target	N/A	D	D	No target	N/A	N/A	N/A	No target	No target	D
General Urban Area	Arterial	C	B	C	B	D	B	C	D	D	E	D
	Collector	C	B	C	B	D	B	C	D	D	No target	D
	Local	C	B	C	B	D	B	C	D	N/A	No target	D
Mixed Use Centre	Arterial	C	A	C	B	D	B	C	D	D	E	D
	Collector	C	A	B	B	D	B	C	D	D	No target	D
	Local	C	A	B	B	D	B	C	D	N/A	No target	D
Village	Arterial	C	B	C	B	D	N/A	N/A	N/A	D	No target	D
	Collector	C	B	C	B	D	N/A	N/A	N/A	D	No target	D
	Local	C	B		B	D	N/A	N/A	N/A	N/A	No target	D
Traditional Main Street	Arterial	B	A	C	C	D	B	C	D	D	E	D
	Collector	B	A	C	C	D	B	C	D	D	No target	D
Arterial Main Street	Arterial	C	B	C	D	D	B	C	D	D	E	D
All Other Designations	Arterial	D	B	C	C	D	B	C	D	D	No target	D
	Collector	D	B	C	C	D	B	C	D	D	No target	D
	Local	D	B	C	C	D	B	C	D	N/A	No target	D
Policy Area[2]												
Within 600m of a rapid transit station	Arterial	A	A	C	B	D	A	C	D	D	E	E
	Collector	A	A	B	B	D	A	C	D	D	No target	E
	Local	A	A	B	B	D	A	C	D	N/A	No target	E
Within 300m of a school	Arterial	A	A	C	B	D	A	C	D	D	E	E
	Collector	A	A	B	B	D	A	C	D	D	No target	E
	Local	A	A	B	B	D	A	C	D	N/A	No target	E

1. This table indicates the minimum desirable target. Efforts should be made to exceed these minimum targets whenever possible, without negatively impacting the ability to achieve the minimum targets for other modes .
2. Where a policy area applies to a project or area, the modal targets should reflect the policy area targets regardless of the land use designation.
3. Transit targets are intended to be applied only for streets with a proposed or existing transit route.
4. Auto LOS is based on the two and a half hour peak period.
5. Minimum guidelines as dictated by City policy must be maintained, regardless of MMLOS targets.

N/A - Not applicable

Exhibit 4 – PLOS Segment Evaluation Table

Sidewalk Width (m)	Boulevard Width (m)	Motor Vehicle Traffic Volume (AADT)	Presence of On-street Parking	Segment PLOS			
				Operating Speed (km/h)			
				≤30	>30 or 50	>50 or 60	>60 [1]
2.0 or more	> 2	≤ 3000	N/A	A	A	A	B
		> 3000	Yes	A	B	B	N/A
			No	A	B	C	D
	0.5 to 2	≤ 3000	N/A	A	A	A	B
		> 3000	Yes	A	B	C	N/A
			No	A	C	D	E
	0	≤ 3000	NA	A	B	C	D
		> 3000	Yes	B	B	D	N/A
			No	B	C	E	F
1.8	> 2	≤ 3000	N/A	A	A	A	B
		> 3000	Yes	A	B	C	N/A
			No	A	C	D	E
	0.5 to 2	≤ 3000	N/A	A	B	B	D
		> 3000	Yes	A	C	C	N/A
			No	B	C	E	E
	0	≤ 3000	N/A	A	B	C	D
		> 3000	Yes	B	C	D	N/A
			No	C	D	F	F
1.5	> 2	≤ 3000	N/A	C	C	C	C
		> 3000	Yes	C	C	D	N/A
			No	C	D	E	E
	0.5 to 2	≤ 3000	N/A	C	C	C	D
		> 3000	Yes	C	C	D	N/A
			No	D	E	E	E
	0	N/A		D	E	F [2]	F [2]
<1.5	N/A			F [3]	F [3]	F [3]	F [3]
No sidewalk	N/A			C [4]	F [3]	F [3]	F [3]

Notes:
1. On-street parking not provided on roadways with posted speed of 70 km/h or more
2. Sidewalk must be 1.8 m wide if no separation is provided (curb-face sidewalk) where speeds are high
3. Sidewalk must be 1.5 m wide to meet Provincial accessiblity standards
4. Ottawa Pedestrian Plan, 2014: "all new and reconstructed urban local roads where pedestrian facilities are required in accordance with these policies but no dedicated pedestrian facility is provided, require that roads be designed for a speed of 30 km/h or lower (pending development of a new 30 km/h roadway design standard)." Where a roadway is specifically designed as 'shared space', with appropriate design controls and features, it can achieve LOS A.
5. Where a multi-use path is provided in lieu of sidewalks, the MUP can be evaluated using the same methodology.

Exhibit 11 – BLOS Segment Evaluation Table

Type of Bikeway		LOS
Physically Separated Bikeway (cycle tracks, protected bike lanes and multi-use paths). Physical separation refers to, but is not limited to, curbs, raised medians, bollards and parking lanes (adjacent to the bike lane along the travelled way i.e. not curbside).		A
Bike Lanes Not Adjacent Parking Lane - Select Worst Scoring Criteria		
No. of Travel Lanes	1 travel lane in each direction	A
	2 travel lanes in each direction separated by a raised median	B
	2 travel lanes in each direction without a separating median	C
	More than 2 travel lanes in each direction	D
Bike Lane Width	≥ 1.8 m wide bike lane (includes marked buffer and paved gutter width)	A
	≥1.5 m to <1.8 m wide bike lane (includes marked buffer and paved gutter width)	B
	≥1.2 m to <1.5 m wide bike lane (includes marked buffer and paved gutter width)	C
Operating Speed	≤ 50 km/h operating speed	A
	60 km/h operating speed	C
	≥ 70 km/h operating speed	E
Bike lane blockage (commercial areas)	Rare	A
	Frequent	C
Bike Lanes Adjacent to curbside Parking Lane - Select Worst Scoring Criteria		
No. of Travel Lanes	1 travel lane in each direction	A
	2 or more travel lanes in each direction	C
Bike Lane and Parking Lane Width	4.5 m wide bike lane plus parking lane (includes marked buffer and paved gutter width)	A
	4.25 m wide bike lane plus parking lane (includes marked buffer and paved gutter width)	B
	≤ 4.0 m wide bike lane plus parking lane (includes marked buffer and paved gutter width)	C
Operating Speed	≤ 40 km/h operating speed	A
	50 km/h operating speed	B
	60 km/h operating speed	D
	≥ 70 km/h operating speed	F
Bike lane blockage (commercial areas)	Rare	A
	Frequent	C
Mixed Traffic		
No. of Travel Lanes and Operating Speed	2 travel lanes; ≤ 40 km/h; no marked centerline or classified as residential	A
	2 to 3 travel lanes; ≤ 40 km/h	B
	2 travel lanes; 50 km/h; no marked centerline or classified as residential	B
	2 to 3 travel lanes; 50 km/h	D
	4 to 5 travel lanes; ≤ 40 km/h	D
	4 to 5 travel lanes; ≥ 50 km/h	E
	6 or more travel lanes; ≤ 40 km/h	E
	≥ 60 km/h	F
Unsignalized Crossing along Route: no median refuge		
No. of Travel Lanes on Side Street and Operating Speed	3 or less lanes being crossed; ≤ 40 km/h	A
	4 to 5 lanes being crossed; ≤ 40 km/h	B
	3 or less lanes being crossed; 50 km/h	B
	4 to 5 lanes being crossed; 50 km/h	C
	3 or less lanes being crossed; 60 km/h	C
	4 to 5 lanes being crossed; 60 km/h	D
	6 or more lanes being crossed; ≤ 40 km/h	E
	3 or less lanes being crossed; ≥ 65 km/h	E
	6 or more lanes being crossed; ≥ 50 km/h	F
	4 to 5 lanes being crossed; ≥ 65 km/h	F
Unsignalized Crossing along Route: with median refuge (≥ 1.8 m wide)		
No. of Travel Lanes on Side Street and Operating Speed	5 or less lanes being crossed; ≤ 40 km/h	A
	3 or less lanes being crossed; 50 km/h	A
	6 or more lanes being crossed; ≤ 40 km/h	B
	4 to 5 lanes being crossed; 50 km/h	B
	3 or less lanes being crossed; 60 km/h	B
	6 or more lanes being crossed; 50 km/h	C
	4 to 5 lanes being crossed; 60 km/h	C
	3 or less lanes being crossed; ≥ 65 km/h	D
	6 or more lanes being crossed; 60 km/h	E
	4 to 5 lanes being crossed; ≥ 65 km/h	E
	6 or more lanes being crossed; ≥ 65 km/h	F

Exhibit 14 – TLOS Evaluation Methodology

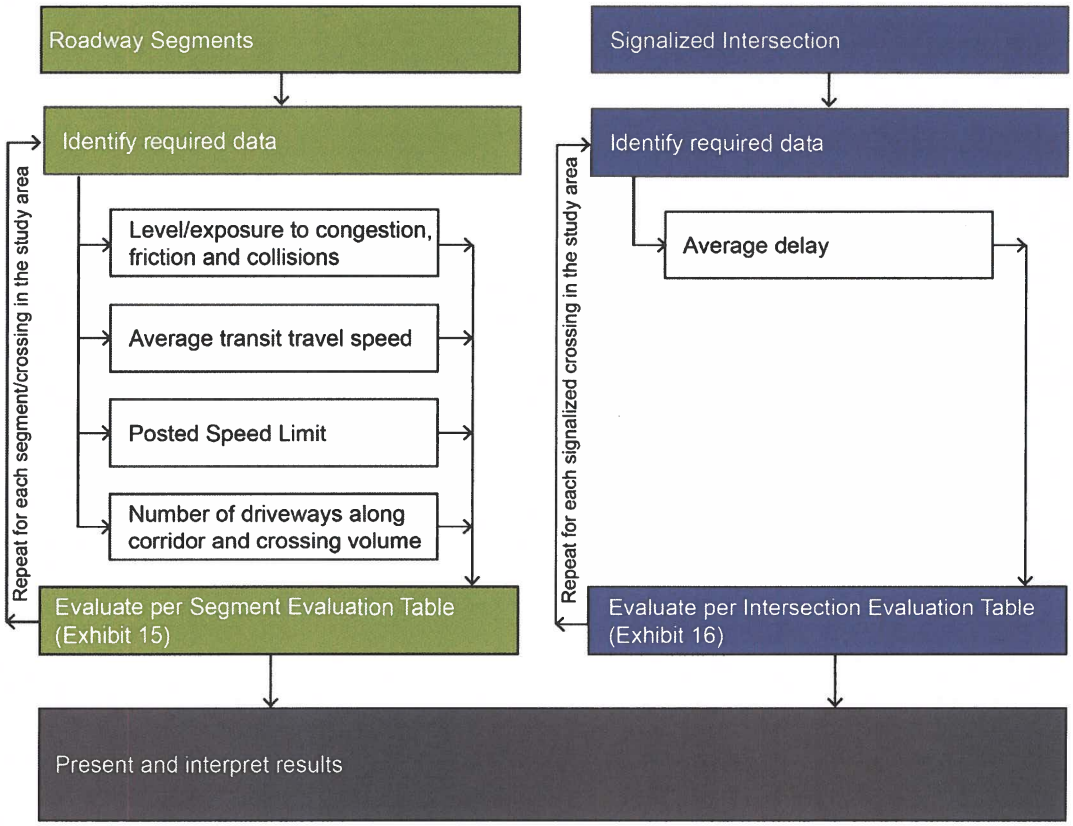


Exhibit 15 - TLOS Segment Evaluation Table

Facility Type		Level/exposure to congestion delay, friction and incidents			Quantitative Measurement	LOS
		Congestion	Friction	Incident Potential		
Segregated ROW		No	No	No	N/A	A
Bus lane	No/limited parking/driveway friction	No	Low	Low	$C_f \leq 60$	B
	Frequent parking/driveway friction	No	Medium	Medium	$C_f > 60$	C
Mixed Traffic	Limited parking/driveway friction	Yes	Low	Medium	Vt/Vp ≥ 0.8	D
	Moderate parking/driveway friction	Yes	Medium	Medium	Vt/Vp ≤ 0.6	E
	Frequent parking/driveway friction	Yes	High	High	Vt/Vp < 0.4	F

Notes:

Cf, Conflict Factor = = (Number of driveways x crossing volume) / 1 km

Vt/Vp is the ratio of average transit travel speed to posted speed limit

Exhibit 22 – Minimum Desirable MMLOS Targets by Official Plan Policy/Designation & Road Class

OP Designation / Policy Area	Road Class	PLOS	Bicycle - BLOS				Transit - TLOS [3]			Truck - TrLOS		Auto - LOS [4]
			Cross-town Bikeway	Spine Route	Local Route	Elsewhere	Rapid Transit Corridor	TP - Continuous Lanes	TP - Isolated Measures	Truck Route	Other	
Land-Use Designation												
Central Area	Arterial	A	A	C	B	D	A	C	D	D	E	E
	Collector	A	A	B	B	D	A	C	D	D	No target	E
	Local	A	A	B	B	D	A	C	D	E	No target	E
Developing Community	Arterial	C	B	C	B	D	B	C	D	D	No target	D
	Collector	C	B	C	B	D	B	C	D	D	No target	D
	Local	C	B	C	B	D	B	C	D	N/A	No target	D
Employment Area	Arterial	C	B	C	C	E	B	C	D	B	D	D
	Collector	C	B	C	C	E	B	C	D	B	D	D
	Local	C	B	D	C	No target	B	C	D	D	E	D
Entreprise Area	Arterial	C	B	C	B	D	B	C	D	B	E	D
	Collector	C	B	C	B	D	B	C	D	B	E	D
	Local	C	B	C	B	No target	B	C	D	D	No target	D
General Rural Area	Arterial	No target	N/A	D	D	No target	N/A	N/A	N/A	C	E	D
	Collector	No target	N/A	D	D	No target	N/A	N/A	N/A	C	No target	D
	Local	No target	N/A	D	D	No target	N/A	N/A	N/A	No target	No target	D
General Urban Area	Arterial	C	B	C	B	D	B	C	D	D	E	D
	Collector	C	B	C	B	D	B	C	D	D	No target	D
	Local	C	B	C	B	D	B	C	D	N/A	No target	D
Mixed Use Centre	Arterial	C	A	C	B	D	B	C	D	D	E	D
	Collector	C	A	B	B	D	B	C	D	D	No target	D
	Local	C	A	B	B	D	B	C	D	N/A	No target	D
Village	Arterial	C	B	C	B	D	N/A	N/A	N/A	D	No target	D
	Collector	C	B	C	B	D	N/A	N/A	N/A	D	No target	D
	Local	C	B		B	D	N/A	N/A	N/A	N/A	No target	D
Traditional Main Street	Arterial	B	A	C	C	D	B	C	D	D	E	D
	Collector	B	A	C	C	D	B	C	D	D	No target	D
Arterial Main Street	Arterial	C	B	C	D	D	B	C	D	D	E	D
All Other Designations	Arterial	D	B	C	C	D	B	C	D	D	No target	D
	Collector	D	B	C	C	D	B	C	D	D	No target	D
	Local	D	B	C	C	D	B	C	D	N/A	No target	D
Policy Area [2]												
Within 600m of a rapid transit station	Arterial	A	A	C	B	D	A	C	D	D	E	E
	Collector	A	A	B	B	D	A	C	D	D	No target	E
	Local	A	A	B	B	D	A	C	D	N/A	No target	E
Within 300m of a school	Arterial	A	A	C	B	D	A	C	D	D	E	E
	Collector	A	A	B	B	D	A	C	D	D	No target	E
	Local	A	A	B	B	D	A	C	D	N/A	No target	E

1. This table indicates the minimum desirable target. Efforts should be made to exceed these minimum targets whenever possible, without negatively impacting the ability to achieve the minimum targets for other modes .
2. Where a policy area applies to a project or area, the modal targets should reflect the policy area targets regardless of the land use designation.
3. Transit targets are intended to be applied only for streets with a proposed or existing transit route.
4. Auto LOS is based on the two and a half hour peak period.
5. Minimum guidelines as dictated by City policy must be maintained, regardless of MMLOS targets.

N/A - Not applicable

= North Leg (102 PETSI)
= South Leg (99 PETSI)
= East Leg (87 PETSI)

Exhibit 5 – PETSI Point Tables

5.1 Crossing Distance & Conditions		
Total travel lanes crossed	No median	With Median (>2.4m)
2	120	120
3	105	105
4	88	90
5	72	75
6	55	60
7	39	45
8	23	30
9	6	15
10	-10	0

Island Refuge	Points
No	-4
Yes	0

5.2 Signal Phasing & Timing Features	
Left turn conflict ("Left_turns")	Points
Permissive	-8
Protected/permissive	-8
Protected	0
No left turn/prohibited	0
Right turn conflict ("Right_turns")	**Points**
Permissive or yield control	-5
Protected/permissive	-5
Protected	0
No right turn	0
Right turns on red ("RTOR")	**Points**
RTOR allowed	-3
RTOR prohibited at certain time(s)	-2
RTOR prohibited	0
Leading ped interval? ("LPI")	**Points**
No	-2
Yes	0

5.3 Corner Radius	
Corner radius	Points
Greater than 25m	-9
> 15m to 25m	-8
> 10m to 15m	-6
> 5m to 10m	-5
> 3m to 5m	-4
Less than/equal to 3m	-3
No right turn	0
Right turn channel with receiving	-3
Right turn "smart channel"	2

5.4 Crosswalk Treatment	
Crosswalk treatment ("Crosswalk")	Points
Standard transverse markings	-7
Textured/coloured pavement	-4
Zebra stripe hi-vis markings	-4
Raised crosswalk	0

Exhibit 6 – PETSI Evaluation Table

Pedestrian Exposure to Traffic LOS	
Points threshold	LOS
≥90	A
≥75	B
≥60	C
≥45	D
≥30	E
<30	F

Exhibit 7 – Pedestrian Delay Evaluation Table

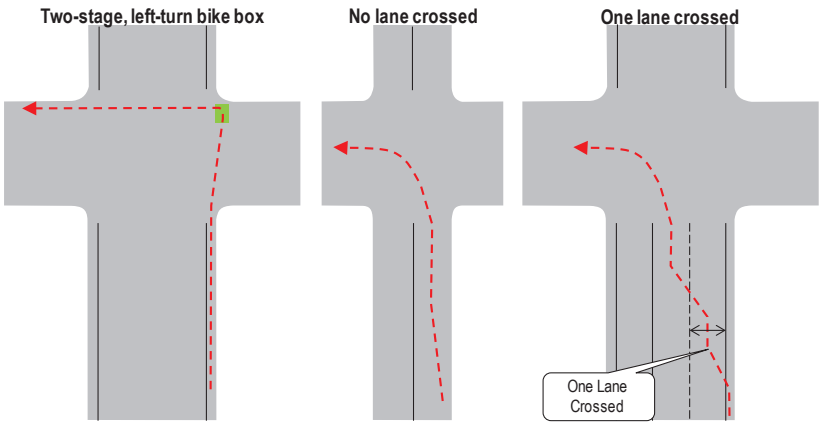
Average Pedestrian Crossing Delay Component	
$\text{Delay} = 0.5 \times \frac{(\text{Cycle Length} - \text{Pedestrian Effective Walk Time})^2}{\text{Cycle Length}}$	
≤10 s per intersection leg	LOS A
≥10 to 20 sec	LOS B
>20 to 30 sec	LOS C
>30 to 40 sec	LOS D
>40 to 60 sec	LOS E
> 60 sec	LOS F

AM Peak Cycle Length was used for each approach.

Exhibit 12 – BLOS Signalized Intersection Evaluation Table

Bikeway and Intersection Type		LOS
Bike Lanes or higher order facility on a Signalized Intersection Approach		
Right-turn Lane and Turning Speed of Motorists	No impact on LTS (as long as cycling facility remains to the right of any turn lane - otherwise see pocket bike lanes below)	
Cyclist Making a Left-turn and Operating Speed of Motorists (refer to figure)	Two-stage, left-turn bike box; ≤ 50 km/h	A
	No lane crossed, ≤ 50 km/h	B
	1 lane crossed, ≤ 40 km/h	B
	No lane crossed, ≥ 60 km/h	C
	1 lane crossed, 50 km/h	C
	2 or more lanes crossed, ≤ 40 km/h	D
	1 lane crossed, ≥ 60 km/h	E
	2 or more lanes crossed, ≥ 50 km/h	F
	All other single left-turn lane configurations	F
	Dual left-turn lanes (shared or exclusive)	F
Pocket Bike Lanes on a Signalized Intersection Approach		
Right-turn Lane and Turning Speed of Motorists	Right-turn lane introduced to the right of the bike lane and ≤ 50 m long, turning speed ≤ 25 km/h (based on curb radii and angle of intersection)	B
	Right-turn lane introduced to the right of the bike lane and > 50 m long, turning speed ≤ 30 km/h (based on curb radii and angle of intersection)	D
	Bike lane shifts to the left of the right-turn lane, turning speed ≤ 25 km/h (based on curb radii and angle of intersection)	D
	Right-turn lane with any other configurations	F
	Dual right-turn lanes (shared or exclusive)	F
Cyclist Making a Left-turn and Operating Speed of Motorists (refer to figure)	Two-stage, left-turn bike box; ≤ 50 km/h	A
	No lane crossed, ≤ 50 km/h	B
	1 lane crossed, ≤ 40 km/h	B
	No lane crossed, ≥ 60 km/h	C
	1 lane crossed, 50 km/h	C
	2 or more lanes crossed, ≤ 40 km/h	D
	1 lane crossed, ≥ 60 km/h	E
	2 or more lanes crossed, ≥ 50 km/h	F
	All other single left-turn lane configurations	F
	Dual left-turn lanes (shared or exclusive)	F
Mixed Traffic on a Signalized Intersection Approach		
Right-turn Lane and Turning Speed of Motorists	Right-turn lane 25 to 50 m long, turning speed ≤ 25 km/h (based on curb radii and angle of intersection)	D
	Right-turn lane 25 to 50 m long, turning speed > 25 km/h (based on curb radii and angle of intersection)	E
	Right-turn lane longer than 50 m	F
	Dual right-turn lanes (shared or exclusive)	F
Cyclist Making a Left-turn and Operating Speed of Motorists (refer to figure)	Two-stage, left-turn bike box; ≤ 50 km/h	A
	No lane crossed, ≤ 50 km/h	B
	1 lane crossed, ≤ 40 km/h	B
	No lane crossed, ≥ 60 km/h	D
	1 lane crossed, 50 km/h	D
	2 or more lanes crossed, ≤ 40 km/h	D
	1 lane crossed, ≥ 60 km/h	F
	2 or more lanes crossed, ≥ 50 km/h	F
	All other single left-turn lane configurations	F
	Dual left-turn lanes (shared or exclusive)	F

Left-turn Configurations



Notes:
1. Pocket bike lanes are defined as bike lanes that develop near intersections between vehicular right turn lanes on the right side and vehicular through or left lanes on the left side. All other configurations of bike lanes or separated facility that remain against the edge of the curb/parking lane and require right turning vehicles to yield to through cyclists will not impact the level of traffic stress (i.e. are considered to be LOS 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 fo
volume. However, some elem
of trucks to operate with ease
motor vehicle LOS by consid
quickly and easily, and to oper

The objective of evaluating T
however, unlike other modes,
and key delivery access rout
exception would be within emp
streets in these areas, as laid

Care should be taken when
pedestrian/bicycle level of ser
potential for trucks to encroach
appropriately, which can put v
guidelines do not replace safe

The TLOS for signalized intersections is based on the average signal delay experienced in combination with the location of transit services with respect to other road users. As no Transit Signal Priority exists at the Burnside and Parkdale intersection, this intersection is assigned TLoS of 'F', independent of length of delay experienced.

5.2 Data Requirem

A summary of the data require

Exhibit 17 - Data Requirements for Truck Level of Service

SEGMENTS	SIGNALIZED INTERSECTIONS
» Street width (number of through lanes per direction) » Curb lane width (m)	» Effective radius » Number of receiving lanes on departing leg

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.

