GEORGIAN COURT ESTATES REDEVELOPMENT

MASTER PLAN APPLICATION

Transportation Considerations

Prepared For: bcIMC Realty Corporation
O/A Georgian Court
C/O Realstar Management

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TABLE OF CONTENTS

EXECUTIVE SUMMARY 6

1.0 INTRODUCTION 7
1.1 Study Purpose & Scope 7
1.1.1 Signalized intersections 7
1.1.2 Unsignalized Intersections 8

2.0 THE SITE TODAY 9
2.1 Existing Site Conditions 9
2.2 Parking Overview 9
2.3 Loading Overview 2
2.4 Site Access 2

3.0 TRANSPORTATION NETWORK 6
3.1 Road Network 6
3.1.1 Freeways 6
3.1.2 Arterial Roads 6
3.1.3 Local Collector Roads 6
3.1.4 Local Roads 7
3.2 Existing Transit 7
3.2.1 Bus Routes 8
3.2.2 Regional Rail Service 8
3.2.3 Planned Transit Improvements 9
3.3 Cycling Network 9
3.3.1 Planned Cycling Network Improvements 10

4.0 PROPOSED DEVELOPMENT PROGRAMME 18
4.1 New Public Road 18
4.2 Private Streets and Laneways 19

5.0 PARKING CONSIDERATIONS 24
5.1 Existing Vehicle Parking Demand 24
5.2 City of Burlington Zoning By-law 2020 Vehicle Parking REquirements 25
5.3 Required Vehicle Parking 26
5.4 Proposed Parking Strategy 27

6.0 BICYCLE PARKING 28
6.1 Required Bicycle Parking 28

6.2 Proposed Bicycle Parking Strategy 28

7.0 LOADING CONSIDERATIONS 29
7.1 Required Loading Spaces 29
7.2 Proposed Loading Space Strategy 29

8.0 VEHICLE TRAFFIC CONSIDERATIONS 31
8.1 Study Area 31
8.2 Analysis Periods 31
8.3 Existing Traffic Volumes 31
8.4 Future Background Traffic Volumes 31
8.4.1 Generalized Corridor Growth 31
8.4.2 Site Specific Traffic Allowances 31
8.5 Site Traffic Generation 32
8.6 Existing Site Traffic Adjustments 35
8.7 Net-New Site Related Traffic Volumes 35
8.8 Traffic Distribution 36
8.9 Future Total Traffic Volumes 36

9.0 OPERATIONS ANALYSIS 44
9.1 Methodology 44
9.1.1 Analysis Scenarios 44
9.1.2 Performance Metrics 44
9.1.3 Signal Timings 45
9.1.4 Saturation Flow Rates 45
9.1.5 Calibration of Existing Movements 45
9.1.6 Heavy Vehicle Assumptions 45
9.2 Analysis Findings: Signalized Intersections 45
9.2.1 Fairview Street & Plains Road East/Northbound QEW Off Ramp 46
9.2.2 Fairview Street/Plains Road East & Southbound QEW On/Off Ramps 47
9.2.3 Plains Road East & Francis Road 48
9.2.4 Plains Road East & King Road 49
9.2.5 North Shore Boulevard East & Northbound QEW Off Ramp 50
9.2.6 North Shore Boulevard East & Southbound QEW On/Off Ramps 51
9.3 Analysis Findings: Unsignalized Intersections 52
9.3.1 King Road & Townsend Avenue 52
9.3.2 King Road & Surrey Lane 53
9.3.3 King Road & Marley Road 53
9.3.4 King Road & Cedar Avenue 54
9.3.5 Francis Road & North Shore Boulevard East 55

9.3.6 Francis Road & Warwick Drive 55
9.3.7 Warwick Court & Warwick Drive 56
9.3.8 Warwick Drive & Surrey Lane 56
9.3.9 Warwick Drive & Marley Road 57
9.3.10 Marley Road & Sunset Road 57
9.3.11 Francis Road & Cedar Avenue 58
9.3.12 Surrey Lane & New Public Street (Sunset Road) 58

10.0 TRANSPORTATION DEMAND MANAGEMENT CONSIDERATIONS 59
10.1 Context 59
10.2 Proposed TDM Plan 59
10.2.1 Provision of Car-Share Parking (If Applicable) 60
10.2.2 Provision of On-Site Cycling Infrastructure 60
10.2.3 Provision of On-Site Bicycle Repair Station 61
10.2.4 Provision of New & Direct Pedestrian Routes 61
10.2.5 Provision of Sustainable Transit Information to New Residents 62
10.3 Implementation 62

11.0 SAFETY CONSIDERATIONS 63
11.1 Collision Data 63
11.2 Collision Analysis 63
11.3 Proposed Safety Strategy 65

12.0 SUMMARY & CONCLUSIONS 66

LIST OF TABLES

Table 1	Proposed Street and Laneway Specifications	19
Table 2	Proposed Unit Types and Quantities by Parcel	20
Table 3	Existing Parking Supply and Demand	24
Table 4	City of Burlington Zoning By-law 2020: Residential Parking Standards (Excerpt)	25
Table 5	Vehicle Parking for Existing Site	25
Table 6	Vehicle Parking Requirements for Proposed Development	26
Table 7	Loading Space Requirements for Proposed Development	29
Table 8	High-Rise Apartment Trip Generation Rates	32
Table 9	Mid-Rise Apartment Trip Generation Rates	32
Table 10	Residential Townhouse Trip Generation Rates	32
Table 11	Future Site Trip Generation by Parcel	33
Table 12	Existing Site Related Traffic Volumes	35
Table 13	Net-New Site Related Traffic Volumes	35
Table 14	Residential Site Traffic Distribution	36
Table 15	Traffic Volume Count Metadata	37
Table 16	Peak Hour Analysis Results: Fairview St & Plains Rd E/QEW NB Ramp (Signalized)	46
Table 17	Peak Hour Analysis Results: Fairview St & QEW SB Ramps (Signalized)	47
Table 18	Peak Hour Analysis Results: Plains Rd E & Francis Rd (Signalized)	48
Table 19	Peak Hour Analysis Results: Plains Rd E & King Rd (Signalized)	49
Table 20	Peak Hour Analysis Results: North Shore Blvd E & QEW NB Ramp (Signalized)	50
Table 21	Peak Hour Analysis Results: North Shore Blvd E & QEW SB Ramps (Signalized)	51
Table 22	Peak Hour Analysis Results: King Rd & Townsend Ave (Unsignalized)	52
Table 23	Peak Hour Analysis Results: King Rd & Surrey Ln (Unsignalized)	53
Table 24	Peak Hour Analysis Results: King Rd & Marley Rd (Unsignalized)	53
Table 25	Peak Hour Analysis Results: King Rd & Cedar Ave (Unsignalized)	54
Table 26	Peak Hour Analysis Results: Francis Rd & North Shore Blvd E (Unsignalized)	55
Table 27	Peak Hour Analysis Results: Francis Rd & Warwick Dr (Unsignalized)	55
Table 28	Peak Hour Analysis Results: Warwick Ct & Warwick Dr (Unsignalized)	56
Table 29	Peak Hour Analysis Results: Warwick Dr & Surrey Ln (Unsignalized)	56
Table 30	Peak Hour Analysis Results: Warwick Dr & Marley Rd (Unsignalized)	57
Table 31	Peak Hour Analysis Results: Marley Rd & Sunset Rd (Unsignalized)	57

Table 32 Peak Hour Analysis Results: Francis Rd & Cedar Ave (Unsignalized) 58
Table 33 Peak Hour Analysis Results: Surrey Ln & New Public Street – Sunset Rd (Unsignalized)...58
Table 34 TDM Implementation Plan 62
Table 35 Existing Study Area Collision Classification....63
Table 36 Existing Study Area Collision Impact Types 64

LIST OF FIGURES

Figure 1 Site Location 3
Figure 2 Site Context....4
Figure 3 Existing Parking Facilities 5
Figure 4 Roadway Classification Map....11
Figure 5 Existing Lane Configurations Map 12
Figure 6 Future Lane Configurations Map 13
Figure 7 Area Transit Context 14
Figure 8 Planned Area Transit Improvements 15
Figure 9 Area Cycling Context 16
Figure 10 Planned Area Cycling Facilities 17
Figure 11 Proposed Site Plan 22
Figure 12 Site Parcel Plan....23
Figure 13: Proposed Loading Strategy Plan 30
Figure 14 Existing Area Traffic Volumes....38
Figure 15 Existing Site Traffic Volumes 39
Figure 16 Future Background Traffic Volumes 40
Figure 17 Net new Site Traffic Volumes....41
Figure 18: Total Site Traffic Volumes....42
Figure 19 Future Total Traffic Volumes....43

TABLE OF APPENDICES

APPENDIX A: Proposed Master Plan
APPENDIX B: Existing Turning Movement Counts
APPENDIX C: Synchro/HCM Analysis Sheets
APPENDIX D: Collision Data Sheets

EXECUTIVE SUMMARY

BA Group has been retained by bcIMC Realty Corporation to conduct a transportation review related to their Master Plan Application for a proposed residential redevelopment of the Georgian Court Estates (referred to herein also as “the Site”) in the City of Burlington, Ontario.

Spanning approximately 20-acres, the Site is currently occupied by 280 townhouse units, including maisonettes, block homes, and traditional townhouses. Areas surrounding the existing development are largely residential, including a nearby mix of low and high-density residential zones, and mixed-use commercial developments.

The proposed Georgian Court Estates redevelopment contemplates to expand the residential profile to include 1,450 residential units, composed of three high-rise towers, five mid-rise towers, and twenty blocks of townhouses. Within these buildings, 162 high-rise units, 951 mid-rise units, 137 grade-related townhouse units, 143 back-to-back townhouse units, and 57 traditional townhouse units are proposed.

As part of the proposed Master Plan concept for the Site, a new public roadway is proposed to bisect the site. The new road will extend Sunset Road north of Marley Road to connect with Surrey Lane. All-way stop controlled intersections are proposed where the new public street intersects at Marley Road and Sunset Road. An additional mews is also proposed to extend from Marley Road and Surrey Lane, running just east of King Road, aiding refuse collection services activity as well as providing further pedestrian connectivity within the Site.

The Master Plan concept proposes to adopt the vehicle parking requirements as prescribed by the City of Burlington Zoning By-law. Parking requirements will be met primarily through underground parking structures varying from 1-2 levels in depth within selected parcels on Site. In addition, shorter term parking is proposed at various locations in lay-by format throughout the site. It is also noted that parking requirements will be met on an overall basis across the entire site with certain underground parking garages providing parking for adjacent development blocks.

Cycling facilities currently do not exist on the site, and are not required under the applicable Zoning By-law. As potential for future bicycle parking facilities are assessed, the development proposal may seek a bicycle parking rate beyond the by-law requirement.

The Master Plan concept proposes to meet the City of Burlington Zoning By-law 2020 loading requirements. The allocation of the loading facilities, in some instances, will adopt the same site-wide model as the Site’s vehicle parking, i.e. centralized loading/refuse collection areas to be shared by nearby units.

An assessment of existing, future background and future total traffic operations along the areas road network was undertaken, and indicates that the existing signalized and unsignalized intersections operate under acceptable conditions and will continue to operate under acceptable levels of operations in the future with the development of the Site as contemplated as part of the Master Plan concept. No improvements to area intersections, other then signal timing adjustments, are required to accommodate site traffic.

1.0 INTRODUCTION

The Site is located on the east side of King Road, approximately midblock between Plains Road East to the north and Cedar Avenue to the south, where it intersects with Surrey Lane. The Site is bound by Surrey Lane and Warwick Drive to the north, the Francis Road Bikeway to the east, Marley Road to the south, and King Road to the west.

The Site location and context are shown in Figure 1 and Figure 2, respectively.

The proposed Master Plan developed as part of this application is shown in Figure 11.

This report documents BA Group's review of the transportation-related elements of the proposed development, including parking, loading, site access provisions, existing transportation context, and future traffic operations as a part of the Master Plan Application to the City of Burlington.

1.1 STUDY PURPOSE & SCOPE

The purpose of this study is to review the transportation-related elements of the proposed development, and identify any improvements (if necessary) from a transportation perspective. This study has been prepared in consultation with staff at the City of Burlington through an agreed upon Terms of Reference circulated to staff in January 2017 via email to ensure cohesion with existing municipal and provincial plans and policies.

As part of the traffic operations assessment of the proposed development program, a review of the weekday morning and afternoon peak hour periods for existing, future background, and future total (including site) traffic conditions was undertaken at the study area intersections.

The follow intersections were considered:

1.1.1 Signalized intersections

- Fairview Street & Plains Road East/Northbound QEW Off Ramp
- Fairview Street/Plains Road East & Southbound QEW On/Off Ramps
- North Shore Boulevard East & Northbound QEW Off Ramp
- North Shore Boulevard East & Southbound QEW On/Off Ramps
- Plains Road East & Francis Road
- Plains Road East & King Road

1.1.2 Unsignalized Intersections

- King Road & Townsend Avenue
- King Road & Surrey Lane
- King Road & Marley Road
- King Road & Cedar Avenue
- King Road & North Shore Boulevard East
- Francis Road & North Shore Boulevard East
- Francis Road & Warwick Drive
- Warwick Court & Warwick Drive
- Warwick Drive & Surrey Lane
- Warwick Drive & Marley Road
- Marley Road & Sunset Road
- Francis Road & Cedar Avenue

Beyond traffic operations, elements of this Transportation Study also include a review of:

- existing and future transit, cycling, and pedestrian accessibility context;
- vehicle and bicycle parking requirements specified by applicable by-laws;
- Transportation Demand Management (TDM) Strategies; and
- safety considerations.

2.0 THE SITE TODAY

2.1 EXISTING SITE CONDITIONS

The Site is located on the east side of King Road, approximately midblock between Plains Road East to the north and Cedar Avenue to the south, where it intersects with Surrey Lane. The Site is bound by Surrey Lane and Warwick Drive to the north, the Francis Road Bikeway to the east, Marley Road to the south, and King Road to the west.

The Site is currently occupied by 280 residential townhouse units composed of 34 back-to-back townhouses, 88 maisonettes, and 158 traditional townhouses contained within 28 properties, which include:

- 865 King Road;
- 875 King Road;
- 615-633 Marley Road;
- 635-647 Marley Road;
- 649-661 Marley Road;
- 663-677 Marley Road;
- 679-693 Marley Road;
- 699 Marley Road;
- 610-630 Surrey Lane;
- 611-633 Surrey Lane;
- 632-654 Surrey Lane;
- 645 Surrey Lane;
- 656-670 Surrey Lane;
- 672-686 Surrey Lane;
- 688-706 Surrey Lane;
- 708-722 Surrey Lane;
- 724-740 Surrey Lane;
- 847-861 Warwick Drive;
- 858-866 Warwick Drive:
- 863-869 Warwick Drive:
- 868-876 Warwick Drive:
- 871 Warwick Drive:
- 873 Warwick Drive:
- 875-915 Warwick Drive:
- 878-892 Warwick Drive:
- 894-906 Warwick Drive:
- 908-916 Warwick Drive: and
- 917-937 Warwick Drive:

The Site is zoned for medium density residential (RM2) under the City of Burlington Zoning By-law 2020. The local zoning context consists of low-density residential (R2.1) beyond the western, southern, and eastern limits of the Site, and high density residential (RH2) lands immediately north of the Site.

The Site is situated nearby commercial and recreational amenities, including the Francis Road Greenway, Greenwood Park, Maple Park, LaSalle Park, the Mapleview Shopping Centre, and the mixed-use activity area along Plains Road East, approximately 450m north of the Site.

2.2 PARKING OVERVIEW

Existing on-site parking is supplied largely by multiple off-street surface parking lots. The existing surface parking lots are accessed via Warwick Drive, Surrey Lane and Marley Road and comprise of 14 individual lots across the site. Within these lots, both regular parking spaces and tandem parking spaces (two vehicles/space) are provided. A total of 490 spaces are provided on-site, including 410 occupant spaces, 30 tandem spaces (60 effective parking spots), and 20 visitor spaces.

The existing parking lots and supply are illustrated in Figure 3.

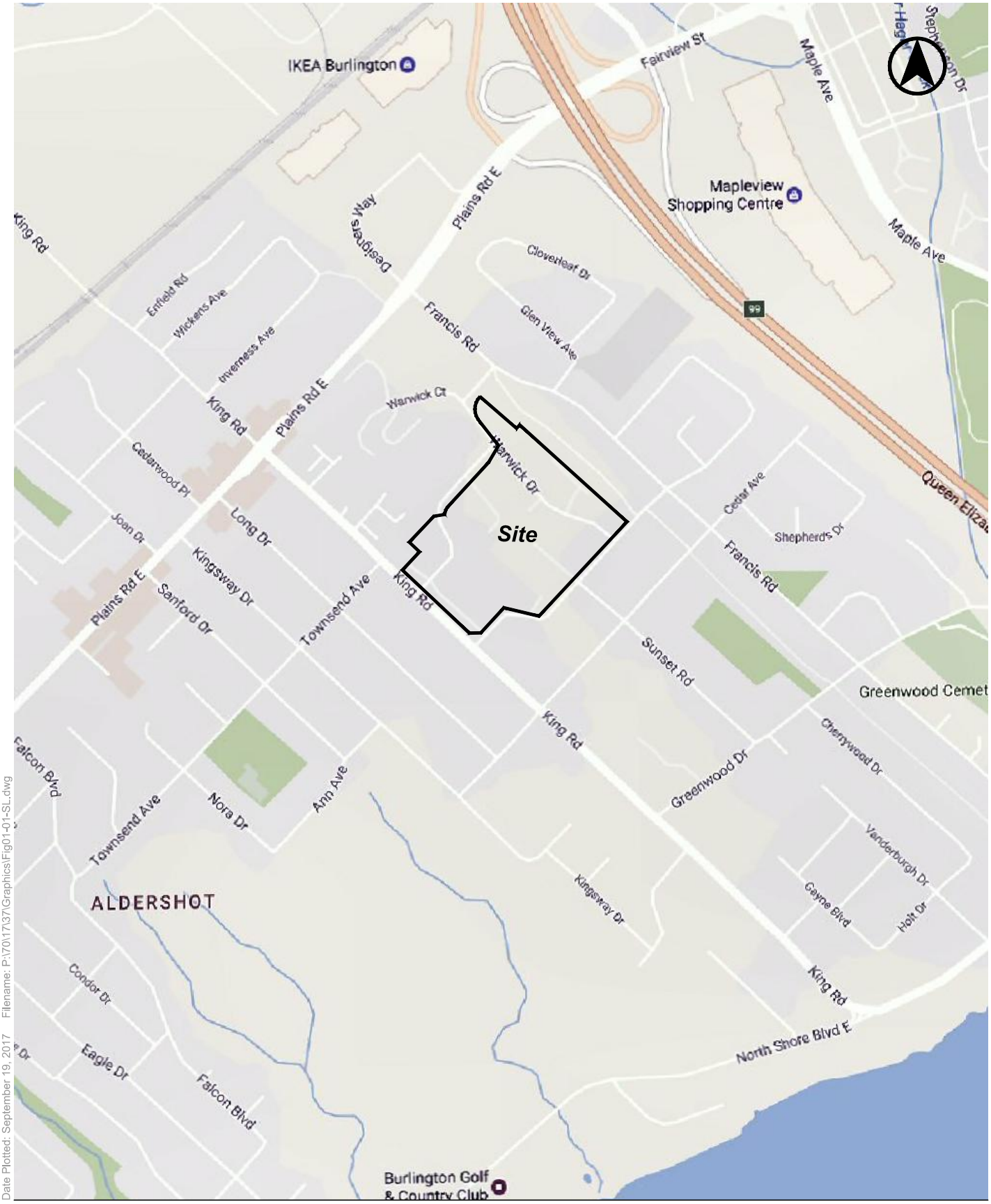
2.3 LOADING OVERVIEW

Refuse disposal on the Site today is provided via on-street collection for each individual unit. No formal on-site loading facilities are currently provided. An informal waste disposal shed also exists where bulky items are stored and disposed of by a contractor when requested.

2.4 SITE ACCESS

Site access is largely provided via a network of arterial and collector roads that surrounding the site with multiple private driveways accessing the individual surface parking lots across the Site.

Two primary driveways lead to the main surface parking lots and are accessible via Surrey Lane and Marley Road.



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SITE LOCATION

BA Group

Georgian Court
7017-37 September 2017

Figure 1



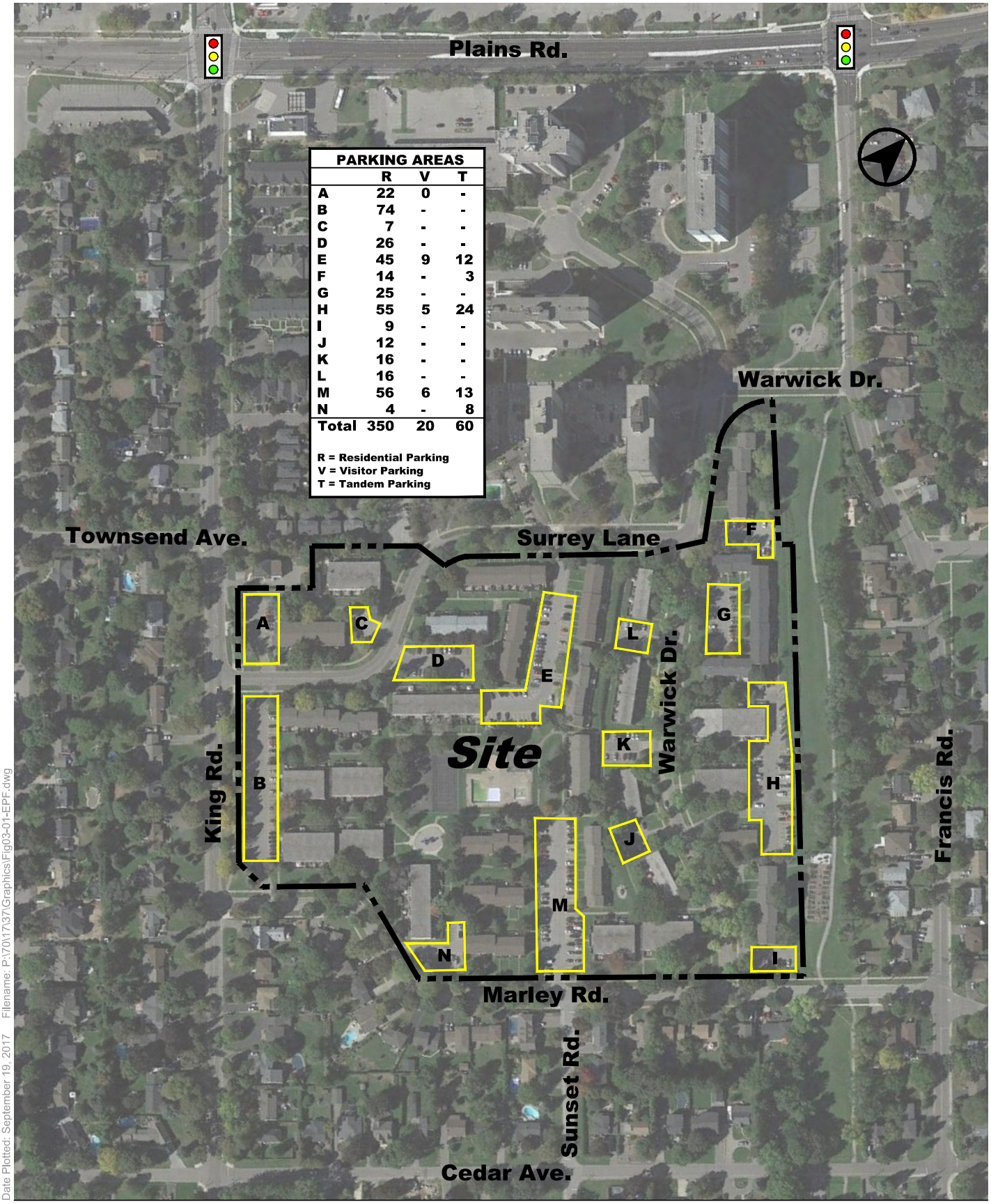
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SITE CONTEXT

BA Group

Georgian Court
7017-37 September 2017

Figure 2



PARKING AREAS	R	V	T
A	22	0	-
B	74	-	-
C	7	-	-
D	26	-	-
E	45	9	12
F	14	-	3
G	25	-	-
H	55	5	24
I	9	-	-
J	12	-	-
K	16	-	-
L	16	-	-
M	56	6	13
N	4	-	8
Total	350	20	60

R = Residential Parking
V = Visitor Parking
T = Tandem Parking

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EXISTING PARKING FACILITIES

3.0 TRANSPORTATION NETWORK

The local transportation network consists of highly proximal arterials and freeways, frequent local transit services, nearby regional rail connections, and infrastructure dedicated to active transportation.

3.1 ROAD NETWORK

Within the Site environs, the road network consists of a hierarchy of freeways, arterial roads, collector roads, and local roads. The roadway classification map for the Site is shown in Figure 4.

3.1.1 Freeways

The **Queen Elizabeth Way (QEW)** is a limited access provincial freeway operating in the north-south direction approximately 500m east of the Site, parallel with King Road. This section of the QEW generally has five (5) travel lanes in the southbound direction and four (4) travel lanes in the northbound direction.

The QEW extends from the City of Toronto at the Highway 427 / Gardiner Expressway interchange to Fort Erie and the United States border to the south. North of the Site, the QEW interchanges with privately-owned Highway 407 and concurrently-signed Highway 403, where its alignment changes to run east to Toronto. Nearby the Site, major accesses include Plains Road East / Fairview Street to the north and North Shore Boulevard East to the south. This 400-series highway has a speed limit of 100km/h.

3.1.2 Arterial Roads

King Road is a north-south road that extends from North Shore Boulevard in the south to Mountain Brow Road in Hamilton, Ontario. The Site lies approximately 450m south of King Road's intersection with Plains Road East. King Road, owned by the City of Burlington, is designated as an urban avenue in the Official Plan, with one (1) lane running in each direction. An extra lane is provided nearby intersections for left-turn movements, including the intersection at King Road and Surrey Lane. Two bike lanes run along the shoulders of King Road in each direction, and the posted speed limit is 50km/h.

Plains Road East is an east-west road that extends from the Queen Elizabeth Way (QEW) in the east to Waterdown Road in the west. Plains Road East is classified as a multi-purpose arterial road, owned by the City of Burlington. Two (2) lanes run in each direction with a centre lane throughout for turning movements. At King Road, additional left and right turning lanes exist on the approach from both directions to accommodate higher volumes. Two (2) bike lanes run along the shoulders of the road throughout. The speed limit is 60km/h.

North Shore Boulevard East is a predominantly east-west road that extends from its intersection with Plains Road West in the west to Maple Avenue in the east, where it becomes Lakeshore Road. It is a collector road along its west end, but it is designated as a main street east of King Road. One (1) lane runs in each direction, with dedicated bike lanes along the shoulders of the road. The speed limit is 50km/h.

3.1.3 Local Collector Roads

Surrey Lane is an east-west road that extends from King Road in the west to Warwick Drive in the east. This local collector road forms the northern border of the Site, featuring one (1) lane in each direction. There is no

on-street parking available along Surrey Lane. The speed limit is 40km/h, lowering to 20km/h along the curved length of the road.

Francis Road is a north-south road that extends from Plains Road East in the north to North Shore Boulevard East in the south. It is a local collector road with a signed traffic calming zone. One (1) lane runs in each direction, and no on-street parking is available. The speed limit is 40km/h.

Cedar Avenue is an east-west road that extends from King Road in the west to Shepherds Drive in the east. It is a local collector road west of Francis Road and a local road in its eastern stretch. Cedar Avenue features one (1) lane of traffic in each direction, with a painted shoulder for pedestrian use between King Road and Francis Street. On-street parking is generally available where sufficient curb lengths exist. The posted speed limit is 50km/h.

3.1.4 Local Roads

Warwick Drive is a predominantly north-south local road that extends from Francis Road to the east to Marley Road to the south. The northern section of Warwick Drive runs east from Francis Road to Warwick Court, where it turns south towards Marley Road. The northern half of Warwick Drive, north of Surrey Lane is considered a local collector road, while the southern half is a local road. One (1) lane runs in each direction, and on-street parking is available only along the west curb of Warwick Drive. The speed limit is 40km/h.

Warwick Court extends from the residential cul-de-sac in the north to Warwick Drive in the south. One (1) lane runs in each direction of this local road, and no on-street parking is available. The speed limit is 40km/h.

Marley Road is an east-west road that extends from King Road in the west to Francis Road in the east. One (1) lane runs in each direction, and there is no on-street parking along this local road. The speed limit is 40km/h, lowering to 20km/h along the curved length of the road.

3.2 EXISTING TRANSIT

Burlington Transit provides municipal bus transit service in the Site area, connecting residents to local destinations and regional transportation connections. GO Transit provides regional transit services along the nearby Lakeshore West line.

The Site is conveniently situated to benefit from a major transit corridor (Plains Road East), a local bus route with stops within the Site (Route 5), accessibility services, and regional rail connections. The existing area transit context is shown in Figure 7, and planned area transit facilities are shown in Figure 8.

3.2.1 Bus Routes

1 Plains is a regular bus service that operates all day, seven days a week. Its predominant travel path runs east-west along Plains Road West and Plains Road East, but extends well beyond the City of Burlington, spanning from the City of Hamilton's downtown (King Street East & James Street North) to the Burlington GO Station (Fairview Street). This service operates at 30 minute headways throughout the entire weekday and into the late evening until approximately 25:00. During weekends, 1 Plains operates at 30 minute headways for limited hours (approximately 6:30-21:00). This route services Plains Road East / King Road near the Site.

1x Plains is a weekday bus service that replaces the 1 Plains during daytime hours (approximately 4:30-20:00), Mondays to Fridays. This service operates along the same route as the 1 Plains at 30 minute headways.

5 Francis-Downtown is a regular bus service that operates all day, Monday to Saturday. The 5 Francis-Downtown route follows a U-shaped routing from the King Road / Plains Road East intersection to the Burlington GO Station (Fairview Street) via the lakeshore. This route enters the Site through Warwick Drive and runs westbound on Surrey Lane before looping back to Francis Road via King Road and Plains Road East. Featuring stops within the Site (Surrey Lane), the 5 Francis-Downtown provides high accessibility to the lakeshore areas and Downtown Burlington. The 5 Francis-Downtown offers 30 minute headways on weekdays and Saturday afternoons, and 60 minute headways on Saturday mornings.

101 Plains Express is an express service bus route that operates Monday to Friday during daytime hours. The service runs at 15 minute headways during peak periods (approximately 5:00-10:00 and 15:00-19:00). The 101 Plains Express travels east-west along Plains Road West and Plains Road east, following the same routing as the 1/1x Plains; however, it serves only select major stops between Burlington GO Station and Downtown Hamilton. Within Site environs, this route services the Plains Road East / King Road intersection.

300 Aldershot is a "Community Connection" transit service, using smaller transit vehicles to provide direct accessibility services to the entrance doors of major destinations. Beginning from LaSalle Towers to the west, this service runs east-west along Plains Road East before travelling north-south along Maple Avenue and terminating at the Burlington Seniors Centre (New Street). Nearby the Site, 300 Aldershot stops at Plains Road East / King Road. It offers 60 minute headways at the top of the hour from 11:00-14:00, Monday to Friday.

3.2.2 Regional Rail Service

8 Lakeshore West is a regional GO Train rail corridor that spans east-west from West Harbour (Hamilton) to Union Station (Toronto). The Site is situated between the two GO Stations in Burlington: it is less than a 10-minute drive (20-minute bus ride) from both Burlington and Aldershot GO Stations. Eastbound trips depart every 30 minutes from Aldershot GO Station, with alternating headways (10 minutes then 20 minutes) during the morning peak period. Westbound trips depart from Union Station every 30 minutes, with alternating headways (10 and 20 minutes) during the afternoon peak. Trips between Burlington GO Station and Union Station currently take 60 minutes.

3.2.3 Planned Transit Improvements

Future area transit characteristics are illustrated in Figure 8.

Local Transit Improvements
Local transit service improvements to Burlington Transit are planned in the City of Burlington's Draft Official Plan, named "Grow Bold" (April 2017). While the new Transportation Master Plan, named "Go Bold", has yet to be released at the time of this report, Chapter 6 of the Draft Official Plan – focused on Infrastructure, Transportation, and Utilities – defines policies for a *Frequent Transit Network* (FTN). The FTN is characterized by 15-minute minimum service intervals along a transit corridor, offering all-day service seven days a week.

Two components exist in the FTN, where roadways are categorized as "Justified" or "Candidate" corridors within the FTN network: Justified FTN corridors adequately demonstrate demand for FTN services in the future, while Candidate FTN corridors will require further study to evaluate suitability.

Plains Road East, already a predominant east-west connection across the City, is considered a Justified Corridor in the FTN. As the Burlington Transit network develops, Plains Road East is slated to become a high-frequency, all-day-service transit corridor.

Plains Road East is also designated as a primary mobility hub connector, forming a principal transportation connection between the intensification areas around the Burlington Downtown and the City's GO Stations. Access from the Site to Burlington's Downtown will be conveniently facilitated via a single transfer at both Brant Street (another primary mobility hub connector), or Maple Avenue (secondary mobility hub connector).

Regional Improvements
Regional rail improvements are planned for the Lakeshore West line as a part of the Regional Express Rail (RER) Project (GO Expansion). Generally, service improvements will offer high-acceleration electric trains, four times the existing number of off-peak trips, and twice the existing number of peak period trips.

Within the Site environs, these improvements will result in 15-minute or better train service operating in both directions, all-day every day between Aldershot GO Station and Union Station. This service interval will be a dramatic improvement to the Line during the mid-day, evening, and weekends: current off-peak services along Lakeshore West operate at 30-minute service intervals. Changes to the Lakeshore West service are expected to be realized by the end of Metrolinx's 10-year RER Project, around 2026.

3.3 CYCLING NETWORK

The Site is advantageously situated nearby existing cycling facilities, including bike lanes and multi-use paths. Figure 9 illustrates the local cycling network context.

King Road features bike lanes in both directions along the shoulders of the road. These lanes extend from North Shore Boulevard East in the south to Hydro Lane in the north (lanes become sharrows until North Service Road intersection). The City of Burlington Cycling Master Plan has recently introduced signage improvements along these lanes, further defining the cyclist's right-of-way. The Site's immediate proximity to King Road's bike lanes make it a valuable north-south connection for cyclists intending to connect with major

facilities such as the Plains Road bike lanes in the north and the North Shore Boulevard bike lanes in the south.

Plains Road East has been prioritized for cycling improvements in the City of Burlington's Multi-use Pathways and Bikeways Plan since 1997. The 20-year plan implemented bike lanes along Plains Road East from York Road in the west to Brant Street in the east. This east-west spine offers bike lanes on both shoulders to connect future residents to the rest of the City's on-road cycling infrastructure. It provides convenient access to areas north of the downtown.

North Shore Boulevard East features cycling lanes that can be accessed via King Road and the Francis Road Bikeway. They span from the QEW / North Shore Boulevard East off-ramp to King Road.

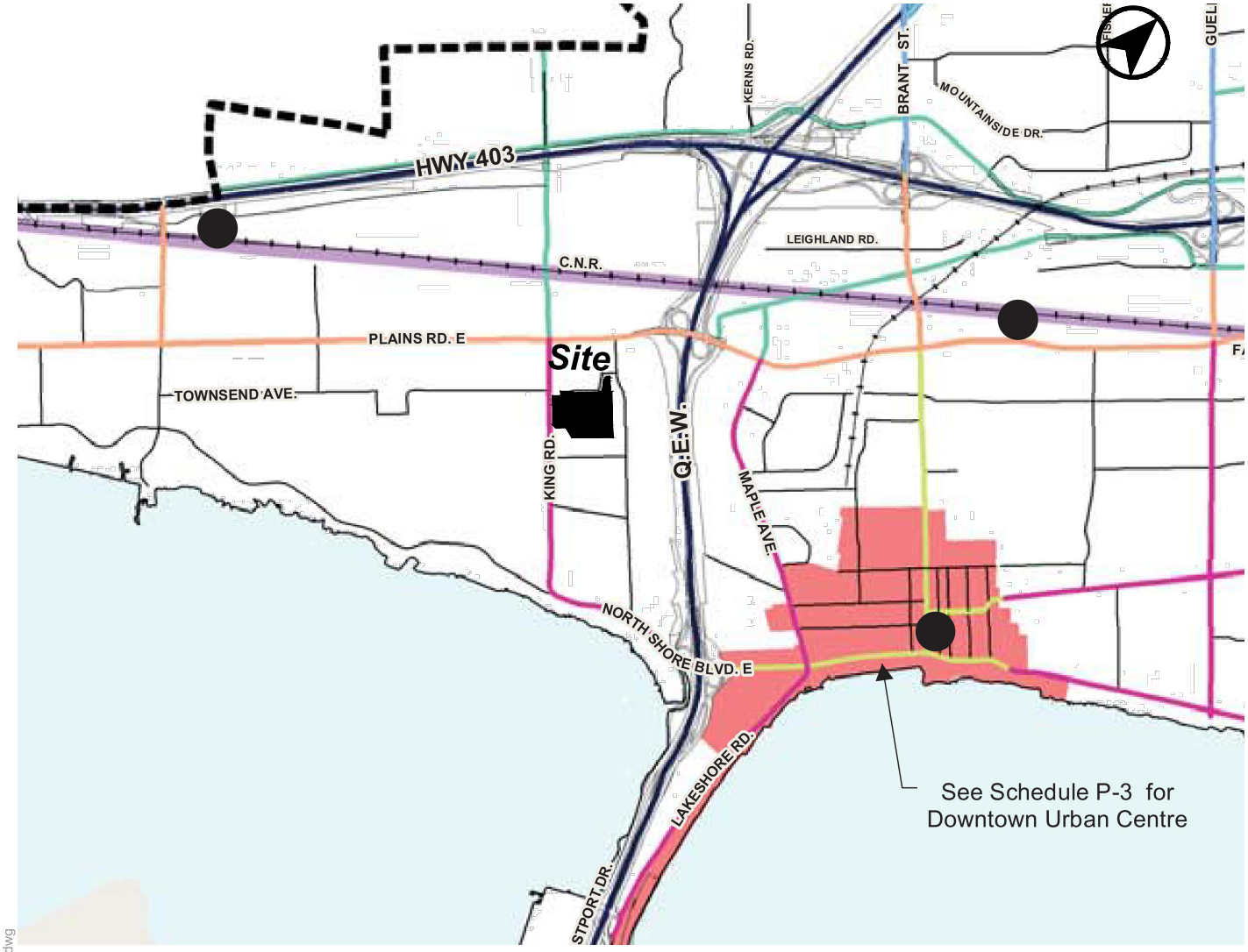
The Francis Road Bikeway is a fully-separated multi-use path that runs along the eastern perimeter of the Site. This path extends from North Shore Boulevard in the south to Warwick Drive to the north. Considering its limited crossings at local roads, the Francis Road Bikeway provides an off-road alternative to the King Road bike lanes.

3.3.1 Planned Cycling Network Improvements

The City of Burlington's Cycling Master Plan has approved numerous cycling infrastructure improvements within the Site's vicinity. Warwick Drive at Francis Road and Francis Road at Greenwood Drive are slated for intersection improvements. Greenwood Drive, south of the Site, will be designated a Bicycle Priority Street, and then extended east, past the QEW. This will connect with Maple Avenue through a grade-separated multi-use path crossing, and ultimately provide a direct, convenient, and safe cycling connection to Burlington's downtown areas. This multi-use path is planned for implementation after 2021.

Figure 10 illustrates the planned cycling network improvements.

Both existing and future cycling networks contribute mutual benefits. The relatively higher densities proposed in the development programme will benefit from the access provided by existing cycling facilities, and their contributions to the demand will justify the expansion and improvement of the cycling network to benefit other users in the community.



Legend

- Major Arterial
- Multi Purpose Arterial
- Urban Avenue
- Main Street
- Industrial Connector
- Neighbourhood Connector
- Provincial Freeway
- Provincial Highway
- (#) Regional Road
- Major Transit Station
- Go Transit Car Pool Lot
- Potential Future Transit Station (Approximate Location)
- Rail Line
- Commuter Rail Corridor
- Higher Order 407 Transit Corridor (Regional Official Plan)
- Municipal Boundary
- Urban Boundary

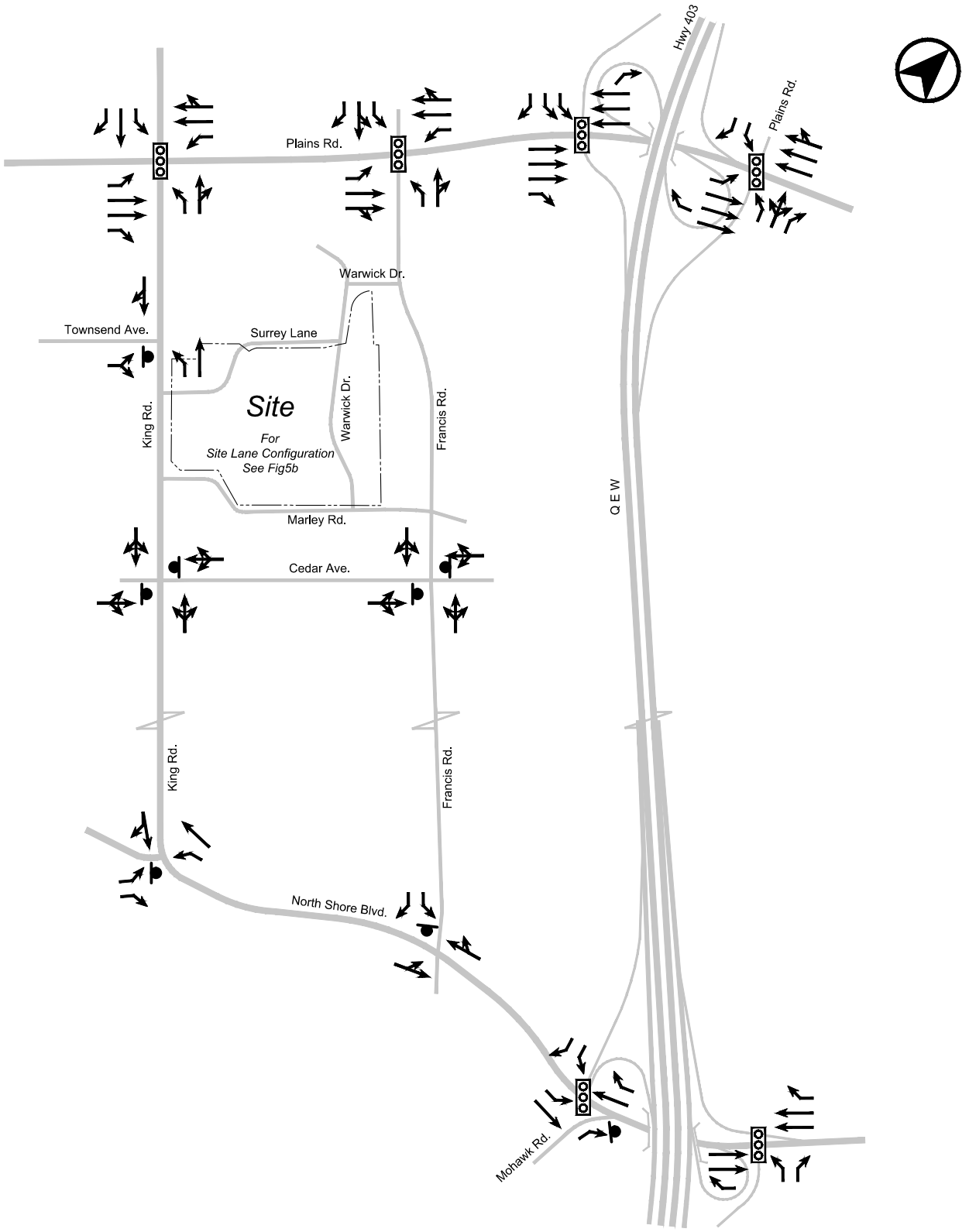
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ROAD CLASSIFICATION MAP

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7017-37 September 2017

Figure 4



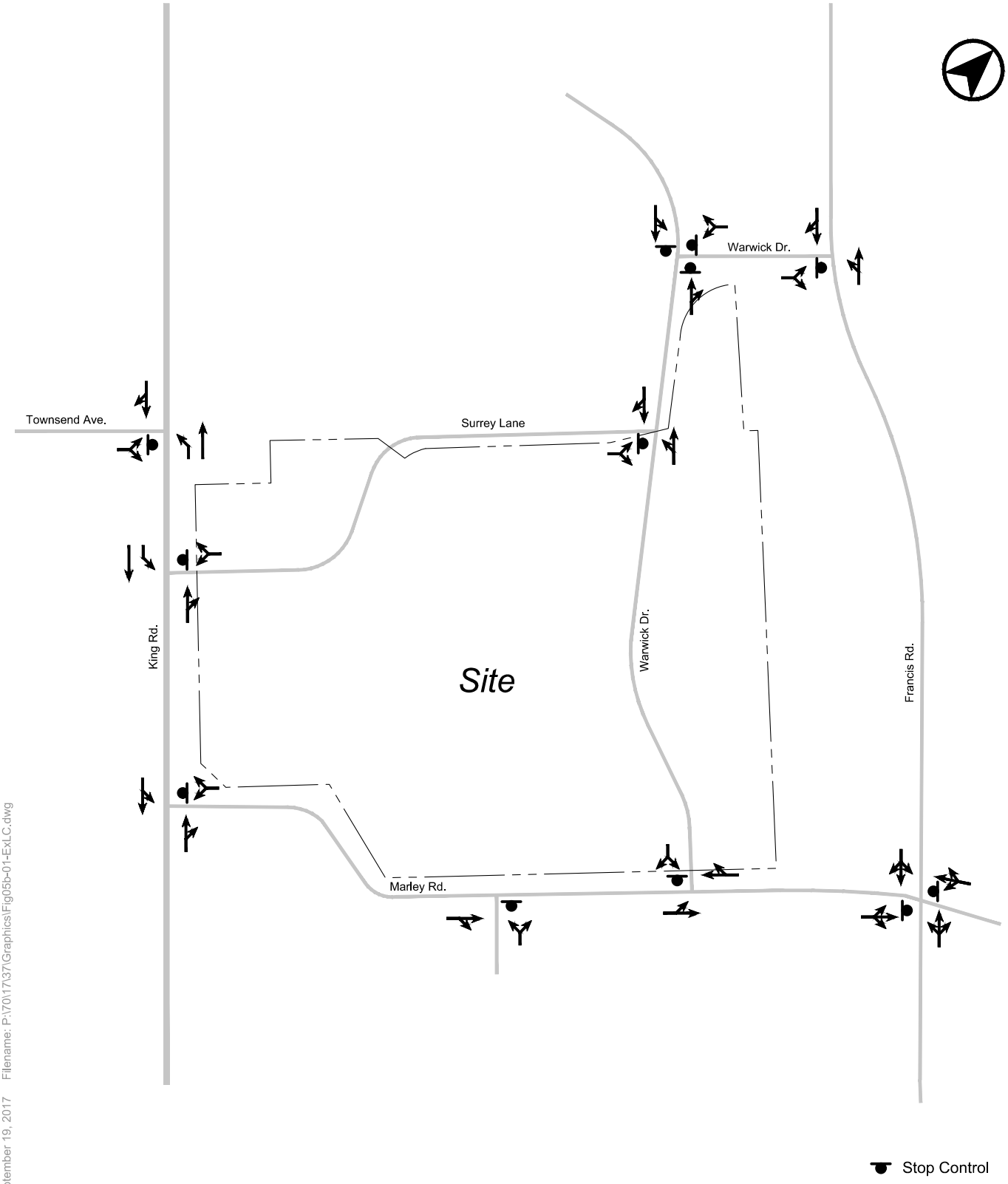
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EXISTING LANE CONFIGURATION

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Figure 5a



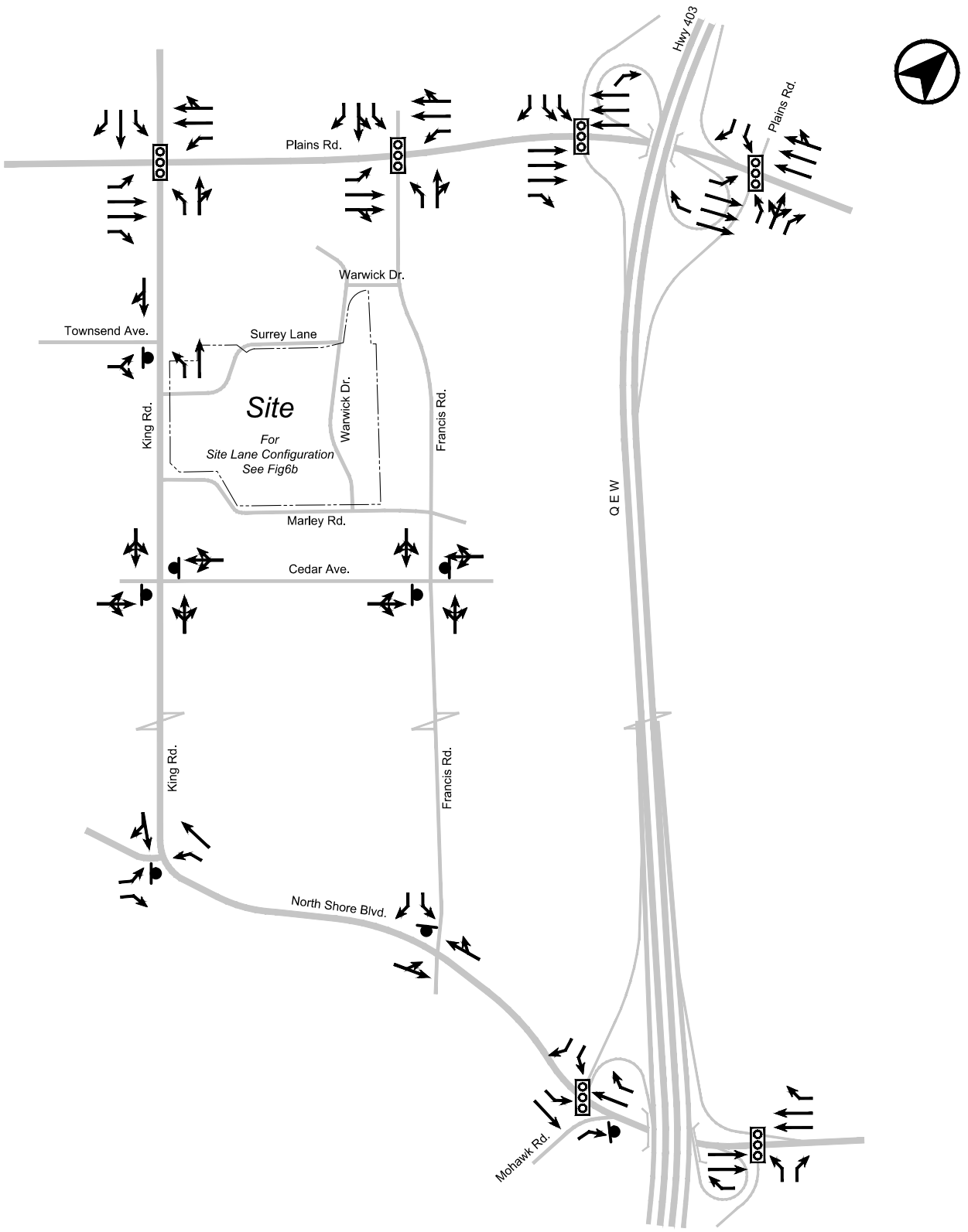
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EXISTING LANE CONFIGURATION

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Figure 5b



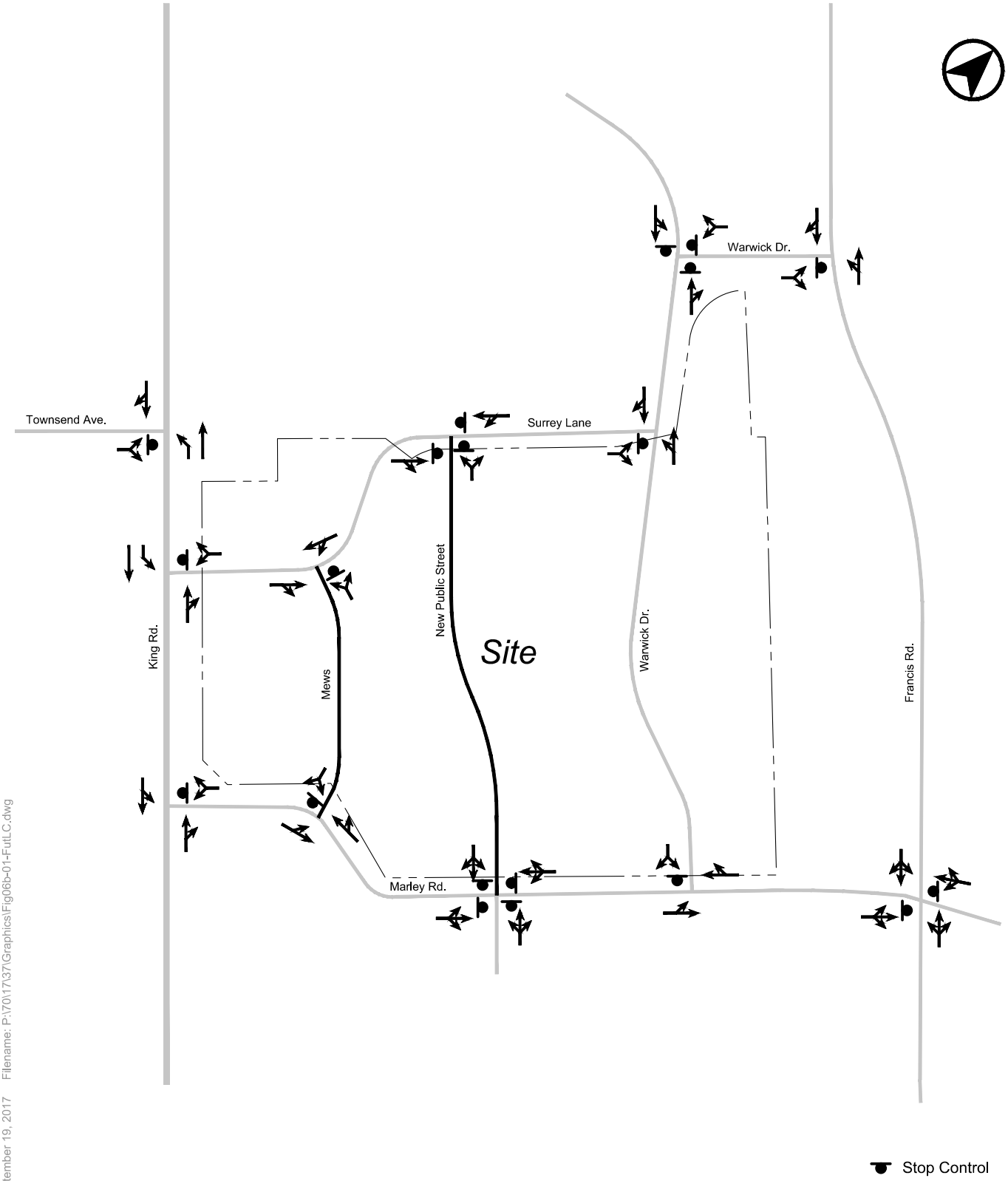
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FUTURE LANE CONFIGURATION AND PUBLIC ROAD NETWORK

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Figure 6a



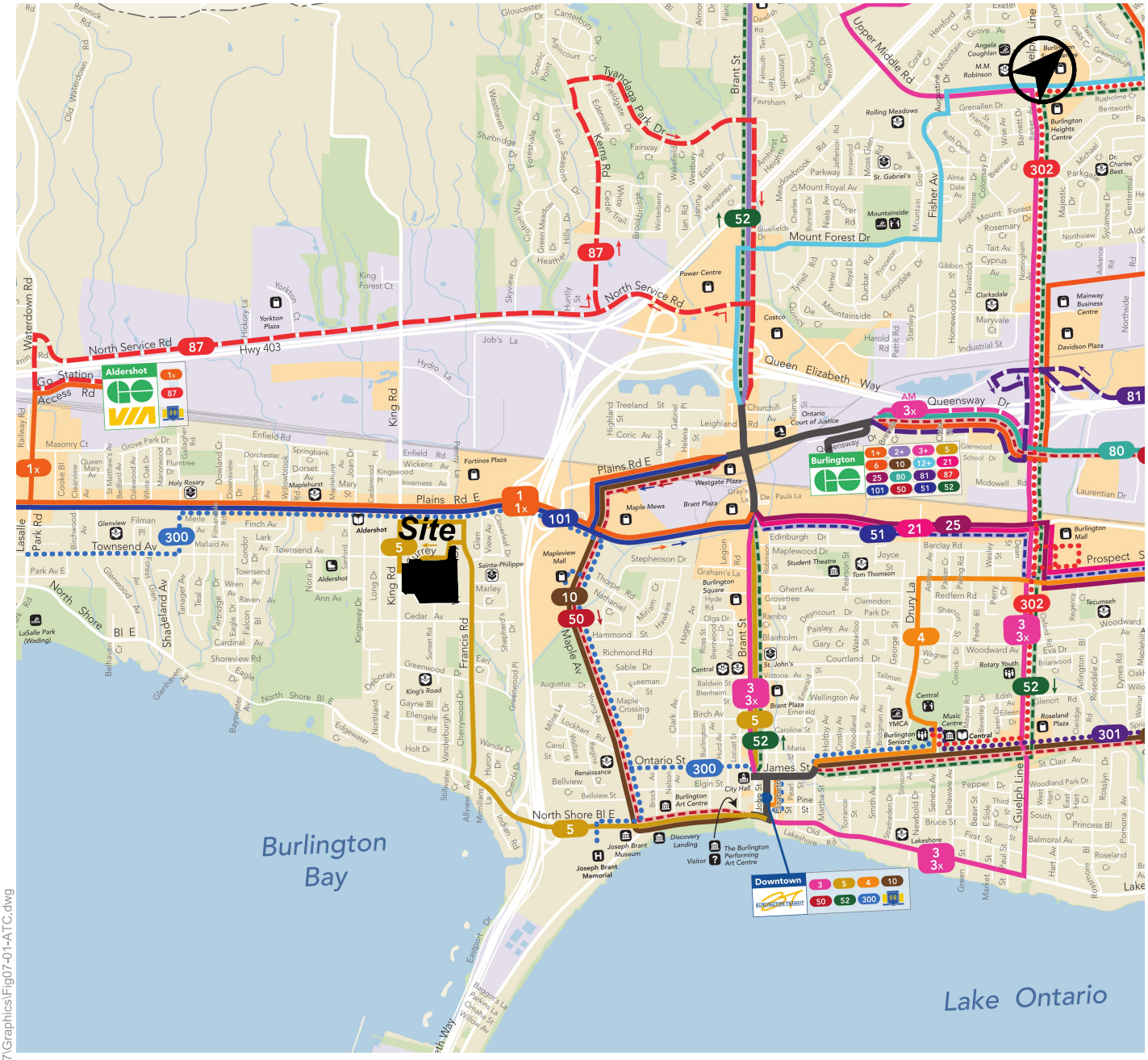
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FUTURE LANE CONFIGURATION AND PUBLIC ROAD WETWORK

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Figure 6b



Route Service Times

Route		Peak Only	M-F	Sat	Sun	Hol
1	Plains		•	•	•	•
1x	Plains		•			
5	Francis - Downtown		•	•		
101	Plains Express		•			
300	Aldershot		•			

Map Legend

Transit

- Regular Service Bus Route
- Peak Service Bus Route¹
- Limited Service Bus Route
- Late Night Service Bus Route
- GO Station
- HSR Transfer Point
- Oakville Transit Transfer Point
- Community Connection Route

Symbols

- Hospital
- Shopping Centre
- Arena
- City Hall
- Courthouse
- Library
- Recreation Centre
- Community Centre
- Museum / Attraction
- Outdoor Pool
- Indoor Pool
- Information
- Public Secondary School
- Public Elementary School
- Catholic Secondary School
- Catholic Elementary School

¹Peak hours are weekdays approximately 5 to 9 a.m. and 3 to 7 p.m.

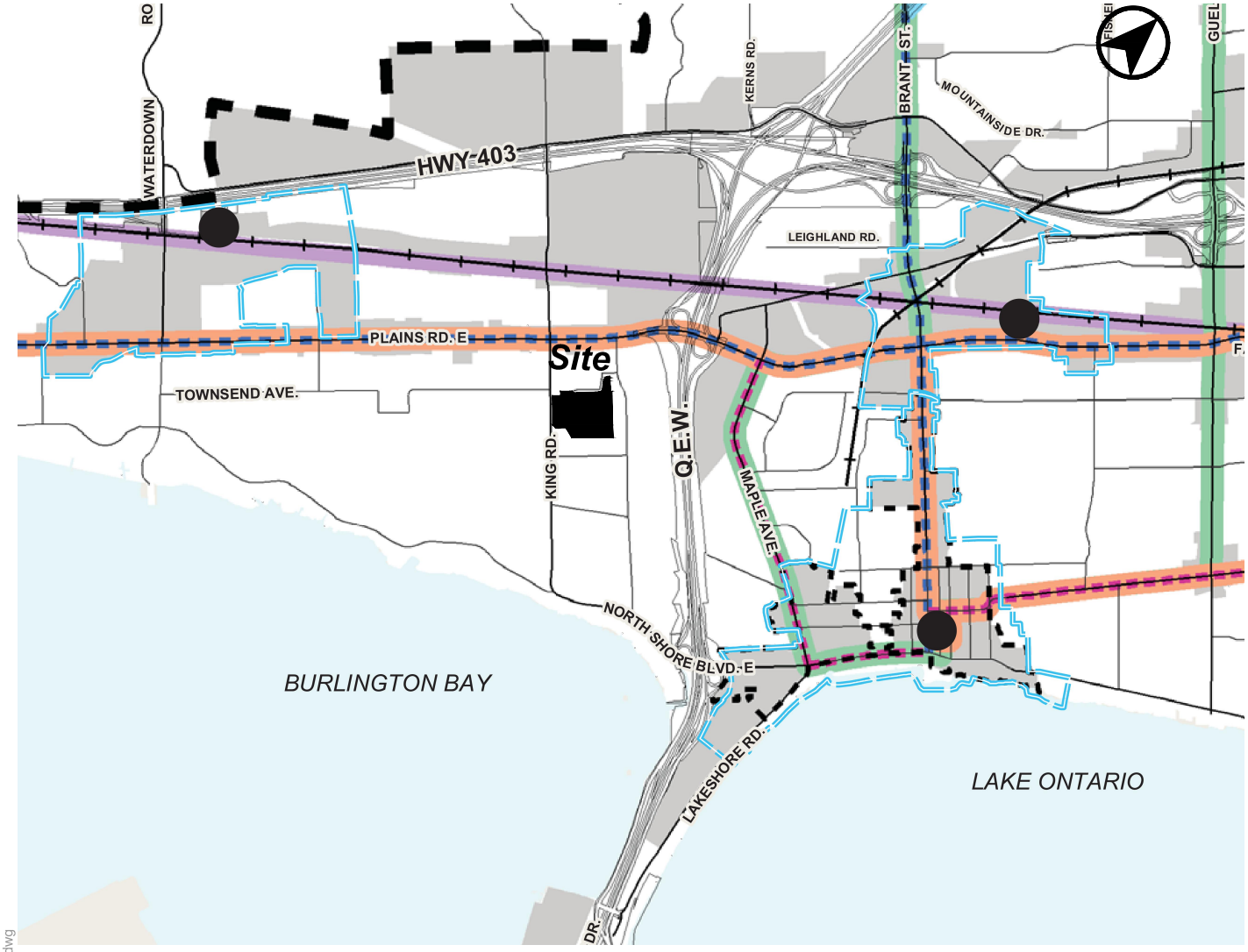
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AREA TRANSIT CONTEXT

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Figure 7



Legend

- Primary Mobility Hub Connector
- Secondary Mobility Hub Connector
- Justified Frequent Transit Network
- Candidate Frequent Transit Network
- Major Transit Station
- Rail Line
- Commuter Rail Corridor

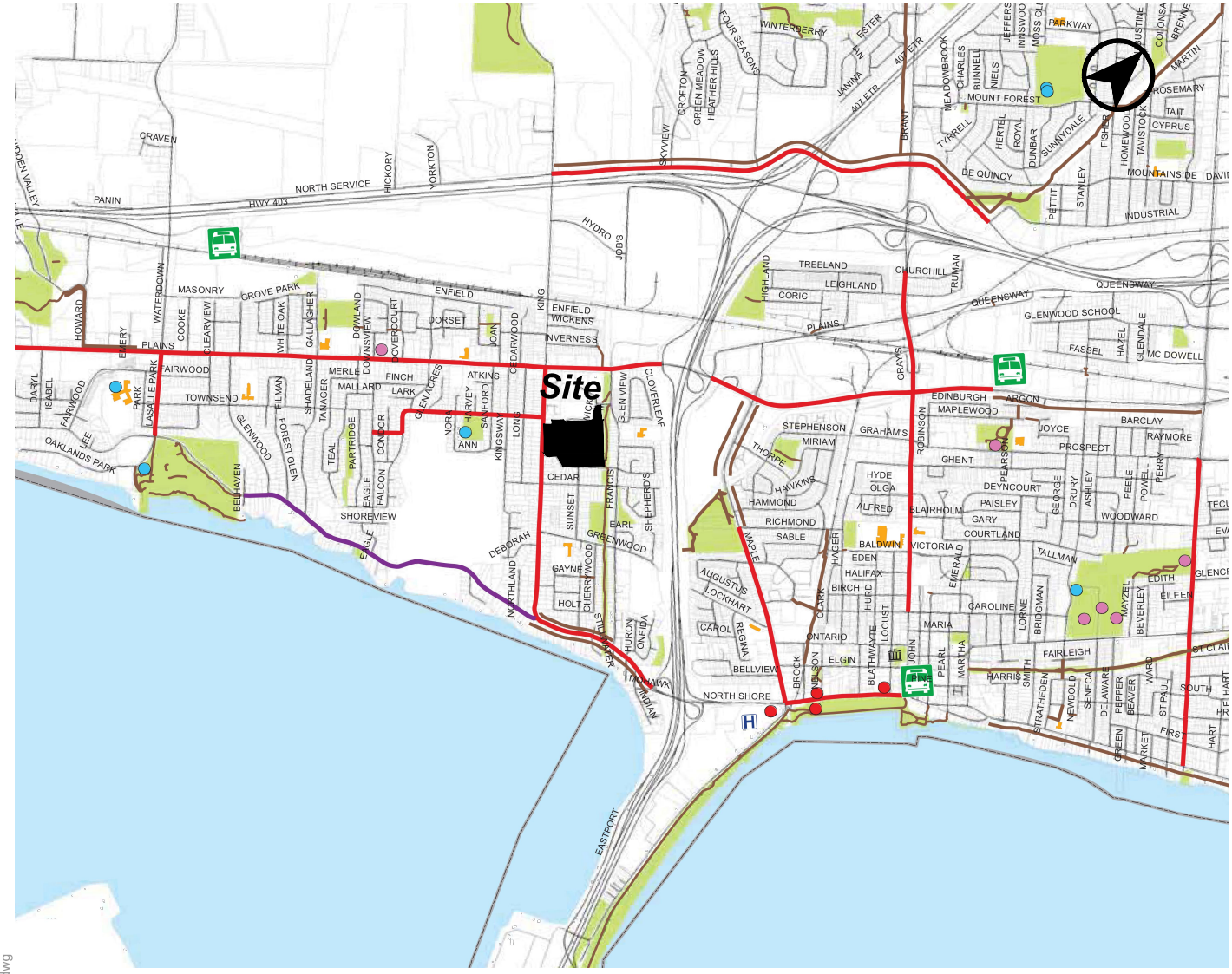
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PLANNED AREA TRANSIT IMPROVEMENTS

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7017-37 September 2017

Figure 8



Legend

- Existing Bike Lane
- Existing Signed Route
- Existing Multi-Use Path

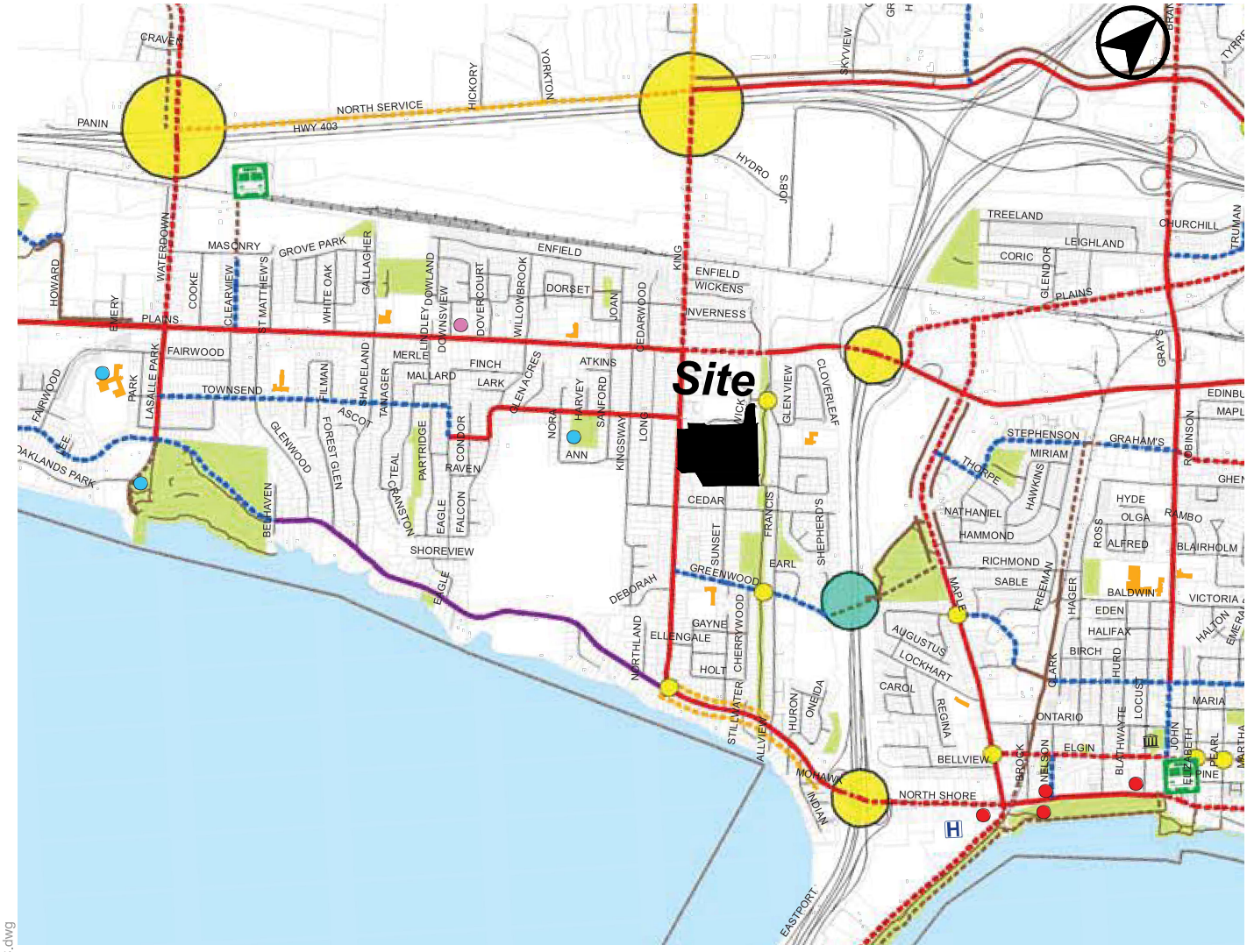
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AREA CYCLING CONTEXT

BA Group

Georgian Court
7017-37 September 2017

Figure 9



Legend

Bikeway Type

- Existing Bike Lane
- Existing Signed Route
- Existing Multi-Use Path
- Proposed Bike Lane
- Proposed Bicycle Priority Street
- Proposed Paved Shoulder
- Proposed Multi-Use Path

Proposed Barrier Crossings

- Highway Interchange Crossing
- Grade-Separated Crossing
- Intersection Improvement
- Transit / GO Station

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PLANNED AREA CYCLING FACILITIES

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7017-37 September 2017

Figure 10

4.0 PROPOSED DEVELOPMENT PROGRAMME

The proposed development programme contemplated as part of the overall Master Plan for the site comprises in the order of 1,450 residential units, ranging from low-rise townhouses to high-rise apartment buildings. Specifically, three (3) high-rise towers 16, 19, and 20 storeys high; five (5) mid-rise towers 8, 8, 8, 8, and 11 storeys high; and twenty (20) blocks of townhouses are proposed within ten (10) individual parcels on Site.

In addition to the redevelopment of existing residential uses on Site, a new Public Park is proposed within the northeast core of the site adjacent to the Francis Road Greenway. The proposed Public Park will enhance the existing Greenway as well as provide for increased outdoor amenity spaces for residents of the site and the local neighbourhood.

Figure 11 shows the proposed Master Plan as part of the Georgian Court redevelopment programme.

The proposed redevelopment of the Site in contemplated to occur in distinct phases, where partial demolition of Site lands will precede the construction staging for new structures. As part of the phase redevelopment of the Site, full built is forecast to be completed by 2030.

The proposed parcel plan for the Site is shown in Figure 12.

The proposed residential unit mix of the redevelopment plan is described in Table 2.

4.1 NEW PUBLIC ROAD

Sunset Road

A new public roadway is proposed within the Site boundary, extending Sunset Road from its existing terminus at Marley Road north to Surrey Lane. The Sunset Road extension will run parallel to Warwick Drive, approximately midblock between King Road and Warwick Drive. A total right-of-way (ROW) width of 20.0 m is proposed and is contemplated to be designed with 2.0 m wide sidewalks along both edges, on-street vehicle parking long one edge and total vehicle pavement width of in the order of 8.0 m.

Sunset Road will primarily facilitate local traffic generated by residents and visitors of the Site. It will provide an alternative route for residents travelling along Surrey Lane and a direct channel for the proposed developments along the Sunset Road extension itself.

At the southern terminus of the proposed new public road, the existing unsignalized two-way STOP control at Marley Road / Sunset Road is proposed to be improved to a four-way STOP controlled intersection (i.e. STOP control for all approaches).

At the northern terminus of the new public road where Sunset Road intersects with Surrey Lane, a new unsignalized three-way STOP control is proposed.

These stop controls will help act as traffic calming measures along the Surrey Lane and Marley Road corridors between King Road and Francis Road, as well as provide dedicated, safe pedestrian crossing opportunities for pedestrians.

The proposed new public road also presents an opportunity to better connect pedestrian spaces. As proposed, wider-than-standard sidewalks (i.e. 2.0 m) will help to contribute to a strong north-south connection across the Site, as well as provide for connections to internal east-west pedestrian paths proposed as part of the Master Plan for the Site through use of potential pavement marking treatments / raised intersections to facilitate pedestrian crossing opportunities to the proposed Public Park, the Site itself and the area neighbourhood.

4.2 PRIVATE STREETS AND LANEWAYS

Mews

A new private roadway referred to as the mews will also span north-south from Marley Road to Surrey Lane. The proposed mews is situated approximately 100m east of King Road, equidistant from the new Sunset Road extension and King Road. The proposed mews has a virtual right-of-way (ROW) of 15.0 m and is proposed with a 6.0 pavement width allowing for two-way traffic, one (1) 2.5 m layby parking lane along the eastern shoulder, and 1.5 m-wide sidewalks along both sides for the length of the mews. The mews' virtual right-of-way has been developed to allow for refuse collection services to safely permeate the Site.

The proposed mews will primarily function to facilitate internal garage access and service activity. The mews will also contributes to an extensive, well-connected internal pedestrian network proposed as part of the redevelopment programme. Pedestrians from western parcels of the development can freely navigate using the mews to the various proposed open spaces, where they can connect with the larger proposed Public Park and the Francis Road Greenway to the east.

Private Laneway

A series of private laneways are proposed within the site to facilitate loading, refuse management, and recycling and parking access. The proposed laneways are also proposed with either one-sided sidewalks or dual sidewalks to further support the pedestrian connectivity through the site and the surrounding neighbourhood.

A summary of proposed streets and laneways is presented in Table 1.

TABLE 1 PROPOSED STREET AND LANEWAY SPECIFICATIONS

PARAMETER	SUNSET ROAD EXTENSION	PROPOSED MEWS	TYPICAL PRIVATE LANEWAY
Sidewalk Width (m)	2.0	1.5	1.5
On-Street Parking Width (m)	2.5 (one side)	2.5 (one side)	-
Total Pavement Width	8.0	6.0	6.0
Boulevard Width / Other utilities	5.5	3.5	-
Total Right-of-Way Width (m)	20.0	15.0	7.5

Table 2 provides a summary of the proposed redevelopment programme by parcel.

TABLE 2 PROPOSED UNIT TYPES AND QUANTITIES BY PARCEL

PARCEL 1	UNITS
1 Bedroom Apartment[1]	39
2 Bedroom Apartment[1]	50
3 Bedroom Apartment[1]	12
Subtotal	**101**

[1] Apartment units include mid-rise and grade related units.

PARCEL 2	UNITS
1 Bedroom Apartment[2]	73
2 Bedroom Apartment[2]	91
3 Bedroom Apartment[2]	18
Subtotal	**182**

[2] Apartment units include mid-rise and grade related units.

PARCEL 3	UNITS
1 Bedroom Apartment[3]	54
2 Bedroom Apartment[3]	67
3 Bedroom Apartment[3]	13
Townhouse (Traditional)	6
Subtotal	**140**

[3] Apartment units include mid-rise and grade related units.

PARCEL 5	UNITS
1 Bedroom Apartment[4]	142
2 Bedroom Apartment[4]	188
3 Bedroom Apartment[4]	36
Subtotal	**366**

[4] Apartment units include high-rise, mid-rise, and grade related units.

PARCEL 6	UNITS
1 Bedroom Apartment[5]	52
2 Bedroom Apartment[5]	64
3 Bedroom Apartment[5]	13
Townhouse (Traditional)	12
Subtotal	**141**

[5] Apartment units include mid-rise and grade related units.