Exhibit 19 – TkLOS Evaluation Methodology

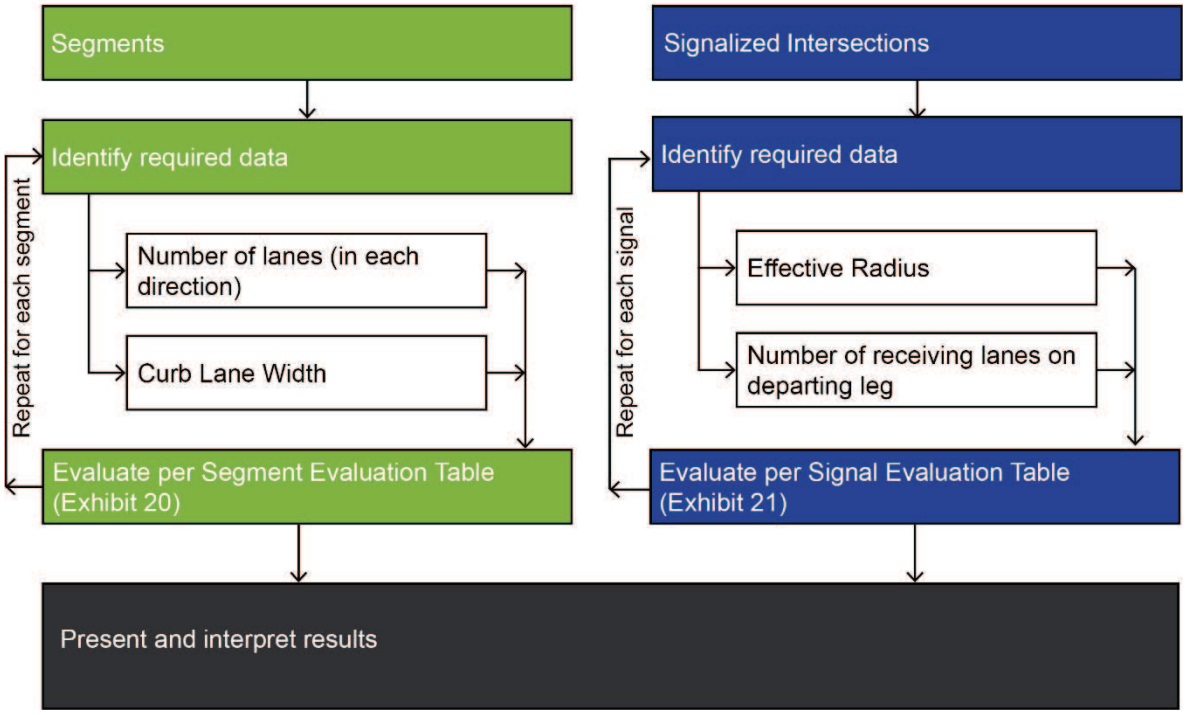


Exhibit 20 – TkLOS Segment Evaluation Table

Curb Lane Width (m	More than two travel lanes
>3.7	A
≤3.5	A
≤3.3	C
≤3.2	D
≤3	E

TkLoS is not applicable as Parkdale and Burnside are not designated truck routes.

Exhibit 21 – TkLOS Signalized Intersection Evaluation Table

Effective Corner Radius	One receiving lane on departure from intersection	More than one receiving lane on departure from intersection
< 10m	F	D
10 to 15m	E	B
> 15m	C	A

Appendix F

- Transportation Demand Checklist

TDM Measures Checklist:
Residential Developments (multi-family, condominium or subdivision)

Legend

BASIC — The measure is generally feasible and effective, and in most cases would benefit the development and its users

BETTER — 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: *Residential developments*	Check if proposed & add descriptions
		1. TDM PROGRAM MANAGEMENT	
		1.1 Program coordinator	
BASIC	★ 1.1.1	Designate an internal coordinator, or contract with an external coordinator	☐
		1.2 Travel surveys	
BETTER	1.2.1	Conduct periodic surveys to identify travel-related behaviours, attitudes, challenges and solutions, and to track progress	☐
		2. WALKING AND CYCLING	
		2.1 Information on walking/cycling routes & destinations	
BASIC	2.1.1	Display local area maps with walking/cycling access routes and key destinations at major entrances *(multi-family, condominium)*	☐
		2.2 Bicycle skills training	
BETTER	2.2.1	Offer on-site cycling courses for residents, or subsidize off-site courses	☐

		TDM measures: *Residential developments*	Check if proposed & add descriptions
		3. TRANSIT	
		3.1 Transit information	
BASIC		3.1.1 Display relevant transit schedules and route maps at entrances *(multi-family, condominium)*	☐
BETTER		3.1.2 Provide real-time arrival information display at entrances *(multi-family, condominium)*	☐
		3.2 Transit fare incentives	
BASIC	★	3.2.1 Offer PRESTO cards preloaded with one monthly transit pass on residence purchase/move-in, to encourage residents to use transit	☑
BETTER		3.2.2 Offer at least one year of free monthly transit passes on residence purchase/move-in	☐
		3.3 Enhanced public transit service	
BETTER	★	3.3.1 Contract with OC Transpo to provide early transit services until regular services are warranted by occupancy levels *(subdivision)*	☐
		3.4 Private transit service	
BETTER		3.4.1 Provide shuttle service for seniors homes or lifestyle communities (e.g. scheduled mall or supermarket runs)	☐
		4. CARSHARING & BIKESHARING	
		4.1 Bikeshare stations & memberships	
BETTER		4.1.1 Contract with provider to install on-site bikeshare station (*multi-family)*	☐
BETTER		4.1.2 Provide residents with bikeshare memberships, either free or subsidized *(multi-family)*	☐
		4.2 Carshare vehicles & memberships	
BETTER		4.2.1 Contract with provider to install on-site carshare vehicles and promote their use by residents	☐
BETTER		4.2.2 Provide residents with carshare memberships, either free or subsidized	☐
		5. PARKING	
		5.1 Priced parking	
BASIC	★	5.1.1 Unbundle parking cost from purchase price *(condominium)*	☐
BASIC	★	5.1.2 Unbundle parking cost from monthly rent *(multi-family)*	☑

			TDM measures: *Residential developments*	Check if proposed & add descriptions
		6.	**TDM MARKETING & COMMUNICATIONS**	
		6.1	**Multimodal travel information**	
BASIC	★	6.1.1	Provide a multimodal travel option information package to new residents	☐
		6.2	**Personalized trip planning**	
BETTER	★	6.2.1	Offer personalized trip planning to new residents	☐

TDM-Supportive Development Design and Infrastructure Checklist:
Residential Developments (multi-family or condominium)

Legend

REQUIRED	The Official Plan or Zoning By-law provides related guidance that must be followed
BASIC	The measure is generally feasible and effective, and in most cases would benefit the development and its users
BETTER	The measure could maximize support for users of sustainable modes, and optimize development performance

		TDM-supportive design & infrastructure measures: *Residential developments*	Check if completed & add descriptions, explanations or plan/drawing references
	1.	**WALKING & CYCLING: ROUTES**	
	1.1	**Building location & access points**	
BASIC	1.1.1	Locate building close to the street, and do not locate parking areas between the street and building entrances	✓
BASIC	1.1.2	Locate building entrances in order to minimize walking distances to sidewalks and transit stops/stations	✓
BASIC	1.1.3	Locate building doors and windows to ensure visibility of pedestrians from the building, for their security and comfort	✓
	1.2	**Facilities for walking & cycling**	
REQUIRED	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 *(see Official Plan policy 4.3.3)*	✓
REQUIRED	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 *(see Official Plan policy 4.3.12)*	✓

		TDM-supportive design & infrastructure measures: *Residential developments*	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 *(see Official Plan policy 4.3.10)*	✓
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 *(see Official Plan policy 4.3.10)*	✓
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 *(see Official Plan policy 4.3.11)*	✓
BASIC	1.2.6	Provide safe, direct and attractive walking routes from building entrances to nearby transit stops	✓
BASIC	1.2.7	Ensure that walking routes to transit stops are secure, visible, lighted, shaded and wind-protected wherever possible	✓
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	☐
	1.3	**Amenities for walking & cycling**	
BASIC	1.3.1	Provide lighting, landscaping and benches along walking and cycling routes between building entrances and streets, sidewalks and trails	☐
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)	☐

		TDM-supportive design & infrastructure measures: *Residential developments*	Check if completed & add descriptions, explanations or plan/drawing references
	2.	**WALKING & CYCLING: END-OF-TRIP FACILITIES**	
	2.1	**Bicycle parking**	
REQUIRED	2.1.1	Provide bicycle parking in highly visible and lighted areas, sheltered from the weather wherever possible *(see Official Plan policy 4.3.6)*	✓
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 Zoning By-law Section 111)*	✓
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 Zoning By-law Section 111)*	✓
BASIC	2.1.4	Provide bicycle parking spaces equivalent to the expected number of resident-owned bicycles, plus the expected peak number of visitor cyclists	☐
	2.2	**Secure bicycle parking**	
REQUIRED	2.2.1	Where more than 50 bicycle parking spaces are provided for a single residential 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 Zoning By-law Section 111)*	✓
BETTER	2.2.2	Provide secure bicycle parking spaces equivalent to at least the number of units at condominiums or multi-family residential developments	☐
	2.3	**Bicycle repair station**	
BETTER	2.3.1	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)	☐
	3.	**TRANSIT**	
	3.1	**Customer amenities**	
BASIC	3.1.1	Provide shelters, lighting and benches at any on-site transit stops	☐
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	☐
BETTER	3.1.3	Provide a secure and comfortable interior waiting area by integrating any on-site transit stops into the building	☐

		TDM-supportive design & infrastructure measures: *Residential developments*	Check if completed & add descriptions, explanations or plan/drawing references
	4.	**RIDESHARING**	
	4.1	**Pick-up & drop-off facilities**	
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	☐
	5.	**CARSHARING & BIKESHARING**	
	5.1	**Carshare parking spaces**	
BETTER	5.1.1	Provide up to three carshare parking spaces in an R3, R4 or R5 Zone for specified residential uses *(see Zoning By-law Section 94)*	☐
	5.2	**Bikeshare station location**	
BETTER	5.2.1	Provide a designated bikeshare station area near a major building entrance, preferably lighted and sheltered with a direct walkway connection	☐
	6.	**PARKING**	
	6.1	**Number of parking spaces**	
REQUIRED	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	✓
BASIC	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	✓
BASIC	6.1.3	Where a site features more than one use, provide shared parking and reduce the cumulative number of parking spaces accordingly *(see Zoning By-law Section 104)*	☐
BETTER	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 *(see Zoning By-law Section 111)*	☐
	6.2	**Separate long-term & short-term parking areas**	
BETTER	6.2.1	Provide separate areas for short-term and long-term parking (using signage or physical barriers) to permit access controls and simplify enforcement (i.e. to discourage residents from parking in visitor spaces, and vice versa)	☐

Appendix G

- Synchro Reports

2019 Background Traffic - Intersection LOS (AM Peak / PM Peak)

		LOS	v/c	Delay (s)	95% Queue (m)
Parkdale / Lyndale (Signalized)	NB	A / A	0.27 / 0.56	1.4 / 5.5	24.9 / 80.5
	SB	A / A	0.37 / 0.37	1.9 / 3.7	40.2 / 40.1
	WB	A / A	0.12 / 0.33	24.5 / 25.6	8.1 / 13.7
	Total	**A / A**	**0.37 / 0.56**	**2.2 / 5.6**	**-**
Parkdale / Burnside (Signalized)	NB	A / C	0.32 / 0.77	4.7 / 17.8	28.9 / 151.6#
	SB	C / C	0.75 / 0.72	14.4 / 17.5	127.0# / 99.0#
	WB	A / D	0.40 / 0.86	15.2 / 33.9	14.4 / 71.8#
	Total	**C / D**	**0.75 / 0.86**	**11.3 / 21.3**	**-**
Parkdale / Colombine (Stop-Controlled)	NB	A / A	-	4.1 / 1.6	3.7 / 1.3
	SB	A / A	-	0.0 / 0.0	0.0 / 0.0
	EB-L	D / F	-	25.1 / 680.8	4.6 / 98.1
	EB-R	B / C	-	14.5 / 15.4	2.2 / 7.7
	Total	**A / E**	**-**	**1.3 / 48.4**	**-**
Parkdale / Emmerson (Stop-Controlled)	NB	A / A	-	0.0 / 0.0	0.0 / 0.0
	SB	A / A	-	1.6 / 1.1	1.4 / 0.8
	WB	B / F	-	13.8 / 60.4	1.1 / 9.8
	Total	**A / A**	**-**	**1.4 / 1.3**	**-**

2023 Background Traffic - Intersection LOS (AM Peak / PM Peak)

		LOS	v/c	Delay (s)	95% Queue (m)
Parkdale / Lyndale (Signalized)	NB	A / A	0.26 / 0.53	1.4 / 5.1	23.6 / 72.4
	SB	A / A	0.36 / 0.36	1.8 / 3.5	38.4 / 37.4
	WB	A / A	0.11 / 0.30	24.4 / 25.5	7.7 / 12.8
	Total	**A / A**	**0.36 / 0.53**	**2.1 / 5.2**	**-**
Parkdale / Burnside (Signalized)	NB	A / C	0.31 / 0.73	4.9 / 15.1	29.2 / #121.1
	SB	B / A	0.70 / 0.61	12.8 / 12.7	#117.9 / 77.1
	WB	A / D	0.45 / 0.83	16.8 / 28.6	17.4 / #55.3
	Total	**B / D**	**0.70 / 0.83**	**10.7 / 17.3**	**-**
Parkdale / Colombine (Stop-Controlled)	NB	A / A	-	3.7 / 1.3	3.1 / 1.1
	SB	A / A	-	0.0 / 0.0	0.0 / 0.0
	EB-L	C / F	-	22.8 / 373	3.6 / 74.1
	EB-R	B / B	-	13.9 / 14.5	1.9 / 6.4
	Total	**A / D**	**-**	**1.1 / 25.8**	**-**
Parkdale / Emmerson (Stop-Controlled)	NB	A / A	-	0.0 / 0.0	0.0 / 0.0
	SB	A / A	-	1.4 / 0.9	1.3 / 0.6
	WB	B / E	-	13.6 / 44.5	1.0 / 6.8
	Total	**A / A**	**-**	**1.2 / 0.9**	**-**

2023 Background & Site Generated Traffic - Intersection LOS (AM Peak / PM Peak)

		LOS	v/c	Delay (s)	95% Queue (m)
Parkdale / Lyndale (Signalized)	**NB**	A / A	0.26 / 0.54	1.4 / 5.2	23.6 / 74.4
	SB	A / A	0.37 / 0.36	1.9 / 3.5	39.2 / 37.7
	WB	A / A	0.11 / 0.30	24.4 / 25.5	7.7 / 12.8
	Total	**A / A**	**0.37 / 0.54**	**2.1 / 5.3**	**-**
Parkdale / Burnside (Signalized)	**NB**	A / C	0.32 / 0.74	5.1 / 15.9	30.9 / #130.1
	SB	C / B	0.71 / 0.63	13.3 / 13.5	120.9# / 79.4
	WB	A / D	0.50 / 0.84	16.7 / 29.8	19.2 / #62.7
	Total	**C / D**	**0.71 / 0.84**	**11.1 / 18.3**	**-**
Parkdale / Colombine (Stop-Controlled)	**NB**	A / A	-	3.6 / 1.3	3.1 / 1.1
	SB	A / A	-	0.0 / 0.0	0.0 / 0.0
	EB-L	C / F	-	23.5 / 409.8	3.8 / 76.6
	EB-R	B / B	-	13.9 / 14.5	1.9 / 6.4
	Total	**A / D**	**-**	**1.1 / 28.0**	**-**
Parkdale / Emmerson (Stop-Controlled)	**NB**	A / A	-	0.0 / 0.0	0.0 / 0.0
	SB	A / A	-	1.5 / 1.3	1.4 / 0.9
	WB	B / E	-	13.6 / 46.6	1.1 / 7.3
	Total	**A / A**	**-**	**1.4 / 1.1**	**-**

2028 Background Traffic - Intersection LOS (AM Peak / PM Peak)

		LOS	v/c	Delay (s)	95% Queue (m)
Parkdale / Lyndale (Signalized)	NB	A / A	0.27 / 0.57	1.4 / 5.5	25.2 / 81.8
	SB	A / A	0.38 / 0.38	1.9 / 3.6	42 / 40.6
	WB	A / A	0.11 / 0.30	24.4 / 25.5	7.7 / 12.8
	Total	**A / A**	**0.38 / 0.57**	**2.1 / 5.5**	**-**
Parkdale / Burnside (Signalized)	NB	A / C	0.33 / 0.78	5.1 / 17.6	31.4 / #156.3
	SB	C / C	0.73 / 0.71	14.1 / 16.4	#126.3 / #96.3
	WB	A / D	0.45 / 0.83	16.8 / 30.8	17.4 / #63.1
	Total	**C / D**	**0.73 / 0.83**	**11.4 / 20**	**-**
Parkdale / Colombine (Stop-Controlled)	NB	A / A	-	3.7 / 1.4	3.3 / 1.2
	SB	A / A	-	0.0 / 0.0	0.0 / 0.0
	EB-L	C / F	-	24.8 / 618.8	4.0 / 87.7
	EB-R	B / C	-	14.5 / 15.1	2.0 / 6.8
	Total	**A / E**	**-**	**1.1 / 40.2**	**-**
Parkdale / Emmerson (Stop-Controlled)	NB	A / A	-	0.0 / 0.0	0.0 / 0.0
	SB	A / A	-	1.4 / 1.0	1.3 / 0.7
	WB	B / F	-	14.2 / 60.9	1.0 / 9.1
	Total	**A / A**	**-**	**1.3 / 1.2**	**-**

2028 Background & Site Generated Traffic - Intersection LOS (AM Peak / PM Peak)

		LOS	v/c	Delay (s)	95% Queue (m)
Parkdale / Lyndale (Signalized)	NB	A / A	0.28 / 0.57	1.5 / 5.6	25.4 / 84.4
	SB	A / A	0.39 / 0.38	2.0 / 3.6	42.9 / 41.1
	WB	A / A	0.11 / 0.30	24.4 / 25.5	7.7 / 12.8
	Total	**A / A**	**0.39 / 0.57**	**2.1 / 5.6**	**-**
Parkdale / Burnside (Signalized)	NB	A / C	0.33 / 0.79	5.3 / 18.5	33.2 / #160.1
	SB	C / C	0.74 / 0.73	14.6 / 18.0	#129.3 / #112.4
	WB	A / D	0.50 / 0.85	16.7 / 32.0	19.2 / #66.7
	Total	**C / D**	**0.74 / 0.85**	**11.9 / 21.3**	**-**
Parkdale / Colombine (Stop-Controlled)	NB	A / A	-	3.6 / 1.5	3.3 / 1.2
	SB	A / A	-	0.0 / 0.0	0.0 / 0.0
	EB-L	D / F	-	25.6 / 683.9	4.2 / 90.4
	EB-R	B / C	-	14.5 / 15.2	2.0 / 6.8
	Total	**A / E**	**-**	**1.1 / 44.0**	**-**
Parkdale / Emmerson (Stop-Controlled)	NB	A / A	-	0.0 / 0.0	0.0 / 0.0
	SB	A / A	-	1.6 / 1.5	1.4 / 1.1
	WB	B / F	-	14.2 / 65.0	1.2 / 9.9
	Total	**A / A**	**-**	**1.4 / 1.4**	**-**

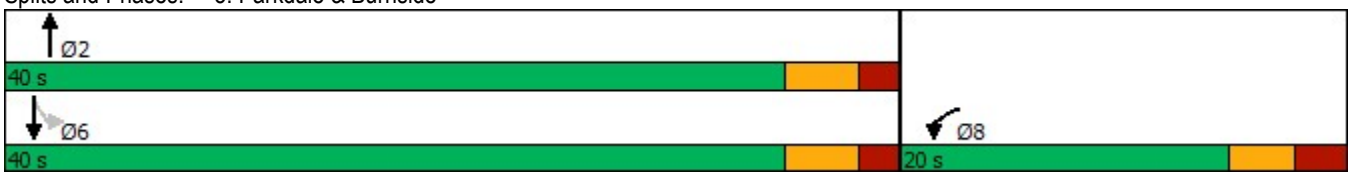
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	40	57	328	42	184	502
Future Volume (vph)	40	57	328	42	184	502
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.95		1.00			
Frt	0.921		0.985			
Flt Protected	0.980					0.987
Satd. Flow (prot)	1549	0	1767	0	0	1779
Flt Permitted	0.980					0.780
Satd. Flow (perm)	1549	0	1767	0	0	1406
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	63		18			
Link Speed (k/h)	48		48			48
Link Distance (m)	321.1		184.1			89.0
Travel Time (s)	24.1		13.8			6.7
Confl. Peds. (#/hr)		29		12		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	44	63	364	47	204	558
Shared Lane Traffic (%)						
Lane Group Flow (vph)	107	0	411	0	0	762
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Turn Type	Prot		NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases					6	
Detector Phase	8		2		6	6
Switch Phase						
Minimum Initial (s)	5.0		5.0		5.0	5.0
Minimum Split (s)	20.0		40.0		40.0	40.0
Total Split (s)	20.0		40.0		40.0	40.0
Total Split (%)	33.3%		66.7%		66.7%	66.7%
Yellow Time (s)	3.0		3.3		3.3	3.3
All-Red Time (s)	2.4		1.9		1.9	1.9
Lost Time Adjust (s)	0.0		0.0			0.0
Total Lost Time (s)	5.4		5.2			5.2
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None		Max		Max	Max
Act Effct Green (s)	7.4		38.8			38.8
Actuated g/C Ratio	0.14		0.72			0.72
v/c Ratio	0.40		0.32			0.75
Control Delay	15.2		4.7			14.4

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Queue Delay	0.0		0.0			0.0
Total Delay	15.2		4.7			14.4
LOS	B		A			B
Approach Delay	15.2		4.7			14.4
Approach LOS	B		A			B
Queue Length 50th (m)	3.8		12.3			40.6
Queue Length 95th (m)	14.4		28.9			#127.0
Internal Link Dist (m)	297.1		160.1			65.0
Turn Bay Length (m)						
Base Capacity (vph)	468		1282			1017
Starvation Cap Reductn	0		0			0
Spillback Cap Reductn	0		0			0
Storage Cap Reductn	0		0			0
Reduced v/c Ratio	0.23		0.32			0.75

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 53.6			
Natural Cycle: 70			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 11.3		Intersection LOS: B	
Intersection Capacity Utilization 83.0%		ICU Level of Service E	
Analysis Period (min) 15			

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

Splits and Phases: 5: Parkdale & Burnside

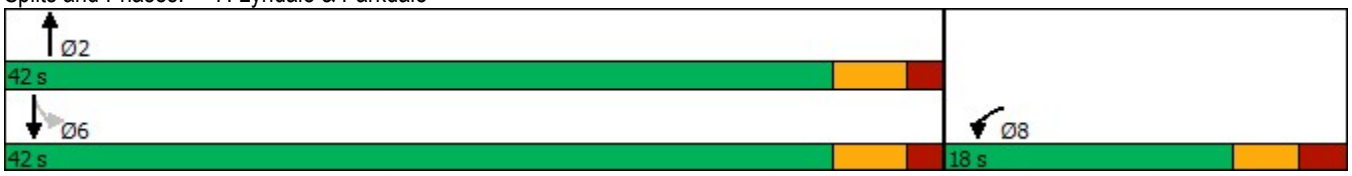


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	16	4	378	31	16	545
Future Volume (vph)	16	4	378	31	16	545
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.97		1.00			
Frt	0.975		0.990			
Flt Protected	0.961					0.999
Satd. Flow (prot)	1644	0	1779	0	0	1800
Flt Permitted	0.961					0.985
Satd. Flow (perm)	1644	0	1779	0	0	1775
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	4		13			
Link Speed (k/h)	48		48			48
Link Distance (m)	319.3		162.8			184.1
Travel Time (s)	23.9		12.2			13.8
Confl. Peds. (#/hr)		53		11		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	18	4	420	34	18	606
Shared Lane Traffic (%)						
Lane Group Flow (vph)	22	0	454	0	0	624
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Turn Type	Prot		NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases					6	
Detector Phase	8		2		6	6
Switch Phase						
Minimum Initial (s)	5.0		5.0		5.0	5.0
Minimum Split (s)	18.0		31.0		31.0	31.0
Total Split (s)	18.0		42.0		42.0	42.0
Total Split (%)	30.0%		70.0%		70.0%	70.0%
Yellow Time (s)	3.0		3.3		3.3	3.3
All-Red Time (s)	2.2		1.7		1.7	1.7
Lost Time Adjust (s)	0.0		0.0			0.0
Total Lost Time (s)	5.2		5.0			5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None		Max		Max	Max
Act Effct Green (s)	6.3		56.6			56.6
Actuated g/C Ratio	0.11		0.95			0.95
v/c Ratio	0.12		0.27			0.37
Control Delay	24.5		1.4			1.9