PARCEL 7	UNITS
1 Bedroom Apartment[6]	77
2 Bedroom Apartment[6]	87
3 Bedroom Apartment[6]	17
Townhouse (Back to Back)	12
Subtotal	**193**

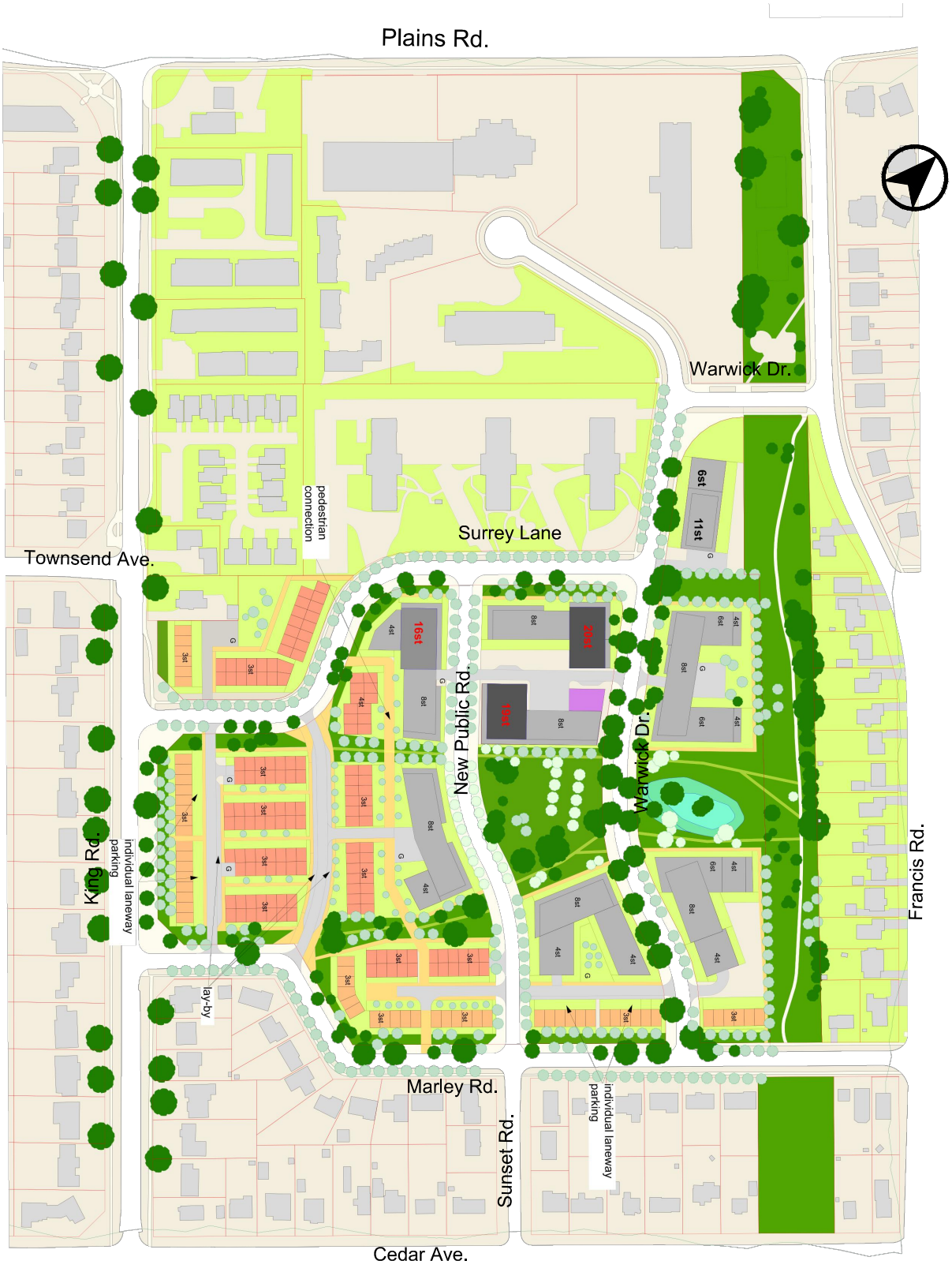
[6] Apartment units include high-rise and mid-rise units.

PARCEL 8	UNITS
1 Bedroom Apartment[7]	63
2 Bedroom Apartment[7]	78
3 Bedroom Apartment[7]	16
Townhouse (Back to Back)	26
Subtotal	**183**

[7] Apartment units include mid-rise and grade related units.

PARCEL 9	UNITS
Townhouse (Traditional)	17
Townhouse (Back to Back)	22
Subtotal	**39**
PARCEL 10	**UNITS**
Townhouse (Traditional)	16
Townhouse (Back to Back)	54
Subtotal	**70**
PARCEL 11	**UNITS**
Townhouse (Traditional)	6
Townhouse (Back to Back)	29
Subtotal	**35**
SITE TOTAL	**UNITS**
1 Bedroom Apartment[8]	500
2 Bedroom Apartment[8]	625
3 Bedroom Apartment[8]	125
Townhouse (Traditional)[8]	57
Townhouse (Back to Back)[8]	143
TOTAL	**1,450**

[8] Apartment units include high-rise, mid-rise and grade related units.



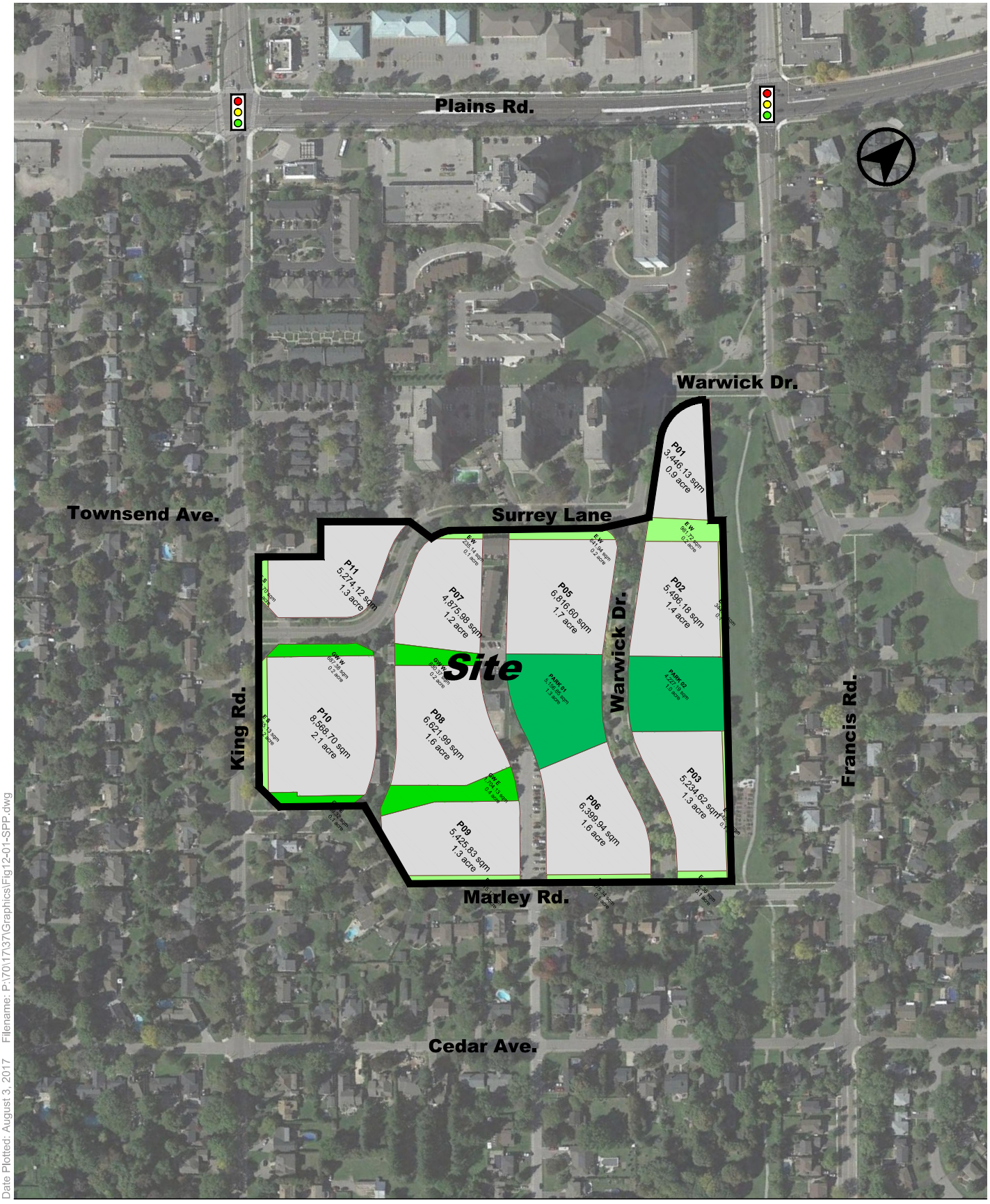
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PROPOSED SITE PLAN

BA Group

Georgian Court
7017-37 September 2017

Figure 11



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SITE PARCEL PLAN

BA Group

Georgian Court
7017-37 August 2017

Figure 12

5.0 PARKING CONSIDERATIONS

5.1 EXISTING VEHICLE PARKING DEMAND

Existing on-site parking is supplied largely by multiple surface parking lots across the Site. The existing surface parking lots are accessed via Warwick Drive, Surrey Lane and Marley Road and comprise of 14 individual lots across the site. Both regular parking spaces and tandem parking spaces (two vehicles / space) are provided in these lots.

A total of 490 spaces are provided on-site, including 410 occupant spaces, 30 tandem spaces (60 effective parking spots), and 20 visitor spaces.

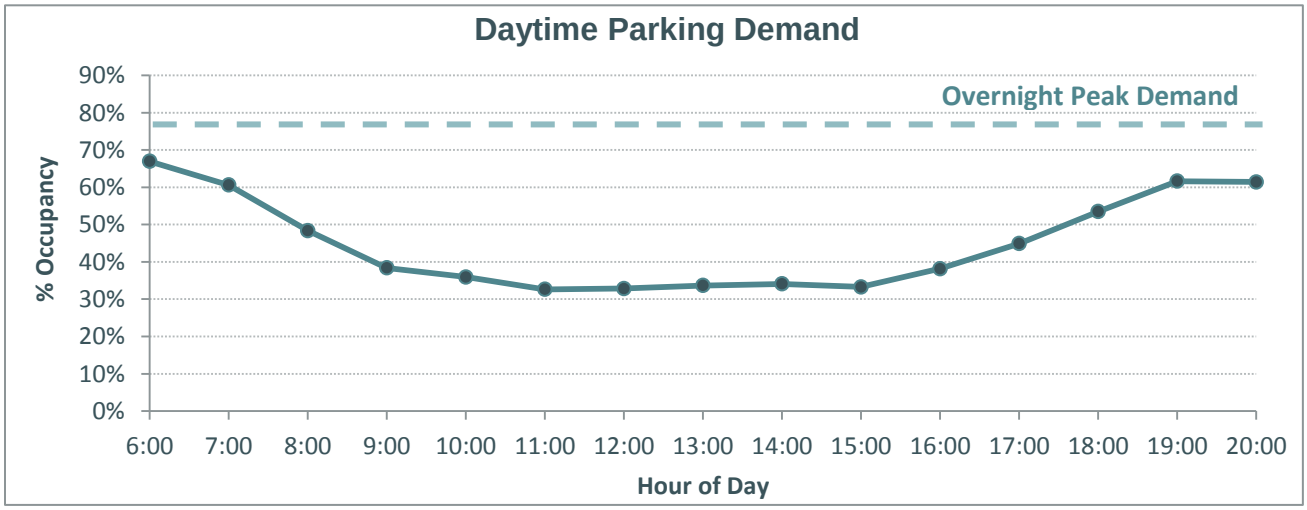
Table 3 details the existing parking demand, based on a parking surveys conducted on Tuesday, November 29, 2016. Over the span of 14 hours (6:00 a.m. – 8:00 p.m.) the typical parking demand of both residents and visitors of the Site was observed at approximately 67% occupancy.

An additional resident demand count was conducted on Thursday, December 1, 2016 to capture the peak resident parking demand between 3:00 a.m. and 4:00 a.m. which was observed at approximately 77% occupancy.

TABLE 3 EXISTING PARKING SUPPLY AND DEMAND

USE	EXISTING UNITS	EXISTING PARKING SUPPLY	PARKING DEMAND (% Occupancy)
Townhouse Dwelling (Block Homes, Maisonettes, Townhouses)	280	470 residential spaces (includes 60 tandem spaces) + 20 visitor spaces	Daytime Peak: 328 (67%) Overnight: 377 (77%)
TOTAL	**280**	**490**	**328-377**

Parking demand over the span of the 14-hour study is plotted below, and compared with the overnight peak occupancy. During both counts, demand did not exceed 77% of the existing supply. Existing vehicle parking supply on the Site adequately provides for peak periods of residential parking demand.



5.2 CITY OF BURLINGTON ZONING BY-LAW 2020 VEHICLE PARKING REQUIREMENTS

The City of Burlington Zoning By-law 2020 was enacted on June 21, 1999, after the construction of the existing Georgian Court Development. Existing parking rates at the Site are therefore legally non-conforming to the rates prescribed by Zoning By-law 2020.

To examine the parking requirements of the proposed development, the Site will be subject to Part 1 of the City of Burlington Zoning By-law 2020 Subsection 2.25. Existing vehicle parking will also be examined to understand existing vehicle parking conditions. For the purposes of this analysis, the 34 back-to-back townhouses and 88 maisonettes are considered "Townhouse Dwelling" uses under the Zoning By-law. Relevant parking standards for the Site are cited in Table 4.

Based on the current development profile of the Site, the number of required parking spaces and the existing parking spaces supplied are enumerated and compared in Table 5.

TABLE 4 CITY OF BURLINGTON ZONING BY-LAW 2020: RESIDENTIAL PARKING STANDARDS (EXCERPT)

USE	PARKING STANDARD
Townhouse Dwelling Fourplex Dwelling Cluster Homes	2 occupant spaces per unit, 0.50 visitor spaces per unit
Stacked Townhouse Dwellings Back to Back Townhouse Dwellings	Without exclusive use garage: 1.25 occupant spaces per one bedroom unit 1.50 occupant spaces per two bedroom unit 1.75 occupant spaces per three or more bedroom 0.35 visitor spaces per unit With exclusive use garage: 2.0 occupant spaces per unit, 0.35 visitor spaces per unit
Apartment Building	1.25 occupant spaces per one bedroom unit 1.50 occupant spaces per two bedroom unit 1.75 occupant spaces per three or more bedroom 0.35 visitor spaces per unit

TABLE 5 VEHICLE PARKING FOR EXISTING SITE

USE	EXISTING UNITS	BY-LAW RATE	PARKING REQUIRED*	EXISTING PARKING SUPPLY
Townhouse Dwelling (Back-to-back, Maisonettes, Townhouses)	280	2 occupant spaces/unit + 0.5 visitor spaces/unit	560 + 140	470 residential spaces (includes 60 tandem spaces) + 20 visitor spaces
TOTAL	**280**	**-**	**700**	**490**

Notes:
1. Parking requirements are prescribed by Zoning By-law 2020, but do not apply since existing development is legally non-conforming.

It should be noted that the existing Site provides less parking than the standard otherwise imposed by the City of Burlington Zoning By-law 2020: with 280 townhouse dwellings, the existing Site would require 700 parking spaces (560 resident, 140 visitor). Formally, the existing parking supply provides 460 spaces (66% of the requirement). Since tandem spaces can facilitate two vehicles, the effective parking supply (including tandem) is 490 spaces (70% of the requirement). Despite the Zoning By-law stipulating a higher supply, preliminary parking studies find that parking demand is adequately facilitated by the supply, suggesting that the minimum Zoning By-law 2020 parking requirements exceed the existing demand on Site.

The locations and existing supply of parking spaces for residents and visitors are shown in Figure 3.

5.3 REQUIRED VEHICLE PARKING

Vehicle parking requirements depend on the unit mix of the proposed development. Subject to the City of Burlington Zoning By-law 2020 Part 1, Subsection 2.25, and considering the proposed development programme, the future vehicle parking requirements for the development are as follows:

TABLE 6 VEHICLE PARKING REQUIREMENTS FOR PROPOSED DEVELOPMENT

APARTMENT TYPE	UNITS	MINIMUM VEHICLE PARKING RATE (per unit)	MINIMUM SPACES REQUIRED
1 Bedroom	500	1.25	625
2 Bedroom	625	1.5	938
3 Bedroom (Includes 143 Back-to-Back Townhouse Units)	268	1.75	469
Visitors	-	0.35	488
Subtotal	*1,393*	-	*2,520*
TOWNHOUSE TYPE	**UNITS**	**MINIMUM VEHICLE PARKING RATE (per unit)**	**MINIMUM SPACES REQUIRED**
Traditional (3 bdrm)	57	2	114
Visitor	-	0.5	29
Subtotal	*57*	-	*143*
TOTAL	**1,450**	**-**	**2,663**

Minimum parking rates for traditional townhouse dwellings are different than those for back to back Townhouses (3 bedroom) and Apartments (includes grade-related units), as per the City of Burlington Zoning By-law 2020. Units were therefore separated based on type of residence in Table 6.

The minimum parking requirement for the whole development would be in the order of 2,663 spaces, including 2,146 tenant spaces and 517 visitor spaces.

5.4 PROPOSED PARKING STRATEGY

The development proposes to adopt the vehicle parking requirements as prescribed by the City of Burlington Zoning By-law. Parking requirements will be met primarily through underground parking structures varying from 1-2 levels in depth within selected parcels on Site.

Underground garages will be situated under developable lands, excluding profiles underneath proposed surface green spaces. Access to garages will be facilitated via new parcel-specific driveways and are conceptually illustrated in the proposed Master Plan (Figure 11). These will be confirmed as part of future Site Plan Applications.

A globally-applied, shared parking model will be adopted for the Site (Site will be treated as one for Zoning parking purposes). Where geometric constraints exist within a given Site parcel, parking may be provided to residents and visitors through nearby parking structures that are not necessarily on the same parcel of land. Central, aggregated lots will be shared with all residents in the development at a rate consistent with the Zoning By-law parking requirements for the Site as a whole.

Additional surface parking will be provided at-grade through individual laneway parking, on-street parking, and lay-by parking for visitors and pick-up drop-off activity. The distribution of these parking spaces will be detailed during the Site Plan Application process.

6.0 BICYCLE PARKING

6.1 REQUIRED BICYCLE PARKING

Bicycle parking for residential developments have no required minimum under the City of Burlington Zoning By-law 2020. The existing bicycle parking demands and supply should be further studied for the potential future implementation of bicycle parking facilities.

6.2 PROPOSED BICYCLE PARKING STRATEGY

Given the present and future cycling network context, established nearby amenities, and proposed increase in residential units, providing on-site bicycle parking spaces is recommended to accommodate future cycling demand. The proposed parking strategy aims to provide bicycle parking spaces beyond the minimum standard set by the Zoning By-law.

The proposed bicycle parking strategy is a component of the greater Transportation Demand Management Strategy proposed for the Site. Potential bicycle parking facilities will be considered based on the type of facility, location, and degree of access afforded to residents. The location, number, and configuration of bicycle parking facilities will be confirmed through the Site Plan Application process.

7.0 LOADING CONSIDERATIONS

7.1 REQUIRED LOADING SPACES

Loading spaces are not required for residential buildings less than 4 storeys high, as per the City of Burlington Zoning By-law 2020 section 2.25.3. Buildings standing 4 storeys or higher must provide at least one loading space for every principal building.

High-rise apartments will be built to a proposed 16 storeys to 20 storeys. Mid-rise apartments will be built to a proposed height within 4 to 11 storeys. The proposed building height for traditional and back-to-back townhouse units is 3 storeys.

The number of buildings and respective loading space requirements are detailed in Table 7.

TABLE 7 LOADING SPACE REQUIREMENTS FOR PROPOSED DEVELOPMENT

BUILDING TYPE	QUANTITY (BUILDINGS)	# OF STOREYS	LOADING SPACES REQUIRED
High-Rise	3	16-20	3
Mid-Rise (incl. grade-related units)	5	4-11	5
Townhouses	20 (blocks)	3	0
TOTAL	**28**	**-**	**8**

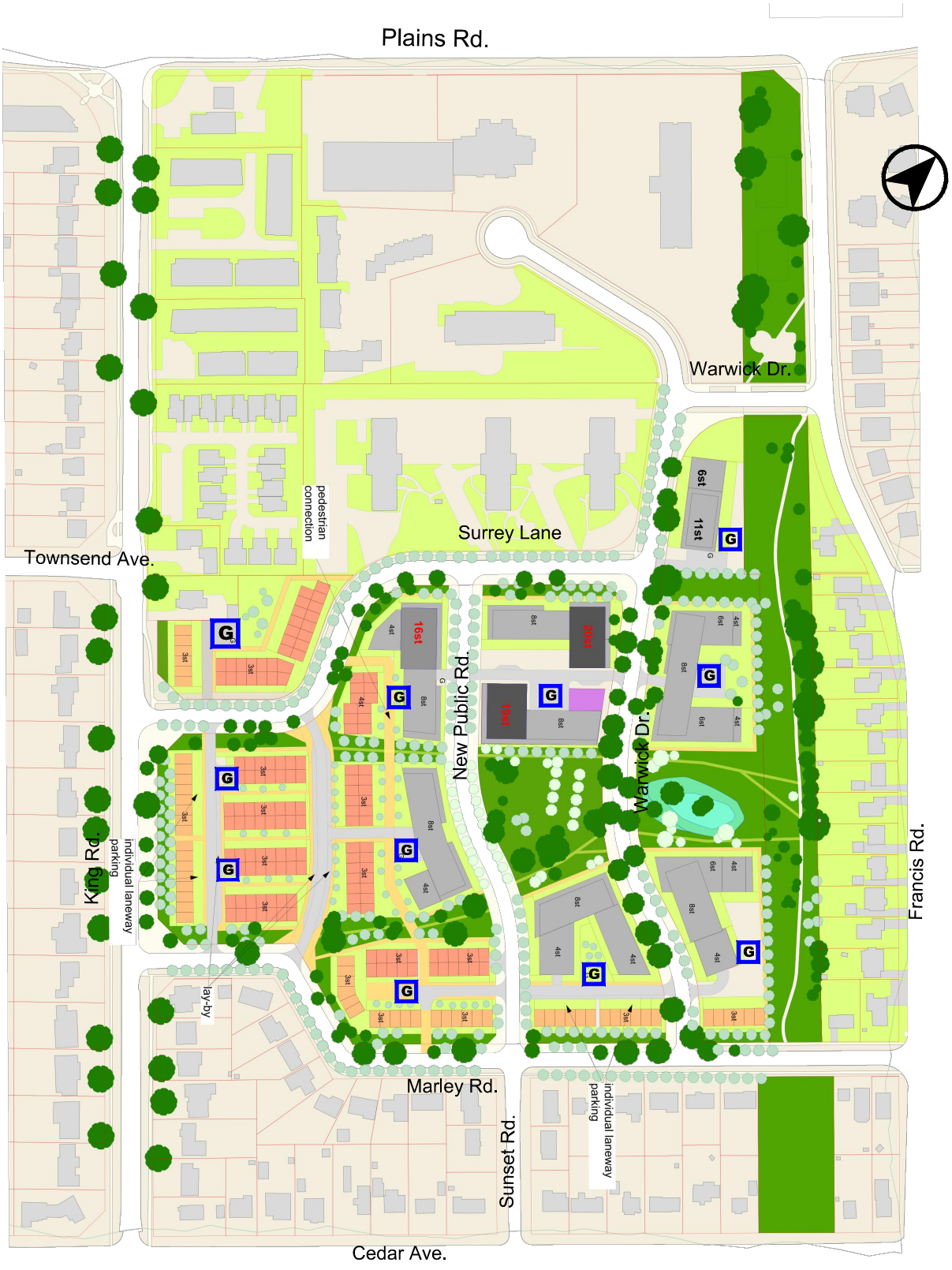
The total number of loading spaces required for the Site is eight (8): three (3) for the proposed high-rise buildings, and five (5) for the proposed mid-rise buildings.

7.2 PROPOSED LOADING SPACE STRATEGY

The development proposes to meet the City of Burlington Zoning By-law 2020 loading requirements. The allocation of the loading facilities, in some instances, will adopt the same globally-applied model as the Site's vehicle parking, i.e. centralized loading/refuse collection areas to be shared by nearby units.

The proposed traditional townhouse units along the east and south perimeter of the Site are proposed to continue operate as they do today, with on-street collection.

An annotated proposed loading strategy plan is illustrated in Figure 13. The figure labels areas for refuse collection as "G". These areas will be located within each of the Georgian Court Redevelopment's 10 parcels, with two along the private laneway in Parcel 10. Note that the size and configuration of the loading spaces will be confirmed through the Site Plan process for each block.



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PROPOSED LOADING STRATEGY PLAN

BA Group

Georgian Court
7017-37 September 2017

Figure 13

8.0 VEHICLE TRAFFIC CONSIDERATIONS

8.1 STUDY AREA

The study area was established based on consultation with staff at the City of Burlington through an agreed upon Terms of Reference circulated in January 2017 and is generally defined in defined by Plains Road East/Fairview Street to the north, North Shore Boulevard to the south, King Road to the west, and the Queen Elizabeth Way to the east.

Relevant intersections for the traffic analysis include the broader area, listed in Table 15.

8.2 ANALYSIS PERIODS

Traffic operations analyses were conducted for the existing, future background, and future total conditions, where: *existing* conditions identify current travel characteristics, *future background* conditions apply a general growth factor to reveal anticipated traffic conditions from background developments, and *future total* conditions contemplate traffic conditions considering the proposed redevelopment of the Site.

8.3 EXISTING TRAFFIC VOLUMES

Existing conditions were established to provide baseline network conditions within the study area. Turning movement counts in the study area were undertaken by Spectrum Traffic Data Inc. on behalf of BA Group to establish existing area volumes in January 2017.

Existing area traffic volumes during the weekday morning and afternoon peak hours for intersections within the study area are illustrated in Figure 14.

Existing traffic volume data sheets are included in **Appendix A.**

8.4 FUTURE BACKGROUND TRAFFIC VOLUMES

8.4.1 Generalized Corridor Growth

Through consultation with the City of Burlington, future background conditions were enumerated based on a generalized traffic growth rate of 2% per annum. The established growth rate was adopted for a 12-year horizon based on the anticipated full build-out site and applied to existing through movements at the key intersection of Plains Road / King Road and carried throughout the network.

Future background traffic volumes are illustrated in Figure 17.

8.4.2 Site Specific Traffic Allowances

In consultation with City of Burlington staff, no allowance for specific background developments near the Site are required for this study. Therefore, no allocation has been made for increased traffic arising from other background developments, beyond those captured by the generalized corridor growth rate.

8.5 SITE TRAFFIC GENERATION

Site traffic generation rates for the proposed uses are based on rates outlined in the Institute of Transportation Engineers (ITE) Trip Generation Manual. Several land use codes are relevant to the Site's uses, including high-rise apartments (Land Use Code 222), mid-rise apartments (Land Use Code 223), and residential condominiums/townhouses (Land Use Code 230). Each land use code provides a fitted curve equation from which the trip rates were derived based on the unit mix of the Site.

Table 11 reveals, for each proposed parcel, the directional distribution (entering or exiting) of Site-generated traffic for the morning peak hour within the 7:00 a.m. and 9:00 a.m. period, and the afternoon peak hour within the 4:00 p.m. and 6:00 p.m. period. These peak hours are based on the times during which traffic along streets adjacent to the Site are expected to be at their highest.

High-Rise Apartment Trip Generation

Site traffic generation rates from the ITE Trip Generation Manual Land Use Code 222 were applied to the 162 high-rise units proposed for the Site. Adopted high-rise trip rates during both peak hours are as follows:

TABLE 8 HIGH-RISE APARTMENT TRIP GENERATION RATES

UNIT TYPE	# UNITS	AM Peak Hour			PM Peak Hour		
		In	Out	2-Way	In	Out	2-Way
High-Rise (ITE Land Use 222)	162	0.06	0.22	0.28	0.25	0.15	0.40

Mid-Rise Apartment Trip Generation

Site traffic generation rates from the ITE Trip Generation Manual Land Use Code 223 were applied to the 951 mid-rise units proposed for the Site. Adopted mid-rise trip rates during both peak hours are as follows:

TABLE 9 MID-RISE APARTMENT TRIP GENERATION RATES

UNIT TYPE	# UNITS	AM Peak Hour			PM Peak Hour		
		In	Out	2-Way	In	Out	2-Way
Mid-Rise (ITE Land Use 233)	951	0.12	0.27	0.39	0.27	0.19	0.47

Residential Townhouse Trip Generation

Site traffic generation rates from the ITE Trip Generation Manual Land Use Code 230 were applied to the 57 traditional townhouses, 140 grade-related units, and 143 back to back units proposed for the Site. For the purposes of traffic generation, these unit types may be classified as "Townhouse" units under the ITE Trip Generation Manual. Adopted townhouse trip rates during both peak hours are as follows:

TABLE 10 RESIDENTIAL TOWNHOUSE TRIP GENERATION RATES

UNIT TYPE	# UNITS	AM Peak Hour			PM Peak Hour		
		In	Out	2-Way	In	Out	2-Way
Townhouses (ITE Land Use 230)	337	0.07	0.34	0.42	0.33	0.16	0.49

TABLE 11 FUTURE SITE TRIP GENERATION BY PARCEL

PARCEL 1 UNITS	# UNITS	AM Peak Hour			PM Peak Hour		
		In	Out	2-Way	In	Out	2-Way
Mid-Rise (ITE Land Use 233)	91	10	25	35	25	20	45
Townhouses (ITE Land Use 230)	10	0	5	5	5	0	5
Parcel Total	101	10	30	40	30	20	50
PARCEL 2 UNITS	**# UNITS**	**AM Peak Hour**			**PM Peak Hour**		
		In	**Out**	**2-Way**	**In**	**Out**	**2-Way**
Mid-Rise (ITE Land Use 233)	155	20	45	65	40	30	70
Townhouses (ITE Land Use 230)	27	0	10	10	5	5	10
Parcel Total	182	20	55	75	45	35	80
PARCEL 3 UNITS	**# UNITS**	**AM Peak Hour**			**PM Peak Hour**		
		In	**Out**	**2-Way**	**In**	**Out**	**2-Way**
Mid-Rise (ITE Land Use 233)	112	15	30	45	30	20	50
Townhouses (ITE Land Use 230)	28	0	10	10	10	5	15
Parcel Total	140	15	40	55	40	25	65
PARCEL 5 UNITS	**# UNITS**	**AM Peak Hour**			**PM Peak Hour**		
		In	**Out**	**2-Way**	**In**	**Out**	**2-Way**
High-Rise (ITE Land Use 222)	114	5	25	30	30	20	50
Mid-Rise (ITE Land Use 233)	238	30	65	95	65	45	110
Townhouses (ITE Land Use 230)	14	0	5	5	5	0	5
Parcel Total	366	35	95	130	100	65	165
PARCEL 6 UNITS	**# UNITS**	**AM Peak Hour**			**PM Peak Hour**		
		In	**Out**	**2-Way**	**In**	**Out**	**2-Way**
Mid-Rise (ITE Land Use 233)	106	15	30	45	30	20	50
Townhouses (ITE Land Use 230)	35	5	10	15	10	5	15
Parcel Total	141	20	40	60	40	25	65
PARCEL 7 UNITS	**# UNITS**	**AM Peak Hour**			**PM Peak Hour**		
		In	**Out**	**2-Way**	**In**	**Out**	**2-Way**
High-Rise (ITE Land Use 222)	48	5	10	15	10	5	15
Mid-Rise (ITE Land Use 233)	133	15	35	50	35	25	60
Townhouses (ITE Land Use 230)	12	0	5	5	5	5	10
Parcel Total	193	20	50	70	50	35	85

PARCEL 8 UNITS	# UNITS	AM Peak Hour			PM Peak Hour		
		In	Out	2-Way	In	Out	2-Way
Mid-Rise (ITE Land Use 233)	116	15	30	45	30	25	55
Townhouses (ITE Land Use 230)	67	5	20	25	20	15	35
Parcel Total	183	20	50	70	50	40	90
PARCEL 9 UNITS	**# UNITS**	**AM Peak Hour**			**PM Peak Hour**		
		In	**Out**	**2-Way**	**In**	**Out**	**2-Way**
Townhouses (ITE Land Use 230)	39	5	10	15	15	5	20
Parcel Total	39	5	10	15	15	5	20
PARCEL 10 UNITS	**# UNITS**	**AM Peak Hour**			**PM Peak Hour**		
		In	**Out**	**2-Way**	**In**	**Out**	**2-Way**
Townhouses (ITE Land Use 230)	70	5	25	30	25	10	35
Parcel Total	70	5	25	30	25	10	35
PARCEL 11 UNITS	**# UNITS**	**AM Peak Hour**			**PM Peak Hour**		
		In	**Out**	**2-Way**	**In**	**Out**	**2-Way**
Townhouses (ITE Land Use 230)	35	5	10	15	10	5	15
Parcel Total	35	5	10	15	10	5	15
WHOLE SITE	**# UNITS**	**AM Peak Hour**			**PM Peak Hour**		
		In	**Out**	**2-Way**	**In**	**Out**	**2-Way**
High-Rise (ITE Land Use 222)	162	10	35	45	40	25	65
Mid-Rise (ITE Land Use 233)	951	120	260	380	255	185	440
Townhouses (ITE Land Use 230)	337	25	110	135	110	55	165
Site Total	**1450**	155	405	**560**	405	265	**670**

Notes:
1. Trips rounded to the nearest 5 vehicles.

The proposed redevelopment programme as contemplated as part of the proposed Master Plan for the Site would generate in the order of 560 and 670 two-way trips during the morning and afternoon peak hour periods.

It should be noted that these trips do not include existing trips generated by the Site today, which have been established in following sections (Section 8.6).

8.6 EXISTING SITE TRAFFIC ADJUSTMENTS

Existing Site traffic volumes have been established in order to better understand the net-new trip generation characteristics of the Site given the proposed redevelopment program. Existing Site related trips were forecast based on the residential townhouse trip generation rates listed in Table 10 and are summarized below.

TABLE 12 EXISTING SITE RELATED TRAFFIC VOLUMES

UNIT TYPE / NUMER OF UNITS	AM Peak Hour			PM Peak Hour		
	In	Out	2-Way	In	Out	2-Way
Townhouses (ITE Land Use 230)	0.07	0.34	0.42	0.33	0.16	0.49
Existing Residential Uses (280 units)	20	95	**115**	90	45	**135**

Notes:
1. Trips rounded to the nearest 5 vehicles.

Based on the foregoing, the existing site generates in the order of 115 and 135 two-way trips during the morning and afternoon peak hour periods.

8.7 NET-NEW SITE RELATED TRAFFIC VOLUMES

New-new site related traffic volumes forecast as part of the proposed redevelopment of the site as contemplated by the proposed Master Plan are summarized in Table 13.

TABLE 13 NET-NEW SITE RELATED TRAFFIC VOLUMES

UNIT TYPE / NUMER OF UNITS	AM Peak Hour			PM Peak Hour		
	In	Out	2-Way	In	Out	2-Way
Existing Residential Uses (280 units)	20	95	**115**	90	45	**135**
Proposed Redevelopment Plan (1,450 units)	155	405	**560**	405	265	**670**
Net-New Site Related Traffic Volumes	+135	+310	**+445**	+315	+220	**+535**

Notes:
1. Trips rounded to the nearest 5 vehicles.

Based on the foregoing, the site is anticipated to generate in the order of 445 and 535 net-new two-way trips during the morning and afternoon peak hour periods.

8.8 TRAFFIC DISTRIBUTION

Site traffic distribution patterns for the proposed residential uses were based on a review of data available through the 2011 Transportation Tomorrow Survey (TTS) and existing area travel patterns. The data were filtered to include automobile trips in the morning and afternoon peak periods to account for residential travel patterns.

Table 14 summarizes the adopted residential site traffic distribution.

TABLE 14 RESIDENTIAL SITE TRAFFIC DISTRIBUTION

ROUTE	DIRECTION	INBOUND	OUTBOUND
Queen Elizabeth Way	North	20%	10%
Queen Elizabeth Way	South	10%	10%
Highway 407	North	5%	5%
King Road	North	15%	15%
North Shore Boulevard East	East	10%	15%
North Shore Boulevard East	West	5%	5%
Plains Road East[2]	East	30%	35%
Plains Road East	West	5%	5%

Notes:
1. TTS Zones 4053, 4054, and 4055 represent the Site area.
2. Includes indirect access to the QEW via Brant Street.

8.9 FUTURE TOTAL TRAFFIC VOLUMES

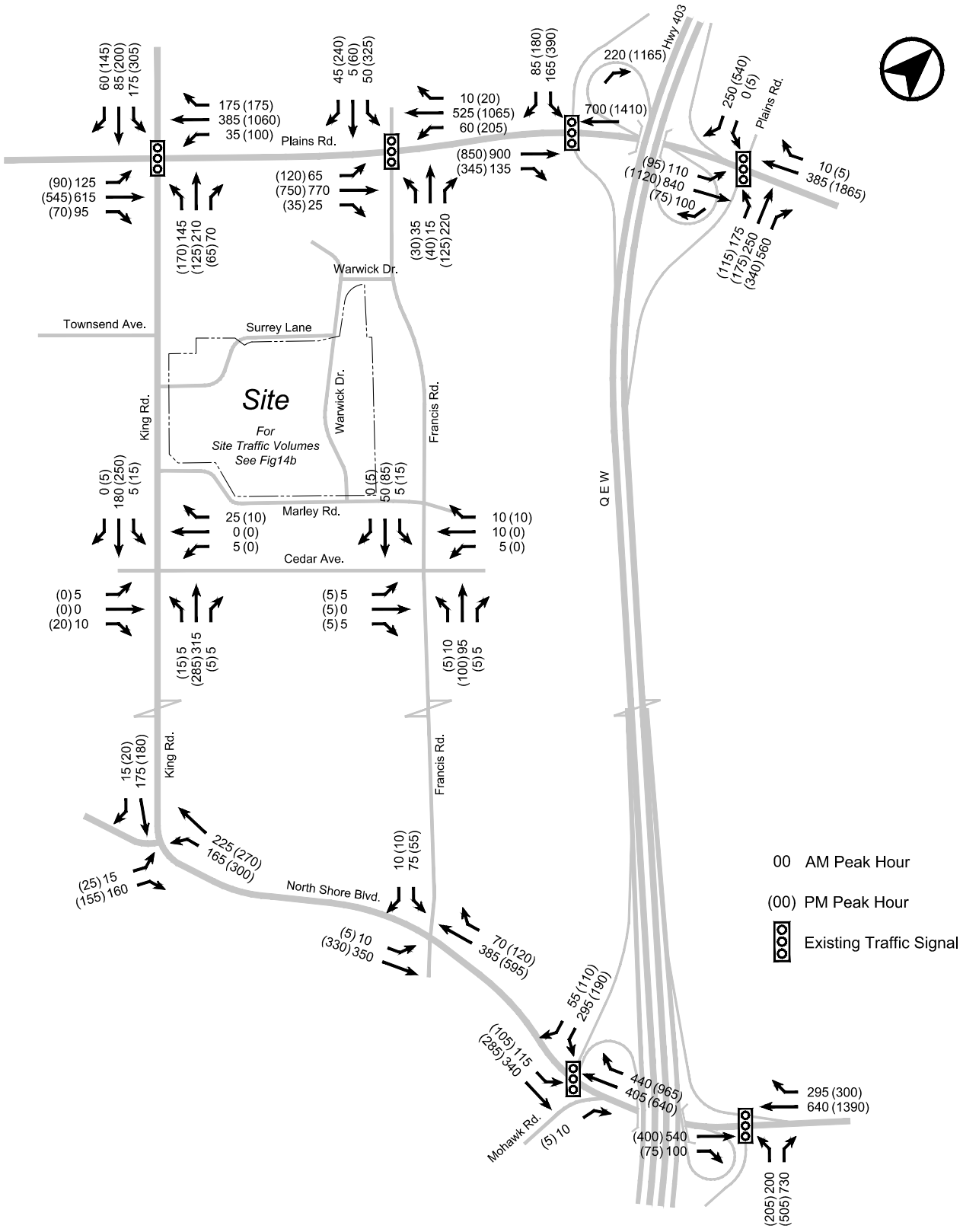
Future total traffic volumes are calculated by adding Site-incurred traffic to future background traffic and subtracting existing traffic volumes. The future total volumes will reflect expected activity resulting from the proposed Georgian Court development.

Future total traffic volumes in the area road network are illustrated in Figure 19.

TABLE 15 TRAFFIC VOLUME COUNT METADATA

INTERSECTION	CONTROL TYPE	SIGNAL TIMING PLAN DATE	DATE OF COUNT
Fairview Street & Plains Rd E/NB QEW Ramps	Signalized	Dec. 19, 2016	Wed. January 11, 2017
Fairview Street/Plains Rd E & SB QEW Ramps	Signalized	Dec. 19, 2016	Wed. January 11, 2017
Plains Road East & Francis Road	Signalized	Dec. 20, 2016	Wed. January 11, 2017
Plains Road East & King Road	Signalized	Dec. 20, 2016	Wed. January 11, 2017
North Shore Boulevard East & QEW NB Ramps	Signalized	Mar. 3, 2015	Wed. January 11, 2017
North Shore Boulevard East & QEW SB Ramps	Signalized	Apr. 28, 2016	Wed. January 11, 2017
King Road & Townsend Avenue	Unsignalized	N/A	Wed. January 11, 2017
King Road & Surrey Lane	Unsignalized	N/A	Wed. January 11, 2017
King Road & Marley Road	Unsignalized	N/A	Wed. January 11, 2017
King Road & Cedar Avenue	Unsignalized	N/A	Wed. January 11, 2017
King Road & North Shore Boulevard East	Unsignalized	N/A	Wed. January 11, 2017
Francis Road & North Shore Boulevard East	Unsignalized	N/A	Wed. January 11, 2017
Francis Road & Warwick Drive	Unsignalized	N/A	Wed. January 11, 2017
Warwick Court & Warwick Drive	Unsignalized	N/A	Wed. January 11, 2017
Warwick Drive & Surrey Lane	Unsignalized	N/A	Wed. January 11, 2017
Warwick Drive & Marley Road	Unsignalized	N/A	Wed. January 11, 2017
Marley Road & Sunset Road	Unsignalized	N/A	Wed. January 11, 2017
Francis Road & Cedar Avenue	Unsignalized	N/A	Wed. January 11, 2017

Notes:
1. Signal timing plans gathered from the City of Burlington
2. Turning movement counts were conducted by Spectrum Traffic Data Inc. on behalf of BA Group



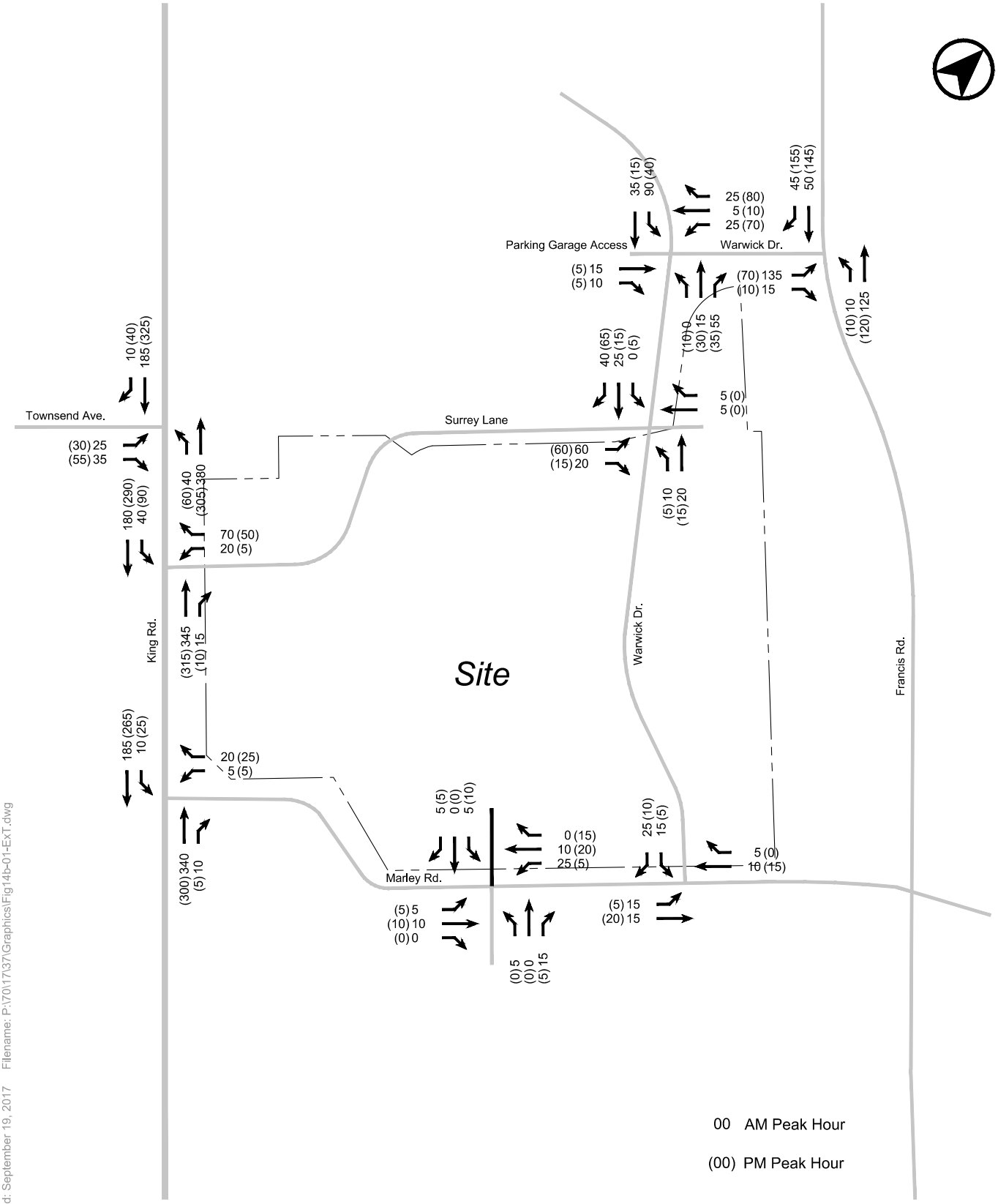
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EXISTING AREA TRAFFIC VOLUMES

BA Group

Georgian Court
7017-37 September 2017

Figure 14a



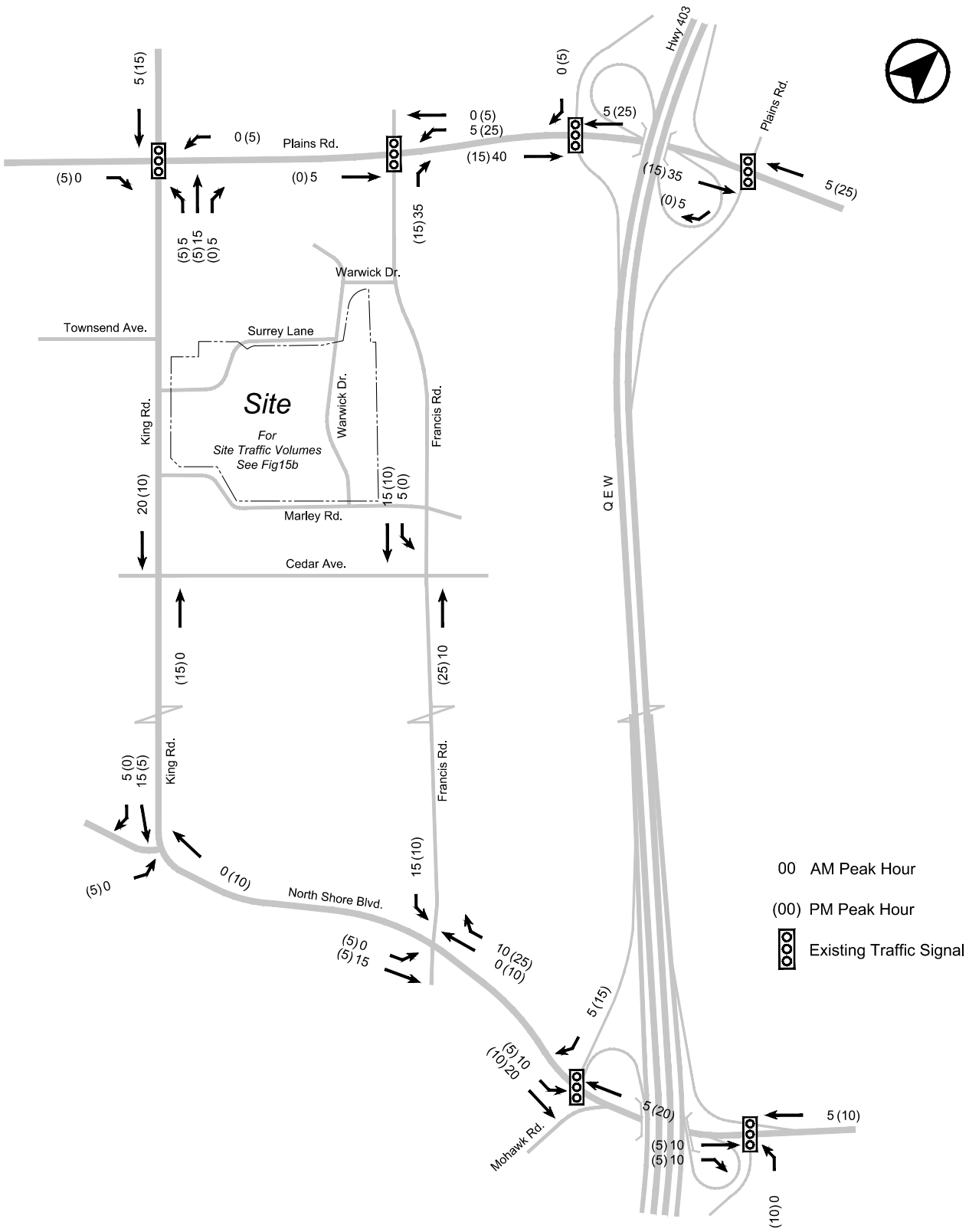
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EXISTING AREA TRAFFIC VOLUMES

BA Group

Georgian Court
7017-37 September 2017

Figure 14b



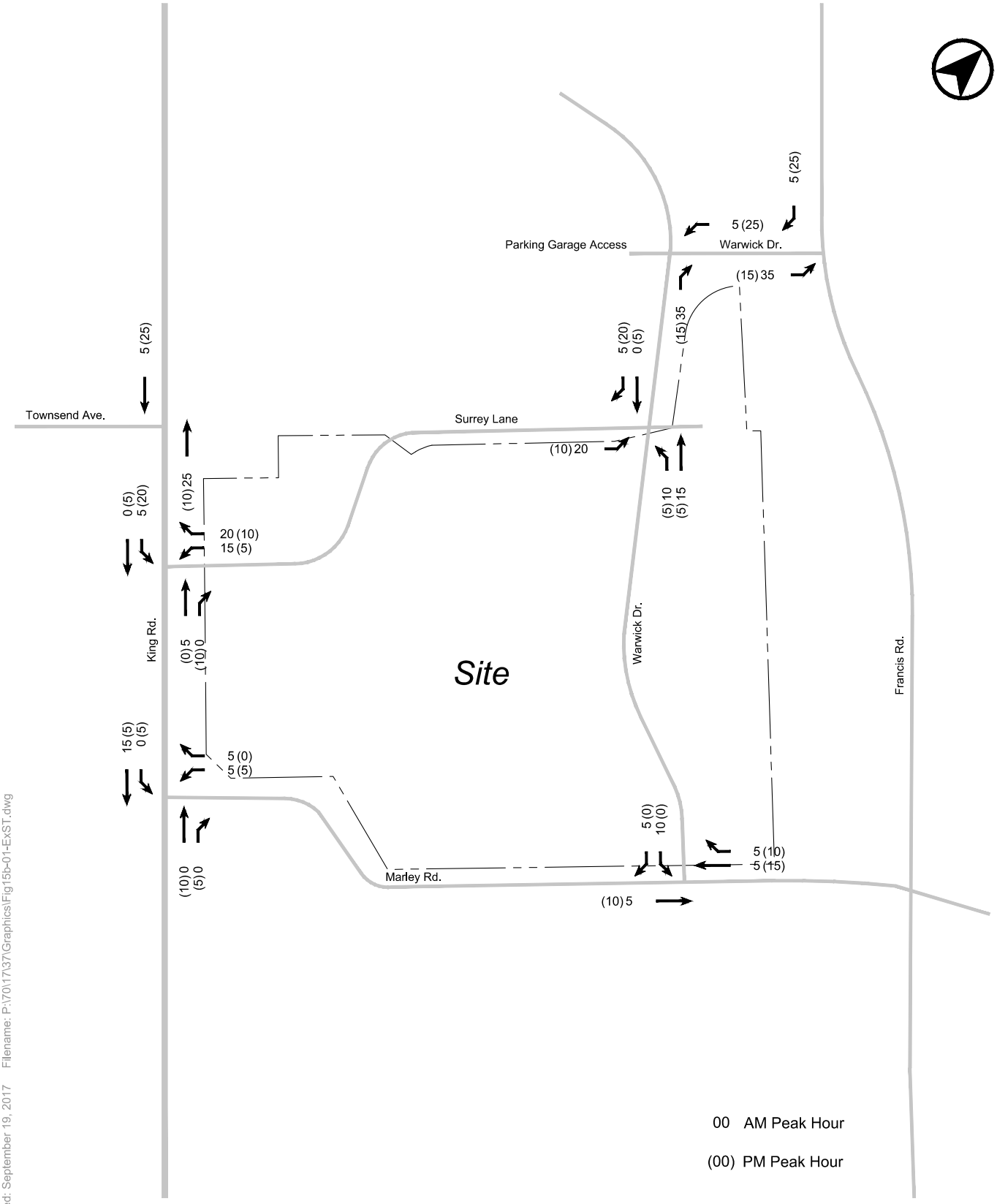
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EXISTING SITE TRAFFIC VOLUMES

BA Group

Georgian Court
7017-37 September 2017

Figure 15a



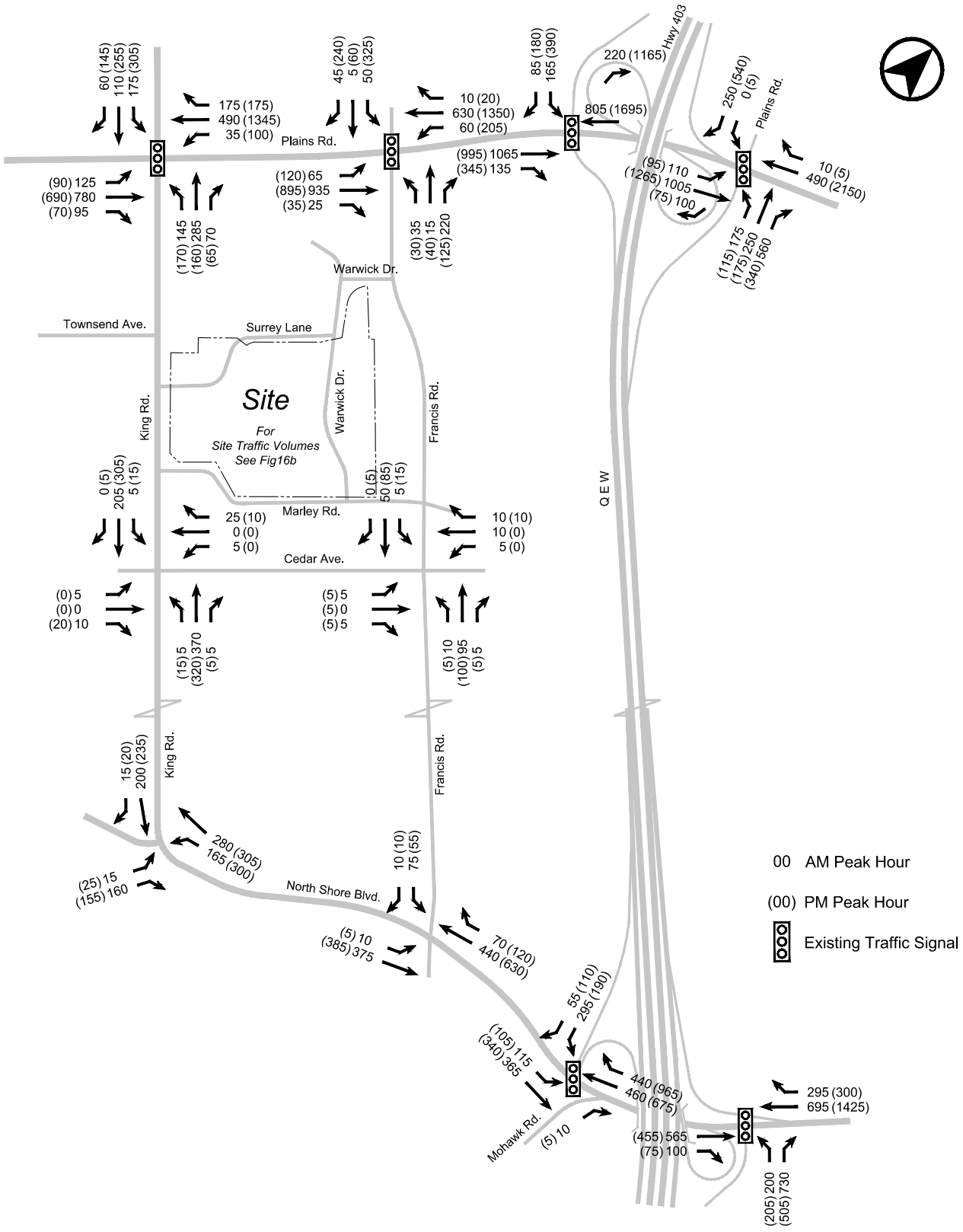
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EXISTING SITE TRAFFIC VOLUMES

BA Group

Georgian Court
7017-37 September 2017

Figure 15b



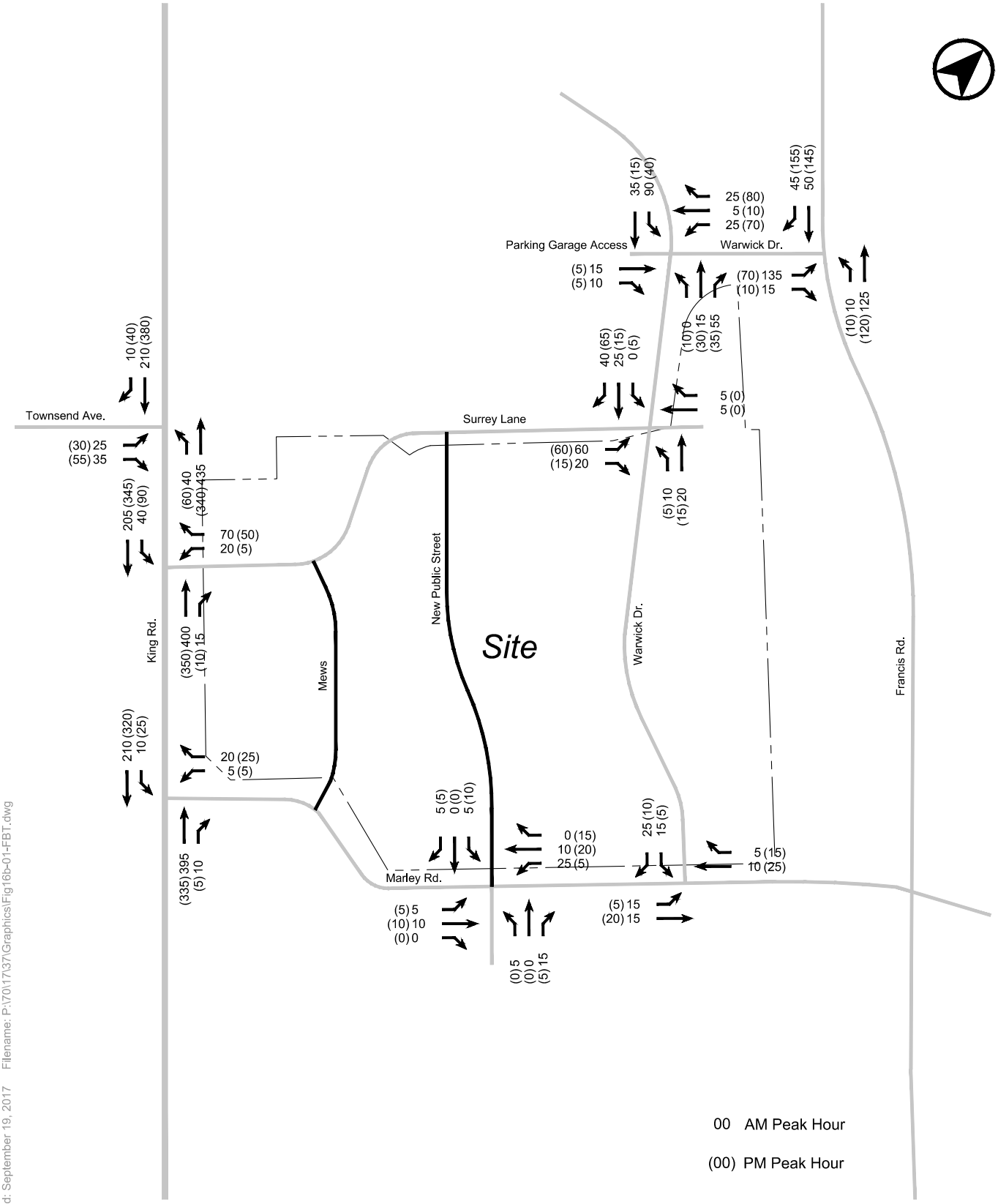
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FUTURE BACKGROUND TRAFFIC VOLUMES

BA Group

Georgian Court
7017-37 September 2017

Figure 16a



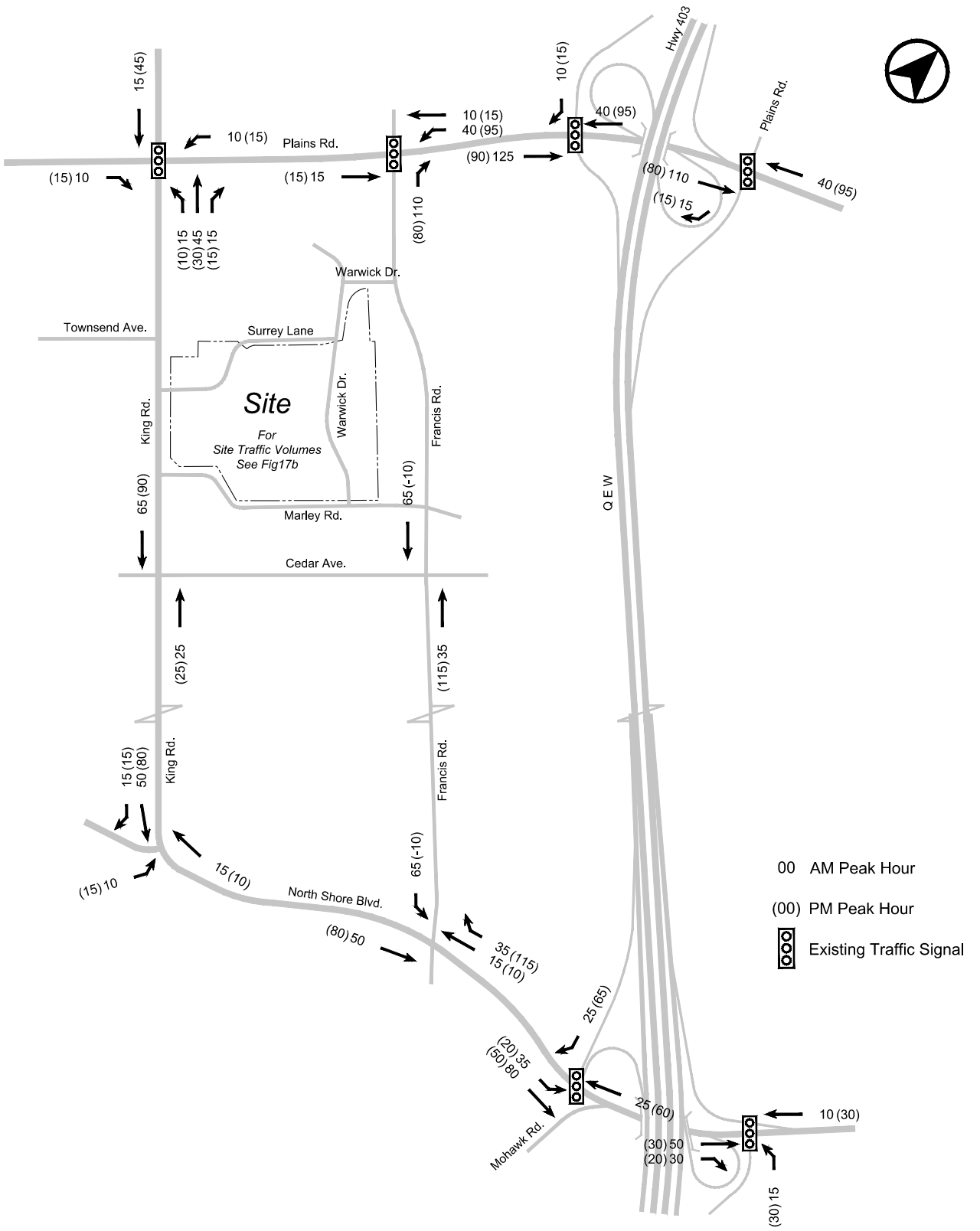
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FUTURE BACKGROUND TRAFFIC VOLUMES

BA Group

Georgian Court
7017-37 September 2017

Figure 16b



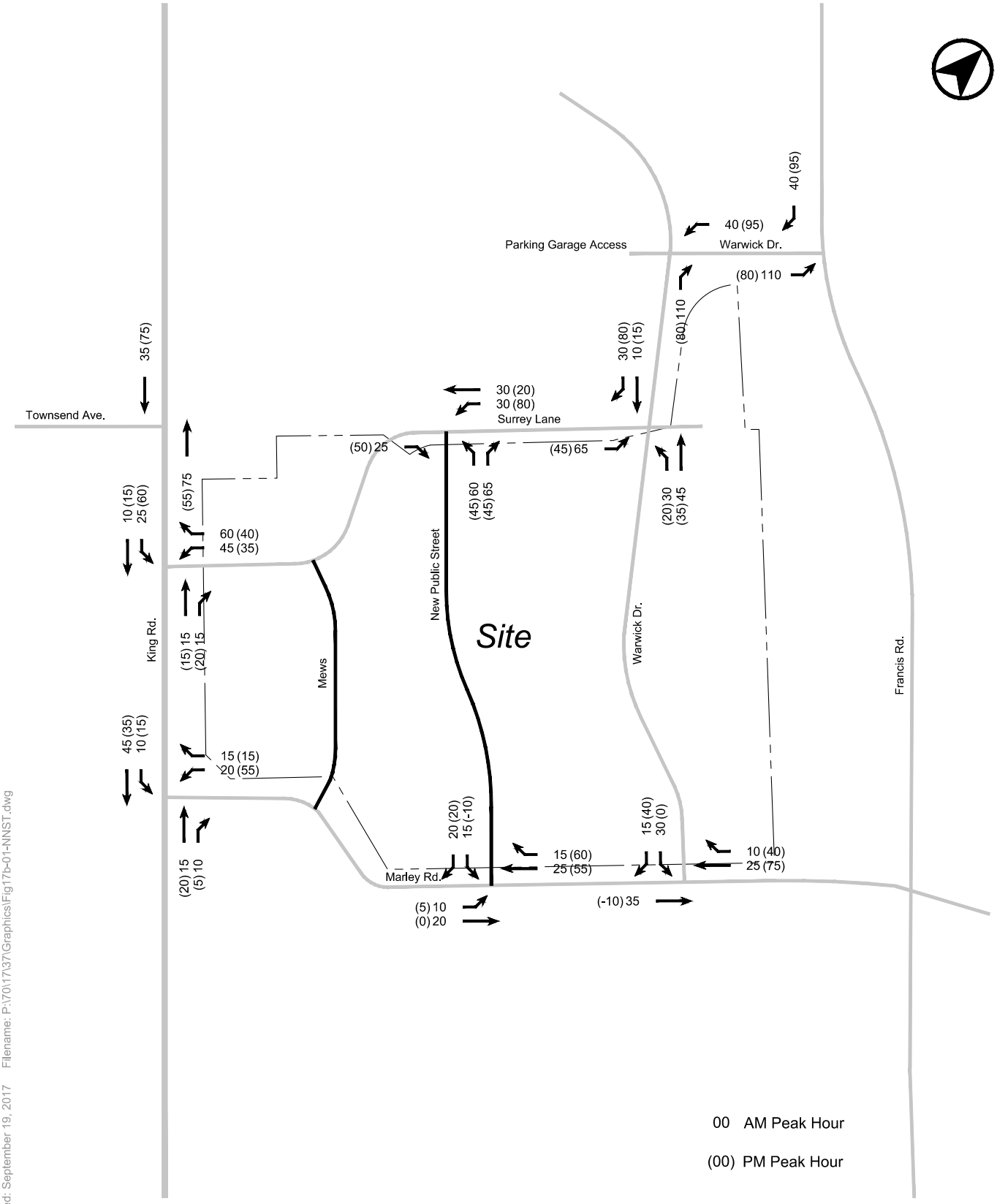
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NET NEW SITE TRAFFIC VOLUMES

BA Group

Georgian Court
7017-37 September 2017

Figure 17a



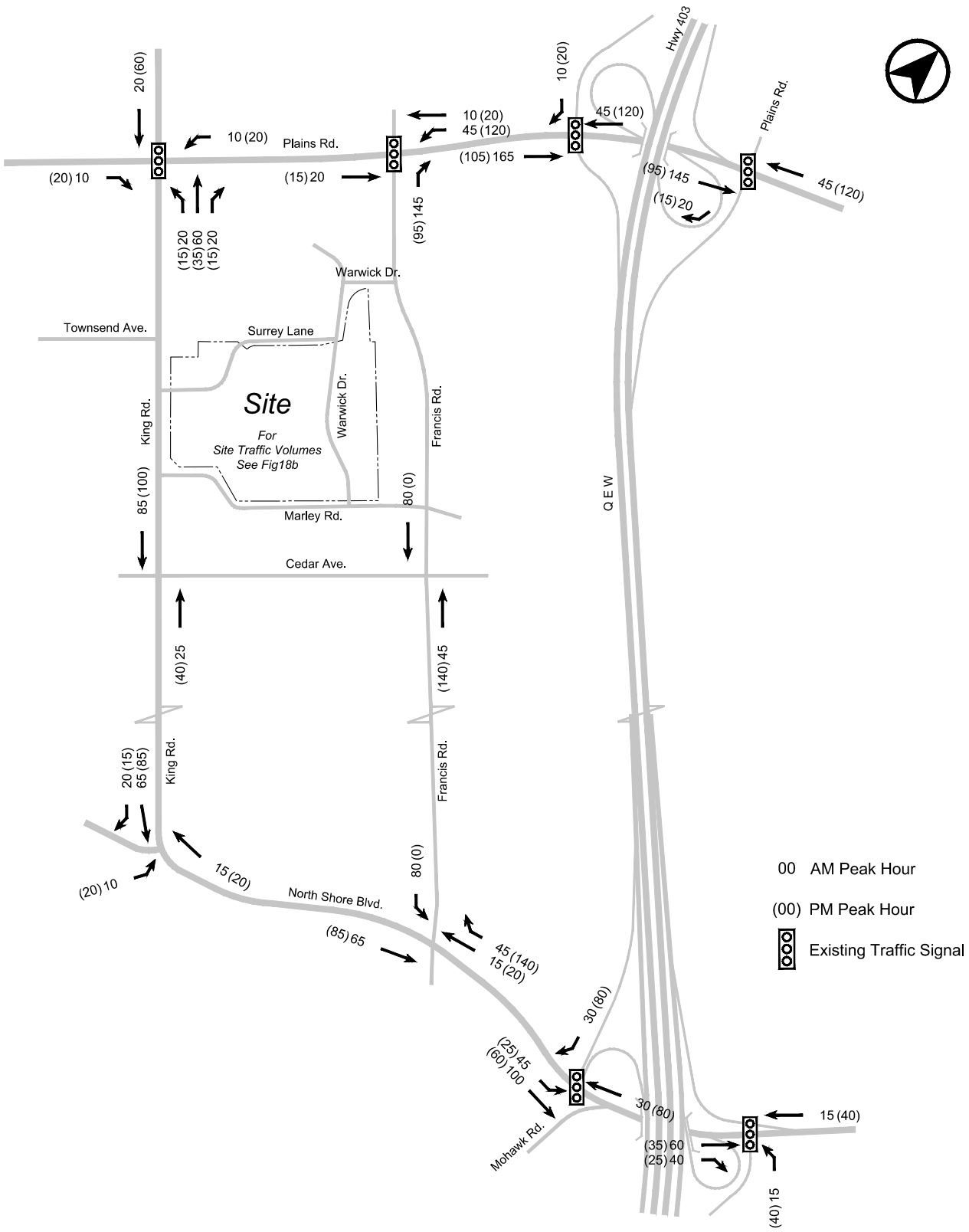
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NET NEW SITE TRAFFIC VOLUMES

BA Group

Georgian Court
7017-37 September 2017

Figure 17b



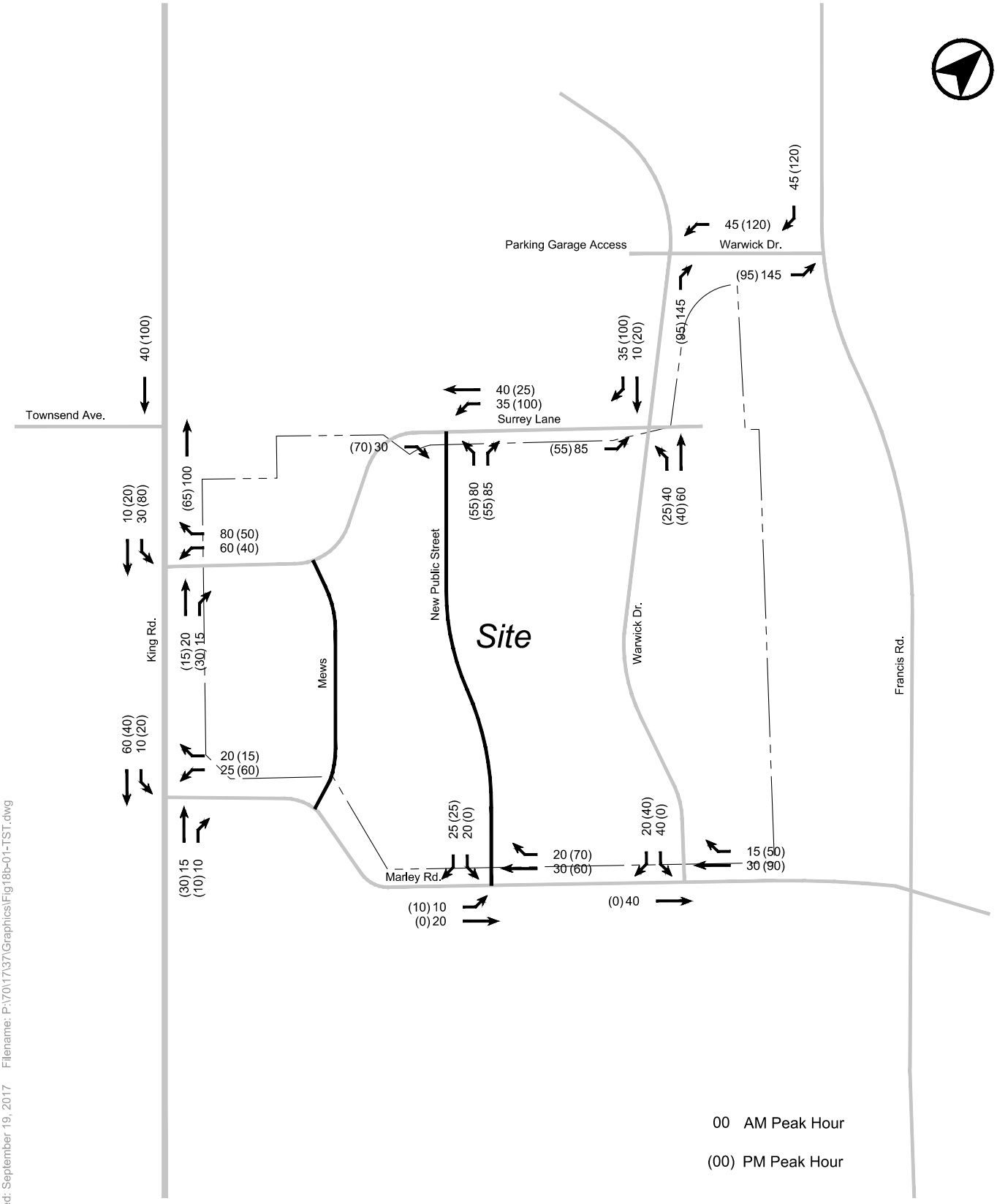
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TOTAL SITE TRAFFIC VOLUMES