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Queue Delay	0.0		0.0			0.0
Total Delay	24.5		1.4			1.9
LOS	C		A			A
Approach Delay	24.5		1.4			1.9
Approach LOS	C		A			A
Queue Length 50th (m)	1.7		0.0			0.0
Queue Length 95th (m)	8.1		24.9			40.2
Internal Link Dist (m)	295.3		138.8			160.1
Turn Bay Length (m)						
Base Capacity (vph)	358		1687			1682
Starvation Cap Reductn	0		0			0
Spillback Cap Reductn	0		0			0
Storage Cap Reductn	0		0			0
Reduced v/c Ratio	0.06		0.27			0.37

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 59.7			
Natural Cycle: 50			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.37			
Intersection Signal Delay: 2.2		Intersection LOS: A	
Intersection Capacity Utilization 61.7%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 7: Lyndale & Parkdale



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	4	14	245	9	68	835
Future Volume (Veh/h)	4	14	245	9	68	835
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)	4	16	272	10	76	928
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			190			
pX, platoon unblocked						
vC, conflicting volume	1357	277			282	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1357	277			282	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	98			94	
cM capacity (veh/h)	155	764			1286	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	20	282	1004
Volume Left	4	0	76
Volume Right	16	10	0
cSH	428	1700	1286
Volume to Capacity	0.05	0.17	0.06
Queue Length 95th (m)	1.1	0.0	1.4
Control Delay (s)	13.8	0.0	1.6
Lane LOS	B		A
Approach Delay (s)	13.8	0.0	1.6
Approach LOS	B		

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	77.9%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	33	33	0	356	671	0
Future Volume (Veh/h)	33	33	0	356	671	0
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)	37	37	0	396	746	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				89		
pX, platoon unblocked	0.94					
vC, conflicting volume	1142	746	746			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1120	746	746			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	83	91	100			
cM capacity (veh/h)	216	415	867			

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	37	37	396	746
Volume Left	37	0	0	0
Volume Right	0	37	0	0
cSH	216	415	1700	1700
Volume to Capacity	0.17	0.09	0.23	0.44
Queue Length 95th (m)	4.6	2.2	0.0	0.0
Control Delay (s)	25.1	14.5	0.0	0.0
Lane LOS	D	B		
Approach Delay (s)	19.8		0.0	0.0
Approach LOS	C			

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	47.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	92	264	671	144
Future Volume (Veh/h)	0	0	92	264	671	144
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	0	102	293	746	160
Pedestrians	45					
Lane Width (m)	0.0					
Walking Speed (m/s)	1.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				107		
pX, platoon unblocked	0.97					
vC, conflicting volume	1368	871	951			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1364	871	951			
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	86			
cM capacity (veh/h)	136	352	726			

Direction, Lane #	NB 1	SB 1
Volume Total	395	906
Volume Left	102	0
Volume Right	0	160
cSH	726	1700
Volume to Capacity	0.14	0.53
Queue Length 95th (m)	3.7	0.0
Control Delay (s)	4.1	0.0
Lane LOS	A	
Approach Delay (s)	4.1	0.0
Approach LOS		

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	73.9%	ICU Level of Service	D
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	23	338	716	31	51	466
Future Volume (vph)	23	338	716	31	51	466
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.91		1.00			
Frt	0.874		0.994			
Flt Protected	0.997					0.995
Satd. Flow (prot)	1422	0	1788	0	0	1793
Flt Permitted	0.997					0.738
Satd. Flow (perm)	1422	0	1788	0	0	1330
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	162		5			
Link Speed (k/h)	48		48			48
Link Distance (m)	321.1		184.1			89.0
Travel Time (s)	24.1		13.8			6.7
Confl. Peds. (#/hr)		33		15		
Confl. Bikes (#/hr)				3		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	26	376	796	34	57	518
Shared Lane Traffic (%)						
Lane Group Flow (vph)	402	0	830	0	0	575
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Turn Type	Prot		NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases					6	
Detector Phase	8		2		6	6
Switch Phase						
Minimum Initial (s)	5.0		5.0		5.0	5.0
Minimum Split (s)	25.0		45.0		45.0	45.0
Total Split (s)	25.0		45.0		45.0	45.0
Total Split (%)	35.7%		64.3%		64.3%	64.3%
Maximum Green (s)	19.6		39.8		39.8	39.8
Yellow Time (s)	3.0		3.3		3.3	3.3
All-Red Time (s)	2.4		1.9		1.9	1.9
Lost Time Adjust (s)	0.0		0.0			0.0
Total Lost Time (s)	5.4		5.2			5.2
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Recall Mode	None		Max		Max	Max
Walk Time (s)	7.0		15.0			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Flash Dont Walk (s)	7.0		6.0			
Pedestrian Calls (#/hr)	0		0			
Act Effct Green (s)	16.2		40.0			40.0
Actuated g/C Ratio	0.24		0.60			0.60
v/c Ratio	0.86		0.77			0.72
Control Delay	33.9		17.8			17.5
Queue Delay	0.0		0.0			0.0
Total Delay	33.9		17.8			17.5
LOS	C		B			B
Approach Delay	33.9		17.8			17.5
Approach LOS	C		B			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 66.8			
Natural Cycle: 70			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 21.3		Intersection LOS: C	
Intersection Capacity Utilization 105.8%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 5: Parkdale & Burnside

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	35	19	734	26	6	500
Future Volume (vph)	35	19	734	26	6	500
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.94		1.00			
Frt	0.953		0.995			
Flt Protected	0.969					0.999
Satd. Flow (prot)	1566	0	1791	0	0	1800
Flt Permitted	0.969					0.992
Satd. Flow (perm)	1566	0	1791	0	0	1788
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	21		6			
Link Speed (k/h)	48		48			48
Link Distance (m)	319.3		162.8			184.1
Travel Time (s)	23.9		12.2			13.8
Confl. Peds. (#/hr)		54		11		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	39	21	816	29	7	556
Shared Lane Traffic (%)						
Lane Group Flow (vph)	60	0	845	0	0	563
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Turn Type	Prot		NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases					6	
Detector Phase	8		2		6	6
Switch Phase						
Minimum Initial (s)	5.0		5.0		5.0	5.0
Minimum Split (s)	18.0		52.0		52.0	52.0
Total Split (s)	18.0		52.0		52.0	52.0
Total Split (%)	25.7%		74.3%		74.3%	74.3%
Maximum Green (s)	12.8		47.0		47.0	47.0
Yellow Time (s)	3.0		3.3		3.3	3.3
All-Red Time (s)	2.2		1.7		1.7	1.7
Lost Time Adjust (s)	0.0		0.0			0.0
Total Lost Time (s)	5.2		5.0			5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Recall Mode	None		Max		Max	Max
Walk Time (s)	7.0		15.0		15.0	15.0
Flash Dont Walk (s)	5.5		5.0		5.0	5.0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Pedestrian Calls (#/hr)	0		0		0	0
Act Effct Green (s)	7.5		59.7			59.7
Actuated g/C Ratio	0.11		0.84			0.84
v/c Ratio	0.33		0.56			0.37
Control Delay	25.6		5.5			3.7
Queue Delay	0.0		0.0			0.0
Total Delay	25.6		5.5			3.7
LOS	C		A			A
Approach Delay	25.6		5.5			3.7
Approach LOS	C		A			A

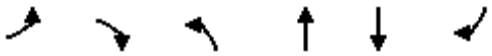
Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70.7			
Natural Cycle: 70			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.56			
Intersection Signal Delay: 5.6		Intersection LOS: A	
Intersection Capacity Utilization 60.5%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 7: Lyndale & Parkdale

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	7	22	1261	10	11	336
Future Volume (Veh/h)	7	22	1261	10	11	336
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)	8	24	1401	11	12	373
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			190			
pX, platoon unblocked	0.73	0.73			0.73	
vC, conflicting volume	1804	1406			1412	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1915	1372			1380	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	85	82			97	
cM capacity (veh/h)	53	131			366	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	32	1412	385
Volume Left	8	0	12
Volume Right	24	11	0
cSH	96	1700	366
Volume to Capacity	0.33	0.83	0.03
Queue Length 95th (m)	9.8	0.0	0.8
Control Delay (s)	60.4	0.0	1.1
Lane LOS	F		A
Approach Delay (s)	60.4	0.0	1.1
Approach LOS	F		

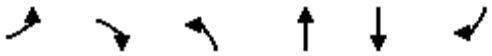
Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	80.7%	ICU Level of Service	D
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	121	108	0	911	592	0
Future Volume (Veh/h)	121	108	0	911	592	0
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)	134	120	0	1012	658	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				89		
pX, platoon unblocked	0.66					
vC, conflicting volume	1670	658	658			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1758	658	658			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	0	74	100			
cM capacity (veh/h)	62	466	935			

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	134	120	1012	658
Volume Left	134	0	0	0
Volume Right	0	120	0	0
cSH	62	466	1700	1700
Volume to Capacity	2.17	0.26	0.60	0.39
Queue Length 95th (m)	98.1	7.7	0.0	0.0
Control Delay (s)	680.8	15.4	0.0	0.0
Lane LOS	F	C		
Approach Delay (s)	366.4		0.0	0.0
Approach LOS	F			

Intersection Summary			
Average Delay	48.4		
Intersection Capacity Utilization	64.4%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	40	871	592	134
Future Volume (Veh/h)	0	0	40	871	592	134
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	0	44	968	658	149
Pedestrians	17					
Lane Width (m)	0.0					
Walking Speed (m/s)	1.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				107		
pX, platoon unblocked	0.69					
vC, conflicting volume	1806	750	824			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1944	750	824			
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	95			
cM capacity (veh/h)	47	413	810			

Direction, Lane #	NB 1	SB 1
Volume Total	1012	807
Volume Left	44	0
Volume Right	0	149
cSH	810	1700
Volume to Capacity	0.05	0.47
Queue Length 95th (m)	1.3	0.0
Control Delay (s)	1.6	0.0
Lane LOS	A	
Approach Delay (s)	1.6	0.0
Approach LOS		

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	86.0%	ICU Level of Service	E
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	64	65	344	52	188	527
Future Volume (vph)	64	65	344	52	188	527
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.96		1.00			
Frt	0.932		0.982			
Flt Protected	0.976					0.987
Satd. Flow (prot)	1572	0	1761	0	0	1779
Flt Permitted	0.976					0.791
Satd. Flow (perm)	1572	0	1761	0	0	1425
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	65		22			
Link Speed (k/h)	48		48			48
Link Distance (m)	321.1		184.1			89.0
Travel Time (s)	24.1		13.8			6.7
Confl. Peds. (#/hr)		29		12		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	64	65	344	52	188	527
Shared Lane Traffic (%)						
Lane Group Flow (vph)	129	0	396	0	0	715
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Turn Type	Prot		NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases					6	
Detector Phase	8		2		6	6
Switch Phase						
Minimum Initial (s)	5.0		5.0		5.0	5.0
Minimum Split (s)	20.0		40.0		40.0	40.0
Total Split (s)	20.0		40.0		40.0	40.0
Total Split (%)	33.3%		66.7%		66.7%	66.7%
Maximum Green (s)	14.6		34.8		34.8	34.8
Yellow Time (s)	3.0		3.3		3.3	3.3
All-Red Time (s)	2.4		1.9		1.9	1.9
Lost Time Adjust (s)	0.0		0.0			0.0
Total Lost Time (s)	5.4		5.2			5.2
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Recall Mode	None		Max		Max	Max
Walk Time (s)	7.0		15.0			
Flash Dont Walk (s)	7.0		6.0			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Pedestrian Calls (#/hr)	0		0			
Act Effct Green (s)	8.0		38.8			38.8
Actuated g/C Ratio	0.15		0.72			0.72
v/c Ratio	0.45		0.31			0.70
Control Delay	16.8		4.9			12.8
Queue Delay	0.0		0.0			0.0
Total Delay	16.8		4.9			12.8
LOS	B		A			B
Approach Delay	16.8		4.9			12.8
Approach LOS	B		A			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 54.2			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 10.7		Intersection LOS: B	
Intersection Capacity Utilization 86.8%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 5: Parkdale & Burnside

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	16	4	407	31	16	596
Future Volume (vph)	16	4	407	31	16	596
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.97		1.00			
Frt	0.973		0.990			
Flt Protected	0.962					0.999
Satd. Flow (prot)	1638	0	1779	0	0	1800
Flt Permitted	0.962					0.988
Satd. Flow (perm)	1638	0	1779	0	0	1780
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	4		12			
Link Speed (k/h)	48		48			48
Link Distance (m)	319.3		162.8			184.1
Travel Time (s)	23.9		12.2			13.8
Confl. Peds. (#/hr)		53		11		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	16	4	407	31	16	596
Shared Lane Traffic (%)						
Lane Group Flow (vph)	20	0	438	0	0	612
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Turn Type	Prot		NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases					6	
Detector Phase	8		2		6	6
Switch Phase						
Minimum Initial (s)	5.0		5.0		5.0	5.0
Minimum Split (s)	18.0		31.0		31.0	31.0
Total Split (s)	18.0		42.0		42.0	42.0
Total Split (%)	30.0%		70.0%		70.0%	70.0%
Maximum Green (s)	12.8		37.0		37.0	37.0
Yellow Time (s)	3.0		3.3		3.3	3.3
All-Red Time (s)	2.2		1.7		1.7	1.7
Lost Time Adjust (s)	0.0		0.0			0.0
Total Lost Time (s)	5.2		5.0			5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Recall Mode	None		Max		Max	Max
Walk Time (s)	7.0		15.0		15.0	15.0
Flash Dont Walk (s)	5.5		5.0		5.0	5.0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Pedestrian Calls (#/hr)	0		0		0	0
Act Effct Green (s)	6.3		56.5			56.5
Actuated g/C Ratio	0.11		0.95			0.95
v/c Ratio	0.11		0.26			0.36
Control Delay	24.4		1.4			1.8
Queue Delay	0.0		0.0			0.0
Total Delay	24.4		1.4			1.8
LOS	C		A			A
Approach Delay	24.4		1.4			1.8
Approach LOS	C		A			A

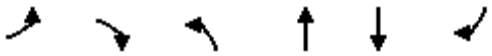
Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 59.6			
Natural Cycle: 50			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.36			
Intersection Signal Delay: 2.1		Intersection LOS: A	
Intersection Capacity Utilization 64.6%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 7: Lyndale & Parkdale

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	4	14	265	9	68	880
Future Volume (Veh/h)	4	14	265	9	68	880
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)	4	14	265	9	68	880
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			190			
pX, platoon unblocked						
vC, conflicting volume	1286	270			274	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1286	270			274	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	98			95	
cM capacity (veh/h)	173	772			1295	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	18	274	948
Volume Left	4	0	68
Volume Right	14	9	0
cSH	436	1700	1295
Volume to Capacity	0.04	0.16	0.05
Queue Length 95th (m)	1.0	0.0	1.3
Control Delay (s)	13.6	0.0	1.4
Lane LOS	B		A
Approach Delay (s)	13.6	0.0	1.4
Approach LOS	B		

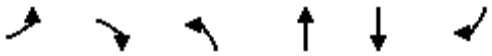
Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	81.5%	ICU Level of Service	D
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	33	33	0	377	708	0
Future Volume (Veh/h)	33	33	0	377	708	0
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)	33	33	0	377	708	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				89		
pX, platoon unblocked	0.95					
vC, conflicting volume	1085	708	708			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1062	708	708			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	86	92	100			
cM capacity (veh/h)	236	436	895			

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	33	33	377	708
Volume Left	33	0	0	0
Volume Right	0	33	0	0
cSH	236	436	1700	1700
Volume to Capacity	0.14	0.08	0.22	0.42
Queue Length 95th (m)	3.6	1.9	0.0	0.0
Control Delay (s)	22.8	13.9	0.0	0.0
Lane LOS	C	B		
Approach Delay (s)	18.3		0.0	0.0
Approach LOS	C			

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	49.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	92	285	708	144
Future Volume (Veh/h)	0	0	92	285	708	144
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	0	92	285	708	144
Pedestrians	45					
Lane Width (m)	0.0					
Walking Speed (m/s)	1.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				107		
pX, platoon unblocked	0.98					
vC, conflicting volume	1294	825	897			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1289	825	897			
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	88			
cM capacity (veh/h)	156	374	761			

Direction, Lane #	NB 1	SB 1
Volume Total	377	852
Volume Left	92	0
Volume Right	0	144
cSH	761	1700
Volume to Capacity	0.12	0.50
Queue Length 95th (m)	3.1	0.0
Control Delay (s)	3.7	0.0
Lane LOS	A	
Approach Delay (s)	3.7	0.0
Approach LOS		

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	77.1%	ICU Level of Service	D
Analysis Period (min)	15		

Lanes, Volumes, Timings
5: Parkdale & Burnside

01/30/2020

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	35	342	751	47	57	489
Future Volume (vph)	35	342	751	47	57	489
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.91		1.00			
Frt	0.878		0.992			
Flt Protected	0.995					0.995
Satd. Flow (prot)	1430	0	1783	0	0	1793
Flt Permitted	0.995					0.806
Satd. Flow (perm)	1430	0	1783	0	0	1452
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	180		7			
Link Speed (k/h)	48		48			48
Link Distance (m)	321.1		184.1			89.0
Travel Time (s)	24.1		13.8			6.7
Confl. Peds. (#/hr)		33		15		
Confl. Bikes (#/hr)				3		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	35	342	751	47	57	489
Shared Lane Traffic (%)						
Lane Group Flow (vph)	377	0	798	0	0	546
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Turn Type	Prot		NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases					6	
Detector Phase	8		2		6	6
Switch Phase						
Minimum Initial (s)	5.0		5.0		5.0	5.0
Minimum Split (s)	25.0		45.0		45.0	45.0
Total Split (s)	25.0		45.0		45.0	45.0
Total Split (%)	35.7%		64.3%		64.3%	64.3%
Maximum Green (s)	19.6		39.8		39.8	39.8
Yellow Time (s)	3.0		3.3		3.3	3.3
All-Red Time (s)	2.4		1.9		1.9	1.9
Lost Time Adjust (s)	0.0		0.0			0.0
Total Lost Time (s)	5.4		5.2			5.2
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Recall Mode	None		Max		Max	Max
Walk Time (s)	7.0		15.0			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Flash Dont Walk (s)	7.0		6.0			
Pedestrian Calls (#/hr)	0		0			
Act Effct Green (s)	14.4		40.1			40.1
Actuated g/C Ratio	0.22		0.62			0.62
v/c Ratio	0.83		0.73			0.61
Control Delay	28.6		15.1			12.7
Queue Delay	0.0		0.0			0.0
Total Delay	28.6		15.1			12.7
LOS	C		B			B
Approach Delay	28.6		15.1			12.7
Approach LOS	C		B			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 65.1			
Natural Cycle: 70			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 17.3		Intersection LOS: B	
Intersection Capacity Utilization 113.3%		ICU Level of Service H	
Analysis Period (min) 15			

Splits and Phases: 5: Parkdale & Burnside

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	35	19	786	26	6	537
Future Volume (vph)	35	19	786	26	6	537
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.94		1.00			
Frt	0.952		0.996			
Flt Protected	0.969					0.999
Satd. Flow (prot)	1564	0	1793	0	0	1800
Flt Permitted	0.969					0.993
Satd. Flow (perm)	1564	0	1793	0	0	1789
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	19		5			
Link Speed (k/h)	48		48			48
Link Distance (m)	319.3		162.8			184.1
Travel Time (s)	23.9		12.2			13.8
Confl. Peds. (#/hr)		54		11		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	35	19	786	26	6	537
Shared Lane Traffic (%)						
Lane Group Flow (vph)	54	0	812	0	0	543
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Turn Type	Prot		NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases					6	
Detector Phase	8		2		6	6
Switch Phase						
Minimum Initial (s)	5.0		5.0		5.0	5.0
Minimum Split (s)	18.0		52.0		52.0	52.0
Total Split (s)	18.0		52.0		52.0	52.0
Total Split (%)	25.7%		74.3%		74.3%	74.3%
Maximum Green (s)	12.8		47.0		47.0	47.0
Yellow Time (s)	3.0		3.3		3.3	3.3
All-Red Time (s)	2.2		1.7		1.7	1.7
Lost Time Adjust (s)	0.0		0.0			0.0
Total Lost Time (s)	5.2		5.0			5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Recall Mode	None		Max		Max	Max
Walk Time (s)	7.0		15.0		15.0	15.0
Flash Dont Walk (s)	5.5		5.0		5.0	5.0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Pedestrian Calls (#/hr)	0		0		0	0
Act Effct Green (s)	7.3		60.2			60.2
Actuated g/C Ratio	0.10		0.85			0.85
v/c Ratio	0.30		0.53			0.36
Control Delay	25.5		5.1			3.5
Queue Delay	0.0		0.0			0.0
Total Delay	25.5		5.1			3.5
LOS	C		A			A
Approach Delay	25.5		5.1			3.5
Approach LOS	C		A			A

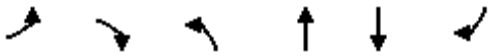
Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 71.1			
Natural Cycle: 70			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.53			
Intersection Signal Delay: 5.2		Intersection LOS: A	
Intersection Capacity Utilization 63.3%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 7: Lyndale & Parkdale

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	7	22	1327	10	11	359
Future Volume (Veh/h)	7	22	1327	10	11	359
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)	7	22	1327	10	11	359
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			190			
pX, platoon unblocked	0.77	0.77			0.77	
vC, conflicting volume	1713	1332			1337	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1776	1282			1289	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	90	86			97	
cM capacity (veh/h)	69	156			418	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	29	1337	370
Volume Left	7	0	11
Volume Right	22	10	0
cSH	119	1700	418
Volume to Capacity	0.24	0.79	0.03
Queue Length 95th (m)	6.8	0.0	0.6
Control Delay (s)	44.5	0.0	0.9
Lane LOS	E		A
Approach Delay (s)	44.5	0.0	0.9
Approach LOS	E		

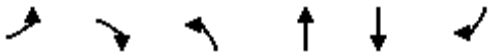
Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	84.4%	ICU Level of Service	E
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	121	108	0	954	627	0
Future Volume (Veh/h)	121	108	0	954	627	0
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)	121	108	0	954	627	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				89		
pX, platoon unblocked	0.70					
vC, conflicting volume	1581	627	627			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1616	627	627			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	0	78	100			
cM capacity (veh/h)	80	485	960			

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	121	108	954	627
Volume Left	121	0	0	0
Volume Right	0	108	0	0
cSH	80	485	1700	1700
Volume to Capacity	1.51	0.22	0.56	0.37
Queue Length 95th (m)	74.1	6.4	0.0	0.0
Control Delay (s)	373.0	14.5	0.0	0.0
Lane LOS	F	B		
Approach Delay (s)	204.0		0.0	0.0
Approach LOS	F			

Intersection Summary			
Average Delay	25.8		
Intersection Capacity Utilization	66.7%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	40	918	627	134
Future Volume (Veh/h)	0	0	40	918	627	134
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	0	40	918	627	134
Pedestrians	17					
Lane Width (m)	0.0					
Walking Speed (m/s)	1.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				107		
pX, platoon unblocked	0.73					
vC, conflicting volume	1709	711	778			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1787	711	778			
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	95			
cM capacity (veh/h)	62	435	843			

Direction, Lane #	NB 1	SB 1
Volume Total	958	761
Volume Left	40	0
Volume Right	0	134
cSH	843	1700
Volume to Capacity	0.05	0.45
Queue Length 95th (m)	1.1	0.0
Control Delay (s)	1.3	0.0
Lane LOS	A	
Approach Delay (s)	1.3	0.0
Approach LOS		