BA Group

Georgian Court
7017-37 September 2017

Figure 18a



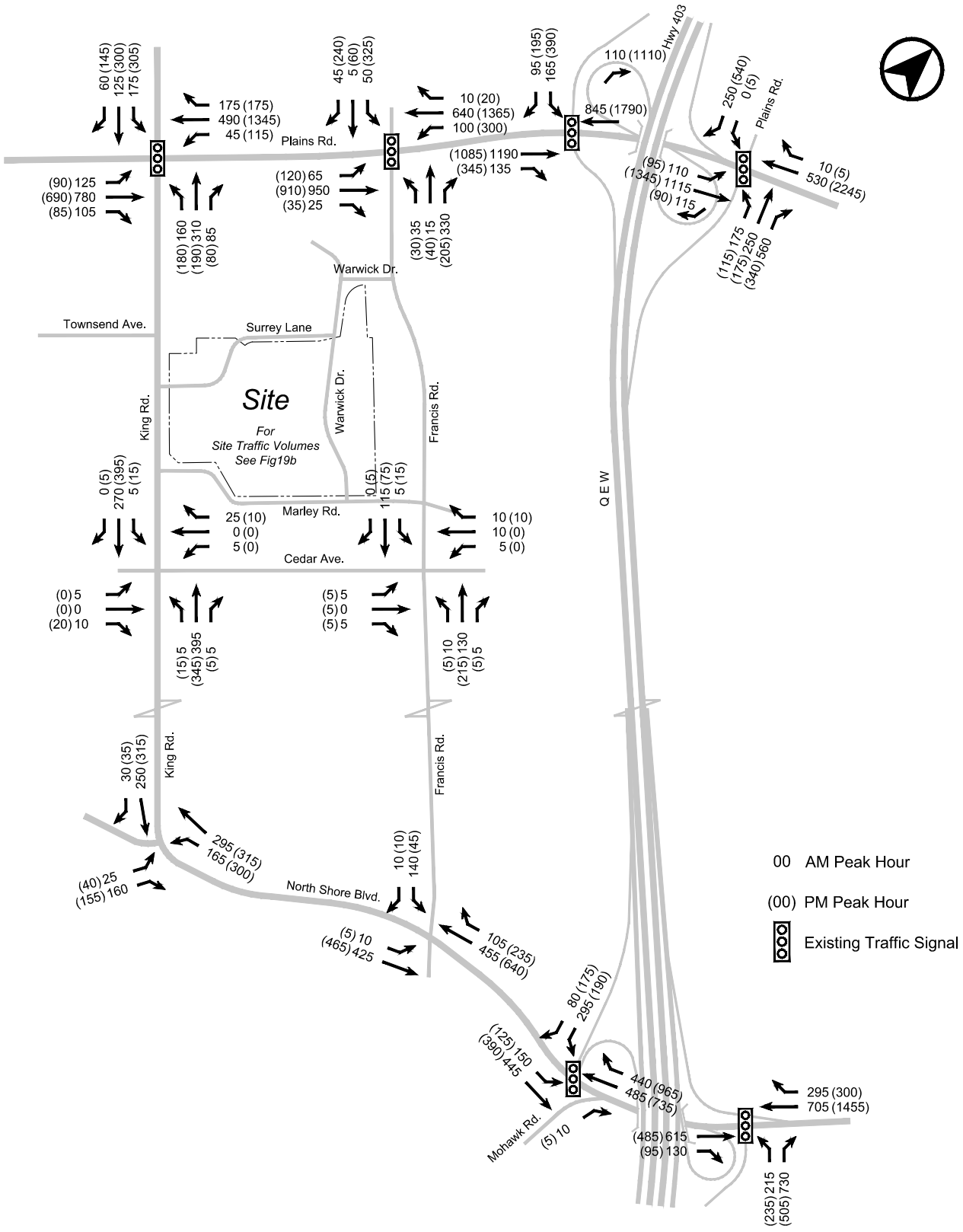
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TOTAL SITE TRAFFIC VOLUMES

BA Group

Georgian Court
7017-37 September 2017

Figure 18b



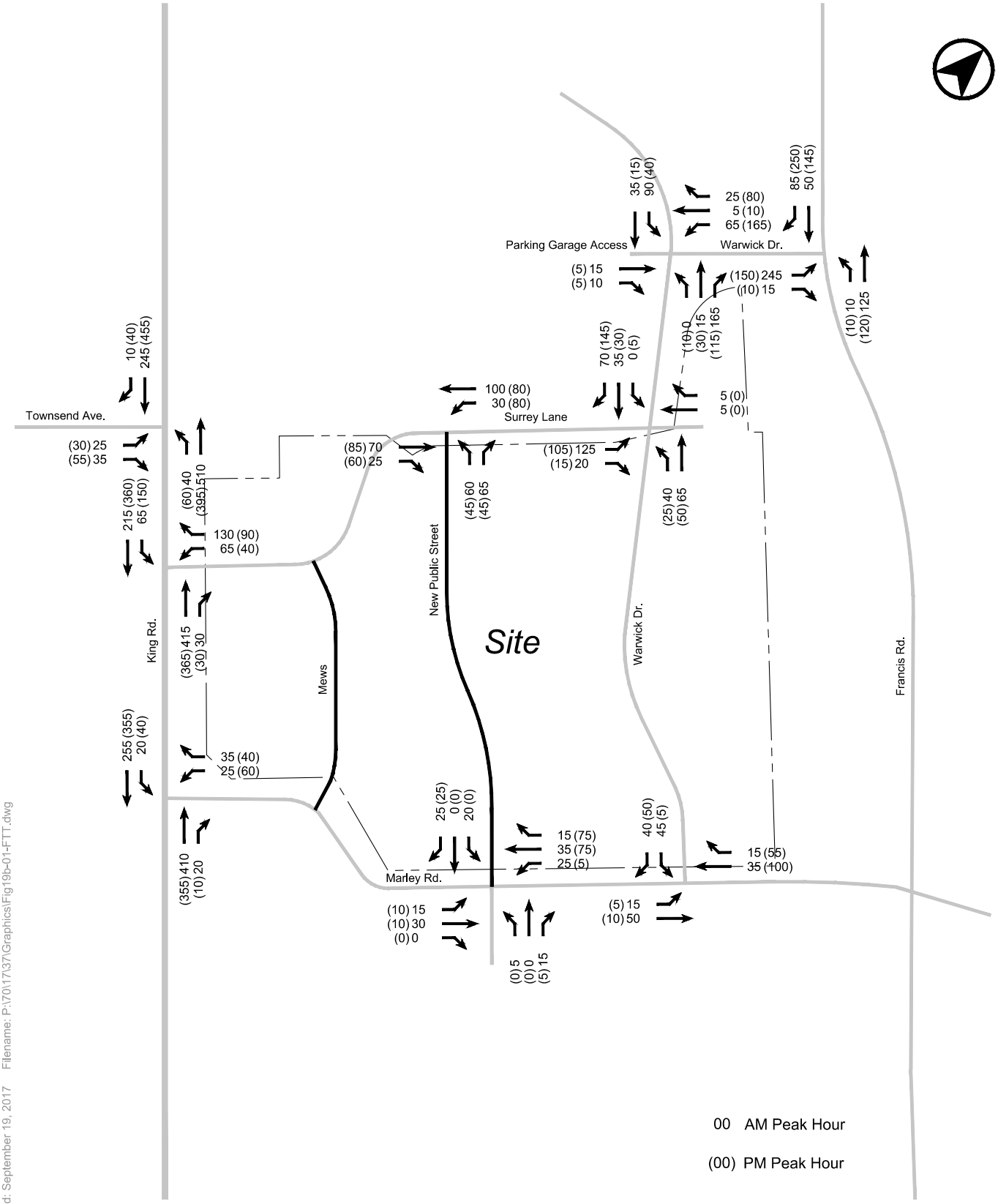
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FUTURE TOTAL TRAFFIC VOLUMES

BA Group

Georgian Court
7017-37 September 2017

Figure 19a



Date Plotted: September 19, 2017 Filename: P:\7017\37\Graphics\Fig19b-01-FTT.dwg

FUTURE TOTAL TRAFFIC VOLUMES

BA Group

Georgian Court
7017-37 September 2017

Figure 19b

9.0 OPERATIONS ANALYSIS

9.1 METHODOLOGY

Intersection capacity analysis was completed using Synchro Version 9.0 with the Highway Capacity Manual (HCM) Methodology. Existing signal timing plans were obtained from the City of Burlington and were maintained for all intersections studied. Detailed intersection capacity analysis sheets are provided in **Appendix C**.

Traffic operations analyses examined the weekday morning and afternoon peak hours, which reflect the busiest periods of activity on the road network for the three scenarios below.

9.1.1 Analysis Scenarios

Three scenarios framed the analysis:

- Existing conditions,
- Future background, and
- Future total traffic conditions.

Existing traffic conditions evaluated existing levels of activity and drew operational inferences. The future background analysis contemplated both existing levels of activity and the expected changes to the network incurred by other, “background” developments. Future total conditions integrate expected changes incurred by the Site with the background conditions to predict the traffic conditions that will ultimately exist.

9.1.2 Performance Metrics

For both signalized and unsignalized intersections, the analysis regards several evaluation metrics. Signalized intersections are evaluated based on the volume-to-capacity ratio and level of service; meanwhile, unsignalized intersections should be regarded for level of service and delay.

- Volume-to-capacity ratio (v/c) represents the extent of capacity used for intersection movements. A v/c of 1.0 indicates that corresponding traffic movements are operating at or near capacity, whereas a lower v/c ratio indicates lesser utilization.

- Level of Service (LOS) characterizes operational conditions in terms of delay time. LOS A represents a minimal delay time, while LOS F represents a poor level of service with long delays. The LOS can be expressed as a value affixed to each movement at the intersection, or as an average of all vehicles processed by the intersection.

- Delay provides a measure of vehicle lag in seconds. Busy intersections often operate at LOS D to E, reflecting average (control) delays in the range of 35 to 50 seconds.

Based on these performance metrics, individual intersections, and ultimately the local area network, are evaluated for their ability to accommodate traffic volumes in each of the three analysis scenarios.

9.1.3 Signal Timings

Existing signal timings, phasing plans, and cycle lengths were obtained from the City of Burlington. These parameters were adopted for the analysis under all scenarios, at all signalized intersections of study.

Signal timings at Plains Road East & King Road; Fairview Street & Plains Road East/Northbound QEW Off Ramps; and North Shore Boulevard East & Northbound QEW Off Ramps have been optimized under future total conditions in response to changing traffic demands and to best accommodate traffic activity at the intersection.

9.1.4 Saturation Flow Rates

The base saturation flow rate of 1,900 passenger cars per hour of green time per lane (pcphgpl) was adopted as the base assumption in the Synchro analysis.

9.1.5 Calibration of Existing Movements

No calibration of existing conditions was undertaken in this analysis.

9.1.6 Heavy Vehicle Assumptions

Heavy and medium truck percentages incorporated into the analyses were based on information obtained from observations made during existing intersection turning movement counts.

The relative proportions of heavy vehicles within the traffic stream were used as the basis for the heavy vehicle adjustment factor determinations. These adjustment factors were used in the Synchro analysis for all scenarios.

9.2 ANALYSIS FINDINGS: SIGNALIZED INTERSECTIONS

The v/c ratio and LOS were assessed for the following signalized intersections within the Georgian Court Study Area:

- Fairview Street & Plains Road East/Northbound QEW Off Ramp
- Fairview Street/Plains Road East & Southbound QEW On/Off Ramps
- Plains Road East & Francis Road
- Plains Road East & King Road
- North Shore Boulevard East & Northbound QEW Off Ramp
- North Shore Boulevard East & Southbound QEW On/Off Ramps

9.2.1 Fairview Street & Plains Road East/Northbound QEW Off Ramp

Under existing conditions, this intersection operates at an overall v/c ratio of 0.54 during the weekday morning and 0.76 during the weekday afternoon rush hours. The level of service is consistent, with moderate delay during peak periods.

Under future background conditions, with the addition of generalized corridor growth, this intersection will operate at an overall v/c ratio of 0.60 during the weekday morning and 0.82 during the weekday afternoon peak hours. The level of service drops during the p.m. for the southbound right turn movement, but it does not deviate far from existing conditions.

Under future total conditions, with the addition of Site traffic, this intersection will operate at an overall v/c ratio of 0.64 and 0.84 during the weekday morning and weekday afternoon peak hour, respectively. The high v/c ratio of the northbound through movement during the a.m. peak hour warranted an optimization of the existing signal timing splits. The signal timing splits have been optimized within existing cycle lengths.

TABLE 16 PEAK HOUR ANALYSIS RESULTS: FAIRVIEW ST & PLAINS RD E/QEW NB RAMP (SIGNALIZED)

CRITICAL MOVEMENT	V/C	LOS	V/C	LOS	V/C	LOS
Horizon	**EXISTING**		**FUTURE BACKGROUND**		**FUTURE TOTAL**	
Overall	**0.54 (0.76)**	**C (C)**	**0.60 (0.82)**	**C (C)**	**0.64 (0.84)**	**C (C)**
EBL	0.20 (0.46)	A (B)	0.23 (0.48)	B (B)	0.24 (0.48)	B (C)
EBT	0.31 (0.37)	B (B)	0.43 (0.43)	B (B)	0.48 (0.46)	B (B)
NBL	0.35 (0.23)	C (C)	0.32 (0.24)	C (C)	0.32 (0.24)	C (C)
NBT	0.99 (0.62)	E (D)	0.90 (0.64)	D (D)	0.90 (0.64)	D (D)
NBR	0.72 (0.44)	D (C)	0.76 (0.51)	D (D)	0.80 (0.53)	D (D)
SBR	0.18 (0.95)	C (E)	0.18 (0.99)	C (F)	0.18 (0.99)	C (F)
WBT	0.18 (0.71)	B (C)	0.24 (0.79)	B (C)	0.26 (0.83)	B (C)

Notes:
1. xx (xx) – a.m. (p.m.)

9.2.2 Fairview Street/Plains Road East & Southbound QEW On/Off Ramps

Under existing conditions, this intersection operates at an overall v/c ratio of 0.28 during the weekday morning and 0.44 during the weekday afternoon rush hour. The level of service is high, with minimal delay for most movements during peak hours.

Under future background conditions, with the addition of generalized corridor growth, this intersection will operate at an overall v/c ratio of 0.32 during the weekday morning and 0.50 during the weekday afternoon peak hours. The level of service remains consistent with existing conditions.

Under future total conditions, with the addition of Site traffic, this intersection will operate at an overall v/c ratio of 0.35 and 0.53 during the weekday morning and weekday afternoon peak hour, respectively. Both the capacity and LOS are well-maintained in future total conditions.

TABLE 17 PEAK HOUR ANALYSIS RESULTS: FAIRVIEW ST & QEW SB RAMPS (SIGNALIZED)

CRITICAL MOVEMENT	V/C	LOS	V/C	LOS	V/C	LOS
	EXISTING		FUTURE BACKGROUND		FUTURE TOTAL	
Overall	**0.28 (0.44)**	**A (B)**	**0.32 (0.50)**	**A (B)**	**0.35 (0.53)**	**A (B)**
EBT	0.25 (0.23)	A (A)	0.30 (0.27)	A (A)	0.33 (0.30)	A (A)
EBR	0.10 (0.24)	A (A)	0.10 (0.24)	A (A)	0.10 (0.24)	A (A)
SBL	0.43 (0.69)	D (D)	0.43 (0.69)	D (D)	0.43 (0.69)	D (D)
SBR	0.06 (0.47)	D (D)	0.06 (0.57)	D (D)	0.07 (0.65)	D (D)
WBT	0.20 (0.38)	A (A)	0.23 (0.46)	A (A)	0.24 (0.49)	A (A)

Notes:
1. xx (xx) – a.m. (p.m.)

9.2.3 Plains Road East & Francis Road

Under existing conditions, this intersection operates at an overall v/c ratio of 0.40 during the weekday morning and 0.66 during the weekday afternoon rush hour. The level of service is consistent, with moderate delay during peak periods.

Under future background conditions, with the addition of generalized corridor growth, this intersection will operate at an overall v/c ratio of 0.46 during the weekday morning and 0.77 during the weekday afternoon peak hours. The level of service remains consistent with existing conditions, but a moderate increase in traffic volumes is experienced by the westbound through movement.

Under future total conditions, with the addition of Site traffic, this intersection will operate at an overall v/c ratio of 0.56 and 0.82 during the weekday morning and weekday afternoon peak hour, respectively. The level of service is consistent, with moderate delay times during peak periods.

TABLE 18 PEAK HOUR ANALYSIS RESULTS: PLAINS RD E & FRANCIS RD (SIGNALIZED)

CRITICAL MOVEMENT	V/C	LOS	V/C	LOS	V/C	LOS
Horizon	**EXISTING**		**FUTURE BACKGROUND**		**FUTURE TOTAL**	
Overall	**0.40 (0.66)**	**B (C)**	**0.46 (0.77)**	**B (C)**	**0.56 (0.82)**	**C (D)**
EBL	0.13 (0.49)	A (B)	0.15 (0.56)	A (C)	0.16 (0.57)	A (C)
EBT	0.46 (0.58)	B (C)	0.56 (0.70)	B (C)	0.58 (0.79)	B (D)
NBL	0.24 (0.16)	D (D)	0.24 (0.16)	D (D)	0.19 (0.15)	D (D)
NBT	0.25 (0.42)	D (D)	0.25 (0.42)	D (D)	0.76 (0.52)	E (D)
SBL	0.39 (0.65)	D (D)	0.25 (0.65)	D (D)	0.26 (0.65)	D (D)
SBT	0.40 (0.64)	D (D)	0.26 (0.64)	D (D)	0.27 (0.64)	D (D)
SBR	0.04 (0.17)	D (D)	0.04 (0.17)	D (D)	0.04 (0.17)	D (D)
WBL	0.16 (0.55)	A (B)	0.2 (0.62)	A (B)	0.34 (0.84)	B (D)
WBT	0.31 (0.73)	B (C)	0.37 (0.92)	B (D)	0.39 (0.93)	B (D)

Notes:
1. xx (xx) – a.m. (p.m.)

9.2.4 Plains Road East & King Road

Under existing conditions, this intersection operates at an overall v/c ratio of 0.54 during the weekday morning and 0.78 during the weekday afternoon rush hour. The level of service for certain movements are lower than others, particularly the southbound left turn movement off King Road.

Under future background conditions, with the addition of generalized corridor growth, this intersection will operate at an overall v/c ratio of 0.64 during the weekday morning and 0.90 during the weekday afternoon peak hours. The level of service remains consistent with existing conditions, and improvements are experienced by the southbound left turn movement given signal timing split optimization changes within existing cycle lengths.

Under future total conditions, with the addition of Site traffic, this intersection will operate at an overall v/c ratio of 0.69 and 0.93 during the weekday morning and weekday afternoon peak hour, respectively. The high v/c ratio of certain movements during both a.m. and p.m. peak hours warranted an optimization of the existing signal timing splits. The signal timing splits have been optimized within existing cycle lengths.

TABLE 19 PEAK HOUR ANALYSIS RESULTS: PLAINS RD E & KING RD (SIGNALIZED)

CRITICAL MOVEMENT	EXISTING CONDITIONS		V/C	LOS	V/C	LOS
Horizon	V/C	LOS	FUTURE BACKGROUND		FUTURE TOTAL	
Overall	**0.54 (0.78)**	**C (C)**	**0.64 (0.90)**	**C (D)**	**0.69 (0.93)**	**C (D)**
EBL	0.31 (0.41)	B (B)	0.36 (0.45)	B (C)	0.37 (0.46)	B (C)
EBT	0.39 (0.33)	B (B)	0.52 (0.44)	B (C)	0.53 (0.45)	C (C)
EBR	0.07 (0.05)	B (B)	0.07 (0.05)	B (B)	0.08 (0.06)	B (B)
NBL	0.34 (0.56)	C (D)	0.35 (0.55)	C (C)	0.38 (0.63)	C (D)
NBT	0.84 (0.64)	E (D)	0.85 (0.69)	D (D)	0.95 (0.78)	E (E)
SBL	0.65 (0.98)	C (F)	0.77 (0.91)	D (E)	0.87 (0.98)	E (E)
SBT	0.26 (0.68)	D (D)	0.28 (0.76)	C (D)	0.30 (0.84)	C (E)
SBR	0.04 (0.09)	C (D)	0.04 (0.09)	C (D)	0.04 (0.09)	C (D)
WBL	0.10 (0.20)	B (B)	0.13 (0.26)	B (B)	0.18 (0.3)	B (B)
WBT	0.37 (0.72)	B (C)	0.47 (0.97)	C (D)	0.48 (0.98)	C (D)

Notes:
1. xx (xx) – a.m. (p.m.)

9.2.5 North Shore Boulevard East & Northbound QEW Off Ramp

Under existing conditions, this intersection operates at an overall v/c ratio of 0.67 during the weekday morning and 0.7 during the weekday afternoon rush hour.

Under future background conditions, with the addition of generalized corridor growth, this intersection will operate at an overall v/c ratio of 0.68 during the weekday morning and 0.72 during the weekday afternoon peak hours. The level of service remains consistent with existing conditions.

Under future total conditions, with the addition of Site traffic, this intersection will operate at an overall v/c ratio of 0.69 and 0.75 during the weekday morning and weekday afternoon peak hour, respectively. Signal timing splits in the p.m. have been optimized within existing cycle lengths.

TABLE 20 PEAK HOUR ANALYSIS RESULTS: NORTH SHORE BLVD E & QEW NB RAMP (SIGNALIZED)

CRITICAL MOVEMENT	V/C	LOS	V/C	LOS	V/C	LOS
Horizon	EXISTING		FUTURE BACKGROUND		FUTURE TOTAL	
Overall	**0.67 (0.70)**	**B (B)**	**0.68 (0.72)**	**B (B)**	**0.69 (0.75)**	**B (B)**
EBT	0.49 (0.19)	B (A)	0.50 (0.22)	B (A)	0.56 (0.24)	B (A)
NBL	0.31 (0.81)	B (E)	0.32 (0.74)	B (E)	0.35 (0.80)	B (E)
NBR	0.57 (0.35)	A (A)	0.56 (0.35)	A (A)	0.56 (0.35)	A (A)
WBT	0.69 (0.68)	B (A)	0.72 (0.71)	B (A)	0.73 (0.73)	B (B)

Notes:
1. xx (xx) – a.m. (p.m.)

9.2.6 North Shore Boulevard East & Southbound QEW On/Off Ramps

Under existing conditions, this intersection operates at an overall v/c ratio of 0.53 during the weekday morning and 0.74 during the weekday afternoon rush hour. The level of service is high, with minimal delay for most movements during peak hours.

Under future background conditions, with the addition of generalized corridor growth, this intersection will operate at an overall v/c ratio of 0.57 during the weekday morning and 0.74 during the weekday afternoon peak hours. The level of service remains consistent with existing conditions, and improvements are experienced by the eastbound left turn movement given signal timing split optimization changes within existing cycle lengths.

Under future total conditions, with the addition of Site traffic, this intersection will operate at an overall v/c ratio of 0.6 and 0.75 during the weekday morning and weekday afternoon peak hour, respectively. Both the capacity and LOS are well-maintained in future total conditions.

TABLE 21 PEAK HOUR ANALYSIS RESULTS: NORTH SHORE BLVD E & QEW SB RAMPS (SIGNALIZED)

CRITICAL MOVEMENT	V/C	LOS	V/C	LOS	V/C	LOS
Horizon	**EXISTING**		**FUTURE BACKGROUND**		**FUTURE TOTAL**	
Overall	**0.53 (0.74)**	**B (C)**	**0.57 (0.73)**	**B (C)**	**0.60 (0.75)**	**B (C)**
EBL	0.22 (0.82)	A (F)	0.24 (0.65)	A (E)	0.32 (0.75)	A (E)
EBT	0.32 (0.22)	A (A)	0.34 (0.27)	A (A)	0.41 (0.30)	A (A)
SBL	0.76 (0.72)	D (E)	0.76 (0.72)	D (E)	0.76 (0.72)	D (E)
SBR	0.04 (0.07)	C (D)	0.04 (0.07)	C (D)	0.06 (0.12)	C (D)
WBT	0.47 (0.57)	B (B)	0.53 (0.62)	B (B)	0.56 (0.68)	B (B)
WBR	0.30 (0.74)	B (B)	0.30 (0.76)	B (C)	0.30 (0.76)	B (C)

Notes:
1. xx (xx) – a.m. (p.m.)

9.3 ANALYSIS FINDINGS: UNSIGNALIZED INTERSECTIONS

The delay in seconds and LOS were assessed for the following unsignalized intersections within the Georgian Court Study Area:

- King Road & Townsend Avenue
- King Road & Surrey Lane
- King Road & Marley Road
- King Road & Cedar Avenue
- King Road & North Shore Boulevard East
- Francis Road & North Shore Boulevard East
- Francis Road & Warwick Drive
- Warwick Court & Warwick Drive
- Warwick Drive & Surrey Lane
- Warwick Drive & Marley Road
- Marley Road & Sunset Road
- Francis Road & Cedar Avenue
- Surrey Lane & New Public Road (Sunset Road)

9.3.1 King Road & Townsend Avenue

Under existing conditions, the intersection operates at LOS B or better during the weekday morning and weekday afternoon peak hour.

Under future background conditions, with the addition of generalized corridor growth, the intersection operates at LOS B or better during both weekday morning and afternoon peak hours.

Under future total conditions, with the addition of Site traffic, the LOS is largely maintained, with a slightly longer delay in the eastbound movement.

TABLE 22 PEAK HOUR ANALYSIS RESULTS: KING RD & TOWNSEND AVE (UNSIGNALIZED)

CRITICAL MOVEMENT	DELAY (S)	LOS	DELAY (S)	LOS	DELAY (S)	LOS
Horizon	EXISTING		FUTURE BACKGROUND		FUTURE TOTAL	
EBLR	12.2 (13.7)	B (B)	13 (14.9)	B (B)	14.2 (17.3)	B (C)
NBL	7.7 (8.2)	A (A)	7.8 (8.4)	A (A)	7.9 (8.7)	A (A)

Notes:
1. xx (xx) – a.m. (p.m.)

9.3.2 King Road & Surrey Lane

Under existing conditions, the intersection operates at LOS B or better during the weekday morning and weekday afternoon peak hour.

Under future background conditions, with the addition of generalized corridor growth, the intersection operates at LOS B or better during both weekday morning and afternoon peak hours.

Under future total conditions, with the addition of Site traffic, the LOS in the westbound movement drops to a LOS C during both peak hours. The delays are extended from 13 seconds to 18 seconds in the a.m. and 12 seconds to 20 seconds in the p.m. peak hours. The LOS for the southbound left movement is maintained.

TABLE 23 PEAK HOUR ANALYSIS RESULTS: KING RD & SURREY LN (UNSIGNALIZED)

CRITICAL MOVEMENT	DELAY (S)	LOS	DELAY (S)	LOS	DELAY (S)	LOS
Horizon	EXISTING		FUTURE BACKGROUND		FUTURE TOTAL	
WBLR	12.1 (11.3)	B (B)	12.9 (11.8)	B (B)	18.0 (20.2)	C (C)
SBL	8.2 (8.2)	A (A)	8.4 (8.3)	A (A)	8.6 (8.7)	A (A)

Notes:
1. xx (xx) – a.m. (p.m.)

9.3.3 King Road & Marley Road

Under existing conditions, the intersection operates at LOS B or better during the weekday morning and weekday afternoon peak hour.

Under future background conditions, with the addition of generalized corridor growth, the intersection operates at LOS B or better during both weekday morning and afternoon peak hours.

Under future total conditions, with the addition of Site traffic, the LOS for westbound movements drops slightly to a LOS C during the afternoon peak hour, but is otherwise consistent with other scenarios.

TABLE 24 PEAK HOUR ANALYSIS RESULTS: KING RD & MARLEY RD (UNSIGNALIZED)

CRITICAL MOVEMENT	DELAY (S)	LOS	DELAY (S)	LOS	DELAY (S)	LOS
Horizon	EXISTING		FUTURE BACKGROUND		FUTURE TOTAL	
WBLR	11.1 (10.9)	B (B)	11.7 (11.4)	B (B)	14 (17.8)	B (C)
SBLT	0.5 (0.9)	A (A)	0.5 (0.8)	A (A)	0.8 (1.3)	A (A)

Notes:
1. xx (xx) – a.m. (p.m.)

9.3.4 King Road & Cedar Avenue

Under existing conditions, the intersection operates at LOS B or better during the weekday morning and weekday afternoon peak hour.

Under future background conditions, with the addition of generalized corridor growth, the intersection operates at LOS B or better during both weekday morning and afternoon peak hours.

Under future total conditions, with the addition of Site traffic, the LOS is well maintained with minimal delays for all movements.

TABLE 25 PEAK HOUR ANALYSIS RESULTS: KING RD & CEDAR AVE (UNSIGNALIZED)

CRITICAL MOVEMENT	DELAY (S)	LOS	DELAY (S)	LOS	DELAY (S)	LOS
Horizon	**EXISTING**		**FUTURE BACKGROUND**		**FUTURE TOTAL**	
EBR	11.2 (9.9)	B (A)	11.9 (10.3)	B (B)	12.9 (11.0)	B (B)
WBR	11.2 (10.0)	B (A)	11.9 (10.2)	B (B)	12.5 (10.4)	B (B)
NBLTR	0.2 (0.5)	A (A)	0.2 (0.5)	A (A)	0.2 (0.5)	A (A)
SBLTR	0.3 (0.6)	A (A)	0.3 (0.5)	A (A)	0.2 (0.4)	A (A)

Notes:
1. xx (xx) – a.m. (p.m.)

9.3.5 Francis Road & North Shore Boulevard East

Under existing conditions, the intersection operates at LOS C or better during the weekday morning peak hour and LOS D or better during the weekday afternoon peak hour.

Under future background conditions, with the addition of generalized corridor growth, the intersection operates at LOS C or better during the weekday morning peak hour and LOS D or better during the weekday afternoon peak hour.

Under future total conditions, with the addition of Site traffic, the LOS in the southbound left-turn movement drops to E in both the a.m. and p.m. peak hours. Other movements operate at a LOS B or better.

TABLE 26 PEAK HOUR ANALYSIS RESULTS: FRANCIS RD & NORTH SHORE BLVD E (UNSIGNALIZED)

CRITICAL MOVEMENT	DELAY (S)	LOS	DELAY (S)	LOS	DELAY (S)	LOS
Horizon	**EXISTING**		**FUTURE BACKGROUND**		**FUTURE TOTAL**	
EBLT	0.4 (0.2)	A (A)	0.4 (0.2)	A (A)	0.4 (0.2)	A (A)
SBL	19.7 (27.4)	C (D)	22.6 (34.3)	C (D)	40.0 (49.7)	E (E)
SBR	10.8 (13.1)	B (B)	11.2 (13.5)	B (B)	11.5 (14.5)	B (B)

Notes:
1. xx (xx) – a.m. (p.m.)

9.3.6 Francis Road & Warwick Drive

Under existing conditions, the intersection operates at LOS B or better during the weekday morning and weekday afternoon peak hour.

Under future background conditions, with the addition of generalized corridor growth, the intersection operates at LOS B or better during both weekday morning and afternoon peak hours.

Under future total conditions, with the addition of Site traffic, the LOS is well maintained with minimal delays for all movements.

TABLE 27 PEAK HOUR ANALYSIS RESULTS: FRANCIS RD & WARWICK DR (UNSIGNALIZED)

CRITICAL MOVEMENT	DELAY (S)	LOS	DELAY (S)	LOS	DELAY (S)	LOS
Horizon	**EXISTING**		**FUTURE BACKGROUND**		**FUTURE TOTAL**	
EBLR	11.5 (11.6)	B (B)	11.5 (11.6)	B (B)	13.8 (13.4)	B (B)
NBLT	0.6 (0.7)	A (A)	0.6 (0.7)	A (A)	0.6 (0.8)	A (A)

Notes:
1. xx (xx) – a.m. (p.m.)

9.3.7 Warwick Court & Warwick Drive

Under existing conditions, the intersection operates at LOS A during the weekday morning and weekday afternoon peak hour for all movements.

Under future background conditions, with the addition of generalized corridor growth, the intersection operates at LOS A during both weekday morning and afternoon peak hours.

Under future total conditions, with the addition of Site traffic, the LOS is well maintained with minimal delays for all movements.

TABLE 28 PEAK HOUR ANALYSIS RESULTS: WARWICK CT & WARWICK DR (UNSIGNALIZED)

CRITICAL MOVEMENT	DELAY (S)	LOS	DELAY (S)	LOS	DELAY (S)	LOS
Horizon	EXISTING		FUTURE BACKGROUND		FUTURE TOTAL	
WBLR	7.8 (7.9)	A (A)	7.8 (7.9)	A (A)	8.9 (9.5)	A (A)
NBTR	7.1 (7.4)	A (A)	7.1 (7.4)	A (A)	8.0 (8.2)	A (A)
SBLT	8.2 (7.8)	A (A)	8.2 (7.8)	A (A)	8.7 (8.3)	A (A)

Notes:
1. xx (xx) – a.m. (p.m.)

9.3.8 Warwick Drive & Surrey Lane

Under existing conditions, the intersection operates at LOS A during the weekday morning and weekday afternoon peak hour for all movements.

Under future background conditions, with the addition of generalized corridor growth, the intersection operates at LOS A during both weekday morning and afternoon peak hours.

Under future total conditions, with the addition of Site traffic, the LOS is maintained with minimal delays for all movements.

TABLE 29 PEAK HOUR ANALYSIS RESULTS: WARWICK DR & SURREY LN (UNSIGNALIZED)

CRITICAL MOVEMENT	DELAY (S)	LOS	DELAY (S)	LOS	DELAY (S)	LOS
Horizon	EXISTING		FUTURE BACKGROUND		FUTURE TOTAL	
EBLR	9.6 (9.4)	A (A)	9.6 (9.4)	A (A)	11.9 (11.1)	B (B)
NBLT	2.6 (1.9)	A (A)	2.6 (1.9)	A (A)	3.1 (2.7)	A (A)

Notes:
1. xx (xx) – a.m. (p.m.)

9.3.9 Warwick Drive & Marley Road

Under existing conditions, the intersection operates at LOS A during the weekday morning and weekday afternoon peak hour for all movements.

Under future background conditions, with the addition of generalized corridor growth, the intersection at LOS A during both weekday morning and afternoon peak hours.

Under future total conditions, with the addition of Site traffic, the LOS drops to B; although, minimal delays remain for all movements.

TABLE 30 PEAK HOUR ANALYSIS RESULTS: WARWICK DR & MARLEY RD (UNSIGNALIZED)

CRITICAL MOVEMENT	DELAY (S)	LOS	DELAY (S)	LOS	DELAY (S)	LOS
Horizon	EXISTING		FUTURE BACKGROUND		FUTURE TOTAL	
EBLT	3.8 (1.6)	A (A)	3.8 (1.6)	A (A)	1.8 (2.7)	A (A)
SBLR	9.1 (9.0)	A (A)	9.1 (9.0)	A (A)	10.3 (10.2)	B (B)

Notes:
1. xx (xx) – a.m. (p.m.)

9.3.10 Marley Road & Sunset Road

Under existing conditions, the intersection operates at LOS A during the weekday morning and weekday afternoon peak hour for all movements.

Under future background conditions, with the addition of generalized corridor growth, the intersection operates at LOS A during the weekday morning peak hour and LOS B or better during the weekday afternoon peak hour.

Under future total conditions, with the addition of Site traffic, the LOS is maintained with minimal delays for all movements.

TABLE 31 PEAK HOUR ANALYSIS RESULTS: MARLEY RD & SUNSET RD (UNSIGNALIZED)

CRITICAL MOVEMENT	DELAY (S)	LOS	DELAY (S)	LOS	DELAY (S)	LOS
Horizon	EXISTING		FUTURE BACKGROUND		FUTURE TOTAL	
EBLTR	2.4 (2.5)	A (A)	2.4 (10.2)	A (A)	8.3 (7.9)	A (A)
WBLTR	5.3 (1.0)	A (A)	5.3 (8.9)	A (A)	8.1 (8.3)	A (A)
NBLTR	9.0 (8.4)	A (A)	9.0 (0.4)	A (A)	7.3 (7.0)	A (A)
SBLTR	9.4 (9.3)	A (A)	9.4 (1.2)	A (A)	7.6 (7.2)	A (A)

Notes:
1. xx (xx) – a.m. (p.m.)
2. Under future total condition All-Way STOP control is proposed.

9.3.11 Francis Road & Cedar Avenue

Under existing conditions, the intersection operates at LOS B or better during the weekday morning and weekday afternoon peak hour.

Under future background conditions, with the addition of generalized corridor growth, the intersection operates at LOS A during both weekday morning and afternoon peak hours.

Under future total conditions, with the addition of Site traffic, the LOS is well maintained with minimal delays for all movements.

TABLE 32 PEAK HOUR ANALYSIS RESULTS: FRANCIS RD & CEDAR AVE (UNSIGNALIZED)

CRITICAL MOVEMENT	DELAY (S)	LOS	DELAY (S)	LOS	DELAY (S)	LOS
Horizon	EXISTING		FUTURE BACKGROUND		FUTURE TOTAL	
EBLTR	9.5 (10.2)	A (B)	9.5 (10.2)	A (B)	10.3 (11.2)	B (B)
WBR	9.9 (8.9)	A (A)	9.9 (8.9)	A (A)	10.7 (9.5)	B (A)
NBLTR	0.7 (0.4)	A (A)	0.7 (0.4)	A (A)	0.6 (0.2)	A (A)
SBLTR	0.7 (1.2)	A (A)	0.7 (1.2)	A (A)	0.3 (0.9)	A (A)

Notes:
1. xx (xx) – a.m. (p.m.)

9.3.12 Surrey Lane & New Public Street (Sunset Road)

Under future total conditions, with the addition existing traffic, corridor growth and site related traffic, the new unsignalized intersection of Surrey Lane / New Pubic Road (Sunset Road) operates at LOS B or better during both weekday morning and afternoon peak hours. Minimal delay is experienced at this intersection.

TABLE 33 PEAK HOUR ANALYSIS RESULTS: SURREY LN & NEW PUBLIC STREET – SUNSET RD (UNSIGNALIZED)

CRITICAL MOVEMENT	DELAY (S)	LOS	DELAY (S)	LOS	DELAY (S)	LOS
Horizon	EXISTING		FUTURE BACKGROUND		FUTURE TOTAL	
EBTR	-	-	-	-	7.9 (7.9)	A (A)
WBTL	-	-	-	-	8.4 (8.6)	A (A)
NBLR	-	-	-	-	8.1 (8.0)	A (A)

Notes:
1. xx (xx) – a.m. (p.m.)

Based on the foregoing, both signalized and unsignalized intersections can acceptably accommodate new Site-related traffic along the area road network.

10.0 TRANSPORTATION DEMAND MANAGEMENT CONSIDERATIONS

10.1 CONTEXT

The Region of Halton Transportation Master Plan (TMP) targets a more diverse transportation mode split in Burlington by 2031. This mode split is expected to consist of 3% carpool, 20% transit, 5% active (walking and cycling), and 72% cars. Reaching this targeted mode split will require that new developments within Halton Region adopt initiatives that will reduce the need to travel by car.

In keeping with Regional OP objectives, the redevelopment of Georgian Court includes a Transportation Demand Management Strategy that is intended to encourage residents to utilize other modes of transportation. The Transportation Demand Management (TDM) Strategy for the Site will consist of a variety of TDM Strategies each of which is intended to incentivize residents to use modes of transportation other than the personal automobile.

TDM Strategies can generally be divided into two groups: policies and programs that aim to change an individual's travel behaviour (generally referred to as 'soft' measures); or the provision of physical infrastructure that will support or incent people to utilize alternative transportation (generally referred to as 'hard' measures). Recognizing that the current stage of the approval process is for a Zoning By-law Amendment and Official Plan amendment, the precise location, nature, and supply of physical sustainable transportation infrastructure cannot be confirmed at this time. These elements will be confirmed through the subsequent Site Plan approvals process for each phase of the redevelopment.

A TDM Plan is therefore proposed for Georgian Court which outlines the various TDM Strategies that apply, or will apply to the redevelopment in the future. As such, any TDM Strategies proposed that involve the provision of physical infrastructure will be confirmed through the Site Plan approval process.

10.2 PROPOSED TDM PLAN

The proposed TDM plan for Georgian Court includes a mix of programmatic and infrastructure based measures (i.e. hard and soft elements). The following strategies make up the proposed TDM Plan for the Georgian Court redevelopment:

i) Consideration of on-site designated car-share parking;
ii) Promote cycling through provision of secure on-site bicycle parking;
iii) Promote cycling through provision of a potential on-site cycling station;
iv) Creating a connected, walkable environment; and
v) Raise awareness through the provision of sustainable transit packages to new residents.

Descriptions of the proposed TDM Strategies constituting the Georgian Court TDM Plan follow.

10.2.1 Provision of Car-Share Parking (If Applicable)

The provision of dedicated car-share parking within private sites provides an incentive to car share companies to locate vehicles in convenient locations close to residents who may not need to utilize a vehicle on a daily basis. The proximity to the site to frequent transit on Plains Road East and the GO Lakeshore West line, coupled with the concentration of existing and future residents in the area makes Georgian Court an ideal site for a potential future car-share service or vehicle that would serve not only the Georgian Court residents, but the area community as well.

There are currently no car-share companies operating in Halton Region; however, as the Site develops this may not remain the case. As redevelopment phases proceed, Georgian Court will confirm whether a car-share operator has started operating in Halton and/or review opportunities to partner with an existing car-share company to locate a car-share vehicle in the community. In this regard, should there be interest in providing a service, Georgian Court will provide a parking space within the Georgian Court site at no charge to the operator for the purposes of encouraging a car-share operator. In turn, any such car-share vehicle will support the residents of the community and reduce their need to own and use a private automobile on a regular basis.

The provision and identification of car-share parking opportunities will be confirmed through the Site Plan application processes for each development phase.

10.2.2 Provision of On-Site Cycling Infrastructure

Cycling for residents of Georgian Court can be encouraged through the provision of secure on-site bicycle parking facilities for residents. In this regard, the Georgian Court Redevelopment is considering the provision of internal bicycle parking facilities as part of the development.

Opportunities for enclosed bicycle parking facilities exist in higher density / apartment form units due to their larger shared-space resources. Secured bicycle parking facilities can encourage bicycle ownership and bicycle use due to their capacity to deter theft while maintaining convenient short-term and long-term storage. Where potential bicycle parking facilities are considered, the use of access control and surveillance systems may augment this benefit.

Back-to-back and stacked townhouse forms of development offer potential for stand-alone parking facilities, outside of building enclosures. Such forms of bicycle parking may prove highly accessible and convenient for short-term bicycle parking given the low barriers of access and flexibility in location. Site selection for potential bicycle parking facilities can be considered based on proximity and security merits of specific areas.

Potential bicycle parking for traditional townhouse developments may be facilitated within individual units, however consideration will also be made for opportunities to share bicycle parking facilities between nearby developments.

In addition to potential resident bike parking, the potential for visitor bike parking is also considered. Visitor bike parking may be provided in exterior locations adjacent to main building entrances to accommodate non-residents who elect to cycle to the Site.

The location, number, and configuration of potential resident and visitor bike parking facilities will be confirmed through the Site Plan Application process.

10.2.3 Provision of On-Site Bicycle Repair Station

To further encourage cycling, there is a potential to provide a cycling repair station within the site. A cycling repair station could consist of a stand / pillar that includes attached tools and an air pump. The stand / station could also include a rack for holding a bicycle while people make repairs.

The potential bicycle repair station would be provided in a location where it is accessible to all Georgian Court residents. In this regard, it could be located within a building in a keycard-accessed room. Alternatively, it could also be externally located and combined with bicycling facilities. The precise location will be confirmed through the Site Plan application process.

10.2.4 Provision of New & Direct Pedestrian Routes

The concept plan for Georgian Court includes a well-connected series of pedestrian routes through the site to encourage and support walking through the Site. Two off-street east-west routes are proposed through the Site which will connect residents between Surrey Lane and Marley Road to the west, and the Francis Road Bikeway to the east.

In addition, the Site concept includes two new north-south pedestrian linkages that will further encourage and support pedestrian activity. The first is the proposed north-south mews located at the western end of the site which will feature a sidewalk on both sides. Second, a proposed public street extension of Sunset Road in the centre of the Site will feature public sidewalks on both sides of the street, providing new north-south connectivity.

Finally, it is also noted that through the safety review, a variety of improvements have been recommended for consideration by City of Burlington staff which will contribute to an improved pedestrian environment. These include:

- A new all-way stop at the future Surrey Lane / Sunset Road intersection to provide a new crossing location across Surrey Lane;
- A new all-way stop at Townsend / King Road to provide a new east-west pedestrian crossing of King Street (which will assist in accessing the community centre on Townsend Street west of King Road); and
- A new sidewalk along Sunset Road from Marley Road to Greenwood Drive to improve pedestrian safety and connectivity to/from the south (and to Kings Road Public School).

These improvements are recommendations that will need to be confirmed by City of Burlington staff through the approvals process.

10.2.5 Provision of Sustainable Transit Information to New Residents

To ensure new residents are aware of the mobility options available to them, Georgian Court property management will provide each new resident with an information package that outlines the existing and future sustainable transportation options available at the Site. The information package will contain information about alternative transportation modes, including

- transit maps, route information, and fare information;
- walking and cycling routes within the Site and area, including maps;
- travel times to/from GO Stations by walking and cycling;
- information about on-site bicycle parking and amenities (e.g. the cycle repair station); and
- information about carpool (ride-matching) services.

10.3 IMPLEMENTATION

The proposed TDM Strategies that involve physical infrastructure (the potential bicycle repair station, bicycle parking, provision of pedestrian routes, review potential of car-share parking) will be confirmed and detailed through the Site Plan application process. The program-based TDM Strategy (provision of sustainable transportation information) will commence once occupancies begin in the first new phase of the redevelopment.

A summary of the implementation process for each strategy is outlined in Table 34.

TABLE 34 TDM IMPLEMENTATION PLAN

PROPOSED TDM STRATEGY	IMPLEMENTATION PROCESS AND TIMING	RESPONSIBILITY
Consideration of an on-site car-share parking space (if applicable)	Applicability and location to be confirmed through SPA process for each phase.	Georgian Court (redevelopment managers)
Provision of dedicated bicycle parking for residents and visitors	Supply and location for each phase confirmed through SPA process.	Georgian Court (redevelopment managers)
Provision of a potential on-site bicycle repair station	To be confirmed through SPA process	Georgian Court (redevelopment managers)
Provision of new pedestrian routes	To be confirmed through SPA process	Georgian Court (redevelopment managers)
Provision of sustainable transportation information packages to new residents	To be provided by property management during first occupancies within Phase 1 and for all subsequent new phases.	Georgian Court (property management staff)

11.0 SAFETY CONSIDERATIONS

11.1 COLLISION DATA

Collision data for relevant study area intersections have been obtained from the Region of Peel over the last 5 years (January 1, 2012 to May 1, 2017).

Table 35 lists the existing collision information for major intersections in the study area.

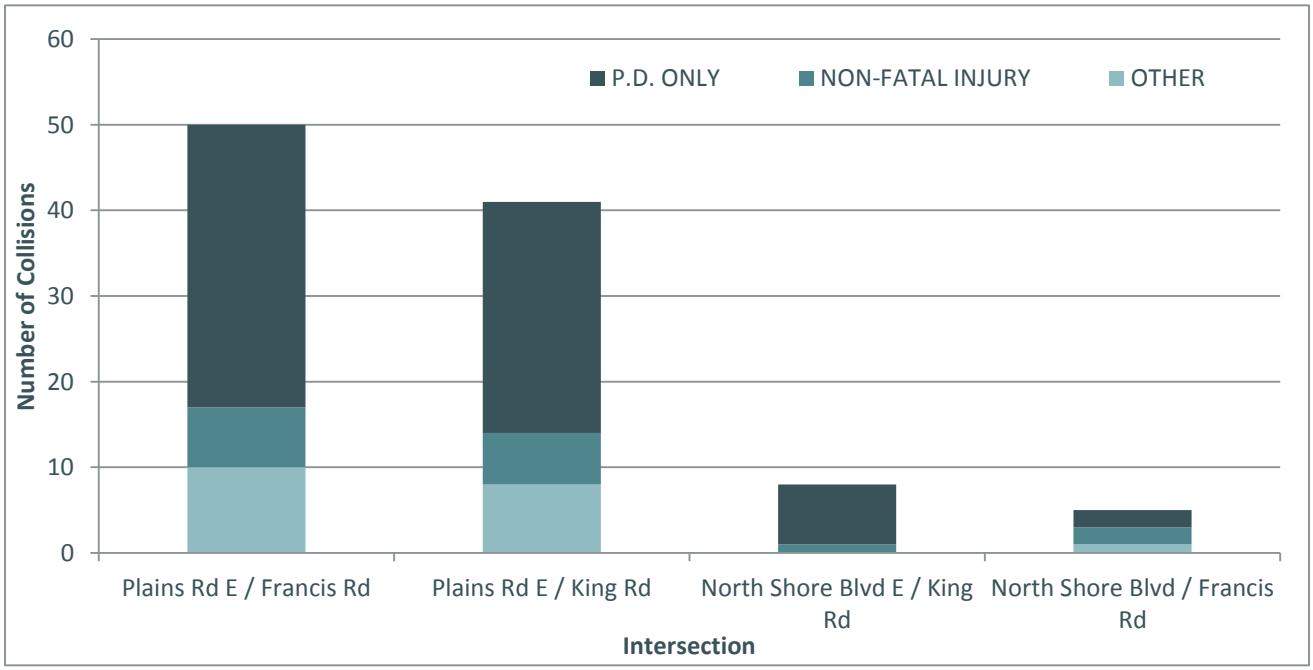
TABLE 35 EXISTING STUDY AREA COLLISION CLASSIFICATION

INTERSECTION	COLLISION CLASSIFICATION			TOTAL NUMBER OF COLLISIONS
	P.D. ONLY	NON-FATAL INJURY	OTHER	
Plains Rd E / Francis Rd	33	7	10	50
Plains Rd E / King Rd	27	6	8	41
North Shore Blvd E / King Rd	7	1	0	8
North Shore Blvd / Francis Rd	2	2	1	5
Total Collisions	*69*	*16*	*19*	***104***

Notes:
1. Data collected from collision reports from January 1, 2012 to May 1, 2017.
2. "P.D. Only" – Personal Damage Only

11.2 COLLISION ANALYSIS

The graph below summarizes the number of recorded collisions for key area intersections, classified by the consequences resultant of the collisions.



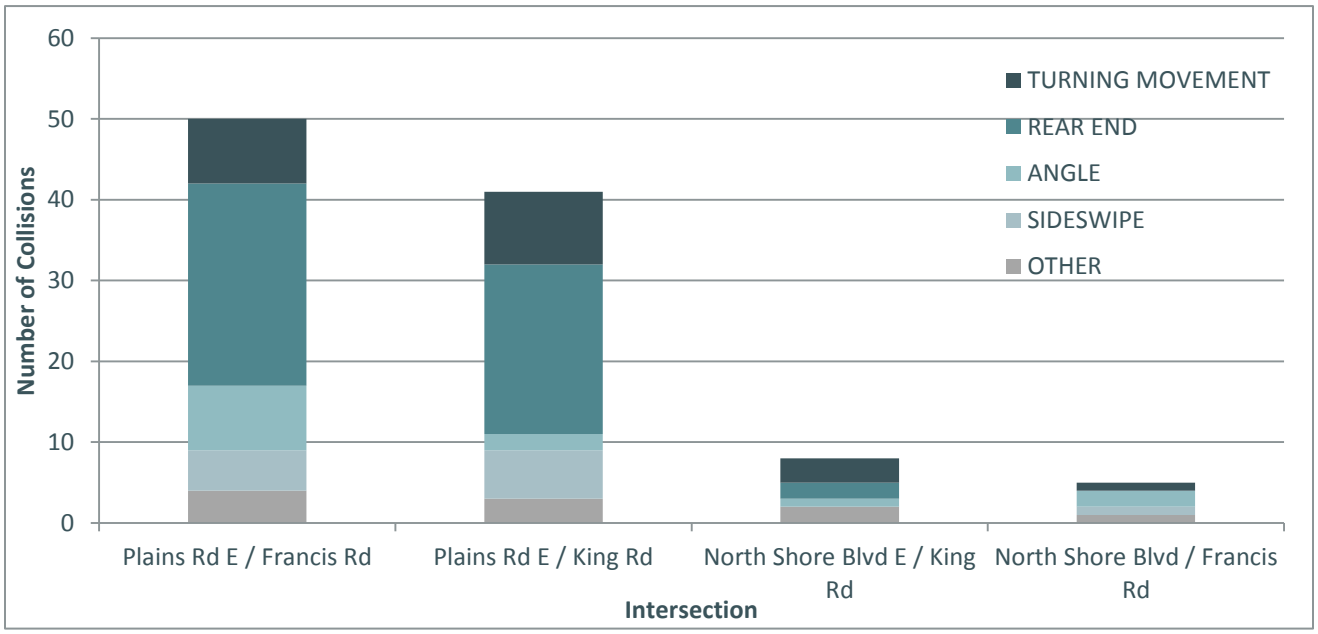
Within the study area, a total of 104 collisions have been reported from January 1, 2012 to May 1, 2017. Of these, 69 collisions (66%) were classified as “personal damage only” (P.D. Only), 16 (15%) as “non-fatal injury”, and 19 (18%) as “other”. The majority of accidents occurred at the Plains Road East / Francis Road intersection. No fatal incidents were recorded at any of the intersections within the study period.

Collisions may also be classified by the impact types, to better understand the movements that have caused the collisions. Table 36 details the collision impact types for each intersection, categorized as turning movements, rear ends, angle (perpendicular movements), sideswipes, and others. The data are plotted on a graph immediately below to visualize relative distributions.

TABLE 36 EXISTING STUDY AREA COLLISION IMPACT TYPES

INTERSECTION	COLLISION IMPACT TYPES					TOTAL NUMBER OF COLLISIONS
	TURNING MOVEMENT	REAR END	ANGLE	SIDESWIPE	OTHER	
Plains Rd E / Francis Rd	8	25	8	5	4	50
Plains Rd E / King Rd	9	21	2	6	3	41
North Shore Blvd E / King Rd	3	2	1	0	2	8
North Shore Blvd / Francis Rd	1	0	2	1	1	5
Total Collisions	*21*	*48*	*13*	*12*	*10*	***104***

Notes:
1. Data collected from collision reports from January 1, 2012 to May 1, 2017.



Between the different collision impact types, rear ends constitute the majority of incidents (46%). These occurred most at the intersections along Plains Road East. Issues with following and stopping are prominent; however, they generally pose less severe penalties for road users.

Turning movements characterized a smaller share of collisions: approximately 20% of collisions involved left or right-turn movements. Of these turning movement collisions, the vast majority involved left turns (95%): only a single collision at Plains Road East / Francis Road exclusively involved a right turn (5% of all turning movement collisions).

Angle collisions were most frequent at Plains Road East / Francis Road. They constituted 16% of all collisions at that intersection, compared with the average incidence at other intersections where angle collisions shared approximately 6% of collisions. Angle collisions are largely a result of users disobeying traffic control devices. Further study of the Plains Road East / Francis Road intersection may be warranted to identify issues with visibility and confusion.

Sideswipes represent comparably infrequent collision types. They account for approximately 8% of all collisions, concentrated at the intersections along Plains Road East.

For the purposes of this analysis, “Other” impact types are generally indicative of collisions that do not involve two vehicles; rather, they include collisions between vehicles and cyclists, vehicles and pedestrians, and vehicles and other road objects. Intersections with a higher incidence of “Other” collisions may require improvements in the pedestrian / cyclist realm to better protect all road users.

Detailed collision information sheets can be found in **Appendix D**.

11.3 PROPOSED SAFETY STRATEGY

The proposed safety strategy will be concentrated within the Site boundaries, where traffic will be managed to reduce potential safety concerns. This safety strategy is consistent with the goals of the proposed pedestrian-oriented public road and mews, and synergizes with the proposed TDM strategy.

Two main components constitute the proposed on-site safety strategy:

1. Introducing a raised “table top” crossing
2. New stop-controlled midblock intersections

Introducing a raised table top crossing creates a barrier to speeding vehicles without encumbering emergency vehicles, or disrupting normal intersection function. Pedestrians crossing the intersection will be raised by the heightened platform to appear taller and therefore more visible to motorists. There is also an opportunity to provided additional pavement treatments to the raise portion of the table top to further increase awareness of pedestrian activity in the area. The proposed safety strategy seeks to implement a table top crossing midblock crossing along Warwick Drive that would connects pedestrians to the proposed park spaces and Francis Road Bikeway. For the same reason, two smaller table top crossings are also proposed along the new Sunset Road extension near the proposed park.

All-way stop controls proposed at the new intersections created by the proposed public roadway will be effective traffic calming measures along Surrey Lane and Marley Road. These intersections, described in the proposed development programme, create a dedicated space for pedestrian crossings, and contribute significantly to the reduction of speeds along the fringes of the proposed development.

12.0 SUMMARY & CONCLUSIONS

BA Group has been retained by bcIMC Realty Corporation to review and document the transportation-related aspects of the project, including parking, loading, bicycle parking, access and traffic operations as a part of the Master Plan Application process.

Based on the findings of this review, the transportation-related conditions imposed by the proposed development can be supported by the existing transportation network. In conclusion, these findings support the proposed Georgian Court Estates Redevelopment project as proposed as part of the contemplated Master Plan for the Site.

General Site Characteristics

1. The Georgian Court Redevelopment is a proposed residential development located approximately 400m southeast of the King Road and Plains Road East intersection in the City of Burlington, Ontario

2. Existing development: 280 townhouse units, including maisonettes, back-to-back townhouses, and traditional townhouses

3. Proposed development: 1,450 residential units in three (3) high-rise towers, five (5) mid-rise towers, and twenty (20) townhouse blocks

4. Proposed unit split: 162 high-rise apartments, 951 mid-rise apartments, 137 grade-related townhouses, 143 back-to-back townhouses, and 57 traditional townhouses

5. Proposed public road: Sunset Road extension from Marley Road to Surrey Lane
   - 20m right-of-way, including:
   - 2m-wide sidewalks on both sides
   - 2.5m-wide on-street parking lane on one side
   - 4m general purpose traffic lanes in both directions

6. Proposed private mews: Marley Road to Surrey Lane, halfway between King Road and Sunset Road Extension
   - 15m virtual right-of-way, including:
   - 1.5m-wide sidewalks on both sides
   - 2.5m-wide layby parking lanes on both sides
   - 3m general purpose traffic lanes in both directions

7. Proposed private laneway: Marley Road to Surrey Lane, between King Road proposed mews
   - 11.5m virtual right-of-way, including:
   - 1.5m-wide sidewalks on both sides
   - 2.5m-wide private laneway parking for residents on one side
   - 3m general purpose traffic lanes in both directions

Vehicle Parking

8. Existing parking supply provided by 14 parking lots, offering 470 spaces for residents and 20 spaces for visitors (490 total spaces). Existing parking rate = 1.75 spaces per unit

9. Parking requirement for proposed development is 2,411 spaces (1,896 resident, 515 visitor spaces) under City of Burlington Zoning By-law 2020, Subsection 2.25. Proposed future parking rate = 1.85 spaces per unit

10. It is proposed to adopt the zoning by-law parking requirements for the Site. Parking locations and supply distribution will be confirmed as part of future Site Plan application for the site and are proposed to be shared globally within the site and to be included primarily within multiple underground garages (varying from 1-2 levels in depth) with some additional surface lot allocations.

Cycling Facilities

11. No bicycle parking areas currently exist on Site.

12. No bicycle parking spaces are required under City of Burlington Zoning By-law 2020 for the proposed development.

13. As part of the proposed Master Plan for the site, it is proposed to meet and potentially exceed the bicycle parking zoning by-law requirements for the site.

Loading Facilities

14. No loading facilities current exist at the Site beyond on-street garbage collection

15. Loading space requirement for proposed development is 8 loading spaces, as determined by applicable City of Burlington Zoning Bylaws

16. Proposed loading spaces will meet zoning by-law requirements

Traffic Volumes

17. Existing traffic volumes established based on review of turning movement counts conducted on Wednesday, January 11, 2017 by Spectrum Traffic Data Inc.

18. Existing Site related trips were forecast based on a review of the residential townhouse trip generation rates listed within the ITE Trip Generation manual for Residential Condominiums/Townhouses (Land Use Code 230).

    Based on this review, the existing site generates in the order of 115 and 135 two-way trips during the morning and afternoon peak hour periods.

19. Future background traffic volumes were generated through a general growth allowance for background development applied at a rate of 2% per annum over the expected full build-out period (12 years).

20. Future total traffic volumes include Site-generated traffic, determined through the application of the ITE Trip Generation manual rates on the proposed unit mix. Three land use codes apply to the Site:
    - High-Rise Apartments (ITE Land Use Code 222)
    - Mid-Rise Apartments (ITE Land Use Code 223)
    - Residential Condominiums/Townhouses (ITE Land Use Code 230)

21. Total Site generated traffic is expected to produce approximately 565 and 670 two-way trips during the weekday morning and afternoon peak hours, respectively.

22. Total net-new two-way site related traffic is anticipated to be in the order of 450 and 535 trips during the weekday morning and afternoon peak hours, respectively.

Traffic Operations

23. Traffic operations analyses were conducted for both signalized and unsignalized intersections using Highway Capacity Manual 2000 (HCM 2000) methodology

24. Existing traffic conditions analysis of signalized intersections revealed busy conditions with overall intersection LOS better than C and v/c ratios less than 0.78 during a.m. and p.m. peak periods.

25. Future background traffic conditions analysis of signalized intersections revealed busy conditions with overall intersection LOS better than D and v/c ratios less than 0.90 during a.m. and p.m. peak periods.

26. Future total traffic conditions analysis of signalized intersections revealed busy, but operationally acceptable conditions with overall intersection LOS better than D and v/c ratios less than 0.93 during a.m. and p.m. peak periods.

27. Existing traffic conditions analysis of unsignalized intersections revealed busy conditions with LOS better than D and delays less than 27.4 seconds during a.m. and p.m. peak periods.

28. Future background traffic conditions analysis of unsignalized intersections revealed busy conditions with LOS better than D and delays less than 34.3 seconds during a.m. and p.m. peak periods.

29. Future total traffic conditions analysis of unsignalized intersections revealed busy, but operationally acceptable conditions with LOS better than E and delays less than 49.7 seconds during a.m. and p.m. peak periods.

30. Traffic induced by the proposed development programme can be acceptably accommodated by the existing transportation infrastructure.

Transportation Demand Management

31. A Transportation Demand Management (TDM) Plan is proposed as part of the redevelopment of Georgian Court in order to encourage existing and future residents to develop more sustainable transportation habits through the greater utilization of non-auto modes of transportation. The proposed TDM plan consists of five proposed strategies which are:
    i) Consideration of on-site designated car-share parking;
    ii) Encourage cycling through the potential provision of on-site bicycle parking;
    iii) Promote cycling through the provision of a potential on-site cycling station;
    iv) Creating a connected, walkable environment; and
    v) Raise awareness through the provision of sustainable transit packages to new residents.

32. The proposed TDM Plan contained within this report will be used as the guideline that will apply to subsequent Site Plan applications for each phase of the redevelopment. In this regard, details with respect to the above noted TDM Strategies that involve the provision of physical infrastructure (the bicycle repair station, bicycle parking, provision of pedestrian routes, review potential of car-share parking) will be confirmed through the Site Plan application process. The program-based TDM Strategy outlined above (provision of sustainable transportation information) will commence upon unit occupancy in the first phase of the redevelopment

Safety

33. Collision data from area road network indicated a high incidence of rear ends at prominent area intersections.

34. Proposed table-top pedestrian crossings along Warwick Drive and the Sunset Road extension will increase pedestrian visibility and further act to reduce vehicle speeds.

35. Proposed all-way stop controls at Sunset Road & Marley Road intersection and new public road & Surrey Lane intersection will act effectively as traffic calming measures.

36. Feasibility of sidewalk infill along Sunset Road to be reviewed by City of Burlington.

Conclusions

37. Based on a review of transportation related aspects of the site, the proposed redevelopment of the Georgian Court Estates as contemplated by the proposed Master Plan can be acceptably accommodated within the surround area road network.

APPENDIX A:
Proposed Master Plan

2017.06.28
Georgian Court
Masterplan



private open space

public open space

pedestrian connections

G potential garbage collection location when it's not integrated in the parking garage

1:1000
(if printed Arch D paper size)

URBAN STRATEGIES INC.

APPENDIX B:
Existing Turning Movement Counts

Turning Movement Count (1 . FAIRVIEW ST & EB QEW RAMPS)

Start Time	N Approach PLAINS RD E								E Approach FAIRVIEW ST								S Approach EB QEW OFF RAMP								SW Approach EB QEW RAMP (EB FAIRVIEW ST)								W Approach FAIRVIEW ST								NW Approach EB QEW RAMP (WB FAIRVIEW ST)								Int. Total (15 min)	Int. Total (1 hr)
	Hard Right N:NW	Right N:W	Bear Right N:SW	Thru N:S	Left N:E	U-Turn N:N	Peds N:	Approach Total	Right E:N	Bear Right E:NW	Thru E:W	Bear Left E:SW	Left E:S	U-Turn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Bear Left S:NW	Left S:W	Hard Left S:SW	U-Turn S:S	Peds S:	Approach Total	Hard Right SW:S	Bear Right SW:E	Bear Left SW:N	Left SW:NW	Hard Left SW:W	U-Turn SW:SW	Peds SW:	Approach Total	Hard Right W:SW	Right W:S	Thru W:E	Left W:N	Hard Left W:NW	U-Turn W:W	Peds W:	Approach Total	Hard Right NW:W	Right NW:SW	Bear Right NW:S	Bear Left NW:E	Hard Left NW:N	U-Turn NW:NW	Peds NW:	Approach Total		
07:00:00	5	53	0	0	0	0	0	58	1	39	67	0	0	0	0	107	116	63	0	30	0	0	0	209	0	0	0	0	0	0	0	0	22	0	115	16	0	0	0	153	0	0	0	0	0	0	0	0	527	
07:15:00	4	58	0	0	0	0	1	62	0	38	54	0	0	0	0	92	172	91	0	28	0	0	0	291	0	0	0	0	0	0	0	0	20	0	147	22	0	0	0	189	0	0	0	0	0	0	0	0	634	
07:30:00	4	38	0	0	0	0	0	42	2	55	79	0	0	0	0	136	156	77	0	44	0	0	0	277	0	0	0	0	0	0	0	0	22	0	202	24	0	0	0	248	0	0	0	0	0	0	0	0	703	
07:45:00	10	70	0	0	0	0	0	80	3	54	111	0	0	0	0	168	141	77	0	32	0	0	0	250	0	0	0	0	0	0	0	0	31	0	217	28	0	0	0	276	0	0	0	0	0	0	0	0	774	2638
08:00:00	4	75	0	0	0	0	0	79	2	41	94	0	0	0	0	137	121	47	0	54	0	0	1	222	0	0	0	0	0	0	0	0	25	0	202	28	0	0	0	255	0	0	0	0	0	0	0	0	693	2904
08:15:00	6	65	0	0	0	0	1	71	1	40	102	0	0	0	1	143	143	50	0	43	0	0	0	236	0	0	0	0	0	0	0	0	22	0	220	30	0	0	0	272	0	0	0	0	0	0	0	0	722	2892
08:30:00	4	57	0	0	0	0	1	61	1	44	120	0	0	0	0	165	93	43	0	45	0	0	1	181	0	0	0	0	0	0	1	0	16	0	222	28	0	0	0	266	0	0	0	0	0	0	0	0	673	2862
08:45:00	2	58	0	0	2	0	0	62	1	23	139	0	0	0	0	163	108	40	0	52	0	0	2	200	0	0	0	0	0	0	2	0	21	0	233	26	0	0	0	280	0	0	0	0	0	0	0	0	705	2793
BREAK																																																		
16:00:00	1	125	0	0	0	0	1	126	2	59	407	0	0	0	0	468	62	34	0	22	0	0	10	118	0	0	0	0	0	0	6	0	23	0	264	24	0	0	0	311	0	0	0	0	0	0	1	0	1023	
16:15:00	3	138	0	0	2	0	1	143	1	45	366	0	0	0	1	412	73	27	0	35	0	0	4	135	0	0	0	0	0	0	3	0	14	0	269	21	0	0	0	304	0	0	0	0	0	0	1	0	994	
16:30:00	6	135	0	0	1	0	1	142	4	43	465	0	0	0	0	512	70	37	0	20	0	0	0	127	0	0	0	0	0	0	0	0	10	0	255	30	0	0	0	295	0	0	0	0	0	0	1	0	1076	
16:45:00	8	133	0	0	1	0	0	142	2	55	467	0	0	0	0	524	83	53	0	36	0	0	5	172	0	0	0	0	0	0	4	0	13	0	285	25	0	0	0	323	0	0	0	0	0	0	0	0	1161	4254
17:00:00	5	139	0	0	1	0	0	145	1	57	509	0	0	0	0	567	82	31	1	26	0	0	3	140	0	0	0	0	0	0	5	0	16	0	264	19	0	0	0	299	0	0	0	0	0	0	0	0	1151	4382
17:15:00	4	141	0	0	2	0	1	147	2	38	475	0	0	0	0	515	84	51	0	33	0	0	7	168	0	0	0	0	0	0	9	0	24	0	273	23	0	0	0	320	0	0	0	0	0	0	0	0	1150	4538
17:30:00	1	128	0	0	1	0	2	130	1	37	414	0	0	0	0	452	90	40	0	21	0	0	4	151	0	0	0	0	0	0	5	0	21	0	296	29	0	0	0	346	0	0	0	0	0	0	0	0	1079	4541
17:45:00	6	143	0	0	0	0	0	149	2	47	345	0	0	0	0	394	53	35	0	27	0	0	1	115	0	0	0	0	0	0	1	0	12	0	310	19	0	0	0	341	0	0	0	0	0	0	0	0	999	4379
Grand Total	73	1556	0	0	10	0	9	1639	26	715	4214	0	0	0	2	4955	1647	796	1	548	0	0	38	2992	0	0	0	0	0	0	36	0	312	0	3774	392	0	0	0	4478	0	0	0	0	0	0	3	0	**14064**	
Approach%	4.5%	94.9%	0%	0%	0.6%	0%		-	0.5%	14.4%	85%	0%	0%	0%		-	55%	26.6%	0%	18.3%	0%	0%		-	0%	0%	0%	0%	0%	0%		-	7%	0%	84.3%	8.8%	0%	0%		-	0%	0%	0%	0%	0%	0%		-		
Totals %	0.5%	11.1%	0%	0%	0.1%	0%		11.7%	0.2%	5.1%	30%	0%	0%	0%		35.2%	11.7%	5.7%	0%	3.9%	0%	0%		21.3%	0%	0%	0%	0%	0%	0%		0%	2.2%	0%	26.8%	2.8%	0%	0%		31.8%	0%	0%	0%	0%	0%	0%		0%	-	-
Heavy	4	22	0	0	0	0		-	1	9	76	0	0	0		-	26	8	0	9	0	0		-	0	0	0	0	0	0		-	8	0	87	10	0	0		-	0	0	0	0	0	0		-	-	-
Heavy %	5.5%	1.4%	0%	0%	0%	0%		-	3.8%	1.3%	1.8%	0%	0%	0%		-	1.6%	1%	0%	1.6%	0%	0%		-	0%	0%	0%	0%	0%	0%		-	2.6%	0%	2.3%	2.6%	0%	0%		-	0%	0%	0%	0%	0%	0%		-	-	-
Bicycles	0	0	0	0	0	0		-	0	0	1	0	0	0		-	0	0	0	0	0	0		-	0	0	0	0	0	0		-	0	0	3	1	0	0		-	0	0	0	0	0	0		-	-	-
Bicycle %	0%	0%	0%	0%	0%	0%		-	0%	0%	0%	0%	0%	0%		-	0%	0%	0%	0%	0%	0%		-	0%	0%	0%	0%	0%	0%		-	0%	0%	0.1%	0.3%	0%	0%		-	0%	0%	0%	0%	0%	0%		-	-	-

Peak Hour: 07:30 AM - 08:30 AM Weather: Unknown (1.9 °C)

Start Time	N Approach PLAINS RD E								E Approach FAIRVIEW ST								S Approach EB QEW OFF RAMP								SW Approach EB QEW RAMP (EB FAIRVIEW ST)								W Approach FAIRVIEW ST								NW Approach EB QEW RAMP (WB FAIRVIEW ST)								Int. Total (15 min)
	Hard Right	Right	Bear Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Bear Right	Thru	Bear Left	Left	U-Turn	Peds	Approach Total	Right	Thru	Bear Left	Left	Hard Left	U-Turn	Peds	Approach Total	Hard Right	Bear Right	Bear Left	Left	Hard Left	U-Turn	Peds	Approach Total	Hard Right	Right	Thru	Left	Hard Left	U-Turn	Peds	Approach Total	Hard Right	Right	Bear Right	Bear Left	Hard Left	U-Turn	Peds	Approach Total	
07:30:00	4	38	0	0	0	0	0	42	2	55	79	0	0	0	0	136	156	77	0	44	0	0	0	277	0	0	0	0	0	0	0	0	22	0	202	24	0	0	0	248	0	0	0	0	0	0	0	0	703
07:45:00	10	70	0	0	0	0	0	80	3	54	111	0	0	0	0	168	141	77	0	32	0	0	0	250	0	0	0	0	0	0	0	0	31	0	217	28	0	0	0	276	0	0	0	0	0	0	0	0	774
08:00:00	4	75	0	0	0	0	0	79	2	41	94	0	0	0	0	137	121	47	0	54	0	0	1	222	0	0	0	0	0	0	0	0	25	0	202	28	0	0	0	255	0	0	0	0	0	0	0	0	693
08:15:00	6	65	0	0	0	0	1	71	1	40	102	0	0	0	1	143	143	50	0	43	0	0	0	236	0	0	0	0	0	0	0	0	22	0	220	30	0	0	0	272	0	0	0	0	0	0	0	0	722
Grand Total	24	248	0	0	0	0	1	272	8	190	386	0	0	0	1	584	561	251	0	173	0	0	1	985	0	0	0	0	0	0	0	0	100	0	841	110	0	0	0	1051	0	0	0	0	0	0	0	0	**2892**
Approach%	8.8%	91.2%	0%	0%	0%	0%		-	1.4%	32.5%	66.1%	0%	0%	0%		-	57%	25.5%	0%	17.6%	0%	0%		-	0%	0%	0%	0%	0%	0%		-	9.5%	0%	80%	10.5%	0%	0%		-	0%	0%	0%	0%	0%	0%		-	
Totals %	0.8%	8.6%	0%	0%	0%	0%		9.4%	0.3%	6.6%	13.3%	0%	0%	0%		20.2%	19.4%	8.7%	0%	6%	0%	0%		34.1%	0%	0%	0%	0%	0%	0%		0%	3.5%	0%	29.1%	3.8%	0%	0%		36.3%	0%	0%	0%	0%	0%	0%		0%	-
PHF	0.6	0.83	0	0	0	0		0.85	0.67	0.86	0.87	0	0	0		0.87	0.9	0.81	0	0.8	0	0		0.89	0	0	0	0	0	0		0	0.81	0	0.96	0.92	0	0		0.95	0	0	0	0	0	0		0	-
Heavy	2	11	0	0	0	0		13	1	4	18	0	0	0		23	8	3	0	1	0	0		12	0	0	0	0	0	0		0	2	0	27	3	0	0		32	0	0	0	0	0	0		0	-
Heavy %	8.3%	4.4%	0%	0%	0%	0%		4.8%	12.5%	2.1%	4.7%	0%	0%	0%		3.9%	1.4%	1.2%	0%	0.6%	0%	0%		1.2%	0%	0%	0%	0%	0%	0%		0%	2%	0%	3.2%	2.7%	0%	0%		3%	0%	0%	0%	0%	0%	0%		0%	-
Lights	22	237	0	0	0	0		259	7	186	368	0	0	0		561	553	248	0	172	0	0		973	0	0	0	0	0	0		0	98	0	814	107	0	0		1019	0	0	0	0	0	0		0	-
Lights %	91.7%	95.6%	0%	0%	0%	0%		95.2%	87.5%	97.9%	95.3%	0%	0%	0%		96.1%	98.6%	98.8%	0%	99.4%	0%	0%		98.8%	0%	0%	0%	0%	0%	0%		0%	98%	0%	96.8%	97.3%	0%	0%		97%	0%	0%	0%	0%	0%	0%		0%	-
Single-Unit Trucks	0	8	0	0	0	0		8	1	3	5	0	0	0		9	7	3	0	0	0	0		10	0	0	0	0	0	0		0	1	0	7	1	0	0		9	0	0	0	0	0	0		0	-
Single-Unit Trucks %	0%	3.2%	0%	0%	0%	0%		2.9%	12.5%	1.6%	1.3%	0%	0%	0%		1.5%	1.2%	1.2%	0%	0%	0%	0%		1%	0%	0%	0%	0%	0%	0%		0%	1%	0%	0.8%	0.9%	0%	0%		0.9%	0%	0%	0%	0%	0%	0%		0%	-
Buses	1	3	0	0	0	0		4	0	1	12	0	0	0		13	1	0	0	0	0	0		1	0	0	0	0	0	0		0	0	1	17	2	0	0		20	0	0	0	0	0	0		0	-
Buses %	4.2%	1.2%	0%	0%	0%	0%		1.5%	0%	0.5%	3.1%	0%	0%	0%		2.2%	0.2%	0%	0%	0%	0%	0%		0.1%	0%	0%	0%	0%	0%	0%		0%	0%	1%	2%	1.8%	0%	0%		1.9%	0%	0%	0%	0%	0%	0%		0%	-
Articulated Trucks	1	0	0	0	0	0		1	0	0	1	0	0	0		1	0	0	0	1	0	0		1	0	0	0	0	0	0		0	0	0	3	0	0	0		3	0	0	0	0	0	0		0	-
Articulated Trucks %	4.2%	0%	0%	0%	0%	0%		0.4%	0%	0%	0.3%	0%	0%	0%		0.2%	0%	0%	0%	0.6%	0%	0%		0.1%	0%	0%	0%	0%	0%	0%		0%	0%	0%	0.4%	0%	0%	0%		0.3%	0%	0%	0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	-	0	-	-
Pedestrians%	-	-	-	-	-	-	33.3%		-	-	-	-	-	-	33.3%		-	-	-	-	-	-	33.3%		-	-	-	-	-	-	0%		-	-	-	-	-	-	0%		-	-	-	-	-	-	0%		-
Bicycles on Crosswalk	-	-	-	-	-	-	0	-	-	-	-	-	-	-	0	-	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	-	0	-	-
Bicycles on Crosswalk%	-	-	-	-	-	-	0%		-	-	-	-	-	-	0%		-	-	-	-	-	-	0%		-	-	-	-	-	-	0%		-	-	-	-	-	-	0%		-	-	-	-	-	-	0%		-
Bicycles on Road	0	0	0	0	0	0	0	-	0	0	0	0	0	0	0	-	0	0	0	0	0	0	0	-	0	0	0	0	0	0	0	-	0	0	0	0	0	0	0	-	0	0	0	0	0	0	0	-	-
Bicycles on Road%	-	-	-	-	-	-	0%		-	-	-	-	-	-	0%		-	-	-	-	-	-	0%		-	-	-	-	-	-	0%		-	-	-	-	-	-	0%		-	-	-	-	-	-	0%		-

Spectrum

Turning Movement Count
Location Name: FAIRVIEW ST & EB QEW RAMPS
Date: Wed, Jan 11, 2017 Deployment Lead: Walter Fugaj

BA Group
45 St. Clair Avenue West, Suite 300
Toronto ON, CANADA, M4V 1K9

Peak Hour: 04:45 PM - 05:45 PM Weather: Unknown (6.2 °C)