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	88.6%	ICU Level of Service	E
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	64	65	366	52	188	560
Future Volume (vph)	64	65	366	52	188	560
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.96		1.00			
Frt	0.932		0.983			
Flt Protected	0.976					0.988
Satd. Flow (prot)	1572	0	1763	0	0	1780
Flt Permitted	0.976					0.791
Satd. Flow (perm)	1572	0	1763	0	0	1425
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	65		20			
Link Speed (k/h)	48		48			48
Link Distance (m)	321.1		184.1			89.0
Travel Time (s)	24.1		13.8			6.7
Confl. Peds. (#/hr)		29		12		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	64	65	366	52	188	560
Shared Lane Traffic (%)						
Lane Group Flow (vph)	129	0	418	0	0	748
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Turn Type	Prot		NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases					6	
Detector Phase	8		2		6	6
Switch Phase						
Minimum Initial (s)	5.0		5.0		5.0	5.0
Minimum Split (s)	20.0		40.0		40.0	40.0
Total Split (s)	20.0		40.0		40.0	40.0
Total Split (%)	33.3%		66.7%		66.7%	66.7%
Maximum Green (s)	14.6		34.8		34.8	34.8
Yellow Time (s)	3.0		3.3		3.3	3.3
All-Red Time (s)	2.4		1.9		1.9	1.9
Lost Time Adjust (s)	0.0		0.0			0.0
Total Lost Time (s)	5.4		5.2			5.2
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Recall Mode	None		Max		Max	Max
Walk Time (s)	7.0		15.0			
Flash Dont Walk (s)	7.0		6.0			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Pedestrian Calls (#/hr)	0		0			
Act Effct Green (s)	8.0		38.8			38.8
Actuated g/C Ratio	0.15		0.72			0.72
v/c Ratio	0.45		0.33			0.73
Control Delay	16.8		5.1			14.1
Queue Delay	0.0		0.0			0.0
Total Delay	16.8		5.1			14.1
LOS	B		A			B
Approach Delay	16.8		5.1			14.1
Approach LOS	B		A			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 54.2			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 11.4		Intersection LOS: B	
Intersection Capacity Utilization 89.8%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 5: Parkdale & Burnside

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	16	4	432	31	16	632
Future Volume (vph)	16	4	432	31	16	632
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.97		1.00			
Frt	0.973		0.991			
Flt Protected	0.962					0.999
Satd. Flow (prot)	1638	0	1781	0	0	1800
Flt Permitted	0.962					0.988
Satd. Flow (perm)	1638	0	1781	0	0	1780
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	4		11			
Link Speed (k/h)	48		48			48
Link Distance (m)	319.3		162.8			184.1
Travel Time (s)	23.9		12.2			13.8
Confl. Peds. (#/hr)		53		11		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	16	4	432	31	16	632
Shared Lane Traffic (%)						
Lane Group Flow (vph)	20	0	463	0	0	648
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Turn Type	Prot		NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases					6	
Detector Phase	8		2		6	6
Switch Phase						
Minimum Initial (s)	5.0		5.0		5.0	5.0
Minimum Split (s)	18.0		31.0		31.0	31.0
Total Split (s)	18.0		42.0		42.0	42.0
Total Split (%)	30.0%		70.0%		70.0%	70.0%
Maximum Green (s)	12.8		37.0		37.0	37.0
Yellow Time (s)	3.0		3.3		3.3	3.3
All-Red Time (s)	2.2		1.7		1.7	1.7
Lost Time Adjust (s)	0.0		0.0			0.0
Total Lost Time (s)	5.2		5.0			5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Recall Mode	None		Max		Max	Max
Walk Time (s)	7.0		15.0		15.0	15.0
Flash Dont Walk (s)	5.5		5.0		5.0	5.0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Pedestrian Calls (#/hr)	0		0		0	0
Act Effct Green (s)	6.3		56.5			56.5
Actuated g/C Ratio	0.11		0.95			0.95
v/c Ratio	0.11		0.27			0.38
Control Delay	24.4		1.4			1.9
Queue Delay	0.0		0.0			0.0
Total Delay	24.4		1.4			1.9
LOS	C		A			A
Approach Delay	24.4		1.4			1.9
Approach LOS	C		A			A

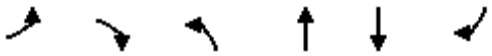
Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 59.6			
Natural Cycle: 50			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.38			
Intersection Signal Delay: 2.1		Intersection LOS: A	
Intersection Capacity Utilization 66.5%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 7: Lyndale & Parkdale

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	4	14	281	9	68	934
Future Volume (Veh/h)	4	14	281	9	68	934
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)	4	14	281	9	68	934
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			190			
pX, platoon unblocked						
vC, conflicting volume	1356	286			290	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1356	286			290	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	98			95	
cM capacity (veh/h)	157	756			1278	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	18	290	1002
Volume Left	4	0	68
Volume Right	14	9	0
cSH	409	1700	1278
Volume to Capacity	0.04	0.17	0.05
Queue Length 95th (m)	1.0	0.0	1.3
Control Delay (s)	14.2	0.0	1.4
Lane LOS	B		A
Approach Delay (s)	14.2	0.0	1.4
Approach LOS	B		

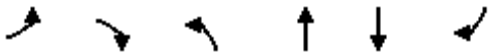
Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	85.4%	ICU Level of Service	E
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	33	33	0	394	752	0
Future Volume (Veh/h)	33	33	0	394	752	0
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)	33	33	0	394	752	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				89		
pX, platoon unblocked	0.94					
vC, conflicting volume	1146	752	752			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1123	752	752			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	85	92	100			
cM capacity (veh/h)	215	412	862			

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	33	33	394	752
Volume Left	33	0	0	0
Volume Right	0	33	0	0
cSH	215	412	1700	1700
Volume to Capacity	0.15	0.08	0.23	0.44
Queue Length 95th (m)	4.0	2.0	0.0	0.0
Control Delay (s)	24.8	14.5	0.0	0.0
Lane LOS	C	B		
Approach Delay (s)	19.6		0.0	0.0
Approach LOS	C			

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	51.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	92	302	752	144
Future Volume (Veh/h)	0	0	92	302	752	144
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	0	92	302	752	144
Pedestrians	45					
Lane Width (m)	0.0					
Walking Speed (m/s)	1.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				107		
pX, platoon unblocked	0.97					
vC, conflicting volume	1355	869	941			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1350	869	941			
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	87			
cM capacity (veh/h)	141	353	733			

Direction, Lane #	NB 1	SB 1
Volume Total	394	896
Volume Left	92	0
Volume Right	0	144
cSH	733	1700
Volume to Capacity	0.13	0.53
Queue Length 95th (m)	3.3	0.0
Control Delay (s)	3.7	0.0
Lane LOS	A	
Approach Delay (s)	3.7	0.0
Approach LOS		

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	80.4%	ICU Level of Service	D
Analysis Period (min)	15		

Lanes, Volumes, Timings
5: Parkdale & Burnside

01/30/2020

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	35	342	798	47	57	519
Future Volume (vph)	35	342	798	47	57	519
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.91		1.00			
Frt	0.878		0.992			
Flt Protected	0.995					0.995
Satd. Flow (prot)	1430	0	1783	0	0	1793
Flt Permitted	0.995					0.745
Satd. Flow (perm)	1430	0	1783	0	0	1342
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	161		7			
Link Speed (k/h)	48		48			48
Link Distance (m)	321.1		184.1			89.0
Travel Time (s)	24.1		13.8			6.7
Confl. Peds. (#/hr)		33		15		
Confl. Bikes (#/hr)				3		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	35	342	798	47	57	519
Shared Lane Traffic (%)						
Lane Group Flow (vph)	377	0	845	0	0	576
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Turn Type	Prot		NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases					6	
Detector Phase	8		2		6	6
Switch Phase						
Minimum Initial (s)	5.0		5.0		5.0	5.0
Minimum Split (s)	25.0		45.0		45.0	45.0
Total Split (s)	25.0		45.0		45.0	45.0
Total Split (%)	35.7%		64.3%		64.3%	64.3%
Maximum Green (s)	19.6		39.8		39.8	39.8
Yellow Time (s)	3.0		3.3		3.3	3.3
All-Red Time (s)	2.4		1.9		1.9	1.9
Lost Time Adjust (s)	0.0		0.0			0.0
Total Lost Time (s)	5.4		5.2			5.2
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Recall Mode	None		Max		Max	Max
Walk Time (s)	7.0		15.0			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Flash Dont Walk (s)	7.0		6.0			
Pedestrian Calls (#/hr)	0		0			
Act Effct Green (s)	15.1		40.0			40.0
Actuated g/C Ratio	0.23		0.61			0.61
v/c Ratio	0.83		0.78			0.71
Control Delay	30.8		17.6			16.4
Queue Delay	0.0		0.0			0.0
Total Delay	30.8		17.6			16.4
LOS	C		B			B
Approach Delay	30.8		17.6			16.4
Approach LOS	C		B			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 65.7			
Natural Cycle: 70			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 20.0		Intersection LOS: B	
Intersection Capacity Utilization 114.9%		ICU Level of Service H	
Analysis Period (min) 15			

Splits and Phases: 5: Parkdale & Burnside

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	35	19	834	26	6	570
Future Volume (vph)	35	19	834	26	6	570
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.94		1.00			
Frt	0.952		0.996			
Flt Protected	0.969					0.999
Satd. Flow (prot)	1564	0	1793	0	0	1800
Flt Permitted	0.969					0.993
Satd. Flow (perm)	1564	0	1793	0	0	1789
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	19		5			
Link Speed (k/h)	48		48			48
Link Distance (m)	319.3		162.8			184.1
Travel Time (s)	23.9		12.2			13.8
Confl. Peds. (#/hr)		54		11		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	35	19	834	26	6	570
Shared Lane Traffic (%)						
Lane Group Flow (vph)	54	0	860	0	0	576
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Turn Type	Prot		NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases					6	
Detector Phase	8		2		6	6
Switch Phase						
Minimum Initial (s)	5.0		5.0		5.0	5.0
Minimum Split (s)	18.0		52.0		52.0	52.0
Total Split (s)	18.0		52.0		52.0	52.0
Total Split (%)	25.7%		74.3%		74.3%	74.3%
Maximum Green (s)	12.8		47.0		47.0	47.0
Yellow Time (s)	3.0		3.3		3.3	3.3
All-Red Time (s)	2.2		1.7		1.7	1.7
Lost Time Adjust (s)	0.0		0.0			0.0
Total Lost Time (s)	5.2		5.0			5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Recall Mode	None		Max		Max	Max
Walk Time (s)	7.0		15.0		15.0	15.0
Flash Dont Walk (s)	5.5		5.0		5.0	5.0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Pedestrian Calls (#/hr)	0		0		0	0
Act Effct Green (s)	7.3		60.2			60.2
Actuated g/C Ratio	0.10		0.85			0.85
v/c Ratio	0.30		0.57			0.38
Control Delay	25.5		5.5			3.6
Queue Delay	0.0		0.0			0.0
Total Delay	25.5		5.5			3.6
LOS	C		A			A
Approach Delay	25.5		5.5			3.6
Approach LOS	C		A			A

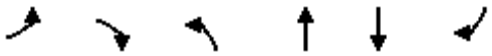
Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 71.1			
Natural Cycle: 70			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.57			
Intersection Signal Delay: 5.5		Intersection LOS: A	
Intersection Capacity Utilization 66.0%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 7: Lyndale & Parkdale

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	7	22	1409	10	11	381
Future Volume (Veh/h)	7	22	1409	10	11	381
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)	7	22	1409	10	11	381
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			190			
pX, platoon unblocked	0.71	0.71			0.71	
vC, conflicting volume	1817	1414			1419	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1944	1380			1387	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	86	83			97	
cM capacity (veh/h)	50	127			355	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	29	1419	392
Volume Left	7	0	11
Volume Right	22	10	0
cSH	92	1700	355
Volume to Capacity	0.31	0.83	0.03
Queue Length 95th (m)	9.1	0.0	0.7
Control Delay (s)	60.9	0.0	1.0
Lane LOS	F		A
Approach Delay (s)	60.9	0.0	1.0
Approach LOS	F		

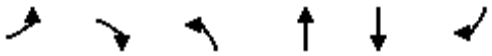
Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	88.9%	ICU Level of Service	E
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	121	108	0	1015	660	0
Future Volume (Veh/h)	121	108	0	1015	660	0
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)	121	108	0	1015	660	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				89		
pX, platoon unblocked	0.65					
vC, conflicting volume	1675	660	660			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1769	660	660			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	0	77	100			
cM capacity (veh/h)	60	465	933			

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	121	108	1015	660
Volume Left	121	0	0	0
Volume Right	0	108	0	0
cSH	60	465	1700	1700
Volume to Capacity	2.01	0.23	0.60	0.39
Queue Length 95th (m)	87.7	6.8	0.0	0.0
Control Delay (s)	618.8	15.1	0.0	0.0
Lane LOS	F	C		
Approach Delay (s)	334.1		0.0	0.0
Approach LOS	F			

Intersection Summary			
Average Delay	40.2		
Intersection Capacity Utilization	70.1%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	40	975	666	134
Future Volume (Veh/h)	0	0	40	975	666	134
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	0	40	975	666	134
Pedestrians	17					
Lane Width (m)	0.0					
Walking Speed (m/s)	1.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				107		
pX, platoon unblocked	0.68					
vC, conflicting volume	1805	750	817			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1950	750	817			
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	95			
cM capacity (veh/h)	46	413	815			

Direction, Lane #	NB 1	SB 1
Volume Total	1015	800
Volume Left	40	0
Volume Right	0	134
cSH	815	1700
Volume to Capacity	0.05	0.47
Queue Length 95th (m)	1.2	0.0
Control Delay (s)	1.4	0.0
Lane LOS	A	
Approach Delay (s)	1.4	0.0
Approach LOS		

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	91.7%	ICU Level of Service	F
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	72	81	344	55	188	527
Future Volume (vph)	72	81	344	55	188	527
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.96		0.99			
Frt	0.929		0.981			
Flt Protected	0.977					0.987
Satd. Flow (prot)	1565	0	1759	0	0	1779
Flt Permitted	0.977					0.790
Satd. Flow (perm)	1565	0	1759	0	0	1424
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	81		23			
Link Speed (k/h)	48		48			48
Link Distance (m)	321.1		184.1			89.0
Travel Time (s)	24.1		13.8			6.7
Confl. Peds. (#/hr)		29		12		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	72	81	344	55	188	527
Shared Lane Traffic (%)						
Lane Group Flow (vph)	153	0	399	0	0	715
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Turn Type	Prot		NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases					6	
Detector Phase	8		2		6	6
Switch Phase						
Minimum Initial (s)	5.0		5.0		5.0	5.0
Minimum Split (s)	20.0		40.0		40.0	40.0
Total Split (s)	20.0		40.0		40.0	40.0
Total Split (%)	33.3%		66.7%		66.7%	66.7%
Maximum Green (s)	14.6		34.8		34.8	34.8
Yellow Time (s)	3.0		3.3		3.3	3.3
All-Red Time (s)	2.4		1.9		1.9	1.9
Lost Time Adjust (s)	0.0		0.0			0.0
Total Lost Time (s)	5.4		5.2			5.2
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Recall Mode	None		Max		Max	Max
Walk Time (s)	7.0		15.0			
Flash Dont Walk (s)	7.0		6.0			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Pedestrian Calls (#/hr)	0		0			
Act Effct Green (s)	8.3		38.9			38.9
Actuated g/C Ratio	0.15		0.71			0.71
v/c Ratio	0.50		0.32			0.71
Control Delay	16.7		5.1			13.3
Queue Delay	0.0		0.0			0.0
Total Delay	16.7		5.1			13.3
LOS	B		A			B
Approach Delay	16.7		5.1			13.3
Approach LOS	B		A			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 54.6			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay: 11.1		Intersection LOS: B	
Intersection Capacity Utilization 87.6%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 5: Parkdale & Burnside

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	16	4	410	31	16	604
Future Volume (vph)	16	4	410	31	16	604
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.97		1.00			
Frt	0.973		0.991			
Flt Protected	0.962					0.999
Satd. Flow (prot)	1638	0	1781	0	0	1800
Flt Permitted	0.962					0.988
Satd. Flow (perm)	1638	0	1781	0	0	1780
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	4		12			
Link Speed (k/h)	48		48			48
Link Distance (m)	319.3		162.8			184.1
Travel Time (s)	23.9		12.2			13.8
Confl. Peds. (#/hr)		53		11		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	16	4	410	31	16	604
Shared Lane Traffic (%)						
Lane Group Flow (vph)	20	0	441	0	0	620
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Turn Type	Prot		NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases					6	
Detector Phase	8		2		6	6
Switch Phase						
Minimum Initial (s)	5.0		5.0		5.0	5.0
Minimum Split (s)	18.0		31.0		31.0	31.0
Total Split (s)	18.0		42.0		42.0	42.0
Total Split (%)	30.0%		70.0%		70.0%	70.0%
Maximum Green (s)	12.8		37.0		37.0	37.0
Yellow Time (s)	3.0		3.3		3.3	3.3
All-Red Time (s)	2.2		1.7		1.7	1.7
Lost Time Adjust (s)	0.0		0.0			0.0
Total Lost Time (s)	5.2		5.0			5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Recall Mode	None		Max		Max	Max
Walk Time (s)	7.0		15.0		15.0	15.0
Flash Dont Walk (s)	5.5		5.0		5.0	5.0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Pedestrian Calls (#/hr)	0		0		0	0
Act Effct Green (s)	6.3		56.5			56.5
Actuated g/C Ratio	0.11		0.95			0.95
v/c Ratio	0.11		0.26			0.37
Control Delay	24.4		1.4			1.9
Queue Delay	0.0		0.0			0.0
Total Delay	24.4		1.4			1.9
LOS	C		A			A
Approach Delay	24.4		1.4			1.9
Approach LOS	C		A			A

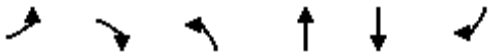
Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 59.6			
Natural Cycle: 50			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.37			
Intersection Signal Delay: 2.1		Intersection LOS: A	
Intersection Capacity Utilization 65.0%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 7: Lyndale & Parkdale

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	4	16	281	9	75	880
Future Volume (Veh/h)	4	16	281	9	75	880
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)	4	16	281	9	75	880
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			190			
pX, platoon unblocked						
vC, conflicting volume	1316	286			290	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1316	286			290	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	98			94	
cM capacity (veh/h)	165	756			1278	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	20	290	955
Volume Left	4	0	75
Volume Right	16	9	0
cSH	440	1700	1278
Volume to Capacity	0.05	0.17	0.06
Queue Length 95th (m)	1.1	0.0	1.4
Control Delay (s)	13.6	0.0	1.5
Lane LOS	B		A
Approach Delay (s)	13.6	0.0	1.5
Approach LOS	B		

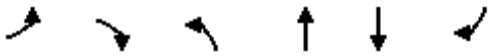
Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	82.8%	ICU Level of Service	E
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	33	33	0	399	708	0
Future Volume (Veh/h)	33	33	0	399	708	0
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)	33	33	0	399	708	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				89		
pX, platoon unblocked	0.94					
vC, conflicting volume	1107	708	708			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1084	708	708			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	86	92	100			
cM capacity (veh/h)	228	436	895			

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	33	33	399	708
Volume Left	33	0	0	0
Volume Right	0	33	0	0
cSH	228	436	1700	1700
Volume to Capacity	0.14	0.08	0.23	0.42
Queue Length 95th (m)	3.8	1.9	0.0	0.0
Control Delay (s)	23.5	13.9	0.0	0.0
Lane LOS	C	B		
Approach Delay (s)	18.7		0.0	0.0
Approach LOS	C			

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	49.3%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	92	307	708	144
Future Volume (Veh/h)	0	0	92	307	708	144
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	0	92	307	708	144
Pedestrians	45					
Lane Width (m)	0.0					
Walking Speed (m/s)	1.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				107		
pX, platoon unblocked	0.97					
vC, conflicting volume	1316	825	897			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1310	825	897			
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	88			
cM capacity (veh/h)	150	374	761			

Direction, Lane #	NB 1	SB 1
Volume Total	399	852
Volume Left	92	0
Volume Right	0	144
cSH	761	1700
Volume to Capacity	0.12	0.50
Queue Length 95th (m)	3.1	0.0
Control Delay (s)	3.6	0.0
Lane LOS	A	
Approach Delay (s)	3.6	0.0
Approach LOS		

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	78.3%	ICU Level of Service	D
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	39	349	751	59	57	489
Future Volume (vph)	39	349	751	59	57	489
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.91		1.00			
Frt	0.879		0.990			
Flt Protected	0.995					0.995
Satd. Flow (prot)	1433	0	1778	0	0	1793
Flt Permitted	0.995					0.785
Satd. Flow (perm)	1433	0	1778	0	0	1415
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	180		9			
Link Speed (k/h)	48		48			48
Link Distance (m)	321.1		184.1			89.0
Travel Time (s)	24.1		13.8			6.7
Confl. Peds. (#/hr)		33		15		
Confl. Bikes (#/hr)				3		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	39	349	751	59	57	489
Shared Lane Traffic (%)						
Lane Group Flow (vph)	388	0	810	0	0	546
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Turn Type	Prot		NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases					6	
Detector Phase	8		2		6	6
Switch Phase						
Minimum Initial (s)	5.0		5.0		5.0	5.0
Minimum Split (s)	25.0		45.0		45.0	45.0
Total Split (s)	25.0		45.0		45.0	45.0
Total Split (%)	35.7%		64.3%		64.3%	64.3%
Maximum Green (s)	19.6		39.8		39.8	39.8
Yellow Time (s)	3.0		3.3		3.3	3.3
All-Red Time (s)	2.4		1.9		1.9	1.9
Lost Time Adjust (s)	0.0		0.0			0.0
Total Lost Time (s)	5.4		5.2			5.2
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Recall Mode	None		Max		Max	Max
Walk Time (s)	7.0		15.0			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Flash Dont Walk (s)	7.0		6.0			
Pedestrian Calls (#/hr)	0		0			
Act Effct Green (s)	14.8		40.0			40.0
Actuated g/C Ratio	0.23		0.61			0.61
v/c Ratio	0.84		0.74			0.63
Control Delay	29.8		15.9			13.5
Queue Delay	0.0		0.0			0.0
Total Delay	29.8		15.9			13.5
LOS	C		B			B
Approach Delay	29.8		15.9			13.5
Approach LOS	C		B			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 65.5			
Natural Cycle: 70			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 18.3		Intersection LOS: B	
Intersection Capacity Utilization 114.0%		ICU Level of Service H	
Analysis Period (min) 15			

Splits and Phases: 5: Parkdale & Burnside

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	35	19	798	26	6	541
Future Volume (vph)	35	19	798	26	6	541
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.94		1.00			
Frt	0.952		0.996			
Flt Protected	0.969					0.999
Satd. Flow (prot)	1564	0	1793	0	0	1800
Flt Permitted	0.969					0.993
Satd. Flow (perm)	1564	0	1793	0	0	1789
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	19		5			
Link Speed (k/h)	48		48			48
Link Distance (m)	319.3		162.8			184.1
Travel Time (s)	23.9		12.2			13.8
Confl. Peds. (#/hr)		54		11		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	35	19	798	26	6	541
Shared Lane Traffic (%)						
Lane Group Flow (vph)	54	0	824	0	0	547
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Turn Type	Prot		NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases					6	
Detector Phase	8		2		6	6
Switch Phase						
Minimum Initial (s)	5.0		5.0		5.0	5.0
Minimum Split (s)	18.0		52.0		52.0	52.0
Total Split (s)	18.0		52.0		52.0	52.0
Total Split (%)	25.7%		74.3%		74.3%	74.3%
Maximum Green (s)	12.8		47.0		47.0	47.0
Yellow Time (s)	3.0		3.3		3.3	3.3
All-Red Time (s)	2.2		1.7		1.7	1.7
Lost Time Adjust (s)	0.0		0.0			0.0
Total Lost Time (s)	5.2		5.0			5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Recall Mode	None		Max		Max	Max
Walk Time (s)	7.0		15.0		15.0	15.0
Flash Dont Walk (s)	5.5		5.0		5.0	5.0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Pedestrian Calls (#/hr)	0		0		0	0
Act Effct Green (s)	7.3		60.2			60.2
Actuated g/C Ratio	0.10		0.85			0.85
v/c Ratio	0.30		0.54			0.36
Control Delay	25.5		5.2			3.5
Queue Delay	0.0		0.0			0.0
Total Delay	25.5		5.2			3.5
LOS	C		A			A
Approach Delay	25.5		5.2			3.5
Approach LOS	C		A			A

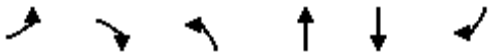
Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 71.1			
Natural Cycle: 70			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.54			
Intersection Signal Delay: 5.3		Intersection LOS: A	
Intersection Capacity Utilization 64.0%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 7: Lyndale & Parkdale

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	7	23	1334	10	16	359
Future Volume (Veh/h)	7	23	1334	10	16	359
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)	7	23	1334	10	16	359
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			190			
pX, platoon unblocked	0.76	0.76			0.76	
vC, conflicting volume	1730	1339			1344	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1802	1289			1295	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	89	85			96	
cM capacity (veh/h)	64	153			410	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	30	1344	375
Volume Left	7	0	16
Volume Right	23	10	0
cSH	116	1700	410
Volume to Capacity	0.26	0.79	0.04
Queue Length 95th (m)	7.3	0.0	0.9
Control Delay (s)	46.6	0.0	1.3
Lane LOS	E		A
Approach Delay (s)	46.6	0.0	1.3
Approach LOS	E		

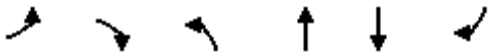
Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	84.8%	ICU Level of Service	E
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	121	108	0	968	627	0
Future Volume (Veh/h)	121	108	0	968	627	0
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)	121	108	0	968	627	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				89		
pX, platoon unblocked	0.69					
vC, conflicting volume	1595	627	627			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1638	627	627			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	0	78	100			
cM capacity (veh/h)	76	485	960			

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	121	108	968	627
Volume Left	121	0	0	0
Volume Right	0	108	0	0
cSH	76	485	1700	1700
Volume to Capacity	1.59	0.22	0.57	0.37
Queue Length 95th (m)	76.6	6.4	0.0	0.0
Control Delay (s)	409.8	14.5	0.0	0.0
Lane LOS	F	B		
Approach Delay (s)	223.4		0.0	0.0
Approach LOS	F			

Intersection Summary			
Average Delay	28.0		
Intersection Capacity Utilization	67.5%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	40	928	627	134
Future Volume (Veh/h)	0	0	40	928	627	134
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	0	40	928	627	134
Pedestrians	17					
Lane Width (m)	0.0					
Walking Speed (m/s)	1.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				107		
pX, platoon unblocked	0.72					
vC, conflicting volume	1719	711	778			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1806	711	778			
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	95			
cM capacity (veh/h)	60	435	843			

Direction, Lane #	NB 1	SB 1
Volume Total	968	761
Volume Left	40	0
Volume Right	0	134
cSH	843	1700
Volume to Capacity	0.05	0.45
Queue Length 95th (m)	1.1	0.0
Control Delay (s)	1.3	0.0
Lane LOS	A	
Approach Delay (s)	1.3	0.0
Approach LOS		

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	89.2%	ICU Level of Service	E
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	72	81	366	55	188	560
Future Volume (vph)	72	81	366	55	188	560
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.96		1.00			
Frt	0.929		0.982			
Flt Protected	0.977					0.988
Satd. Flow (prot)	1565	0	1761	0	0	1780
Flt Permitted	0.977					0.790
Satd. Flow (perm)	1565	0	1761	0	0	1424
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	81		21			
Link Speed (k/h)	48		48			48
Link Distance (m)	321.1		184.1			89.0
Travel Time (s)	24.1		13.8			6.7
Confl. Peds. (#/hr)		29		12		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	72	81	366	55	188	560
Shared Lane Traffic (%)						
Lane Group Flow (vph)	153	0	421	0	0	748
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Turn Type	Prot		NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases					6	
Detector Phase	8		2		6	6
Switch Phase						
Minimum Initial (s)	5.0		5.0		5.0	5.0
Minimum Split (s)	20.0		40.0		40.0	40.0
Total Split (s)	20.0		40.0		40.0	40.0
Total Split (%)	33.3%		66.7%		66.7%	66.7%
Maximum Green (s)	14.6		34.8		34.8	34.8
Yellow Time (s)	3.0		3.3		3.3	3.3
All-Red Time (s)	2.4		1.9		1.9	1.9
Lost Time Adjust (s)	0.0		0.0			0.0
Total Lost Time (s)	5.4		5.2			5.2
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Recall Mode	None		Max		Max	Max
Walk Time (s)	7.0		15.0			
Flash Dont Walk (s)	7.0		6.0			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Pedestrian Calls (#/hr)	0		0			
Act Effct Green (s)	8.3		38.9			38.9
Actuated g/C Ratio	0.15		0.71			0.71
v/c Ratio	0.50		0.33			0.74
Control Delay	16.7		5.3			14.6
Queue Delay	0.0		0.0			0.0
Total Delay	16.7		5.3			14.6
LOS	B		A			B
Approach Delay	16.7		5.3			14.6
Approach LOS	B		A			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 54.6			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 11.9		Intersection LOS: B	
Intersection Capacity Utilization 90.6%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 5: Parkdale & Burnside

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	16	4	435	31	16	640
Future Volume (vph)	16	4	435	31	16	640
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.97		1.00			
Frt	0.973		0.991			
Flt Protected	0.962					0.999
Satd. Flow (prot)	1638	0	1781	0	0	1800
Flt Permitted	0.962					0.988
Satd. Flow (perm)	1638	0	1781	0	0	1780
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	4		11			
Link Speed (k/h)	48		48			48
Link Distance (m)	319.3		162.8			184.1
Travel Time (s)	23.9		12.2			13.8
Confl. Peds. (#/hr)		53		11		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	16	4	435	31	16	640
Shared Lane Traffic (%)						
Lane Group Flow (vph)	20	0	466	0	0	656
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Turn Type	Prot		NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases					6	
Detector Phase	8		2		6	6
Switch Phase						
Minimum Initial (s)	5.0		5.0		5.0	5.0
Minimum Split (s)	18.0		31.0		31.0	31.0
Total Split (s)	18.0		42.0		42.0	42.0
Total Split (%)	30.0%		70.0%		70.0%	70.0%
Maximum Green (s)	12.8		37.0		37.0	37.0
Yellow Time (s)	3.0		3.3		3.3	3.3
All-Red Time (s)	2.2		1.7		1.7	1.7
Lost Time Adjust (s)	0.0		0.0			0.0
Total Lost Time (s)	5.2		5.0			5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Recall Mode	None		Max		Max	Max
Walk Time (s)	7.0		15.0		15.0	15.0
Flash Dont Walk (s)	5.5		5.0		5.0	5.0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Pedestrian Calls (#/hr)	0		0		0	0
Act Effct Green (s)	6.3		56.5			56.5
Actuated g/C Ratio	0.11		0.95			0.95
v/c Ratio	0.11		0.28			0.39
Control Delay	24.4		1.5			2.0
Queue Delay	0.0		0.0			0.0
Total Delay	24.4		1.5			2.0
LOS	C		A			A
Approach Delay	24.4		1.5			2.0
Approach LOS	C		A			A

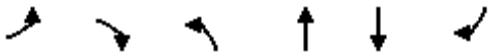
Intersection Summary			
Area Type:	Other		
Cycle Length: 60			
Actuated Cycle Length: 59.6			
Natural Cycle: 50			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.39			
Intersection Signal Delay: 2.1		Intersection LOS: A	
Intersection Capacity Utilization 67.0%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 7: Lyndale & Parkdale

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	4	16	297	9	75	934
Future Volume (Veh/h)	4	16	297	9	75	934
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)	4	16	297	9	75	934
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			190			
pX, platoon unblocked						
vC, conflicting volume	1386	302			306	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1386	302			306	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	98			94	
cM capacity (veh/h)	149	740			1260	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	20	306	1009
Volume Left	4	0	75
Volume Right	16	9	0
cSH	413	1700	1260
Volume to Capacity	0.05	0.18	0.06
Queue Length 95th (m)	1.2	0.0	1.4
Control Delay (s)	14.2	0.0	1.6
Lane LOS	B		A
Approach Delay (s)	14.2	0.0	1.6
Approach LOS	B		

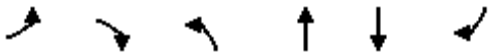
Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	86.7%	ICU Level of Service	E
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	33	33	0	416	752	0
Future Volume (Veh/h)	33	33	0	416	752	0
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)	33	33	0	416	752	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				89		
pX, platoon unblocked	0.94					
vC, conflicting volume	1168	752	752			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1145	752	752			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	84	92	100			
cM capacity (veh/h)	207	412	862			

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	33	33	416	752
Volume Left	33	0	0	0
Volume Right	0	33	0	0
cSH	207	412	1700	1700
Volume to Capacity	0.16	0.08	0.24	0.44
Queue Length 95th (m)	4.2	2.0	0.0	0.0
Control Delay (s)	25.6	14.5	0.0	0.0
Lane LOS	D	B		
Approach Delay (s)	20.1		0.0	0.0
Approach LOS	C			

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	51.8%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	92	324	752	144
Future Volume (Veh/h)	0	0	92	324	752	144
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	0	92	324	752	144
Pedestrians	45					
Lane Width (m)	0.0					
Walking Speed (m/s)	1.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				107		
pX, platoon unblocked	0.96					
vC, conflicting volume	1377	869	941			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1372	869	941			
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	87			
cM capacity (veh/h)	136	353	733			

Direction, Lane #	NB 1	SB 1
Volume Total	416	896
Volume Left	92	0
Volume Right	0	144
cSH	733	1700
Volume to Capacity	0.13	0.53
Queue Length 95th (m)	3.3	0.0
Control Delay (s)	3.6	0.0
Lane LOS	A	
Approach Delay (s)	3.6	0.0
Approach LOS		

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	81.6%	ICU Level of Service	D
Analysis Period (min)	15		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	39	349	798	59	57	519
Future Volume (vph)	39	349	798	59	57	519
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.91		1.00			
Frt	0.879		0.991			
Flt Protected	0.995					0.995
Satd. Flow (prot)	1433	0	1780	0	0	1793
Flt Permitted	0.995					0.722
Satd. Flow (perm)	1433	0	1780	0	0	1301
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	161		9			
Link Speed (k/h)	48		48			48
Link Distance (m)	321.1		184.1			89.0
Travel Time (s)	24.1		13.8			6.7
Confl. Peds. (#/hr)		33		15		
Confl. Bikes (#/hr)				3		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	39	349	798	59	57	519
Shared Lane Traffic (%)						
Lane Group Flow (vph)	388	0	857	0	0	576
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Turn Type	Prot		NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases					6	
Detector Phase	8		2		6	6
Switch Phase						
Minimum Initial (s)	5.0		5.0		5.0	5.0
Minimum Split (s)	25.0		45.0		45.0	45.0
Total Split (s)	25.0		45.0		45.0	45.0
Total Split (%)	35.7%		64.3%		64.3%	64.3%
Maximum Green (s)	19.6		39.8		39.8	39.8
Yellow Time (s)	3.0		3.3		3.3	3.3
All-Red Time (s)	2.4		1.9		1.9	1.9
Lost Time Adjust (s)	0.0		0.0			0.0
Total Lost Time (s)	5.4		5.2			5.2
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Recall Mode	None		Max		Max	Max
Walk Time (s)	7.0		15.0			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Flash Dont Walk (s)	7.0		6.0			
Pedestrian Calls (#/hr)	0		0			
Act Effct Green (s)	15.5		40.0			40.0
Actuated g/C Ratio	0.23		0.61			0.61
v/c Ratio	0.85		0.79			0.73
Control Delay	32.0		18.5			18.0
Queue Delay	0.0		0.0			0.0
Total Delay	32.0		18.5			18.0
LOS	C		B			B
Approach Delay	32.0		18.5			18.0
Approach LOS	C		B			B

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 66.1			
Natural Cycle: 70			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay: 21.3		Intersection LOS: C	
Intersection Capacity Utilization 115.5%		ICU Level of Service H	
Analysis Period (min) 15			

Splits and Phases: 5: Parkdale & Burnside

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	35	19	846	26	6	574
Future Volume (vph)	35	19	846	26	6	574
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.94		1.00			
Frt	0.952		0.996			
Flt Protected	0.969					0.999
Satd. Flow (prot)	1564	0	1793	0	0	1800
Flt Permitted	0.969					0.993
Satd. Flow (perm)	1564	0	1793	0	0	1789
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)	19		5			
Link Speed (k/h)	48		48			48
Link Distance (m)	319.3		162.8			184.1
Travel Time (s)	23.9		12.2			13.8
Confl. Peds. (#/hr)		54		11		
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	35	19	846	26	6	574
Shared Lane Traffic (%)						
Lane Group Flow (vph)	54	0	872	0	0	580
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	3.7		0.0			0.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Turn Type	Prot		NA		Perm	NA
Protected Phases	8		2			6
Permitted Phases					6	
Detector Phase	8		2		6	6
Switch Phase						
Minimum Initial (s)	5.0		5.0		5.0	5.0
Minimum Split (s)	18.0		52.0		52.0	52.0
Total Split (s)	18.0		52.0		52.0	52.0
Total Split (%)	25.7%		74.3%		74.3%	74.3%
Maximum Green (s)	12.8		47.0		47.0	47.0
Yellow Time (s)	3.0		3.3		3.3	3.3
All-Red Time (s)	2.2		1.7		1.7	1.7
Lost Time Adjust (s)	0.0		0.0			0.0
Total Lost Time (s)	5.2		5.0			5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0		3.0	3.0
Recall Mode	None		Max		Max	Max
Walk Time (s)	7.0		15.0		15.0	15.0
Flash Dont Walk (s)	5.5		5.0		5.0	5.0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Pedestrian Calls (#/hr)	0		0		0	0
Act Effct Green (s)	7.3		60.2			60.2
Actuated g/C Ratio	0.10		0.85			0.85
v/c Ratio	0.30		0.57			0.38
Control Delay	25.5		5.6			3.6
Queue Delay	0.0		0.0			0.0
Total Delay	25.5		5.6			3.6
LOS	C		A			A
Approach Delay	25.5		5.6			3.6
Approach LOS	C		A			A

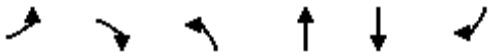
Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 71.1			
Natural Cycle: 70			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.57			
Intersection Signal Delay: 5.6		Intersection LOS: A	
Intersection Capacity Utilization 66.7%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 7: Lyndale & Parkdale

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	7	23	1416	10	16	381
Future Volume (Veh/h)	7	23	1416	10	16	381
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)	7	23	1416	10	16	381
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			190			
pX, platoon unblocked	0.70	0.70			0.70	
vC, conflicting volume	1834	1421			1426	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1975	1388			1395	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	85	81			95	
cM capacity (veh/h)	46	124			347	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	30	1426	397
Volume Left	7	0	16
Volume Right	23	10	0
cSH	89	1700	347
Volume to Capacity	0.34	0.84	0.05
Queue Length 95th (m)	9.9	0.0	1.1
Control Delay (s)	65.0	0.0	1.5
Lane LOS	F		A
Approach Delay (s)	65.0	0.0	1.5
Approach LOS	F		

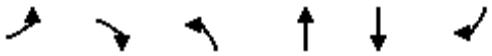
Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	89.3%	ICU Level of Service	E
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	121	108	0	1025	666	0
Future Volume (Veh/h)	121	108	0	1025	666	0
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)	121	108	0	1025	666	0
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				89		
pX, platoon unblocked	0.64					
vC, conflicting volume	1691	666	666			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1799	666	666			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	0	77	100			
cM capacity (veh/h)	56	461	928			

Direction, Lane #	EB 1	EB 2	NB 1	SB 1
Volume Total	121	108	1025	666
Volume Left	121	0	0	0
Volume Right	0	108	0	0
cSH	56	461	1700	1700
Volume to Capacity	2.14	0.23	0.60	0.39
Queue Length 95th (m)	90.4	6.8	0.0	0.0
Control Delay (s)	683.9	15.2	0.0	0.0
Lane LOS	F	C		
Approach Delay (s)	368.5		0.0	0.0
Approach LOS	F			

Intersection Summary			
Average Delay	44.0		
Intersection Capacity Utilization	70.7%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	0	40	985	666	134
Future Volume (Veh/h)	0	0	40	985	666	134
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	0	40	985	666	134
Pedestrians	17					
Lane Width (m)	0.0					
Walking Speed (m/s)	1.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				107		
pX, platoon unblocked	0.67					
vC, conflicting volume	1815	750	817			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1973	750	817			
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	95			
cM capacity (veh/h)	44	413	815			

Direction, Lane #	NB 1	SB 1
Volume Total	1025	800
Volume Left	40	0
Volume Right	0	134
cSH	815	1700
Volume to Capacity	0.05	0.47
Queue Length 95th (m)	1.2	0.0
Control Delay (s)	1.5	0.0
Lane LOS	A	
Approach Delay (s)	1.5	0.0
Approach LOS		

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	92.3%	ICU Level of Service	F
Analysis Period (min)	15		

Appendix H

- Traffic Signal Warrant Analysis

MTO SIGNAL WARRANT CALCULATIONS - JUSTIFICATION 7

Parkdale / Colombine-EB Intersection - 2028 Background Traffic

Justification	1 Lane Highway - Free Flow*	Criteria	Volume	Sectional %	Entire %	Criteria %	Meets Signalization Warrant
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (av. hr)	720	781	108%	**43%**	**120%**	**No**
	B. Vehicle volume, minor streets (av. hr)	170	74	43%			
2. Delay to Cross Traffic	A. Vehicle volume, major street (av. hr)	720	707	98%	**51%**	**120%**	**No**
	B. Combined vehicle & pedestrian volume crossing artery from minor streets	75	39	51%			

	Weekday AM Peak		
	NB	SB	EB
AmPHV:	394	752	66
PmPHV:	1015	666	229
AHV = (AmPHV + PmPHV) / 4	352	355	74
1a - AHV all approaches:	781		
1b - AHV minor approach:	74		
2a - AHV major approach:	707		
2b - AHV crossing traffic:	39		

OTM Book 12: (March 2012 Edition):

1. Due to the increased uncertainty of volume projections for new developments, an increased justification threshold is used in those cases. Justification 1 and 2 are used only and the justification is required to be met to 120% in the case of an existing intersection and 150% in the case of a new intersection for traffic signals to be considered.

2. Free Flow Conditions represents roads with operating or posted speed limits equal to or greater than 70 km/hr and are normally encountered in rural areas or on controlled access roads in urban areas. Also, isolated communities with populations less than 10,000 and are located outside the community influence of large urban centres, even if operating speed is less than 70 km/hr.

3. Restricted Flow Conditions represents roads with operating or posted speeds limits less than 70 km/hr and are normally encountered in urban areas where side functions on the roadway such as parking and numerous entrances reduces the operating speed of the road.

4. If right turns are channelized and are effectively segregated from through traffic by means of a physical island, then the volume of right turning vehicles should not be included in any justification calculation.

5. Justification volumes for minor street volumes (Justification 1b) are reduced by 50% for "T" intersections.

MTO SIGNAL WARRANT CALCULATIONS - JUSTIFICATION 7

Parkdale / Colombine-EB Intersection - 2028 Background & Site Generated Traffic

Justification	1 Lane Highway - Free Flow*	Criteria	Volume	Sectional %	Entire %	Criteria %	Meets Signalization Warrant
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (av. hr)	720	789	110%	**43%**	**120%**	**No**
	B. Vehicle volume, minor streets (av. hr)	170	74	43%			
2. Delay to Cross Traffic	A. Vehicle volume, major street (av. hr)	720	715	99%	**51%**	**120%**	**No**
	B. Combined vehicle & pedestrian volume crossing artery from minor streets	75	39	51%			

	Weekday AM Peak		
	NB	SB	EB
AmPHV:	416	752	66
PmPHV:	1025	666	229
AHV = (AmPHV + PmPHV) / 4	360	355	74
1a - AHV all approaches:	789		
1b - AHV minor approach:	74		
2a - AHV major approach:	715		
2b - AHV crossing traffic:	39		

OTM Book 12: (March 2012 Edition):

1. Due to the increased uncertainty of volume projections for new developments, an increased justification threshold is used in those cases. Justification 1 and 2 are used only and the justification is required to be met to 120% in the case of an existing intersection and 150% in the case of a new intersection for traffic signals to be considered.

2. Free Flow Conditions represents roads with operating or posted speed limits equal to or greater than 70 km/hr and are normally encountered in rural areas or on controlled access roads in urban areas. Also, isolated communities with populations less than 10,000 and are located outside the community influence of large urban centres, even if operating speed is less than 70 km/hr.

3. Restricted Flow Conditions represents roads with operating or posted speeds limits less than 70 km/hr and are normally encountered in urban areas where side functions on the roadway such as parking and numerous entrances reduces the operating speed of the road.

4. If right turns are channelized and are effectively segregated from through traffic by means of a physical island, then the volume of right turning vehicles should not be included in any justification calculation.

5. Justification volumes for minor street volumes (Justification 1b) are reduced by 50% for "T" intersections.

Appendix I

- Trip Generation for 121 Parkdale Avenue

TRANS / ITE Trip Generation and Distribution Rates for 121 Parkdale

Land Use	AM Peak	PM Peak
High Rise Condo	0.38	0.34
Specialty Retail Center- ITE 826	6.84	5.02

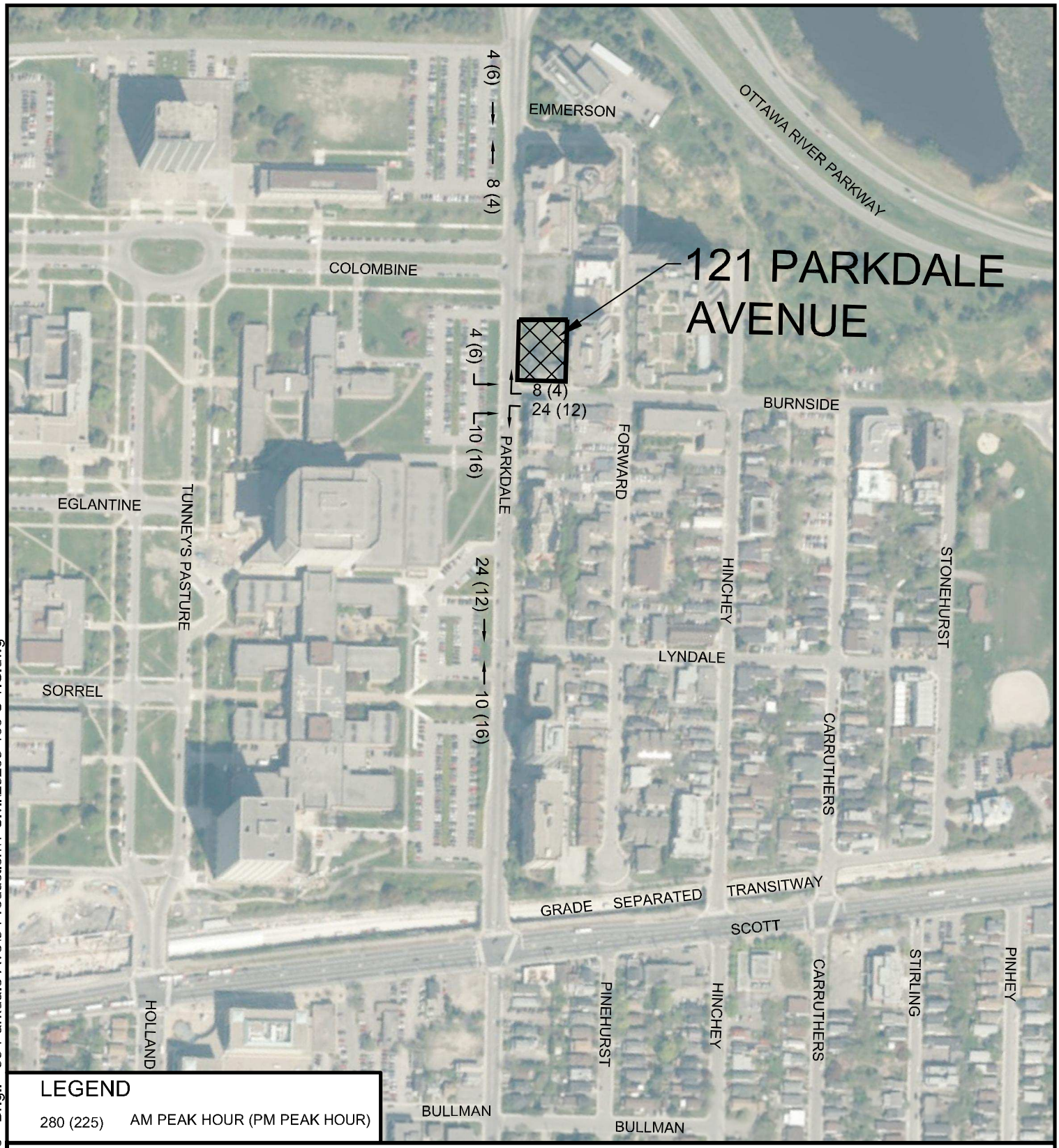
Land Use	AM Peak		PM Peak	
	In	Out	In	Out
High Rise Condo	28%	72%	58%	42%
Specialty Retail Center - ITE 826	48%	52%	56%	44%

Site Generated Person Trips for 121 Parkdale

Land Use	Units / 1000's SF	AM Peak			PM Peak		
		In	Out	Total	In	Out	Total
High Rise Condo	280	81	207	**288**	138	100	**238**
Specialty Retail Center - ITE 826	3.787	16	18	**34**	14	11	**25**
Synergy Reduction Factor for Specialty Retail Center	0.25	-4	-5	**-9**	-4	-3	**-7**
Total		93	220	**313**	148	108	**256**

Updated Development-Generated Travel Demand for 121 Parkdale

Travel Mode	Modal Share	AM Peak			PM Peak		
		In	Out	Total	In	Out	Total
Auto Driver	15%	14	33	**47**	22	16	**38**
Auto Passenger	5%	5	11	**16**	8	5	**13**
Transit	65%	60	143	**203**	97	70	**167**
Non-Motorized	15%	14	33	**47**	22	16	**38**
Total	**100%**	**93**	**220**	**313**	**149**	**107**	**256**



LEGEND

280 (225) AM PEAK HOUR (PM PEAK HOUR)

PROJECT:

99 PARKDALE CONDOMINIUM BUILDING

99 PARKDALE AVENUE, OTTAWA, ON

DRAWING:

SITE GENERATED TRAFFIC FROM 121 PARKDALE

www.jlrichards.ca

J.L.Richards ENGINEERS · ARCHITECTS · PLANNERS

DESIGN:	PM
DRAWN:	TB
CHECKED:	MA
JLR #:	25205-100

DRAWING #:

File Location: P:\25000\25205-100 - Brigil - 99 Parkdale Ave\5-Production\1-Civil\25205-100 C TIS.dwg

PLOT DATE: Monday, January 27, 2020 8:44:18 AM

Parkdale and Burnside Residential Condominiums, Ottawa, ON
Transportation Impact Study
Tega Homes

Prepared By:
Stantec Consulting Ltd.