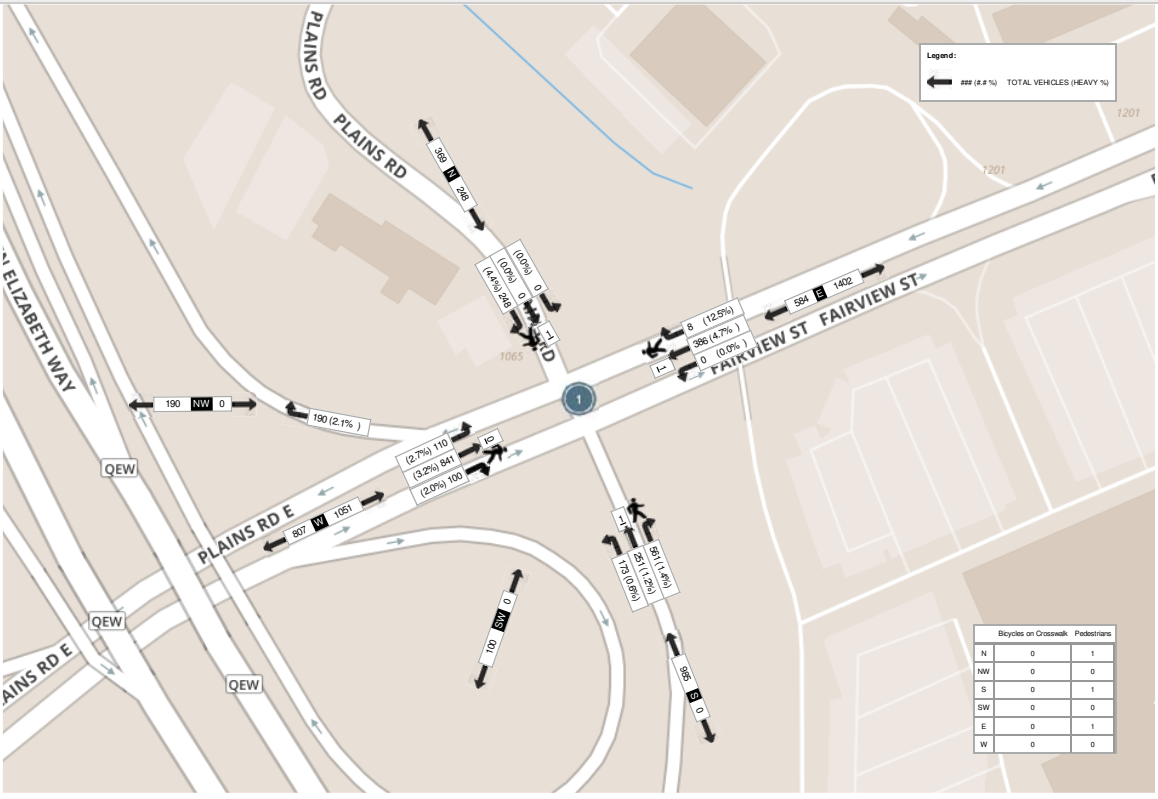
Start Time	N Approach PLAINS RD E								E Approach FAIRVIEW ST								S Approach EB QEW OFF RAMP								SW Approach EB QEW RAMP (EB FAIRVIEW ST)								W Approach FAIRVIEW ST								NW Approach EB QEW RAMP (WB FAIRVIEW ST)								Int. Total (15 min)
	Hard Right	Right	Bear Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Bear Right	Thru	Bear Left	Left	U-Turn	Peds	Approach Total	Right	Thru	Bear Left	Left	Hard Left	U-Turn	Peds	Approach Total	Hard Right	Bear Right	Bear Left	Left	Hard Left	U-Turn	Peds	Approach Total	Hard Right	Right	Thru	Left	Hard Left	U-Turn	Peds	Approach Total	Hard Right	Right	Bear Right	Bear Left	Left	Hard Left	U-Turn	Peds	Approach Total	
16:45:00	8	133	0	0	1	0	0	142	2	55	467	0	0	0	0	524	83	53	0	36	0	0	5	172	0	0	0	0	0	0	4	0	13	0	285	25	0	0	0	323	0	0	0	0	0	0	0	0	1161
17:00:00	5	139	0	0	1	0	0	145	1	57	509	0	0	0	0	567	82	31	1	26	0	0	3	140	0	0	0	0	0	0	5	0	16	0	264	19	0	0	0	299	0	0	0	0	0	0	0	0	1151
17:15:00	4	141	0	0	2	0	1	147	2	38	475	0	0	0	0	515	84	51	0	33	0	0	7	168	0	0	0	0	0	0	9	0	24	0	273	23	0	0	0	320	0	0	0	0	0	0	0	0	1150
17:30:00	1	128	0	0	1	0	2	130	1	37	414	0	0	0	0	452	90	40	0	21	0	0	4	151	0	0	0	0	0	0	5	0	21	0	296	29	0	0	0	346	0	0	0	0	0	0	0	0	1079
Grand Total	18	541	0	0	5	0	3	564	6	187	1865	0	0	0	0	2058	339	175	1	116	0	0	19	631	0	0	0	0	0	0	23	0	74	0	1118	96	0	0	0	1288	0	0	0	0	0	0	0	0	**4541**
Approach%	3.2%	95.9%	0%	0%	0.9%	0%		-	0.3%	9.1%	90.6%	0%	0%	0%		-	53.7%	27.7%	0.2%	18.4%	0%	0%		-	0%	0%	0%	0%	0%	0%		-	5.7%	0%	86.8%	7.5%	0%	0%		-	0%	0%	0%	0%	0%	0%			-
Totals %	0.4%	11.9%	0%	0%	0.1%	0%		12.4%	0.1%	4.1%	41.1%	0%	0%	0%		45.3%	7.5%	3.9%	0%	2.6%	0%	0%		13.9%	0%	0%	0%	0%	0%	0%		0%	1.6%	0%	24.6%	2.1%	0%	0%		28.4%	0%	0%	0%	0%	0%	0%		0%	-
PHF	0.56	0.96	0	0	0.63	0		0.96	0.75	0.82	0.92	0	0	0		0.91	0.94	0.83	0.25	0.81	0	0		0.92	0	0	0	0	0	0		0	0.77	0	0.94	0.83	0	0		0.93	0	0	0	0	0	0		0	-
Heavy	0	1	0	0	0	0		1	0	0	23	0	0	0		23	2	0	0	2	0	0		4	0	0	0	0	0	0		0	1	0	16	3	0	0		20	0	0	0	0	0	0		0	-
Heavy %	0%	0.2%	0%	0%	0%	0%		0.2%	0%	0%	1.2%	0%	0%	0%		1.1%	0.6%	0%	0%	1.7%	0%	0%		0.6%	0%	0%	0%	0%	0%	0%		0%	1.4%	0%	1.4%	3.1%	0%	0%		1.6%	0%	0%	0%	0%	0%	0%		0%	-
Lights	18	540	0	0	5	0		563	6	187	1842	0	0	0		2035	337	175	1	114	0	0		627	0	0	0	0	0	0		0	73	0	1102	93	0	0		1268	0	0	0	0	0	0		0	-
Lights %	100%	99.8%	0%	0%	100%	0%		99.8%	100%	100%	98.8%	0%	0%	0%		98.9%	99.4%	100%	100%	98.3%	0%	0%		99.4%	0%	0%	0%	0%	0%	0%		0%	98.6%	0%	98.6%	96.9%	0%	0%		98.4%	0%	0%	0%	0%	0%	0%		0%	-
Single-Unit Trucks	0	0	0	0	0	0		0	0	0	14	0	0	0		14	1	0	0	2	0	0		3	0	0	0	0	0	0		0	0	0	6	1	0	0		7	0	0	0	0	0	0		0	-
Single-Unit Trucks %	0%	0%	0%	0%	0%	0%		0%	0%	0%	0.8%	0%	0%	0%		0.7%	0.3%	0%	0%	1.7%	0%	0%		0.5%	0%	0%	0%	0%	0%	0%		0%	0%	0%	0.5%	1%	0%	0%		0.5%	0%	0%	0%	0%	0%	0%		0%	-
Buses	0	0	0	0	0	0		0	0	0	8	0	0	0		8	1	0	0	0	0	0		1	0	0	0	0	0	0		0	0	0	8	0	0	0		8	0	0	0	0	0	0		0	-
Buses %	0%	0%	0%	0%	0%	0%		0%	0%	0%	0.4%	0%	0%	0%		0.4%	0.3%	0%	0%	0%	0%	0%		0.2%	0%	0%	0%	0%	0%	0%		0%	0%	0%	0.7%	0%	0%	0%		0.6%	0%	0%	0%	0%	0%	0%		0%	-
Articulated Trucks	0	1	0	0	0	0		1	0	0	1	0	0	0		1	0	0	0	0	0	0		0	0	0	0	0	0	0		0	1	0	2	2	0	0		5	0	0	0	0	0	0		0	-
Articulated Trucks %	0%	0.2%	0%	0%	0%	0%		0.2%	0%	0%	0.1%	0%	0%	0%		0%	0%	0%	0%	0%	0%	0%		0%	0%	0%	0%	0%	0%	0%		0%	1.4%	0%	0.2%	2.1%	0%	0%		0.4%	0%	0%	0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	-	-	-	3	-	-	-	-	-	-	-	0	-	-	-	-	-	-	-	17	-	-	-	-	-	-	-	21	-	-	-	-	-	-	-	0	-	-	-	-	-	-	-	-	0	-	-
Pedestrians%	-	-	-	-	-	-	6.7%		-	-	-	-	-	-	0%		-	-	-	-	-	-	37.8%		-	-	-	-	-	-	46.7%		-	-	-	-	-	-	0%		-	-	-	-	-	-	0%		-
Bicycles on Crosswalk	-	-	-	-	-	-	0	-	-	-	-	-	-	-	0	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	0	-	-	-	-	-	-	-	-	0	-	-
Bicycles on Crosswalk%	-	-	-	-	-	-	0%		-	-	-	-	-	-	0%		-	-	-	-	-	-	4.4%		-	-	-	-	-	-	4.4%		-	-	-	-	-	-	0%		-	-	-	-	-	-	0%		-
Bicycles on Road	0	0	0	0	0	0	0	-	0	0	1	0	0	0	0	-	0	0	0	0	0	0	0	-	0	0	0	0	0	0	0	-	0	0	1	0	0	0	0	-	0	0	0	0	0	0	0	0	-	-
Bicycles on Road%	-	-	-	-	-	-	0%		-	-	-	-	-	-	0%		-	-	-	-	-	-	0%		-	-	-	-	-	-	0%		-	-	-	-	-	-	0%		-	-	-	-	-	-	0%		-

Spectrum

Turning Movement Count
Location Name: FAIRVIEW ST & EB QEW RAMPS
Date: Wed, Jan 11, 2017 Deployment Lead: Walter Fugaj

BA Group
45 St. Clair Avenue West, Suite 300
Toronto ON, CANADA, M4V 1K9

Peak Hour: 07:30 AM - 08:30 AM Weather: Unknown (1.9 °C)



Peak Hour: 04:45 PM - 05:45 PM Weather: Unknown (6.2 °C)



Turning Movement Count (2 . FAIRVIEW ST & SB QEW RAMPS)

Start Time	N Approach SB QEW OFF RAMP							NE Approach SB QEW ON RAMP (WB FAIRVIEW ST)							E Approach FAIRVIEW ST							S Approach SB QEW ON RAMP							W Approach FAIRVIEW ST							Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	Hard Left N:NE	U-Turn N:N	Peds N:	Approach Total	Hard Right NE:N	Bear Right NE:W	Bear Left NE:S	Hard Left NE:E	U-Turn NE:NE	Peds NE:	Approach Total	Hard Right E:NE	Right E:N	Thru E:W	Left E:S	U-Turn E:E	Peds E:	Approach Total	Right S:E	Bear Right S:NE	Thru S:N	Left S:W	U-Turn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Bear Left W:NE	Left W:N	U-Turn W:W	Peds W:	Approach Total		
07:00:00	8	0	15	0	0	0	23	0	0	0	0	0	0	0	59	0	91	0	0	0	150	0	0	0	0	0	0	0	20	139	0	0	0	0	159	332	
07:15:00	8	0	22	0	0	1	30	0	0	0	0	0	0	0	52	0	91	0	0	0	143	0	0	0	0	0	0	0	38	169	0	0	0	0	207	380	
07:30:00	15	0	29	0	0	0	44	0	0	0	0	0	0	0	55	0	113	0	0	0	168	0	0	0	0	0	0	0	42	225	0	0	0	0	267	479	
07:45:00	11	0	30	0	0	0	41	0	0	0	0	0	0	0	64	0	152	0	0	0	216	0	0	0	0	0	0	0	46	241	0	0	0	0	287	544	1735
08:00:00	15	1	28	0	0	0	44	0	0	0	0	0	0	0	59	0	175	0	0	0	234	0	0	0	0	0	1	0	28	227	0	0	0	0	255	533	1936
08:15:00	27	1	33	0	0	1	61	0	0	0	0	0	0	0	56	0	154	0	1	0	211	0	0	0	0	0	0	0	46	237	0	0	0	0	283	555	2111
08:30:00	15	0	45	0	0	1	60	0	0	0	0	0	0	0	62	0	163	0	0	0	225	0	0	0	0	0	1	0	36	214	0	0	0	0	250	535	2167
08:45:00	29	0	58	0	0	0	87	0	0	0	0	0	0	0	44	0	209	0	0	0	253	0	0	0	0	0	2	0	27	223	0	0	0	1	250	590	2213
BREAK																																					
16:00:00	42	0	67	0	0	1	109	0	0	0	0	0	0	0	230	0	323	0	0	0	553	0	0	0	0	0	6	0	72	236	0	0	0	0	308	970	
16:15:00	51	1	92	0	0	1	144	0	0	0	0	0	0	0	240	0	294	0	0	0	534	0	0	0	0	0	3	0	63	217	0	0	0	1	280	958	
16:30:00	43	2	99	0	0	1	144	0	0	0	0	0	0	0	273	0	358	0	0	0	631	0	0	0	0	0	1	0	101	190	0	0	0	0	291	1066	
16:45:00	57	0	112	0	0	0	169	0	0	0	0	0	0	0	294	0	348	0	0	0	642	0	0	0	0	0	3	0	75	222	0	0	0	0	297	1108	4102
17:00:00	49	0	68	0	0	0	117	0	0	0	0	0	0	0	314	0	350	1	0	0	665	0	0	0	0	0	3	0	86	225	0	0	0	0	311	1093	4225
17:15:00	30	0	113	0	0	0	143	0	0	0	0	0	0	0	282	0	355	0	0	0	637	0	0	0	0	0	7	0	81	213	0	0	0	1	294	1074	4341
17:30:00	39	0	109	0	0	3	148	0	0	0	0	0	0	0	244	0	345	0	0	0	589	0	0	0	0	0	4	0	67	223	0	0	0	0	290	1027	4302
17:45:00	48	0	100	0	0	0	148	0	0	0	0	0	0	0	194	0	311	0	0	0	505	0	0	0	0	0	2	0	64	235	0	0	0	0	299	952	4146
Grand Total	487	5	1020	0	0	9	1512	0	0	0	0	0	0	0	2522	0	3832	1	1	0	6356	0	0	0	0	0	33	0	892	3436	0	0	0	3	4328	**12196**	-
Approach%	32.2%	0.3%	67.5%	0%	0%		-	0%	0%	0%	0%	0%		-	39.7%	0%	60.3%	0%	0%		-	0%	0%	0%	0%	0%		-	20.6%	79.4%	0%	0%	0%		-	-	-
Totals %	4%	0%	8.4%	0%	0%		12.4%	0%	0%	0%	0%	0%		0%	20.7%	0%	31.4%	0%	0%		52.1%	0%	0%	0%	0%	0%		0%	7.3%	28.2%	0%	0%	0%		35.5%	-	-
Heavy	13	1	19	0	0		-	0	0	0	0	0		-	32	0	76	0	0		-	0	0	0	0	0		-	19	87	0	0	0		-	-	-
Heavy %	2.7%	20%	1.9%	0%	0%		-	0%	0%	0%	0%	0%		-	1.3%	0%	2%	0%	0%		-	0%	0%	0%	0%	0%		-	2.1%	2.5%	0%	0%	0%		-	-	-
Bicycles	0	0	0	0	0		-	0	0	0	0	0		-	0	0	0	0	0		-	0	0	0	0	0		-	0	5	0	0	0		-	-	-
Bicycle %	0%	0%	0%	0%	0%		-	0%	0%	0%	0%	0%		-	0%	0%	0%	0%	0%		-	0%	0%	0%	0%	0%		-	0%	0.1%	0%	0%	0%		-	-	-

Peak Hour: 08:00 AM - 09:00 AM Weather: Unknown (1.9 °C)

Start Time	N Approach SB QEW OFF RAMP							NE Approach SB QEW ON RAMP (WB FAIRVIEW ST)							E Approach FAIRVIEW ST							S Approach SB QEW ON RAMP							W Approach FAIRVIEW ST							Int. Total (15 min)
	Right	Thru	Left	Hard Left	U-Turn	Peds	Approach Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Peds	Approach Total	Hard Right	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Bear Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Bear Left	Left	U-Turn	Peds	Approach Total	
08:00:00	15	1	28	0	0	0	44	0	0	0	0	0	0	0	59	0	175	0	0	0	234	0	0	0	0	0	0	0	28	227	0	0	0	0	255	533
08:15:00	27	1	33	0	0	1	61	0	0	0	0	0	0	0	56	0	154	0	1	0	211	0	0	0	0	0	0	0	46	237	0	0	0	0	283	555
08:30:00	15	0	45	0	0	1	60	0	0	0	0	0	0	0	62	0	163	0	0	0	225	0	0	0	0	0	1	0	36	214	0	0	0	0	250	535
08:45:00	29	0	58	0	0	0	87	0	0	0	0	0	0	0	44	0	209	0	0	0	253	0	0	0	0	0	2	0	27	223	0	0	0	1	250	590
Grand Total	86	2	164	0	0	2	252	0	0	0	0	0	0	0	221	0	701	0	1	0	923	0	0	0	0	0	4	0	137	901	0	0	0	1	1038	**2213**
Approach%	34.1%	0.8%	65.1%	0%	0%		-	0%	0%	0%	0%	0%		-	23.9%	0%	75.9%	0%	0.1%		-	0%	0%	0%	0%	0%		-	13.2%	86.8%	0%	0%	0%		-	-
Totals %	3.9%	0.1%	7.4%	0%	0%		11.4%	0%	0%	0%	0%	0%		0%	10%	0%	31.7%	0%	0%		41.7%	0%	0%	0%	0%	0%		0%	6.2%	40.7%	0%	0%	0%		46.9%	-
PHF	0.74	0.5	0.71	0	0		0.72	0	0	0	0	0		0	0.89	0	0.84	0	0.25		0.91	0	0	0	0	0		0	0.74	0.95	0	0	0		0.92	-
Heavy	6	0	2	0	0		8	0	0	0	0	0		0	3	0	20	0	0		23	0	0	0	0	0		0	7	31	0	0	0		38	-
Heavy %	7%	0%	1.2%	0%	0%		3.2%	0%	0%	0%	0%	0%		0%	1.4%	0%	2.9%	0%	0%		2.5%	0%	0%	0%	0%	0%		0%	5.1%	3.4%	0%	0%	0%		3.7%	-
Lights	80	2	162	0	0		244	0	0	0	0	0		0	218	0	681	0	1		900	0	0	0	0	0		0	130	870	0	0	0		1000	-
Lights %	93%	100%	98.8%	0%	0%		96.8%	0%	0%	0%	0%	0%		0%	98.6%	0%	97.1%	0%	100%		97.5%	0%	0%	0%	0%	0%		0%	94.9%	96.6%	0%	0%	0%		96.3%	-
Single-Unit Trucks	5	0	1	0	0		6	0	0	0	0	0		0	1	0	11	0	0		12	0	0	0	0	0		0	6	14	0	0	0		20	-
Single-Unit Trucks %	5.8%	0%	0.6%	0%	0%		2.4%	0%	0%	0%	0%	0%		0%	0.5%	0%	1.6%	0%	0%		1.3%	0%	0%	0%	0%	0%		0%	4.4%	1.6%	0%	0%	0%		1.9%	-
Buses	0	0	1	0	0		1	0	0	0	0	0		0	1	0	9	0	0		10	0	0	0	0	0		0	0	15	0	0	0		15	-
Buses %	0%	0%	0.6%	0%	0%		0.4%	0%	0%	0%	0%	0%		0%	0.5%	0%	1.3%	0%	0%		1.1%	0%	0%	0%	0%	0%		0%	0%	1.7%	0%	0%	0%		1.4%	-
Articulated Trucks	1	0	0	0	0		1	0	0	0	0	0		0	1	0	0	0	0		1	0	0	0	0	0		0	1	2	0	0	0		3	-
Articulated Trucks %	1.2%	0%	0%	0%	0%		0.4%	0%	0%	0%	0%	0%		0%	0.5%	0%	0%	0%	0%		0.1%	0%	0%	0%	0%	0%		0%	0.7%	0.2%	0%	0%	0%		0.3%	-
Pedestrians	-	-	-	-	-	2	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	4	-	-	-	-	-	-	1	-	-
Pedestrians%	-	-	-	-	-	28.6%		-	-	-	-	-	0%		-	-	-	-	-	0%		-	-	-	-	-	57.1%		-	-	-	-	-	14.3%		-
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-
Bicycles on Crosswalk%	-	-	-	-	-	0%		-	-	-	-	-	0%		-	-	-	-	-	0%		-	-	-	-	-	0%		-	-	-	-	-	0%		-
Bicycles on Road	0	0	0	0	0	0	-	0	0	0	0	0	0	-	0	0	0	0	0	0	-	0	0	0	0	0	0	-	0	1	0	0	0	0	-	-
Bicycles on Road%	-	-	-	-	-	0%		-	-	-	-	-	0%		-	-	-	-	-	0%		-	-	-	-	-	0%		-	-	-	-	-	0%		-

Spectrum

Turning Movement Count
Location Name: FAIRVIEW ST & SB QEW RAMPS
Date: Wed, Jan 11, 2017 Deployment Lead: Walter Fugaj

BA Group
45 St. Clair Avenue West, Suite 300
Toronto ON, CANADA, M4V 1K9

Peak Hour: 04:30 PM - 05:30 PM Weather: Unknown (6.2 °C)

Start Time	N Approach SB QEW OFF RAMP							NE Approach SB QEW ON RAMP (WB FAIRVIEW ST)							E Approach FAIRVIEW ST							S Approach SB QEW ON RAMP							W Approach FAIRVIEW ST							Int. Total (15 min)
	Right	Thru	Left	Hard Left	U-Turn	Peds	Approach Total	Hard Right	Bear Right	Bear Left	Hard Left	U-Turn	Peds	Approach Total	Hard Right	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Bear Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Bear Left	Left	U-Turn	Peds	Approach Total	
16:30:00	43	2	99	0	0	1	144	0	0	0	0	0	0	0	273	0	358	0	0	0	631	0	0	0	0	0	1	0	101	190	0	0	0	0	291	1066
16:45:00	57	0	112	0	0	0	169	0	0	0	0	0	0	0	294	0	348	0	0	0	642	0	0	0	0	0	3	0	75	222	0	0	0	0	297	1108
17:00:00	49	0	68	0	0	0	117	0	0	0	0	0	0	0	314	0	350	1	0	0	665	0	0	0	0	0	3	0	86	225	0	0	0	0	311	1093
17:15:00	30	0	113	0	0	0	143	0	0	0	0	0	0	0	282	0	355	0	0	0	637	0	0	0	0	0	7	0	81	213	0	0	0	1	294	1074
Grand Total	179	2	392	0	0	1	573	0	0	0	0	0	0	0	1163	0	1411	1	0	0	2575	0	0	0	0	0	14	0	343	850	0	0	0	1	1193	**4341**
Approach%	31.2%	0.3%	68.4%	0%	0%		-	0%	0%	0%	0%	0%		-	45.2%	0%	54.8%	0%	0%		-	0%	0%	0%	0%	0%		-	28.8%	71.2%	0%	0%	0%		-	-
Totals %	4.1%	0%	9%	0%	0%		13.2%	0%	0%	0%	0%	0%		0%	26.8%	0%	32.5%	0%	0%		59.3%	0%	0%	0%	0%	0%		0%	7.9%	19.6%	0%	0%	0%		27.5%	-
PHF	0.79	0.25	0.87	0	0		0.85	0	0	0	0	0		0	0.93	0	0.99	0.25	0		0.97	0	0	0	0	0		0	0.85	0.94	0	0	0		0.96	-
Heavy	4	0	4	0	0		8	0	0	0	0	0		0	12	0	14	0	0		26	0	0	0	0	0		0	5	18	0	0	0		23	-
Heavy %	2.2%	0%	1%	0%	0%		1.4%	0%	0%	0%	0%	0%		0%	1%	0%	1%	0%	0%		1%	0%	0%	0%	0%	0%		0%	1.5%	2.1%	0%	0%	0%		1.9%	-
Lights	175	2	388	0	0		565	0	0	0	0	0		0	1151	0	1397	1	0		2549	0	0	0	0	0		0	338	832	0	0	0		1170	-
Lights %	97.8%	100%	99%	0%	0%		98.6%	0%	0%	0%	0%	0%		0%	99%	0%	99%	100%	0%		99%	0%	0%	0%	0%	0%		0%	98.5%	97.9%	0%	0%	0%		98.1%	-
Single-Unit Trucks	4	0	1	0	0		5	0	0	0	0	0		0	10	0	5	0	0		15	0	0	0	0	0		0	4	5	0	0	0		9	-
Single-Unit Trucks %	2.2%	0%	0.3%	0%	0%		0.9%	0%	0%	0%	0%	0%		0%	0.9%	0%	0.4%	0%	0%		0.6%	0%	0%	0%	0%	0%		0%	1.2%	0.6%	0%	0%	0%		0.8%	-
Buses	0	0	1	0	0		1	0	0	0	0	0		0	1	0	8	0	0		9	0	0	0	0	0		0	1	9	0	0	0		10	-
Buses %	0%	0%	0.3%	0%	0%		0.2%	0%	0%	0%	0%	0%		0%	0.1%	0%	0.6%	0%	0%		0.3%	0%	0%	0%	0%	0%		0%	0.3%	1.1%	0%	0%	0%		0.8%	-
Articulated Trucks	0	0	2	0	0		2	0	0	0	0	0		0	1	0	1	0	0		2	0	0	0	0	0		0	0	4	0	0	0		4	-
Articulated Trucks %	0%	0%	0.5%	0%	0%		0.3%	0%	0%	0%	0%	0%		0%	0.1%	0%	0.1%	0%	0%		0.1%	0%	0%	0%	0%	0%		0%	0%	0.5%	0%	0%	0%		0.3%	-
Pedestrians	-	-	-	-	-	1	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	12	-	-	-	-	-	-	1	-	-
Pedestrians%	-	-	-	-	-	6.3%		-	-	-	-	-	0%		-	-	-	-	-	0%		-	-	-	-	-	75%		-	-	-	-	-	6.3%		-
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	-	-	-	-	-	2	-	-	-	-	-	-	0	-	-
Bicycles on Crosswalk%	-	-	-	-	-	0%		-	-	-	-	-	0%		-	-	-	-	-	0%		-	-	-	-	-	12.5%		-	-	-	-	-	0%		-
Bicycles on Road	0	0	0	0	0	0	-	0	0	0	0	0	0	-	0	0	0	0	0	0	-	0	0	0	0	0	0	-	0	1	0	0	0	0	-	-
Bicycles on Road%	-	-	-	-	-	0%		-	-	-	-	-	0%		-	-	-	-	-	0%		-	-	-	-	-	0%		-	-	-	-	-	0%		-

Peak Hour: 08:00 AM - 09:00 AM Weather: Unknown (1.9 °C)



Peak Hour: 04:30 PM - 05:30 PM Weather: Unknown (6.2 °C)



Turning Movement Count (10 . FRANCIS RD / ALLVIEW AVE & NORTH SHORE BLVD E)

Start Time	N Approach FRANCIS RD						E Approach NORTH SHORE BLVD E						S Approach ALLVIEW AVE						W Approach NORTH SHORE BLVD E						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	U-Turn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	U-Turn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	U-Turn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	U-Turn W:W	Peds W:	Approach Total		
07:00:00	2	0	17	0	0	19	8	62	0	0	0	70	2	0	0	0	0	2	0	41	0	0	0	41	132	
07:15:00	0	0	17	0	1	17	8	57	1	0	0	66	2	0	1	0	0	3	0	58	0	0	0	58	144	
07:30:00	0	0	24	0	1	24	15	89	0	0	0	104	0	0	0	0	0	0	0	65	1	0	0	66	194	
07:45:00	8	0	20	0	1	28	20	97	0	0	1	117	0	0	0	0	0	0	0	91	2	0	0	93	238	708
08:00:00	1	0	22	0	0	23	16	99	0	0	0	115	0	0	0	0	1	0	0	92	5	0	0	97	235	811
08:15:00	0	0	15	0	0	15	16	86	0	0	0	102	1	0	0	0	0	1	0	80	2	0	0	82	200	867
08:30:00	0	0	18	0	6	18	17	104	0	0	0	121	0	0	0	0	0	0	0	88	0	0	0	88	227	900
08:45:00	0	0	17	0	2	17	23	82	0	0	0	105	0	0	1	0	0	1	1	84	2	0	0	87	210	872
BREAK																										
16:00:00	3	0	13	0	2	16	33	123	1	0	0	157	1	1	1	0	1	3	1	68	2	0	6	71	247	
16:15:00	3	0	20	0	2	23	23	132	0	0	0	155	0	0	0	0	0	0	0	72	1	0	0	73	251	
16:30:00	3	0	12	0	0	15	37	136	0	0	0	173	0	0	0	0	1	0	0	88	2	0	0	90	278	
16:45:00	2	0	23	0	1	25	28	153	0	0	0	181	1	0	0	0	1	1	0	93	2	0	0	95	302	1078
17:00:00	2	0	12	0	4	14	27	154	0	0	0	181	0	0	0	0	2	0	0	83	2	0	0	85	280	1111
17:15:00	2	0	10	0	1	12	30	154	1	0	0	185	0	0	0	0	1	0	0	67	1	0	0	68	265	1125
17:30:00	0	0	13	0	0	13	28	152	0	0	0	180	0	0	1	0	2	1	0	67	2	0	0	69	263	1110
17:45:00	3	0	12	0	0	15	17	119	1	0	0	137	0	0	0	0	0	0	1	60	0	0	0	61	213	1021
Grand Total	29	0	265	0	21	294	346	1799	4	0	1	2149	7	1	4	0	9	12	3	1197	24	0	6	1224	**3679**	-
Approach%	9.9%	0%	90.1%	0%		-	16.1%	83.7%	0.2%	0%		-	58.3%	8.3%	33.3%	0%		-	0.2%	97.8%	2%	0%		-	-	-
Totals %	0.8%	0%	7.2%	0%		8%	9.4%	48.9%	0.1%	0%		58.4%	0.2%	0%	0.1%	0%		0.3%	0.1%	32.5%	0.7%	0%		33.3%	-	-
Heavy	2	0	12	0		-	20	29	0	0		-	0	0	0	0		-	0	17	2	0		-	-	-
Heavy %	6.9%	0%	4.5%	0%		-	5.8%	1.6%	0%	0%		-	0%	0%	0%	0%		-	0%	1.4%	8.3%	0%		-	-	-
Bicycles	0	0	2	0		-	1	3	0	0		-	0	0	0	0		-	0	5	0	0		-	-	-
Bicycle %	0%	0%	0.8%	0%		-	0.3%	0.2%	0%	0%		-	0%	0%	0%	0%		-	0%	0.4%	0%	0%		-	-	-

Spectrum

Turning Movement Count
Location Name: FRANCIS RD / ALLVIEW AVE & NORTH SHORE BLVD E
Date: Wed, Jan 11, 2017 Deployment Lead: Walter Fugaj

BA Group
45 St. Clair Avenue West, Suite 300
Toronto ON, CANADA, M4V 1K9

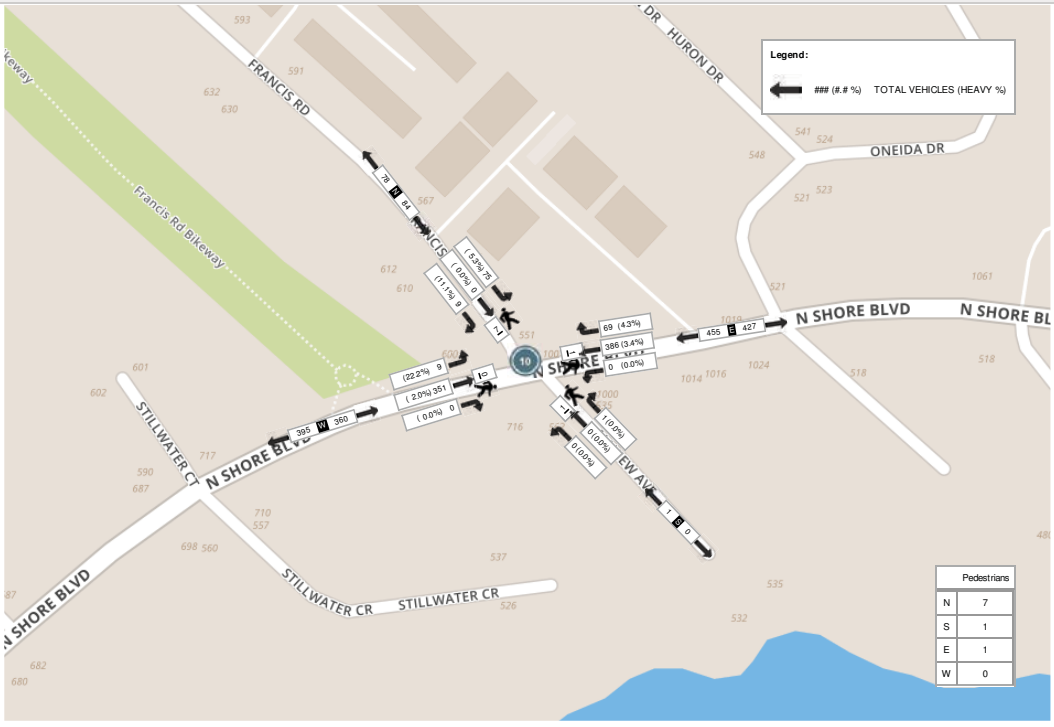
Peak Hour: 07:45 AM - 08:45 AM Weather: Unknown (1.9 °C)

Start Time	N Approach FRANCIS RD						E Approach NORTH SHORE BLVD E						S Approach ALLVIEW AVE						W Approach NORTH SHORE BLVD E						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
07:45:00	8	0	20	0	1	28	20	97	0	0	1	117	0	0	0	0	0	0	0	91	2	0	0	93	238
08:00:00	1	0	22	0	0	23	16	99	0	0	0	115	0	0	0	0	1	0	0	92	5	0	0	97	235
08:15:00	0	0	15	0	0	15	16	86	0	0	0	102	1	0	0	0	0	1	0	80	2	0	0	82	200
08:30:00	0	0	18	0	6	18	17	104	0	0	0	121	0	0	0	0	0	0	0	88	0	0	0	88	227
Grand Total	9	0	75	0	7	84	69	386	0	0	1	455	1	0	0	0	1	1	0	351	9	0	0	360	**900**
Approach%	10.7%	0%	89.3%	0%		-	15.2%	84.8%	0%	0%		-	100%	0%	0%	0%		-	0%	97.5%	2.5%	0%		-	-
Totals %	1%	0%	8.3%	0%		9.3%	7.7%	42.9%	0%	0%		50.6%	0.1%	0%	0%	0%		0.1%	0%	39%	1%	0%		40%	-
PHF	0.28	0	0.85	0		0.75	0.86	0.93	0	0		0.94	0.25	0	0	0		0.25	0	0.95	0.45	0		0.93	-
Heavy	1	0	4	0		5	3	13	0	0		16	0	0	0	0		0	0	7	2	0		9	-
Heavy %	11.1%	0%	5.3%	0%		6%	4.3%	3.4%	0%	0%		3.5%	0%	0%	0%	0%		0%	0%	2%	22.2%	0%		2.5%	-
Lights	8	0	71	0		79	66	373	0	0		439	1	0	0	0		1	0	344	7	0		351	-
Lights %	88.9%	0%	94.7%	0%		94%	95.7%	96.6%	0%	0%		96.5%	100%	0%	0%	0%		100%	0%	98%	77.8%	0%		97.5%	-
Single-Unit Trucks	1	0	0	0		1	0	5	0	0		5	0	0	0	0		0	0	3	0	0		3	-
Single-Unit Trucks %	11.1%	0%	0%	0%		1.2%	0%	1.3%	0%	0%		1.1%	0%	0%	0%	0%		0%	0%	0.9%	0%	0%		0.8%	-
Buses	0	0	4	0		4	3	8	0	0		11	0	0	0	0		0	0	3	2	0		5	-
Buses %	0%	0%	5.3%	0%		4.8%	4.3%	2.1%	0%	0%		2.4%	0%	0%	0%	0%		0%	0%	0.9%	22.2%	0%		1.4%	-
Articulated Trucks	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	1	0	0		1	-
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0.3%	0%	0%		0.3%	-
Pedestrians	-	-	-	-	7	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	0	-	-
Pedestrians%	-	-	-	-	77.8%		-	-	-	-	11.1%		-	-	-	-	11.1%		-	-	-	-	0%		-
Bicycles on Road	0	0	1	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	4	0	0	0	-	-
Bicycles on Road%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-

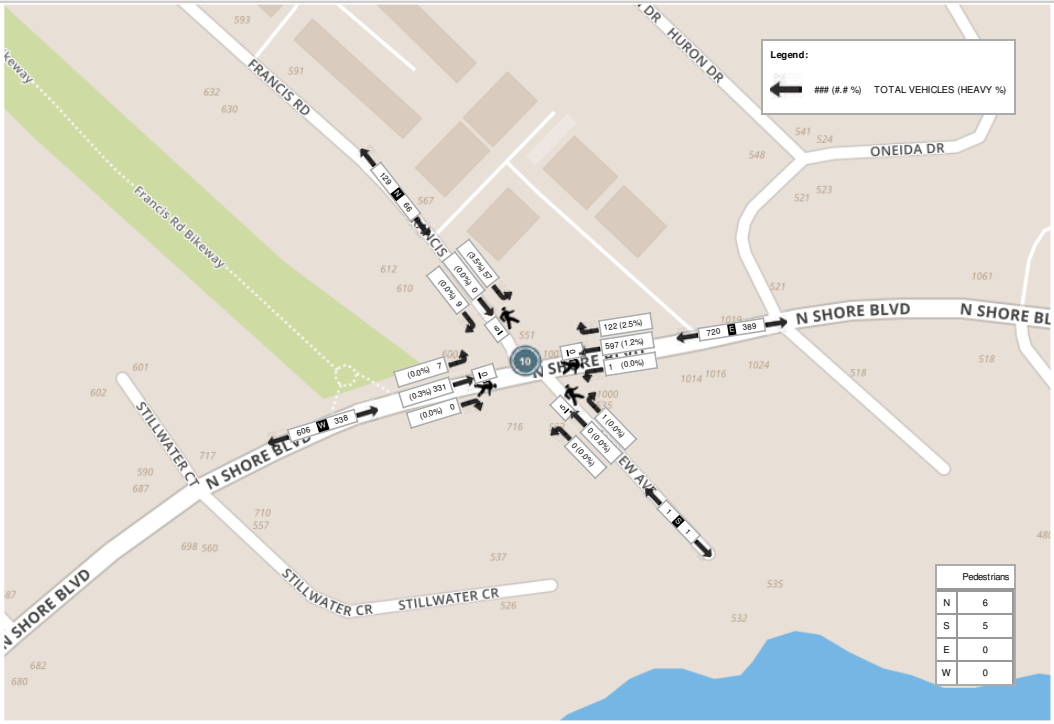
Peak Hour: 04:30 PM - 05:30 PM Weather: Unknown (6.2 °C)