September 2012

TIA GUIDELINES CHECKLIST – TRANSPORTATION IMPACT STUDY

Report Context

☒ Municipal Address
Comment: *Page 1.1*

☒ Location relative to major elements of the existing transportation system (e.g. the site is located in the southwest quadrant of the intersection of Main Street/First Street, 600m from the Maple Street Rapid Transit Station)
Comment: *Page 1.1*

☒ Existing land uses or permitted use provisions in the Official Plan, Zoning By-Law, etc.
Comment: *Page 2.4*

☒ Proposed land uses and relevant planning regulations to be used in the analysis
Comment: *Page 2.4*

☒ Proposed development size (building size, number of residential units, etc.) and location on site
Comment: *Page 2.4*

☒ Estimated date of occupancy
Comment: *Page 1.1*

☐ Planned phasing of development
Comment: *N/A – no phasing is planned at this time.*

☒ Proposed number of parking spaces (not relevant for Draft Plans of Subdivision)
Comment: *Page 2.4*

☒ Proposed Access points and type of access (full turns, right-in/right-out, turning restrictions, etc.)
Comment: *Page 2.4*

☒ Study area
Comment: *Page 1.1*

☒ Time periods and phasing
Comment: *Page 1.1*

☒ Horizon years (including reference to phased development)
Comment: *Page 1.1*

Existing Conditions

☒ Existing roads, ramps in the study area, including jurisdiction, classification, number of lanes and posted speed limit
Comment: *Page 3.6*

☒ Existing intersections, indicating type of control, lane configurations, turning restrictions and any other relevant data (e.g. extraordinary lane widths, grades, etc.)
Comment: *Page 3.6*

☐ Existing access points to adjacent developments (both sides of all roads bordering the site)
Comment: *Page 2.4*

☒ Existing transit system, including stations and stops
Comment: *Page 3.6*

☒ Existing on- and off-road bicycle facilities and pedestrian sidewalks and pathway networks
Comment: *Page 3.6*

☒ Existing system operations (V/C, LOS)
Comment: *Page 3.11*

☒ Major trip generators/attractors within the study area should be indicated
Comment: *Page 3.7*

Demand Forecasting

☒ General background growth
Comment: *Page 4.12*

☒ Other study area developments
Comment: *Page 4.12*

☐ Changes to the study area road network
Comment: *N/A – None anticipated within horizon.*

☒ Future background system operations (V/C, LOS, queue lengths)
- Include figures documenting future background travel demands by mode for each horizon year

Comment: *Page 5.22*

☒ Trip generation rates
Comment: *Page 4.15*

☒ Trip Distribution and assignment
- Include figures documenting forecast site trip generation and assignment by mode demands by mode for each horizon year

Comment: *Page 4.16-4.18*
- Include figures documenting total future travel demands by mode for each horizon year

Comment: *Page 4.20*

Impact Analysis

☒ Total future system operations (V/C, LOS, queue lengths)
Comment: *Page 5.25*

☐ Signal and auxiliary lane (device) warrants
Comment: *N/A – No mitigation measures required at unsignalized intersection*

☐ Operational/safety assessment (e.g. sight line assessment where grades are an issue)
Comment: *N/A – No special requirements for this site.*

☒ Storage analysis for closely spaced intersections
Comment: *Page 5.26*

☒ Pedestrian and bicycle network connections and continuity
Comment: *Page 5.27*

☐ On-site circulation and design
Comment: *N/A – High Rise Condominium*

☒ Potential for neighbourhood impacts
Comment: *Page 5.27*

☒ Transportation Demand Management
Comment: *Page 5.27*

Mitigation Measures and Site Design Characteristics

☐ Location and timing of proposed changes to existing traffic controls at intersections (e.g. new traffic signals, Stop signs, etc.)
Comment: *N/A – no changes are required.*

☐ Location and timing of new intersections, including proposed traffic control measures (e.g. traffic signals, etc.)
Comment: *N/A – no new intersections are required.*

☒ Requirements for new auxiliary lanes
Comment: *Page 5.23*

☐ Mitigation measure required to offset impacts on the surface and Rapid Transit networks
Comment: *N/A – none required.*

☒ New or modified elements of the bicycle and pedestrian networks
Comment: *Page 5.27*

☒ Community impact mitigation measures
Comment: *Page 5.27*

☒ Proposed TDM features or programs to support the site development.
Comment: *Page 5.27*

Table of Contents

Table of Contents

List of Tables

List of Figures

1.0 Introduction

This Transportation Impact Study (TIS) has been prepared to assess the transportation impacts of the proposed redevelopment of several single and multi-family dwellings for one new residential condominium high-rise building. The subject site is located in the northeast quadrant of the Parkdale Avenue/Burnside Avenue intersection in the City of Ottawa (municipal addresses 111, 115, 121 Parkdale Avenue and 51 Burnside Avenue). The subject site is adjacent to the Tunney's Pasture Federal Government Campus and approximately 400m north of the Transitway.

Figure 1 shows the site location.

The scope of this TIS, which was discussed with the City of Ottawa, will encompass the following:

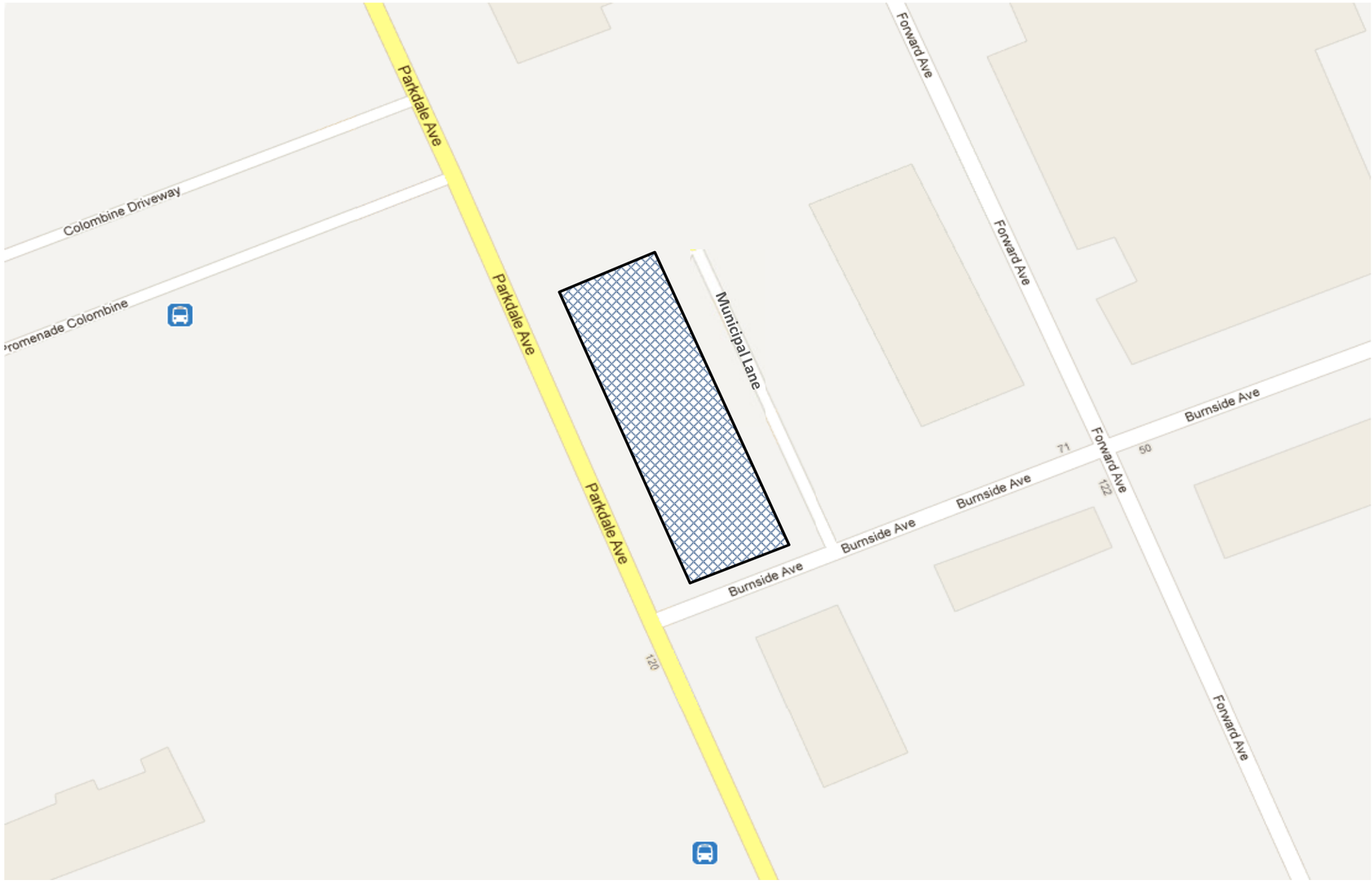
- The study area will be comprised of the intersections of Parkdale Avenue / Scott Street, Parkdale Avenue/Burnside Avenue and Burnside Avenue/Municipal Lane (subject site access);
- Traffic analysis horizons will include:
    - 2012 Existing Conditions;
    - 2015 Future Background Conditions;
    - 2015 Future Traffic Conditions (Full Occupancy of the Proposed Site) and;
    - 2020 Ultimate Traffic Conditions (5 years beyond full occupancy).
- Analysis time periods will include the weekday a.m. and p.m. peak hours.

The methodology used in the TIS is summarized below:

- Background traffic growth in the study area will be explicitly accounted for based on known developments in the Study Area;
- The net increase in site traffic from the proposed development will be estimated;
- The future background traffic volumes will be combined with the net increase in site traffic volumes to determine the total traffic volumes for horizon year 2015;
- A 1% per annum growth rate will be used to determine future traffic conditions for the 2020 horizon year;
- The future peak hour intersection operations for 2015 background, 2015 total traffic conditions and 2020 ultimate traffic conditions will be analyzed; and

- The net impact on operational performance due to the site traffic will be determined, and the need for road and/or traffic control improvements to address any identified impacts will be examined.

The TIS has been carried out in accordance with the City of Ottawa Transportation Impact Assessment (TIA) guidelines, and is required as part of a Zoning By-law amendment application.



N.T.S.

SITE LOCATION
111 Parkdale Avenue, Ottawa, ON

FIGURE 1
SITE LOCATION

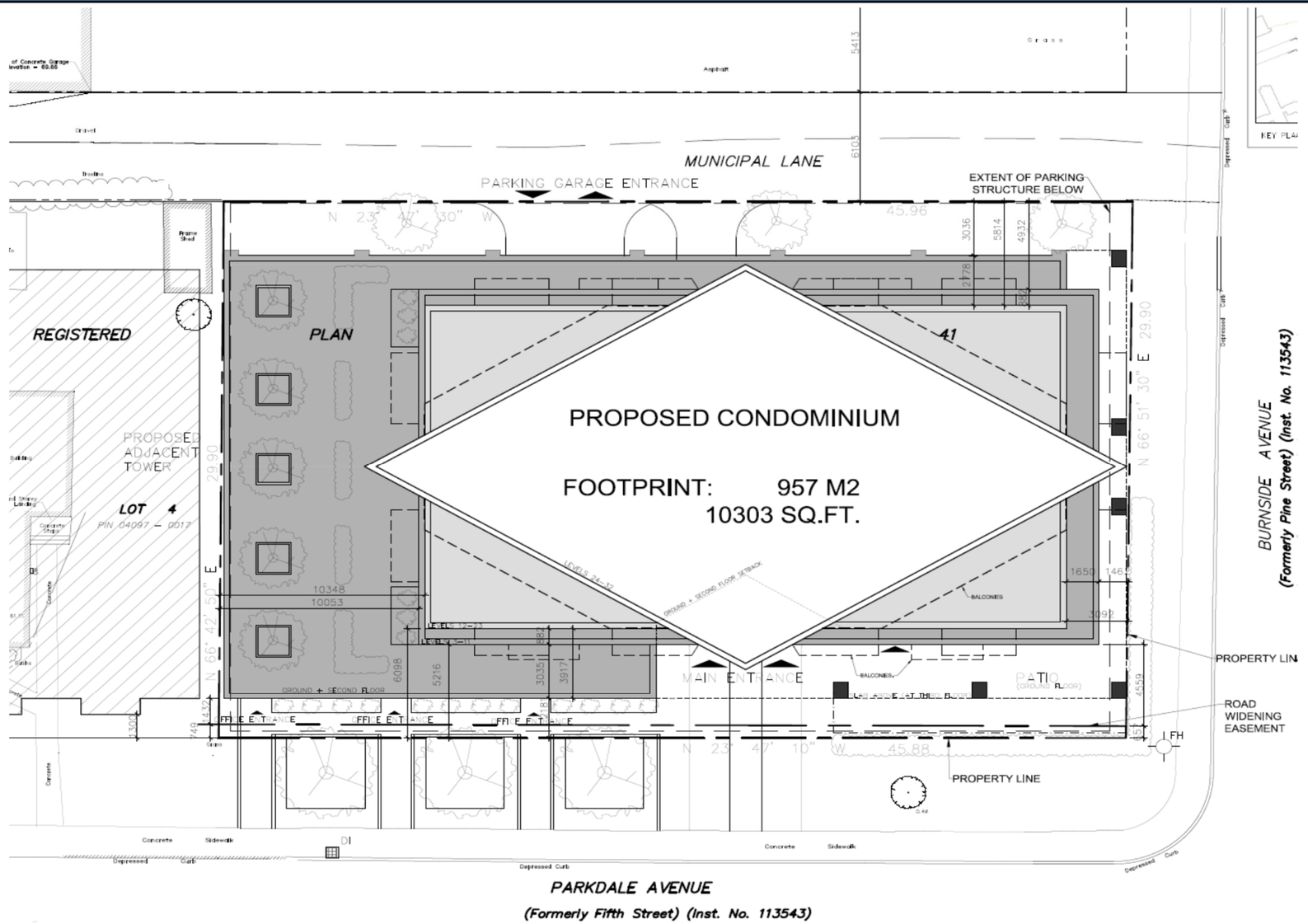
2.0 Proposed Development

Four lots along the east side of Parkdale, Avenue between Burnside Avenue and Colombine Driveway, will be merged to create the proposed site. The four lots are currently occupied by two multi-unit low rise apartment buildings and one converted single dwelling along Parkdale Avenue. One single family unit fronts onto Burnside Avenue. The existing residential units on Parkdale Avenue have direct vehicular access to Parkdale Avenue as well as indirect access via Burnside Avenue and the Municipal Lane that runs north-south immediately to the east of the subject properties.

The proposed development replaces the existing land uses with a 32-storey building that would contain 218 residential condominium units, including ten work/live units on the second floor, and several ground floor retail units with a combined area of 4,853 square feet (451 square metres). It is understood that the ground floor retail uses would be expected to serve passers-by (primarily pedestrian traffic) and residents of the site itself. Adjacent accesses include access to another high rise apartment and a low rise apartment along Burnside Avenue.

Parking spaces for 194 vehicles would be provided in a below grade parking garage and would be allocated as follows: 173 tenant spaces, 18 visitor spaces, and three commercial spaces. In addition, parking facilities for 102 bicycles will be provided with 19 spaces at the ground floor level and 83 spaces within the first level of the parking garage. The site plan is shown in **Figure 2**, and further details related to the proposed building and its design features are contained in the *Planning Rationale Report*.

Vehicular access for the proposed development is to be provided via Burnside Avenue and the aforementioned Municipal Lane. The Burnside Avenue/Municipal Lane intersection is located approximately 30 m east of Parkdale Avenue.



N.T.S.

FIGURE 2
SITE PLAN

3.0 Existing Conditions

3.1 ROADS AND TRAFFIC CONTROL

The roads immediately adjacent to the site are described as follows:

- Scott Street is a four lane, east-west arterial roadway, with a 50 km/h speed limit;
- Parkdale Avenue is a two lane, north-south arterial roadway, with a 50 km/h speed limit; and
- Burnside Avenue is a two lane, east-west local roadway, with a 50 km/h speed limit.

The road classifications noted above are referenced from Schedule E of the City's Official Plan.

The intersection of Scott Street with Parkdale Avenue is a four-way signalized intersection. Exclusive left turn lanes are provided on the southbound, eastbound, and westbound legs. Additionally the westbound leg features a channelized right turn onto Parkdale Avenue. The intersection of Parkdale Avenue/Burnside Avenue is a T-intersection, operates under traffic signal control, and has single lanes on all approaches. There is one hour parking (7 a.m. to 7 p.m.) along the west side of Parkdale Avenue from Burnside Avenue to Lyndale Avenue, and along the north side of Burnside Avenue from Parkdale Avenue to Forward Avenue.

3.2 TRANSIT

The site is conveniently served by OC Transpo Route 159 Tunney's Pasture, which provides direct access to the nearby Tunney's Pasture Transitway station. A bus stop is located at the northwest corner of the Parkdale Avenue/Burnside Avenue intersection in close proximity to the subject site.

3.3 CYCLING AND WALKING

Pedestrian travel to and from the subject site is facilitated by sidewalks on both sides of Parkdale Avenue and Burnside Avenue, and there are signalized pedestrian crosswalks at the latter intersection. While the streets noted above are not indicated as part of the primary urban cycling transportation network (reference: Official Plan, Schedule C), they do provide cycling opportunities. To the north of the proposed site Parkdale Avenue connects to the Ottawa River Parkway. This link connects the site to the multi-use paths along the Ottawa River Parkway, which link into the City of Ottawa Pedestrian and Cycling Network.

3.4 TRAFFIC VOLUMES AND MAJOR TRIP GENERATORS

The City of Ottawa provided the most recent and historical traffic count information for the signalized intersection of Parkdale Avenue/Burnside Avenue (July 2007 and July 2011) along with the most recent count for Scott Street and Parkdale Avenue (2011). No traffic data is

available for the Burnside Avenue / Municipal Lane intersection, and therefore, a conservative estimate of the volumes was made taking into account the relatively small number of properties that have this lane as their primary access (assumed 30 two-way trips using the lane in each peak hour with an in/out split typical of residential peak hour travel patterns).

The a.m. and p.m. peak hour traffic representing existing conditions is shown in **Figure 3**. The City's traffic data is provided for reference in **Appendix A**.

The study area is adjacent to the Tunney's Pasture Federal Government Campus. Located between the Ottawa River Parkway to the north and the Transitway to the south, this campus has a high transit modal share as well as convenient access to the major transportation facilities in the region.

3.5 TRAFFIC OBSERVATIONS

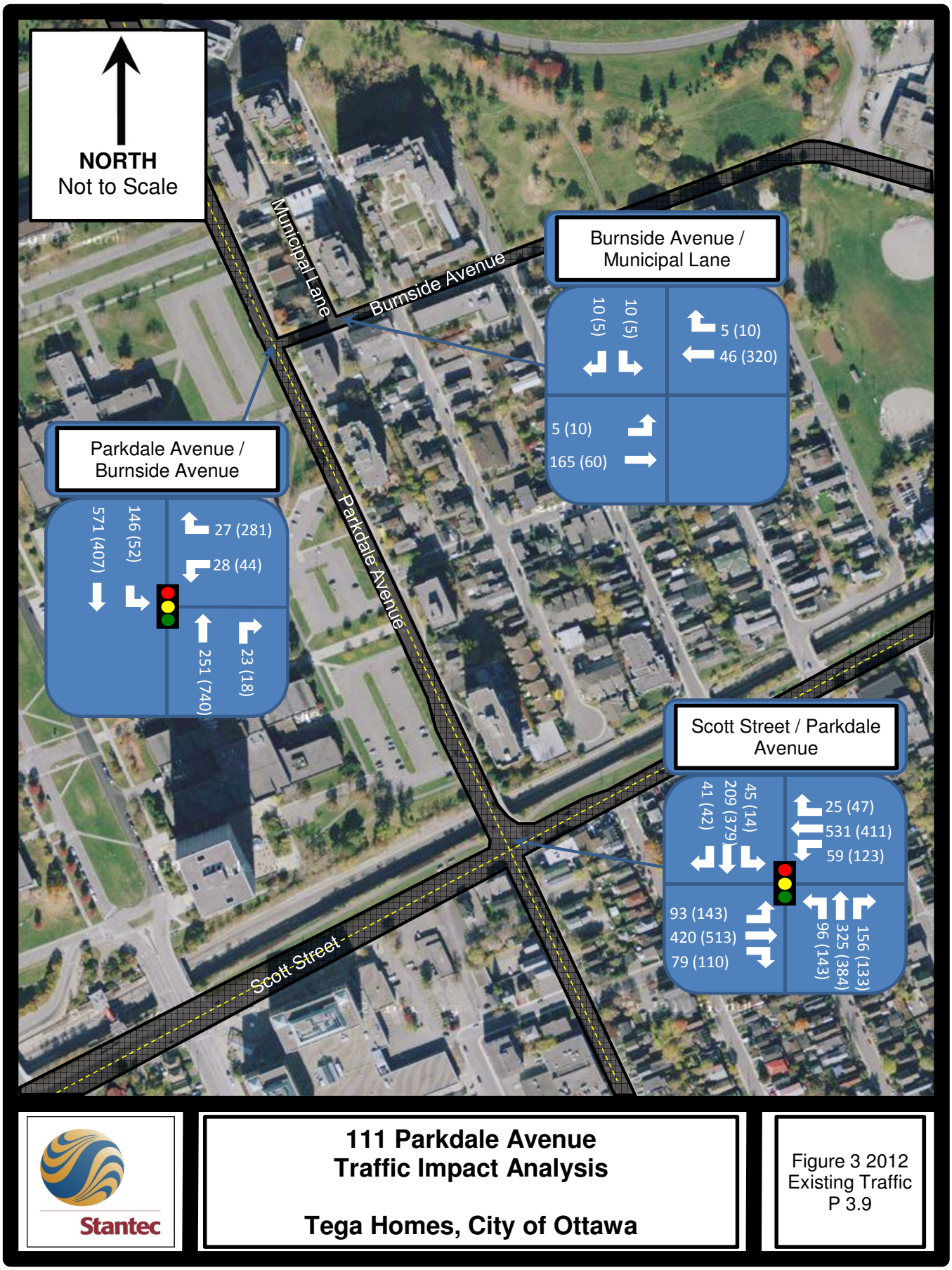
Traffic observations were conducted by Stantec staff on Monday, July 16, 2012 during the a.m. and p.m. peak hour periods. The key points from the field visit are as follows:

- A good level of service was observed at the Parkdale Avenue / Burnside Avenue intersection with no unusual traffic delays on any leg of the intersection;
- Although each approach is one lane, it was observed that southbound through vehicles on Parkdale Avenue were able to "slip around" southbound left turn vehicles due to the width of Parkdale Avenue (approximate 5 m lane width);
- During the morning peak hour, the longest observed queues at the Parkdale Avenue / Burnside Avenue intersection were 12 vehicles (one observation) on southbound Parkdale Avenue (peak direction of travel), four vehicles (two observations) on northbound Parkdale Avenue, and six vehicles (one observation) on westbound Burnside Avenue;
- During the afternoon peak hour, the longest observed queues at the Parkdale Avenue / Burnside Avenue intersection were seven vehicles (one observation) on southbound Parkdale Avenue, 11 vehicles (one observation) on northbound Parkdale Avenue (peak direction of travel), and 11 vehicles (one observation) on westbound Burnside Avenue (peak direction of travel);
- For the westbound approach of Burnside Avenue at Parkdale Avenue, it was observed that queues greater than four cars would temporarily block the Municipal Lane access. With traffic predominantly eastbound during the morning peak hour, there was only one observed occurrence of the Municipal Lane being blocked. With traffic predominantly westbound during the afternoon peak hour, there were 13 occurrences recorded where the Municipal Lane was temporarily blocked until Burnside Avenue received the green signal at the Parkdale Avenue intersection;

- The traffic entering or exiting the Municipal Lane during either peak hour was negligible. Therefore, the base year estimate of 30 trips as noted in the previous section is confirmed as being conservative;

- During the morning peak hour, approximately 75 and 10 pedestrians crossed Parkdale Avenue and Burnside Avenue, respectively. During the afternoon peak hour, the corresponding numbers of pedestrian crossings were 60 and 10; and

- During the morning and afternoon peak hours, approximately 10 and five cyclists, respectively, were observed entering the intersection (all approaches in total).



Stantec

111 Parkdale Avenue
Traffic Impact Analysis

Tega Homes, City of Ottawa

Figure 3 2012
Existing Traffic
P 3.9

3.6 COLLISION SUMMARY

Collision data for the study area intersections was obtained from the City of Ottawa's OnTRAC Reporting System. Records from 2008 – 2011 were obtained.

Table 1 summarizes the collision records.

Table 1
Collision Summary

Intersection	# Collisions[1]
Burnside Avenue / Parkdale Avenue	**1**
Parkdale Avenue / Scott Street	**24 (1)**

1 – Number of Fatalities is listed in brackets.

The data shows that at Burnside Avenue and Parkdale Avenue one collision has occurred in the previous three years. This was a rear end collision listed as property damage only. The intersection of Parkdale Avenue and Scott Street has experienced 24 collisions during the previous three years. These collisions include 1 fatality, 4 non-fatal injuries and the remainder property damage only. It should be noted that the fatality involved a motorcycle and a truck. No patterns in collisions were evident from the data. The *TIA Guidelines* specify that if a single movement / collision type exceeds 6 for a given year or if the total collisions at an intersection are greater than 33, additional analysis must be carried out. Neither of these triggers were met at the study area intersections, as such no further analysis is required.

Appendix B contains the detailed summary of intersection collisions.

3.7 BASE YEAR TRAFFIC OPERATIONS

The quality of intersection operations is typically measured in terms of level of service (LOS). The LOS is assigned on the basis of the ratio of the capacity of the intersection to the volume of traffic using the intersection. A V/C ratio of 1.0 or greater indicates that the intersection operates at or above the capacity of the intersection (LOS F). A V/C ratio of less than 0.90 is considered to be acceptable within the City of Ottawa. For unsignalized intersections, the LOS ranges from 10 seconds or less for LOS A to delays greater than 50 seconds for LOS F. Acceptable operations are generally considered to be LOS D or better, however during peak hours a LOS E may be considered acceptable. In accordance with the City's TIA guidelines, critical movements have been defined as movements where the volume to capacity ratio exceeds 0.90.

To assess existing peak hour traffic conditions, a level of service analysis was undertaken for the study area intersections using TrafficWare's Synchro 8.0, which utilizes the methods of the 2000 Highway Capacity Manual.

The Synchro analysis outputs are provided for reference in **Appendix C**. All Synchro files (existing and future analysis) have been provided on a CD, which has been included with the report submission**.**

Table 2 summarizes the results of the intersection capacity analysis for the study area intersections.

Table 2
Existing Peak Hour Level Of Service

Signalized Intersection	Approach/Movement		AM Peak Hour			PM Peak Hour		
			LOS	v/c	Q[1]	LOS	v/c	Q[1]
Parkdale Avenue/ Burnside Avenue *Signalized – Existing Lanes*	WB	Left/Right	A	0.26	16.3	A	0.53	48.8
	NB	Thru/Right	A	0.19	19.1	A	0.59	133.3
	SB	Thru/Left	A	0.57	92.9	A	0.41	64.4
	Overall Intersection		***A***	***0.55***	***-***	***A***	***0.58***	***-***
Scott Street / Parkdale Avenue *Signalized – Existing Lanes*	EB	Left	A	0.55	24.4	C	0.76	#63.7
		Thru/Right	A	0.46	53.2	B	0.63	95.0
	WB	Left	A	0.35	22.6	D	0.88	#72.5
		Thru/Right	C	0.79	#81.3	B	0.70	#78.9
	NB	Left/Thru/Right	B	0.68	#142.4	D	0.87	#254.2
	SB	Left	A	0.11	10.7	A	0.03	4.7
		Thru/Right	A	0.26	40.6	A	0.40	82.9
	Overall Intersection		***A***	***0.72***	***-***	***D***	***0.88***	***-***
Unsignalized Intersection	**Approach/Movement**		**LOS**	**Delay (s)**	**Q[1]**	**LOS**	**Delay (s)**	**Q[1]**
Parkdale Avenue / Municipal Lane Unsignalized – *Existing Lanes*	EB	Thru/Left	-	0.2	-	-	1.2	-
	WB	Thru/Right	-	0.0	-	-	0.0	-
	SB	Left/Right	-	9.2	-	-	10.6	-
	Overall Intersection		***A***	***-***	***-***	***B***	***-***	***-***

[1] 95th Percentile Queue (m)
 # 95th percentile volume exceeds capacity, queue may be longer.

Intersections in the study area are operating within City of Ottawa's acceptable performance thresholds. In the afternoon peak hour Scott Street / Parkdale Avenue reaches a LOS of D. This is due to the westbound left and the northbound through movements. Both of these movements approach the permissible threshold and may require upgrades under future conditions. All other intersection movements operate with minimal impacts to commuters.

4.0 Traffic Forecasts

4.1 HORIZON YEARS AND BACKGROUND TRAFFIC

The City of Ottawa's *TIA Guidelines* require the analysis of two horizons, full occupancy of the proposed development and full occupancy plus five years. For the proposed development full occupancy is anticipated to occur no later than 2015. Based on a full occupancy date of 2015 the two horizons that this study will examine will be 2015 and 2020.

To assess the growth in background traffic between existing conditions and the 2015 horizon, a review of previous traffic studies in the study area was undertaken. Three properties have been included as background traffic:

- 99 Parkdale Avenue – By J.L. Richards for Urbandale Construction (Transportation Impact Study Feb. 2012 / Transportation Brief Nov. 2011)
- 159 Parkdale Avenue – By Delcan for Richcraft Group of Companies (Transportation Brief May 2011)
- 233 Armstrong Street – By Delcan for Tega Developments (Transportation Impact Study Sept. 2011 / TIS Addendum June 2012)

The developments listed above are anticipated to be completed prior to the subject development. Traffic generated by these background developments have been explicitly added to the network volumes consistent with the assumptions of the original studies. For the 2020 ultimate horizon, a nominal growth rate of one percent per annum was selected to estimate traffic growth 5 years beyond full occupancy of the subject site. This value was also applied to the 2011 traffic counts to grow them to 2012 existing conditions. It is noted that the current land uses on the subject site contribute to the traffic volumes and turning movements at the Parkdale Avenue/Burnside Avenue intersection by directly generating vehicle trips. To remain conservative, no traffic was deducted from the future background traffic volumes to account for the removal of the existing land uses.

The future background traffic forecast for horizon year 2015 is illustrated in **Figure 4**.

4.2 SITE TRAFFIC

The vehicular traffic that would be generated by the subject development during the peak hours was based on the Institute of Transportation Engineers (ITE) publication, "*Trip Generation, 8th Edition*", and the trip generation formulae for "Residential Condominium/ Townhouse" (ITE land use code 230). The latter category was selected since the trip formulae are based on approximately 60 field studies, whereas another similar category, "High-Rise Residential Condominium/Townhouse" (ITE land use code 232) is only based on five field studies. In general, the trip estimates using Land Use Code 230 are higher than those based on Land Use

Code 232 (generally in the order of five to 15 percent higher), and therefore, can be considered to represent a conservative approach.

For the retail/office and coffee shop first floor land uses (4,853 SF in total) the ITE land use category “Specialty Retail” (land use code 814) was used. “Specialty Retail” covers a broad range of smaller sized retail units that may be located in this type of setting. Although “Specialty Retail” only has p.m. peak hour generation results a conservative estimate of a.m. peak trips was generated using the p.m. peak hour generation. To account for the synergy between the retail / office uses and the residential uses a 25% reduction factor was applied to the generation of trips to the “Specialty Retail” component.

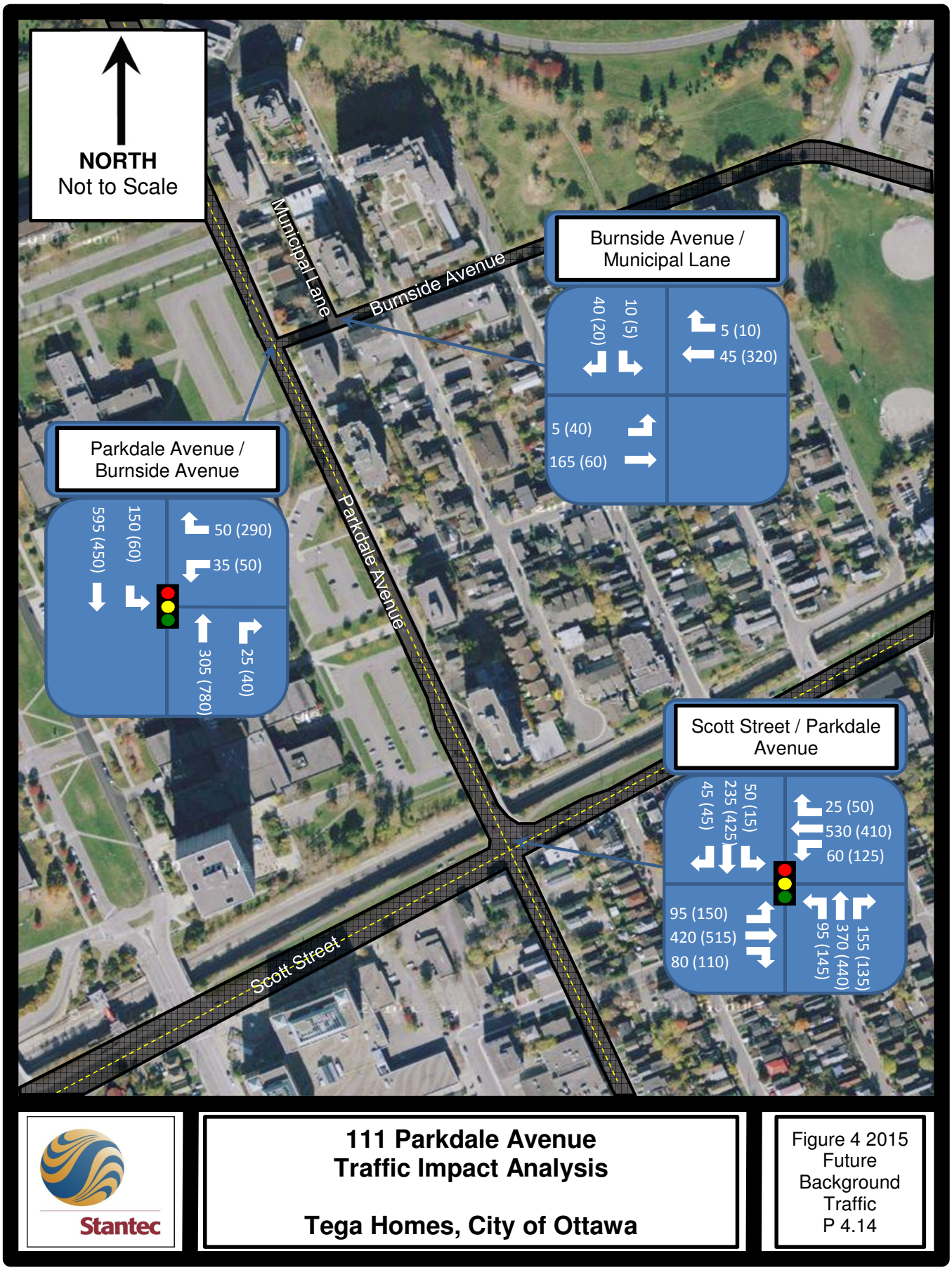
It is noted that the a.m. and p.m. peak hour trip rates have been applied to all units, although the ten live/work units may or may not generate peak hour traffic depending on the nature of the business and the potential to attract visitor or customer traffic. As this is a conservative approach and the precise tenants are not yet determined no further adjustments were made.

Travel mode share was determined using the *2005 O-D Survey Summary of Results*.

Table 3 includes the Ottawa West Trans District Modal Split.

To better reflect the modal share exhibited in the Ottawa West Trans District “Vehicle Trips” have been converted to “Person Trips” using a factor of 1.05 to represent the inherent transit modal share in ITE rates. The “Person Trips” are then split according to the modal share. Using this method it was determined that the proposed site will generate 127 a.m. peak hour person trips and 146 p.m. peak hour person trips. This translates to 70 a.m. peak hour vehicle trips and 80 p.m. peak hour vehicle trips.

Table 3 summarizes the resultant peak hour site trip generation for the proposed development.



Stantec

111 Parkdale Avenue
Traffic Impact Analysis

Tega Homes, City of Ottawa

Figure 4 2015 Future Background Traffic
P 4.14

Table 3
Proposed Residential Development
Site Vehicle Trip Generation[1]

Land Use	Units / 1000's SF	Morning Peak Hour			Units / 1000's SF	Afternoon Peak Hour		
		Rate	In	Out		Rate	In	Out
Residential Condominium / Townhouse	218	0.44	17%	83%	218	0.52	67%	33%
Specialty Retail (SF)	4.853	6.83	56%	44%	4.853	6.83	44%	56%
	Synergy	Morning Peak Hour			Synergy	Afternoon Peak Hour		
		In	Out	Total		In	Out	Total
Residential Condominium / Townhouse		16	80	96		76	38	114
Reduction	*0%*	*0*	*0*	*0*	*0%*	*0*	*0*	*0*
Specialty Retail (SF)		19	15	33		15	19	33
Reduction	*25%*	*-5*	*-4*	*-8*	*25%*	*-4*	*-5*	*-8*
Total		30	91	121		87	51	139
	Factor	In	Out	Total	Factor	In	Out	Total
Trip Gen (ITE)		30	91	121		87	51	139
Person Trips	1.05	32	95	127	1.05	92	54	146
Mode	Split				Split			
Auto	55%	18	52	70	55%	51	30	80
Passenger	9%	3	9	11	15%	14	8	22
Transit	26%	8	25	33	23%	21	12	34
Active Modes	10%	3	10	13	7%	6	4	10

[1] Sources: ITE Trip Generation Manual, 8th Edition, Land Use Code 230 for Residential, Land Use Code 814 for Retail.

Using the *2005 O-D Survey Summary of Results* the general distribution of trips to the cardinal directions was determined. This distribution was used to assign new trips to the traffic network. Both a.m. and p.m. trip distributions were examined and an overall distribution was determined for the site.

Table 4 summarizes the site trip distribution.

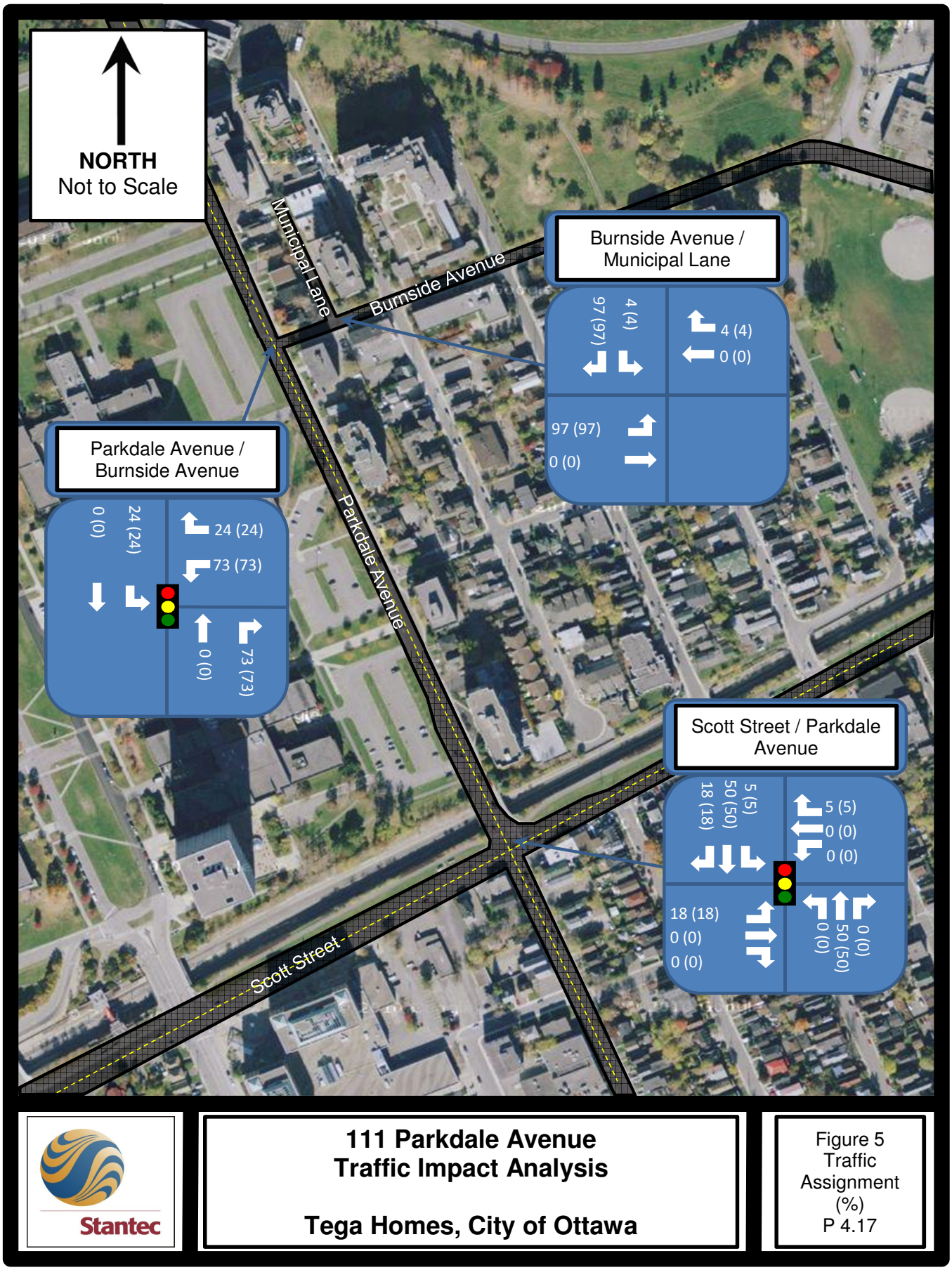
Table 4 Trip Distribution By Cardinal Direction	
To/From	**% Trips**
North	5%
South	15%
East	35%
West	20%
Internal (Trips within the Trans District)	25%
TOTAL	***100%***

The new site trips were assigned to the road network according to the distribution above.

Figure 5 summarizes the resultant assignments for the proposed development.

Figure 6 illustrates the site generated traffic for the proposed development.

Appendix D contains detailed distribution and assignment information.

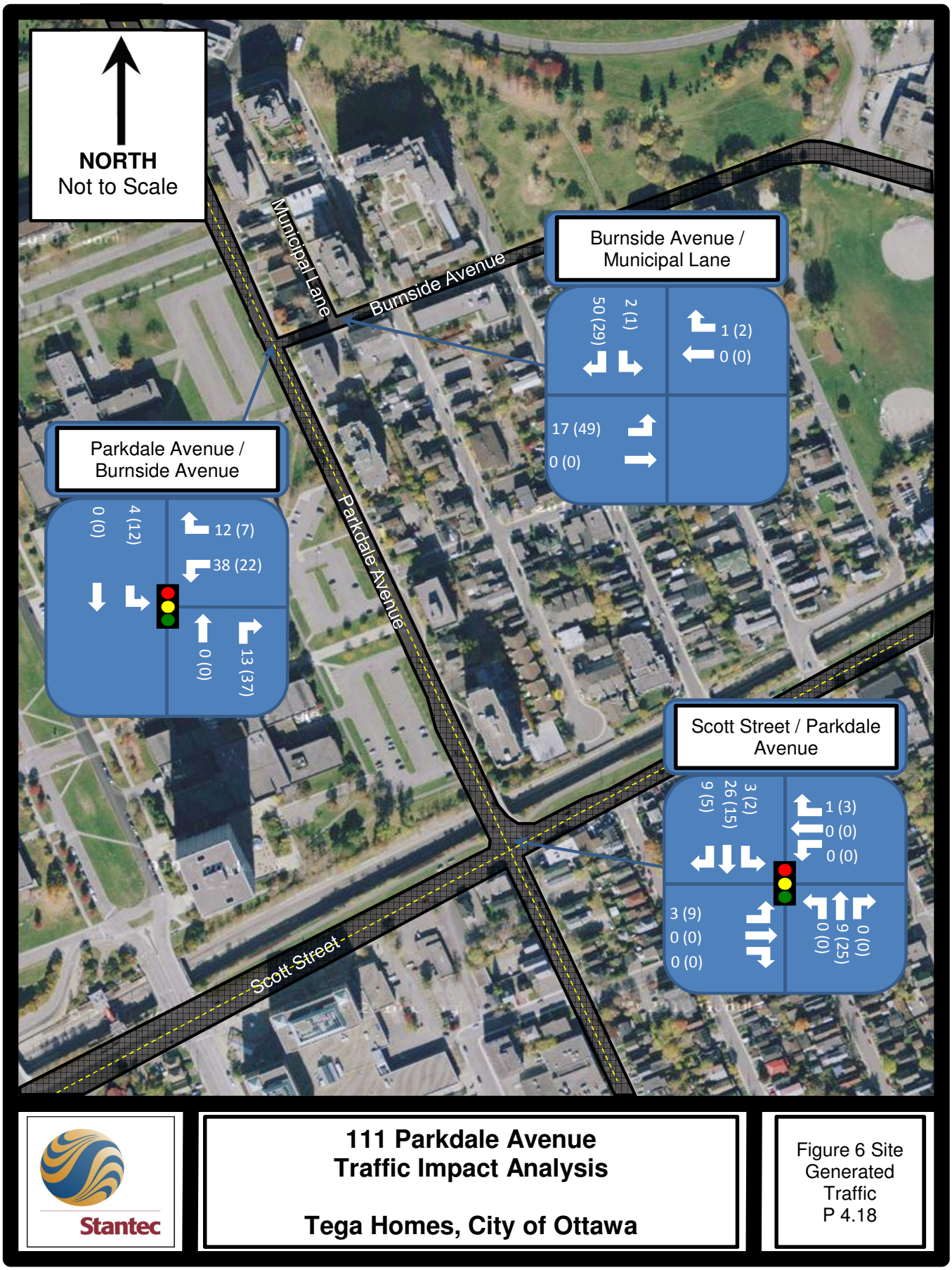


Stantec

111 Parkdale Avenue
Traffic Impact Analysis

Tega Homes, City of Ottawa

Figure 5
Traffic
Assignment
(%)
P 4.17



Stantec

111 Parkdale Avenue
Traffic Impact Analysis

Tega Homes, City of Ottawa

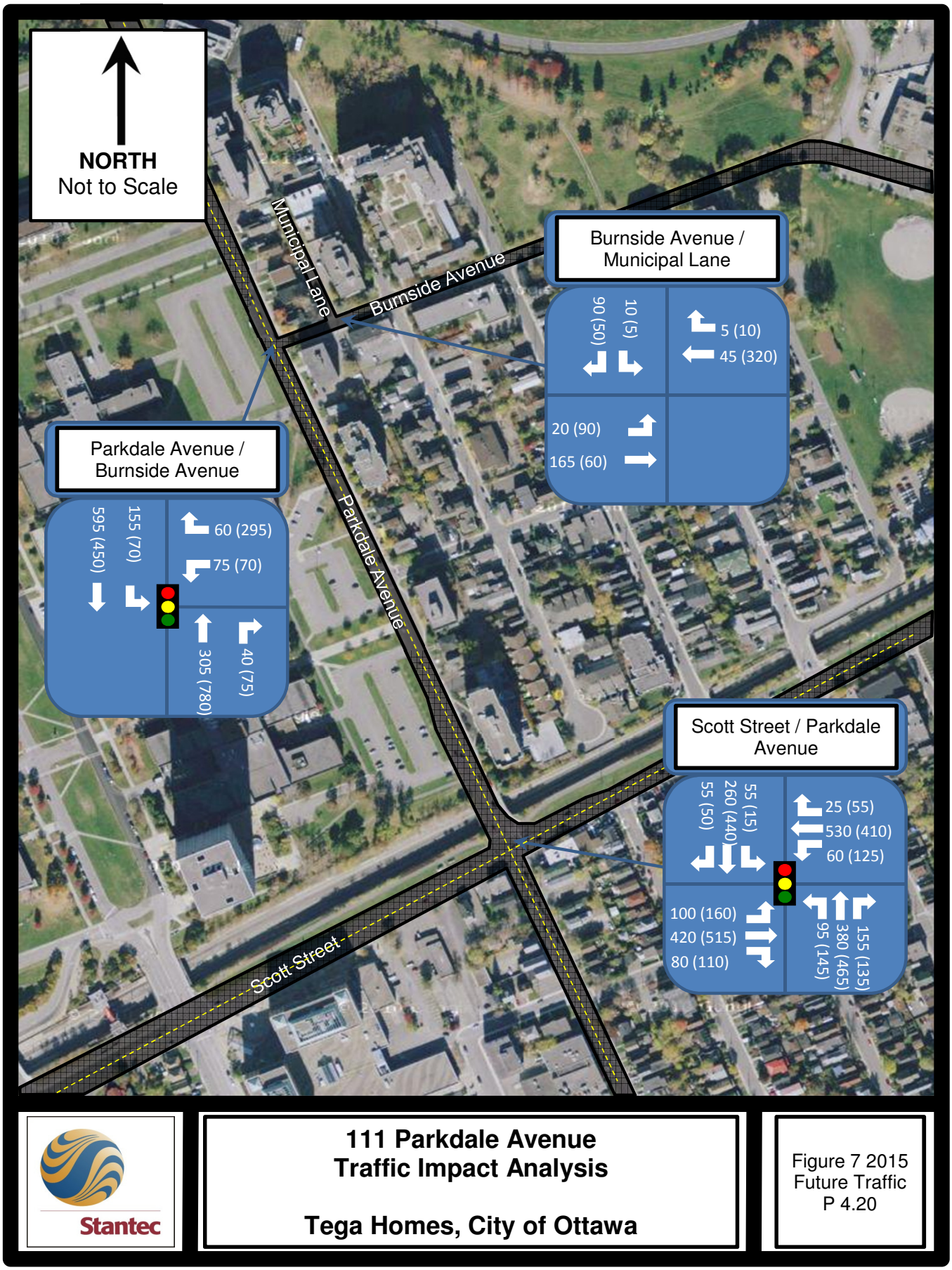
Figure 6 Site Generated Traffic
P 4.18

4.3 FUTURE TOTAL TRAFFIC

The future weekday a.m. and p.m. peak hour background traffic forecasts were combined with the total site traffic assignments to determine the total traffic volumes for 2015.

Figure 7 illustrates the traffic volumes at the study area intersections during 2015 total future conditions. These values were developed by adding the site generated traffic, the background development traffic and existing traffic.

Figure 8 illustrates the 2020 ultimate traffic conditions. These values were developed by applying a 1% per annum growth rate to the 2015 total future traffic projections for a period of 5 years.

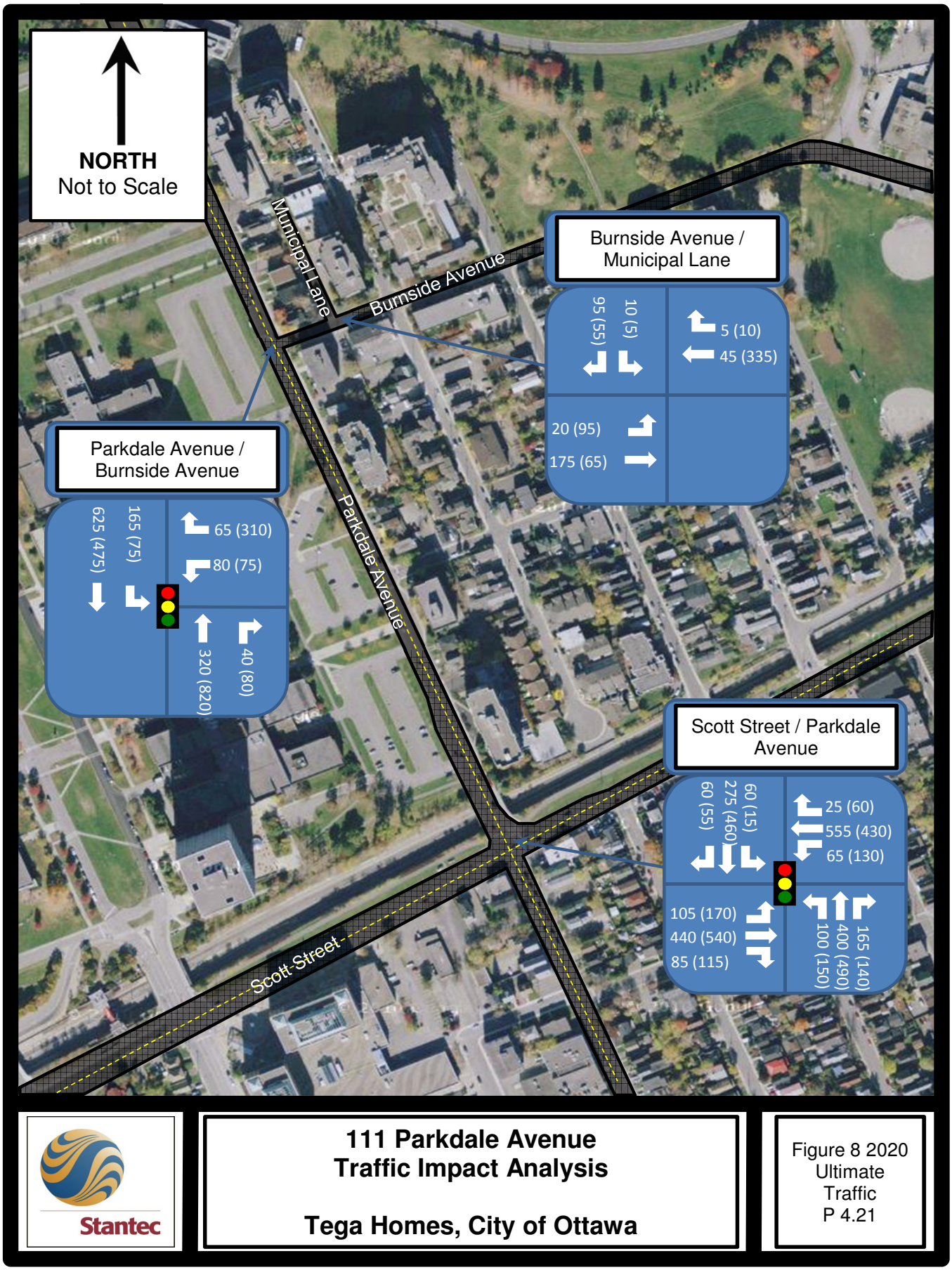


Stantec

111 Parkdale Avenue
Traffic Impact Analysis

Tega Homes, City of Ottawa

Figure 7 2015
Future Traffic
P 4.20



Stantec

111 Parkdale Avenue
Traffic Impact Analysis

Tega Homes, City of Ottawa

Figure 8 2020 Ultimate Traffic
P 4.21

5.0 Operational Analysis

5.1 2015 FUTURE BACKGROUND TRAFFIC

Future background conditions are assessed to determine transportation improvements that may be required to address growth in traffic exclusive from improvements that may be required to accommodate traffic generated by the subject development. Any improvements identified to address future background deficiencies are not the responsibility of the developer.

To assess the operating conditions for the future 2015 weekday a.m. and p.m. peak hour background traffic forecasts, a level of service analysis was undertaken using the same methodology and parameters as in the analysis of existing conditions.

Table 5 summarizes the results of the operational analysis for 2015 background traffic conditions.

Appendix C includes the Synchro analysis output for reference.

Table 5
Future Background Peak Hour Level Of Service

Signalized Intersection	Approach/Movement		AM Peak Hour			PM Peak Hour		
			LOS	v/c	Q[1]	LOS	v/c	Q[1]
Parkdale Avenue/ Burnside Avenue *Signalized – Existing Lanes*	WB	Left/Right	A	0.33	21.3	B	0.63	#66.1
	NB	Thru/Right	A	0.23	26.6	B	0.64	152.7
	SB	Thru/Left	B	0.62	119.6	A	0.47	74.5
	Overall Intersection		***A***	***0.59***	***-***	***B***	***0.64***	***-***
Scott Street / Parkdale Avenue *Signalized – Upgraded (Includes NB exclusive left turn lane and optimized timing)*	EB	Left	A	0.56	#25.0	D	0.88	#76.7
		Thru/Right	A	0.46	53.4	B	0.66	99.2
	WB	Left	A	0.36	23.1	E	0.98	#79.5
		Thru/Right	C	0.79	#81.1	C	0.71	#82.2
	NB	Thru/Right /Left	C	0.73	#169.8	E	0.96	#287.0
	SB	Left	A	0.13	11.8	A	0.04	4.6
		Thru/Right	A	0.29	46.1	A	0.43	89.3
	Overall Intersection		***C***	***0.76***	***-***	***E***	***0.97***	***-***
Scott Street / Parkdale Avenue *Signalized – Upgraded (Includes NB exclusive left turn lane and optimized timing)*	EB	Left	A	0.45	22.9	A	0.49	39.2
		Thru/Right	A	0.42	49.1	D	0.81	#97.1
	WB	Left	A	0.34	22.4	A	0.52	33.2
		Thru/Right	C	0.75	71.8	A	0.60	68.5
	NB	Left	A	0.19	21.1	A	0.43	45.1
		Thru/Right	A	0.59	115.0	B	0.66	159.8
	SB	Left	A	0.16	13.4	A	0.06	6.1
		Thru/Right	A	0.31	51.3	A	0.53	116.6
	Overall Intersection		***A***	***0.65***	***-***	***B***	***0.69***	***-***
Unsignalized Intersection	**Approach/Movement**		**LOS**	**Delay (s)**	**Q[1]**	**LOS**	**Delay (s)**	**Q[1]**
Parkdale Avenue / Municipal Lane Unsignalized – *Existing Lanes*	EB	Thru/Left	-	0.2	-	-	3.4	-
	WB	Thru/Right	-	0.0	-	-	0.0	-
	SB	Left/Right	-	9.0	-	-	10.6	-
	Overall Intersection		***A***	***-***	***-***	***B***	***-***	***-***

[1] 95th Percentile Queue (m)
 # 95th percentile volume exceeds capacity, queue may be longer.

The analysis shows that a good level of service is expected at Parkdale Avenue / Burnside Avenue under future background conditions with single lane approaches *("Existing Lanes")* and there are no volume to capacity ratios above the critical level (i.e. v/c>0.90). With the higher volumes, the 95th percentile queue lengths on all approaches are shown to increase over existing conditions. The westbound 95th percentile queue length on Burnside Avenue in the p.m. peak hour (approximately 65 m) would extend beyond the Municipal Lane, which would result in this access driveway being occasionally and temporarily blocked. Motorists entering or

exiting during these occasions would rely on "courtesy gaps" provided by other motorists. The 50th percentile queue (as shown in the **Appendix C**) for this movement would be approximately 15 m and within the available 30 m storage length on Burnside Avenue between Parkdale Avenue and the Municipal Lane.

The intersection of Scott Street and Parkdale Avenue will begin to experience capacity constraints during 2015 future background conditions. The westbound left movement and northbound left movement will both exceed a V/C ratio of 0.90 which is the permissible threshold as prescribed by the City's guidelines. The eastbound left will also experience delays due to capacity constraints as it has a V/C ratio of 0.88. Upgrades are required at this location to address deficiencies in the traffic network during 2015 future background.

To address the capacity constraints a northbound exclusive left turn lane has been modeled. The inclusion of the exclusive northbound left turn lane at this location is consistent with the recommendations of Delcan's September 2012 TIS for 233 Armstrong Street. Providing additional capacity to accommodate northbound left turns improves the level of service of all movements through Scott Street / Parkdale Avenue to within permissible operational thresholds. Notwithstanding this, the northbound through / right 95th percentile queue will extend beyond Bullman Street to the south potentially blocking the intersection and interfering with operations. Bullman Street is stop controlled as it intersects with Parkdale Avenue. The 50th percentile queue at this location is 85m, which will not interfere with Bullman Street.

5.2 TOTAL FUTURE TRAFFIC

Total future traffic conditions are assessed to determine the impact that the subject site will have on the study area transportation network. Any mitigation measures that are found to be required to address 2015 total future traffic deficiencies may be attributed to traffic generated by the subject site. The total traffic forecasts have been analyzed using the same methodology and parameters as used for the analysis of existing and future background conditions.

Table 6 summarizes the results of the operational analysis for 2015 traffic conditions.

Table 7 summarizes the results of the operational analysis for 2020 traffic conditions.

Appendix C includes the Synchro analysis output for reference.

Table 6
2015 Future Traffic Peak Hour Level Of Service

Signalized Intersection	Approach/Movement		AM Peak Hour			PM Peak Hour		
			LOS	v/c	Q[1]	LOS	v/c	Q[1]
Parkdale Avenue/ Burnside Avenue *Signalized – Existing Lanes*	WB	Left/Right	A	0.52	36.4	C	0.71	#76.3
	NB	Thru/Right	A	0.26	34.4	B	0.70	#217.2
	SB	Thru/Left	B	0.67	153.5	A	0.56	99.8
	Overall Intersection		***B***	***0.65***	***-***	***B***	***0.70***	***-***
Scott Street / Parkdale Avenue *Signalized – Upgraded (Includes NB exclusive left turn lane and optimized timing)*	EB	Left	A	0.55	25.0	B	0.63	#40.0
		Thru/Right	A	0.44	51.3	A	0.51	61.8
	WB	Left	A	0.34	22.4	C	0.74	#50.4
		Thru/Right	C	0.75	71.8	A	0.60	55.5
	NB	Left	A	0.19	20.4	A	0.44	40.6
		Thru/Right	A	0.58	112.8	B	0.70	#162.9
	SB	Left	A	0.17	13.8	A	0.06	5.5
		Thru/Right	A	0.34	55.7	A	0.56	106.9
	Overall Intersection		***B***	***0.64***	***-***	***C***	***0.72***	-
Unsignalized Intersection	**Approach/Movement**		**LOS**	**Delay (s)**	**Q[1]**	**LOS**	**Delay (s)**	**Q[1]**
Parkdale Avenue / Municipal Lane Unsignalized – *Existing Lanes*	EB	Thru/Left	-	0.9	-	-	5.1	-
	WB	Thru/Right	-	0.0	-	-	0.0	-
	SB	Left/Right	-	9.1	-	-	10.8	-
	Overall Intersection		***A***	***-***	***-***	***B***	***-***	***-***

[1] 95th Percentile Queue (m)
 # 95th percentile volume exceeds capacity, queue may be longer.

Table 7
2020 Ultimate Traffic Peak Hour Level of Service

Signalized Intersection	Approach/Movement		AM Peak Hour			PM Peak Hour		
			LOS	v/c	Q[1]	LOS	v/c	Q[1]
Parkdale Avenue/ Burnside Avenue *Signalized – Existing Lanes*	WB	Left/Right	A	0.55	39	C	0.78	#91.6
	NB	Thru/Right	A	0.27	37.6	C	0.75	#233.1
	SB	Thru/Left	C	0.71	#209.5	B	0.68	#148.7
	Overall Intersection		***B***	***0.69***	***-***	***B***	***0.75***	***-***
Scott Street / Parkdale Avenue *Signalized – Upgraded (Includes NB exclusive left turn lane and optimized timing)*	EB	Left	A	0.54	26.1	B	0.68	#46.7
		Thru/Right	A	0.45	54.0	A	0.53	65.6
	WB	Left	A	0.39	24.8	C	0.77	#54.4
		Thru/Right	D	0.81	#87.0	B	0.61	58.8
	NB	Left	A	0.21	21.6	A	0.50	44.7
		Thru/Right	B	0.63	123.1	C	0.74	#176.4
	SB	Left	A	0.20	15.5	A	0.07	5.6
		Thru/Right	A	0.36	59.9	A	0.59	115.1
	Overall Intersection		***B***	***0.68***	***-***	***C***	***0.76***	***-***
Unsignalized Intersection	**Approach/Movement**		**LOS**	**Delay (s)**	**Q[1]**	**LOS**	**Delay (s)**	**Q[1]**
Parkdale Avenue / Municipal Lane Unsignalized – *Existing Lanes*	EB	Thru/Left	-	0.8	-	-	5.2	-
	WB	Thru/Right	-	0.0	-	-	0.0	-
	SB	Left/Right	-	9.1	-	-	10.9	-
	Overall Intersection		***A***	***-***	***-***	***B***	***-***	***-***

[1] 95th Percentile Queue (m)
 # 95th percentile volume exceeds capacity, queue may be longer.

A review of the intersection capacity analysis of 2015 future conditions indicates that all study area intersections are anticipated to operate within operational performance thresholds. The 95th percentile queue on the westbound leg of Parkdale Avenue / Burnside Avenue will extend beyond the next upstream intersection, Burnside Avenue / Forward Avenue. The intersection of Burnside Avenue / Forward Avenue is stop controlled on Forward Avenue. The 50th percentile queue is 22m which will occasionally block the Municipal Lane, but will not interfere with operations at the Burnside Avenue / Forward Avenue intersection. The northbound queue at Parkdale Avenue / Burnside Avenue, 217m, will extend south past the next closest intersection. The 50th percentile queue is shown to reach 70 m which will not exceed the distance to the next upstream intersection. At Scott Street / Parkdale Avenue the 95th percentile queue for the northbound through / right lane will extend beyond the next downstream intersection. The 50th percentile queue will not exceed the available distance to the next downstream intersection.

The intersection capacity analysis for the 2020 ultimate conditions indicates that all study area intersections are expected to operate similarly to 2015 future conditions, no movements will exceed operational performance thresholds. A review of the queueing during 2020 ultimate

conditions indicates that the issues observed for the 2015 future conditions will remain the same, but no additional performance indicators will be exceeded.

5.3 TRANSIT, CYCLING, AND WALKING

It can be anticipated that due to the subject development, there will be relatively small net increases in both transit ridership and walking/cycling trips in the local area. As noted in Section 4.2, the total site generated non-auto person trips would be approximately 50 trips during either peak hour with the transit modal split of 25 percent. The net increase in these types of trips would be slightly less since the proposed development would replace a number of existing residential developments that would currently be generating transit, cycling, and walking trips.

It would be expected that most of the increase in non-auto trips would be by transit (30 to 35 trips) and the remainder would be represent cycling or walking (five to 10 trips). These additional demands should be easily accommodated by the existing services and facilities. It is also noted that on-site bicycle parking and pedestrian connections to the existing sidewalk network will be provided as part of the site plan for the subject development. The removal of the driveways on Parkdale Avenue that currently provide direct vehicular access to the existing multi-unit residential properties would enhance the pedestrian environment and improve pedestrian safety by removing potential vehicle-pedestrian conflicts.

5.4 COMMUNITY IMPACTS

Any adverse impacts related to the development of this site, relative to the local community, will be minimal. Commuters may experience minor increases in delay as a result of the additional vehicle trips being added to the network. This site is also adjacent to an arterial road, and as such, any additional trips generated by the site are unlikely to contribute to any community cut through concerns.

5.5 TRANSPORTATION DEMAND MANAGEMENT

The proposed building will include over 100 spaces for parking and storing bicycles. Additionally, the proximity of the site to major City of Ottawa Transit infrastructure will facilitate the convenient use of public transportation and allow this site to maintain and grow the region's high transit mode share.

6.0 Conclusions and Recommendations

The conclusions of the Transportation Impact Study are as follows:

- The existing weekday a.m. and p.m. peak hour traffic conditions in the study area are characterized by very good levels of service for overall intersection operations;

- Under existing conditions, the subject site is well served by transit and there are good opportunities for cycling and walking trips using the existing road and sidewalk networks;

- For the 2015 future background traffic forecasts, peak hour traffic operations are generally acceptable in the study area, and there would be no traffic movements at the Parkdale Avenue/Burnside Avenue intersection with volume to capacity ratios above the critical threshold (i.e. > 0.90) with the existing single lane approaches. Scott Street / Parkdale Avenue will require the addition of an exclusive northbound left turn lane to accommodate future background conditions at an acceptable LOS. This upgrade is consistent with improvements identified by previous TIAs for developments in the Study Area;

- For the 2015 total traffic and 2020 ultimate traffic forecasts, it is concluded that the relatively minor impact that the additional subject site traffic would have on the study area intersections would not trigger the need for any capacity improvements (i.e. road widening or auxiliary turn lanes);

- Also for 2020 traffic conditions, a very good level service would be experienced for the majority of the time at the Burnside Avenue/Municipal Lane intersection. During the afternoon peak hour, the level of service would be reduced by the presence of the westbound queue on Burnside Avenue, but this impact may be mitigated to some extent by motorists in the queue providing courtesy gaps to site traffic entering or exiting the Municipal Lane;

- The additional non-auto travel demand generated by the proposed development would result in relatively small net increases in transit ridership and cycling or walking trips, and therefore, minimal impacts on the services or facilities that accommodate these travel modes; and

- The removal of driveways that currently provide direct vehicular access to the Parkdale Avenue residences that would be displaced by the proposed development is seen to enhance the pedestrian environment by reducing potential vehicle-pedestrian conflicts.

The recommendation of this Transportation Impact Study is as follows:

- With the proposed development being a relatively low traffic generator (approximately 80 peak hour two way vehicle trips), it is clear from both the site traffic assignments and the analysis of future conditions that its impact on the adjacent street system will be minor. Therefore, no road or traffic control improvements are required or recommended to accommodate this development. The only recommendation is that traffic signal timing adjustments be made as required at the Parkdale Avenue/Burnside Avenue intersection to accommodate the higher future traffic volumes anticipated with background growth and the proposed development.

Based on the transportation evaluation and the impacts that have been anticipated in this study, the proposed Residential Redevelopment of 111, 115, 121 Parkdale Avenue and 51 Burnside Avenue should be permitted to proceed.

Rob Vastag, MCIP, RPP
Project Manager

Mark Crockford, Engineering Intern
Traffic Analyst

www.jlrichards.ca

Ottawa

864 Lady Ellen Place
Ottawa ON Canada
K1Z 5M2
Tel: 613 728-3571

ottawa@jlrichards.ca

Kingston

203-863 Princess Street
Kingston ON Canada
K7L 5N4
Tel: 613 544-1424

kingston@jlrichards.ca

Sudbury

314 Countryside Drive
Sudbury ON Canada
P3E 6G2
Tel: 705 522-8174

sudbury@jlrichards.ca

Timmins

201-150 Algonquin Blvd. East
Timmins ON Canada
P4N 1A7
Tel: 705 360-1899
timmins@jlrichards.ca

North Bay

200-175 Progress Road
North Bay ON Canada
P1A 0B8
Tel: 705 495-7597

northbay@jlrichards.ca

Hawkesbury

326 Bertha Street
Hawkesbury ON Canada
K6A 2A8
Tel: 613 632-0287

hawkesbury@jlrichards.ca

Guelph

107-450 Speedvale Ave.
West Guelph ON Canada
N1H 7Y6
Tel: 519 763-0713

guelph@jlrichards.ca

J.L.Richards
ENGINEERS · ARCHITECTS · PLANNERS