Start Time	N Approach FRANCIS RD						E Approach NORTH SHORE BLVD E						S Approach ALLVIEW AVE						W Approach NORTH SHORE BLVD E						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
16:30:00	3	0	12	0	0	15	37	136	0	0	0	173	0	0	0	0	1	0	0	88	2	0	0	90	278
16:45:00	2	0	23	0	1	25	28	153	0	0	0	181	1	0	0	0	1	1	0	93	2	0	0	95	302
17:00:00	2	0	12	0	4	14	27	154	0	0	0	181	0	0	0	0	2	0	0	83	2	0	0	85	280
17:15:00	2	0	10	0	1	12	30	154	1	0	0	185	0	0	0	0	1	0	0	67	1	0	0	68	265
Grand Total	9	0	57	0	6	66	122	597	1	0	0	720	1	0	0	0	5	1	0	331	7	0	0	338	**1125**
Approach%	13.6%	0%	86.4%	0%		-	16.9%	82.9%	0.1%	0%		-	100%	0%	0%	0%		-	0%	97.9%	2.1%	0%		-	-
Totals %	0.8%	0%	5.1%	0%		5.9%	10.8%	53.1%	0.1%	0%		64%	0.1%	0%	0%	0%		0.1%	0%	29.4%	0.6%	0%		30%	-
PHF	0.75	0	0.62	0		0.66	0.82	0.97	0.25	0		0.97	0.25	0	0	0		0.25	0	0.89	0.88	0		0.89	-
Heavy	0	0	2	0		2	3	7	0	0		10	0	0	0	0		0	0	1	0	0		1	-
Heavy %	0%	0%	3.5%	0%		3%	2.5%	1.2%	0%	0%		1.4%	0%	0%	0%	0%		0%	0%	0.3%	0%	0%		0.3%	-
Lights	9	0	55	0		64	119	590	1	0		710	1	0	0	0		1	0	330	7	0		337	-
Lights %	100%	0%	96.5%	0%		97%	97.5%	98.8%	100%	0%		98.6%	100%	0%	0%	0%		100%	0%	99.7%	100%	0%		99.7%	-
Single-Unit Trucks	0	0	0	0		0	1	3	0	0		4	0	0	0	0		0	0	1	0	0		1	-
Single-Unit Trucks %	0%	0%	0%	0%		0%	0.8%	0.5%	0%	0%		0.6%	0%	0%	0%	0%		0%	0%	0.3%	0%	0%		0.3%	-
Buses	0	0	2	0		2	2	4	0	0		6	0	0	0	0		0	0	0	0	0		0	-
Buses %	0%	0%	3.5%	0%		3%	1.6%	0.7%	0%	0%		0.8%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-
Articulated Trucks	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	-
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	-	6	-	-	-	-	-	0	-	-	-	-	-	5	-	-	-	-	-	0	-	-
Pedestrians%	-	-	-	-	54.5%		-	-	-	-	0%		-	-	-	-	45.5%		-	-	-	-	0%		-
Bicycles on Road	0	0	0	0	0	-	0	2	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	-
Bicycles on Road%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-

Peak Hour: 07:45 AM - 08:45 AM Weather: Unknown (1.9 °C)



Peak Hour: 04:30 PM - 05:30 PM Weather: Unknown (6.2 °C)



Turning Movement Count (18 . FRANCIS RD & CEDAR AVE)

Start Time	W Approach					S Approach					N Approach					E Approach					Int. Total (15 min)	Int. Total (1 hr)
	Right W:S	Left W:N	Thru W:E	Peds W:	Approach Total	Left S:W	Thru S:N	Right S:E	Peds S:	Approach Total	Right N:W	Thru N:S	Left N:E	Peds N:	Approach Total	Thru E:W	Left E:S	Right E:N	Peds E:	Approach Total		
07:00:00	1	1	0	0	2	1	8	0	0	9	0	7	1	0	8	2	2	2	0	6	25	
07:15:00	0	0	1	0	1	3	12	1	1	16	1	6	0	0	7	0	1	4	1	5	29	
07:30:00	1	0	0	0	1	0	18	0	2	18	0	12	1	0	13	2	5	2	2	9	41	
07:45:00	2	2	0	6	4	1	24	0	5	25	1	7	0	0	8	0	0	1	0	1	38	133
08:00:00	1	0	0	1	1	6	21	0	0	27	0	6	3	1	9	2	2	2	1	6	43	151
08:15:00	0	1	0	0	1	0	19	2	0	21	0	14	0	0	14	2	0	5	0	7	43	165
08:30:00	1	3	0	0	4	1	19	1	0	21	0	22	0	0	22	3	0	0	1	3	50	174
08:45:00	1	1	1	0	3	2	36	0	2	38	2	10	0	0	12	5	1	1	3	7	60	196
BREAK																						
16:00:00	0	1	1	0	2	1	28	2	2	31	2	24	1	0	27	0	0	1	1	1	61	
16:15:00	1	2	3	0	6	2	16	1	1	19	2	17	3	0	22	2	1	0	1	3	50	
16:30:00	1	3	0	0	4	1	27	0	1	28	0	19	5	1	24	0	0	3	2	3	59	
16:45:00	1	3	1	0	5	2	21	0	0	23	0	30	3	0	33	0	0	2	1	2	63	233
17:00:00	2	1	2	0	5	1	27	3	0	31	4	21	3	0	28	1	0	2	0	3	67	239
17:15:00	1	0	0	0	1	0	24	3	1	27	1	17	3	0	21	1	0	1	5	2	51	240
17:30:00	0	0	3	1	3	1	24	1	1	26	1	18	4	1	23	2	1	0	4	3	55	236
17:45:00	4	2	1	0	7	2	17	1	0	20	1	21	3	0	25	1	0	1	0	2	54	227
Grand Total	17	20	13	8	50	24	341	15	16	380	15	251	30	3	296	23	13	27	22	63	**789**	-
Approach%	34%	40%	26%		-	6.3%	89.7%	3.9%		-	5.1%	84.8%	10.1%		-	36.5%	20.6%	42.9%		-	-	-
Totals %	2.2%	2.5%	1.6%		6.3%	3%	43.2%	1.9%		48.2%	1.9%	31.8%	3.8%		37.5%	2.9%	1.6%	3.4%		8%	-	-
Heavy	0	0	0		-	0	24	0		-	1	13	0		-	0	0	0		-	-	-
Heavy %	0%	0%	0%		-	0%	7%	0%		-	6.7%	5.2%	0%		-	0%	0%	0%		-	-	-
Bicycles	0	0	0		-	0	1	0		-	0	2	0		-	0	0	0		-	-	-
Bicycle %	0%	0%	0%		-	0%	0.3%	0%		-	0%	0.8%	0%		-	0%	0%	0%		-	-	-

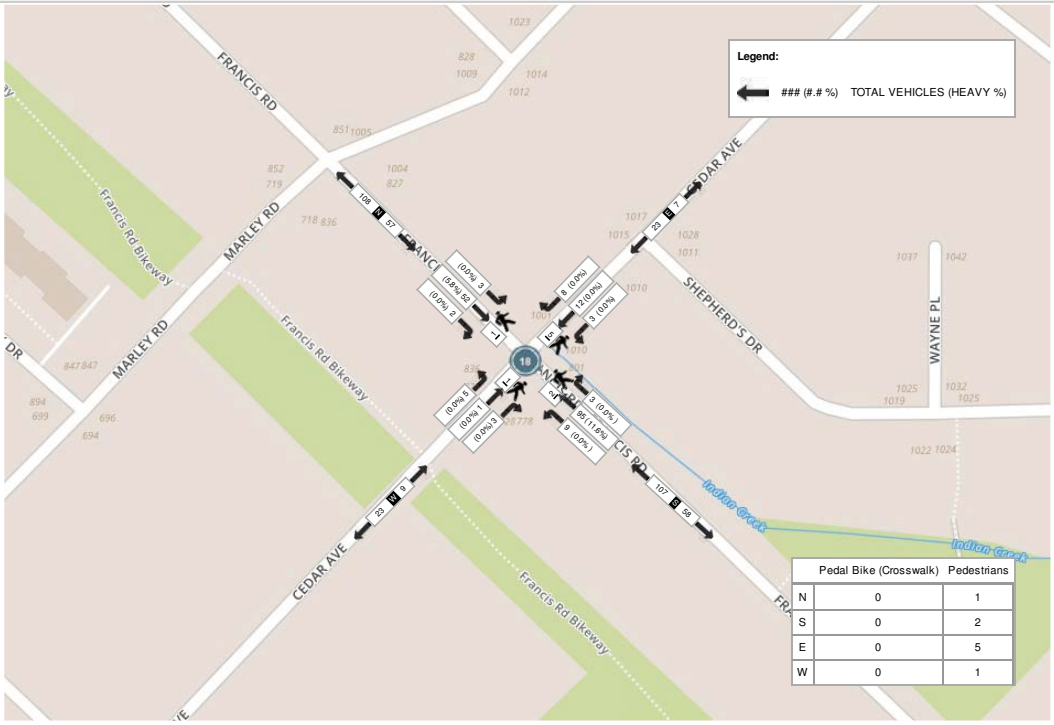
Peak Hour: 08:00 AM - 09:00 AM Weather: Unknown (1.9 °C)

Start Time	W Approach					S Approach					N Approach					E Approach					Int. Total (15 min)
	Right	Left	Thru	Peds	Approach Total	Left	Thru	Right	Peds	Approach Total	Right	Thru	Left	Peds	Approach Total	Thru	Left	Right	Peds	Approach Total	
08:00:00	1	0	0	1	1	6	21	0	0	27	0	6	3	1	9	2	2	2	1	6	43
08:15:00	0	1	0	0	1	0	19	2	0	21	0	14	0	0	14	2	0	5	0	7	43
08:30:00	1	3	0	0	4	1	19	1	0	21	0	22	0	0	22	3	0	0	1	3	50
08:45:00	1	1	1	0	3	2	36	0	2	38	2	10	0	0	12	5	1	1	3	7	60
Grand Total	3	5	1	1	9	9	95	3	2	107	2	52	3	1	57	12	3	8	5	23	**196**
Approach%	33.3%	55.6%	11.1%		-	8.4%	88.8%	2.8%		-	3.5%	91.2%	5.3%		-	52.2%	13%	34.8%		-	-
Totals %	1.5%	2.6%	0.5%		4.6%	4.6%	48.5%	1.5%		54.6%	1%	26.5%	1.5%		29.1%	6.1%	1.5%	4.1%		11.7%	-
PHF	0.75	0.42	0.25		0.56	0.38	0.66	0.38		0.7	0.25	0.59	0.25		0.65	0.6	0.38	0.4		0.82	-
Heavy	0	0	0		0	0	11	0		11	0	3	0		3	0	0	0		0	-
Heavy %	0%	0%	0%		0%	0%	11.6%	0%		10.3%	0%	5.8%	0%		5.3%	0%	0%	0%		0%	-
Lights	3	5	1		9	9	84	3		96	2	49	3		54	12	3	8		23	-
Lights %	100%	100%	100%		100%	100%	88.4%	100%		89.7%	100%	94.2%	100%		94.7%	100%	100%	100%		100%	-
Single-Unit Trucks	0	0	0		0	0	0	0		0	0	1	0		1	0	0	0		0	-
Single-Unit Trucks %	0%	0%	0%		0%	0%	0%	0%		0%	0%	1.9%	0%		1.8%	0%	0%	0%		0%	-
Buses	0	0	0		0	0	11	0		11	0	2	0		2	0	0	0		0	-
Buses %	0%	0%	0%		0%	0%	11.6%	0%		10.3%	0%	3.8%	0%		3.5%	0%	0%	0%		0%	-
Pedal Bike (Crosswalk)	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
Pedal Bike (Crosswalk)%	-	-	-	0%		-	-	-	0%		-	-	-	0%		-	-	-	0%		-
Pedestrians	-	-	-	1	-	-	-	-	2	-	-	-	-	1	-	-	-	-	5	-	-
Pedestrians%	-	-	-	11.1%		-	-	-	22.2%		-	-	-	11.1%		-	-	-	55.6%		-
Pedal Bike (Road)	0	0	0	0	-	0	0	0	0	-	0	1	0	0	-	0	0	0	0	-	-
Pedal Bike (Road)%	-	-	-	0%		-	-	-	0%		-	-	-	0%		-	-	-	0%		-

Peak Hour: 04:30 PM - 05:30 PM Weather: Unknown (6.2 °C)

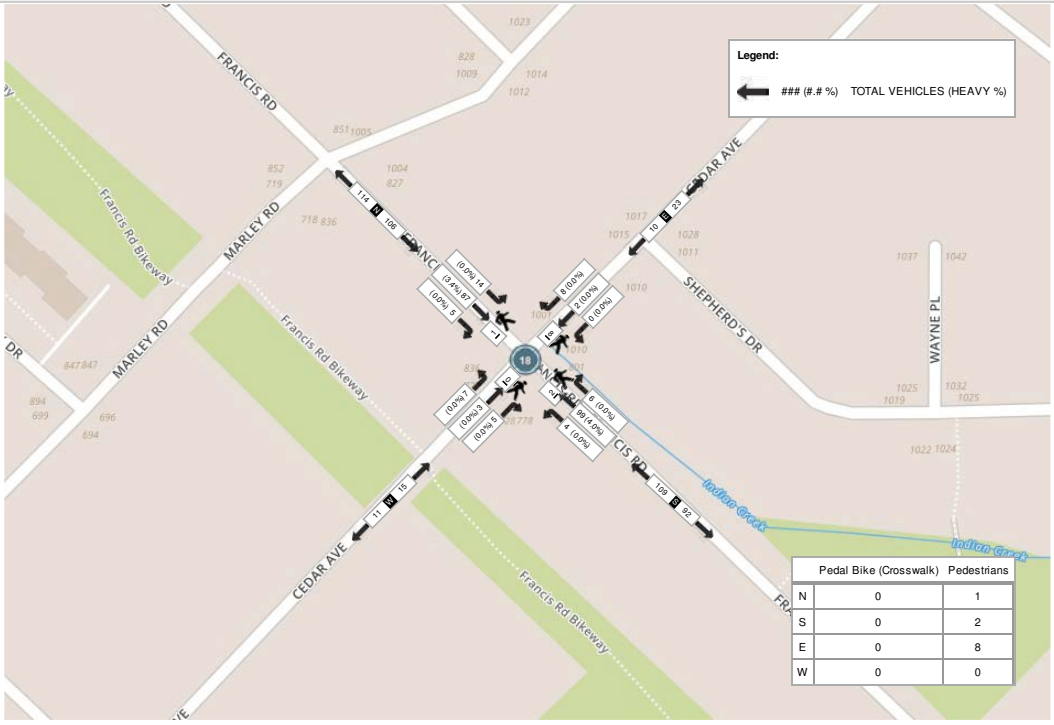
Start Time	W Approach					S Approach					N Approach					E Approach					Int. Total (15 min)
	Right	Left	Thru	Peds	Approach Total	Left	Thru	Right	Peds	Approach Total	Right	Thru	Left	Peds	Approach Total	Thru	Left	Right	Peds	Approach Total	
16:30:00	1	3	0	0	4	1	27	0	1	28	0	19	5	1	24	0	0	3	2	3	59
16:45:00	1	3	1	0	5	2	21	0	0	23	0	30	3	0	33	0	0	2	1	2	63
17:00:00	2	1	2	0	5	1	27	3	0	31	4	21	3	0	28	1	0	2	0	3	67
17:15:00	1	0	0	0	1	0	24	3	1	27	1	17	3	0	21	1	0	1	5	2	51
Grand Total	5	7	3	0	15	4	99	6	2	109	5	87	14	1	106	2	0	8	8	10	**240**
Approach%	33.3%	46.7%	20%		-	3.7%	90.8%	5.5%		-	4.7%	82.1%	13.2%		-	20%	0%	80%		-	-
Totals %	2.1%	2.9%	1.3%		6.3%	1.7%	41.3%	2.5%		45.4%	2.1%	36.3%	5.8%		44.2%	0.8%	0%	3.3%		4.2%	-
PHF	0.63	0.58	0.38		0.75	0.5	0.92	0.5		0.88	0.31	0.73	0.7		0.8	0.5	0	0.67		0.83	-
Heavy	0	0	0		0	0	4	0		4	0	3	0		3	0	0	0		0	-
Heavy %	0%	0%	0%		0%	0%	4%	0%		3.7%	0%	3.4%	0%		2.8%	0%	0%	0%		0%	-
Lights	5	7	3		15	4	95	6		105	5	84	14		103	2	0	8		10	-
Lights %	100%	100%	100%		100%	100%	96%	100%		96.3%	100%	96.6%	100%		97.2%	100%	0%	100%		100%	-
Single-Unit Trucks	0	0	0		0	0	2	0		2	0	1	0		1	0	0	0		0	-
Single-Unit Trucks %	0%	0%	0%		0%	0%	2%	0%		1.8%	0%	1.1%	0%		0.9%	0%	0%	0%		0%	-
Buses	0	0	0		0	0	2	0		2	0	2	0		2	0	0	0		0	-
Buses %	0%	0%	0%		0%	0%	2%	0%		1.8%	0%	2.3%	0%		1.9%	0%	0%	0%		0%	-
Pedal Bike (Crosswalk)	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
Pedal Bike (Crosswalk)%	-	-	-	0%		-	-	-	0%		-	-	-	0%		-	-	-	0%		-
Pedestrians	-	-	-	0	-	-	-	-	2	-	-	-	-	1	-	-	-	-	8	-	-
Pedestrians%	-	-	-	0%		-	-	-	18.2%		-	-	-	9.1%		-	-	-	72.7%		-
Pedal Bike (Road)	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	-
Pedal Bike (Road)%	-	-	-	0%		-	-	-	0%		-	-	-	0%		-	-	-	0%		-

Peak Hour: 08:00 AM - 09:00 AM Weather: Unknown (1.9 °C)



	Pedal Bike (Crosswalk)	Pedestrians
N	0	1
S	0	2
E	0	5
W	0	1

Peak Hour: 04:30 PM - 05:30 PM Weather: Unknown (6.2 °C)



	Pedal Bike (Crosswalk)	Pedestrians
N	0	1
S	0	2
E	0	8
W	0	0

Turning Movement Count (13 . FRANCIS RD & WARWICK DR)

Start Time	N Approach FRANCIS RD					S Approach FRANCIS RD					W Approach WARWICK DR					Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	U-Turn N:N	Peds N:	Approach Total	Thru S:N	Left S:W	U-Turn S:S	Peds S:	Approach Total	Right W:S	Left W:N	U-Turn W:W	Peds W:	Approach Total		
07:00:00	11	4	0	0	15	24	1	0	1	25	2	25	0	0	27	67	
07:15:00	7	5	0	0	12	23	2	0	2	25	2	29	0	1	31	68	
07:30:00	4	7	0	2	11	31	2	0	2	33	4	36	0	0	40	84	
07:45:00	14	12	1	3	27	31	3	0	10	34	2	28	0	0	30	91	310
08:00:00	14	10	0	10	24	31	1	0	0	32	1	29	1	0	31	87	330
08:15:00	12	9	0	0	21	31	3	0	1	34	5	45	0	3	50	105	367
08:30:00	10	11	0	0	21	28	3	0	8	31	6	41	0	2	47	99	382
08:45:00	8	19	0	8	27	34	5	0	7	39	5	21	0	1	26	92	383
BREAK																	
16:00:00	41	30	0	1	71	34	5	0	0	39	3	21	0	2	24	134	
16:15:00	38	31	0	1	69	17	2	0	0	19	2	23	0	0	25	113	
16:30:00	32	37	0	0	69	21	5	0	2	26	3	19	0	1	22	117	
16:45:00	32	41	0	0	73	32	3	0	0	35	5	16	0	2	21	129	493
17:00:00	40	39	0	3	79	36	3	0	0	39	1	20	0	0	21	139	498
17:15:00	38	31	0	0	69	27	1	0	4	28	1	12	0	0	13	110	495
17:30:00	44	33	0	1	77	27	3	0	1	30	2	23	0	0	25	132	510
17:45:00	33	28	0	0	61	16	8	0	2	24	1	24	0	1	25	110	491
Grand Total	378	347	1	29	726	443	50	0	40	493	45	412	1	13	458	**1677**	-
Approach%	52.1%	47.8%	0.1%		-	89.9%	10.1%	0%		-	9.8%	90%	0.2%		-	-	-
Totals %	22.5%	20.7%	0.1%		43.3%	26.4%	3%	0%		29.4%	2.7%	24.6%	0.1%		27.3%	-	-
Heavy	10	13	0		-	7	8	0		-	3	6	0		-	-	-
Heavy %	2.6%	3.7%	0%		-	1.6%	16%	0%		-	6.7%	1.5%	0%		-	-	-
Bicycles	1	1	0		-	0	0	0		-	0	0	0		-	-	-
Bicycle %	0.3%	0.3%	0%		-	0%	0%	0%		-	0%	0%	0%		-	-	-

Peak Hour: 08:00 AM - 09:00 AM Weather: Unknown (1.9 °C)

Start Time	N Approach FRANCIS RD					S Approach FRANCIS RD					W Approach WARWICK DR					Int. Total (15 min)
	Right	Thru	U-Turn	Peds	Approach Total	Thru	Left	U-Turn	Peds	Approach Total	Right	Left	U-Turn	Peds	Approach Total	
08:00:00	14	10	0	10	24	31	1	0	0	32	1	29	1	0	31	87
08:15:00	12	9	0	0	21	31	3	0	1	34	5	45	0	3	50	105
08:30:00	10	11	0	0	21	28	3	0	8	31	6	41	0	2	47	99
08:45:00	8	19	0	8	27	34	5	0	7	39	5	21	0	1	26	92
Grand Total	44	49	0	18	93	124	12	0	16	136	17	136	1	6	154	**383**
Approach%	47.3%	52.7%	0%		-	91.2%	8.8%	0%		-	11%	88.3%	0.6%		-	-
Totals %	11.5%	12.8%	0%		24.3%	32.4%	3.1%	0%		35.5%	4.4%	35.5%	0.3%		40.2%	-
PHF	0.79	0.64	0		0.86	0.91	0.6	0		0.87	0.71	0.76	0.25		0.77	-
Heavy	2	3	0		5	3	2	0		5	0	3	0		3	-
Heavy %	4.5%	6.1%	0%		5.4%	2.4%	16.7%	0%		3.7%	0%	2.2%	0%		1.9%	-
Lights	42	46	0		88	121	10	0		131	17	133	1		151	-
Lights %	95.5%	93.9%	0%		94.6%	97.6%	83.3%	0%		96.3%	100%	97.8%	100%		98.1%	-
Single-Unit Trucks	0	0	0		0	0	0	0		0	0	1	0		1	-
Single-Unit Trucks %	0%	0%	0%		0%	0%	0%	0%		0%	0%	0.7%	0%		0.6%	-
Buses	2	3	0		5	3	2	0		5	0	2	0		2	-
Buses %	4.5%	6.1%	0%		5.4%	2.4%	16.7%	0%		3.7%	0%	1.5%	0%		1.3%	-
Pedestrians	-	-	-	18	-	-	-	-	16	-	-	-	-	6	-	-
Pedestrians%	-	-	-	45%		-	-	-	40%		-	-	-	15%		-
Bicycles on Road	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	-
Bicycles on Road%	-	-	-	0%		-	-	-	0%		-	-	-	0%		-

Peak Hour: 04:45 PM - 05:45 PM Weather: Unknown (6.2 °C)

Start Time	N Approach FRANCIS RD					S Approach FRANCIS RD					W Approach WARWICK DR					Int. Total (15 min)
	Right	Thru	U-Turn	Peds	Approach Total	Thru	Left	U-Turn	Peds	Approach Total	Right	Left	U-Turn	Peds	Approach Total	
16:45:00	32	41	0	0	73	32	3	0	0	35	5	16	0	2	21	129
17:00:00	40	39	0	3	79	36	3	0	0	39	1	20	0	0	21	139
17:15:00	38	31	0	0	69	27	1	0	4	28	1	12	0	0	13	110
17:30:00	44	33	0	1	77	27	3	0	1	30	2	23	0	0	25	132
Grand Total	154	144	0	4	298	122	10	0	5	132	9	71	0	2	80	**510**
Approach%	51.7%	48.3%	0%		-	92.4%	7.6%	0%		-	11.3%	88.8%	0%		-	-
Totals %	30.2%	28.2%	0%		58.4%	23.9%	2%	0%		25.9%	1.8%	13.9%	0%		15.7%	-
PHF	0.88	0.88	0		0.94	0.85	0.83	0		0.85	0.45	0.77	0		0.8	-
Heavy	1	2	0		3	1	2	0		3	1	1	0		2	-
Heavy %	0.6%	1.4%	0%		1%	0.8%	20%	0%		2.3%	11.1%	1.4%	0%		2.5%	-
Lights	153	142	0		295	121	8	0		129	8	70	0		78	-
Lights %	99.4%	98.6%	0%		99%	99.2%	80%	0%		97.7%	88.9%	98.6%	0%		97.5%	-
Single-Unit Trucks	1	0	0		1	1	0	0		1	1	1	0		2	-
Single-Unit Trucks %	0.6%	0%	0%		0.3%	0.8%	0%	0%		0.8%	11.1%	1.4%	0%		2.5%	-
Buses	0	2	0		2	0	2	0		2	0	0	0		0	-
Buses %	0%	1.4%	0%		0.7%	0%	20%	0%		1.5%	0%	0%	0%		0%	-
Pedestrians	-	-	-	4	-	-	-	-	5	-	-	-	-	2	-	-
Pedestrians%	-	-	-	36.4%		-	-	-	45.5%		-	-	-	18.2%		-
Bicycles on Road	0	0	0	0	-	0	0	0	0	-	0	0	0	0	-	-
Bicycles on Road%	-	-	-	0%		-	-	-	0%		-	-	-	0%		-

Peak Hour: 08:00 AM - 09:00 AM Weather: Unknown (1.9 °C)



Peak Hour: 04:45 PM - 05:45 PM Weather: Unknown (6.2 °C)



Turning Movement Count (8 . KING RD & CEDAR AVE)

Start Time	N Approach KING RD						E Approach CEDAR AVE						S Approach KING RD						W Approach CEDAR AVE						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	U-Turn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	U-Turn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	U-Turn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	U-Turn W:W	Peds W:	Approach Total		
07:00:00	0	20	0	0	0	20	3	0	0	0	0	3	0	53	1	0	0	54	1	1	2	0	0	4	81	
07:15:00	1	25	2	0	0	28	7	0	0	0	0	7	0	54	0	0	0	54	3	0	2	0	0	5	94	
07:30:00	0	37	2	0	0	39	7	0	1	0	0	8	1	66	1	0	0	68	0	0	0	0	0	0	115	
07:45:00	0	44	1	0	0	45	3	1	2	0	0	6	2	61	1	0	0	64	3	0	2	0	0	5	120	410
08:00:00	0	53	1	0	0	54	8	0	1	0	0	9	0	77	3	0	0	80	1	0	2	0	0	3	146	475
08:15:00	0	46	0	0	0	46	4	0	2	0	0	6	1	70	1	0	1	72	4	1	1	0	0	6	130	511
08:30:00	1	52	3	0	0	56	7	0	1	0	2	8	2	87	0	0	0	89	3	0	1	0	0	4	157	553
08:45:00	1	31	2	0	1	34	6	0	1	0	1	7	0	80	1	0	1	81	2	0	1	0	0	3	125	558
BREAK																										
16:00:00	1	54	2	0	0	57	1	1	1	0	0	3	2	66	1	0	1	69	2	0	1	0	2	3	132	
16:15:00	0	54	2	0	0	56	5	2	0	0	0	7	0	59	4	0	3	63	7	2	1	0	0	10	136	
16:30:00	0	68	3	0	0	71	1	0	0	0	0	1	0	71	3	0	0	74	3	0	0	0	0	3	149	
16:45:00	4	63	4	0	1	71	3	0	1	0	1	4	1	78	4	0	0	83	4	0	0	0	0	4	162	579
17:00:00	1	64	4	0	0	69	3	0	0	0	0	3	3	77	3	0	1	83	5	0	1	0	0	6	161	608
17:15:00	1	48	5	0	0	54	2	0	0	0	1	2	1	70	6	0	1	77	1	0	1	0	1	2	135	607
17:30:00	0	52	4	0	0	56	4	0	0	0	1	4	2	73	5	0	0	80	4	3	2	0	0	9	149	607
17:45:00	4	41	4	0	0	49	1	0	2	0	0	3	1	55	4	0	0	60	0	0	0	0	0	0	112	557
Grand Total	14	752	39	0	2	805	65	4	12	0	6	81	16	1097	38	0	8	1151	43	7	17	0	3	67	**2104**	-
Approach%	1.7%	93.4%	4.8%	0%		-	80.2%	4.9%	14.8%	0%		-	1.4%	95.3%	3.3%	0%		-	64.2%	10.4%	25.4%	0%		-	-	-
Totals %	0.7%	35.7%	1.9%	0%		38.3%	3.1%	0.2%	0.6%	0%		3.8%	0.8%	52.1%	1.8%	0%		54.7%	2%	0.3%	0.8%	0%		3.2%	-	-
Heavy	1	12	0	0		-	0	0	1	0		-	3	17	0	0		-	1	0	2	0		-	-	-
Heavy %	7.1%	1.6%	0%	0%		-	0%	0%	8.3%	0%		-	18.8%	1.5%	0%	0%		-	2.3%	0%	11.8%	0%		-	-	-
Bicycles	0	2	0	0		-	1	0	0	0		-	0	0	0	0		-	0	0	0	0		-	-	-
Bicycle %	0%	0.3%	0%	0%		-	1.5%	0%	0%	0%		-	0%	0%	0%	0%		-	0%	0%	0%	0%		-	-	-

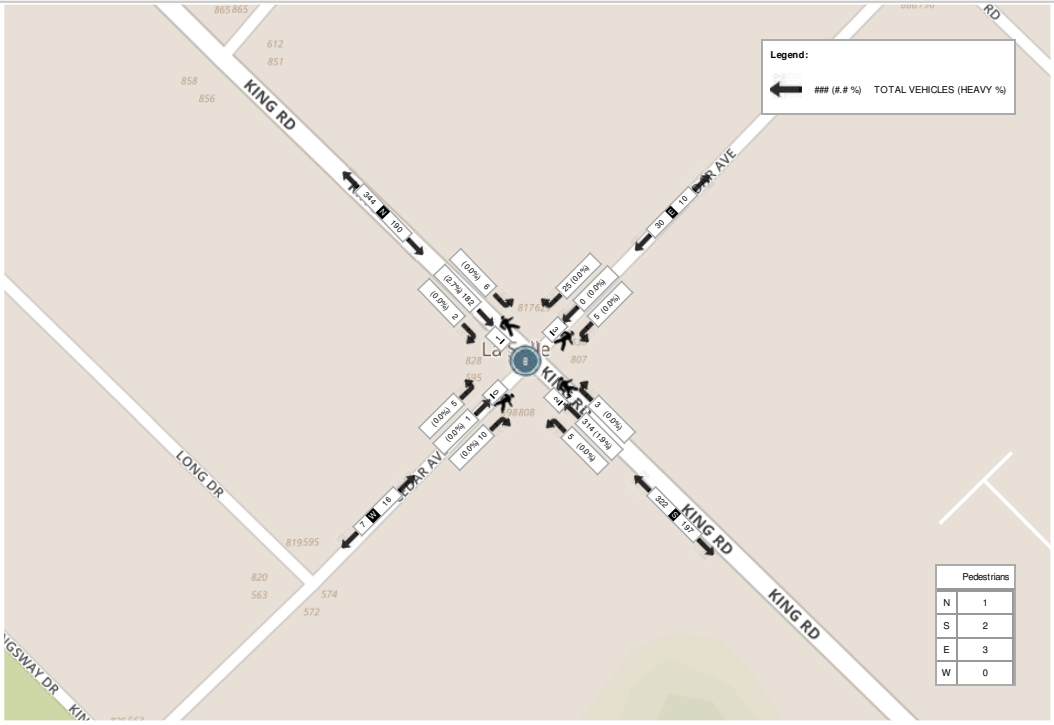
Peak Hour: 08:00 AM - 09:00 AM Weather: Unknown (1.9 °C)

Start Time	N Approach KING RD						E Approach CEDAR AVE						S Approach KING RD						W Approach CEDAR AVE						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
08:00:00	0	53	1	0	0	54	8	0	1	0	0	9	0	77	3	0	0	80	1	0	2	0	0	3	146
08:15:00	0	46	0	0	0	46	4	0	2	0	0	6	1	70	1	0	1	72	4	1	1	0	0	6	130
08:30:00	1	52	3	0	0	56	7	0	1	0	2	8	2	87	0	0	0	89	3	0	1	0	0	4	157
08:45:00	1	31	2	0	1	34	6	0	1	0	1	7	0	80	1	0	1	81	2	0	1	0	0	3	125
Grand Total	2	182	6	0	1	190	25	0	5	0	3	30	3	314	5	0	2	322	10	1	5	0	0	16	**558**
Approach%	1.1%	95.8%	3.2%	0%		-	83.3%	0%	16.7%	0%		-	0.9%	97.5%	1.6%	0%		-	62.5%	6.3%	31.3%	0%		-	-
Totals %	0.4%	32.6%	1.1%	0%		34.1%	4.5%	0%	0.9%	0%		5.4%	0.5%	56.3%	0.9%	0%		57.7%	1.8%	0.2%	0.9%	0%		2.9%	-
PHF	0.5	0.86	0.5	0		0.85	0.78	0	0.63	0		0.83	0.38	0.9	0.42	0		0.9	0.63	0.25	0.63	0		0.67	-
Heavy	0	5	0	0		5	0	0	0	0		0	0	6	0	0		6	0	0	0	0		0	-
Heavy %	0%	2.7%	0%	0%		2.6%	0%	0%	0%	0%		0%	0%	1.9%	0%	0%		1.9%	0%	0%	0%	0%		0%	-
Lights	2	177	6	0		185	25	0	5	0		30	3	308	5	0		316	10	1	5	0		16	-
Lights %	100%	97.3%	100%	0%		97.4%	100%	0%	100%	0%		100%	100%	98.1%	100%	0%		98.1%	100%	100%	100%	0%		100%	-
Single-Unit Trucks	0	5	0	0		5	0	0	0	0		0	0	2	0	0		2	0	0	0	0		0	-
Single-Unit Trucks %	0%	2.7%	0%	0%		2.6%	0%	0%	0%	0%		0%	0%	0.6%	0%	0%		0.6%	0%	0%	0%	0%		0%	-
Buses	0	0	0	0		0	0	0	0	0		0	0	4	0	0		4	0	0	0	0		0	-
Buses %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	1.3%	0%	0%		1.2%	0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	-	1	-	-	-	-	-	3	-	-	-	-	-	2	-	-	-	-	-	0	-	-
Pedestrians%	-	-	-	-	16.7%		-	-	-	-	50%		-	-	-	-	33.3%		-	-	-	-	0%		-
Bicycles on Road	0	1	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	-
Bicycles on Road%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-

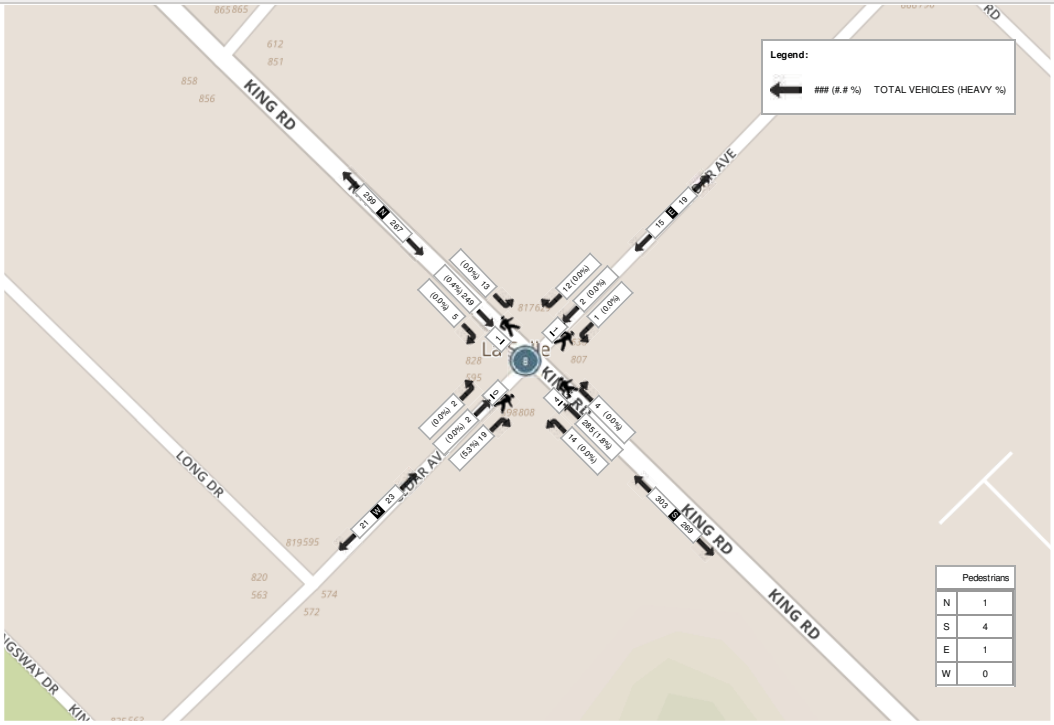
Peak Hour: 04:15 PM - 05:15 PM Weather: Unknown (6.2 °C)

Start Time	N Approach KING RD						E Approach CEDAR AVE						S Approach KING RD						W Approach CEDAR AVE						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
16:15:00	0	54	2	0	0	56	5	2	0	0	0	7	0	59	4	0	3	63	7	2	1	0	0	10	136
16:30:00	0	68	3	0	0	71	1	0	0	0	0	1	0	71	3	0	0	74	3	0	0	0	0	3	149
16:45:00	4	63	4	0	1	71	3	0	1	0	1	4	1	78	4	0	0	83	4	0	0	0	0	4	162
17:00:00	1	64	4	0	0	69	3	0	0	0	0	3	3	77	3	0	1	83	5	0	1	0	0	6	161
Grand Total	5	249	13	0	1	267	12	2	1	0	1	15	4	285	14	0	4	303	19	2	2	0	0	23	**608**
Approach%	1.9%	93.3%	4.9%	0%		-	80%	13.3%	6.7%	0%		-	1.3%	94.1%	4.6%	0%		-	82.6%	8.7%	8.7%	0%		-	-
Totals %	0.8%	41%	2.1%	0%		43.9%	2%	0.3%	0.2%	0%		2.5%	0.7%	46.9%	2.3%	0%		49.8%	3.1%	0.3%	0.3%	0%		3.8%	-
PHF	0.31	0.92	0.81	0		0.94	0.6	0.25	0.25	0		0.54	0.33	0.91	0.88	0		0.91	0.68	0.25	0.5	0		0.58	-
Heavy	0	1	0	0		1	0	0	0	0		0	0	5	0	0		5	1	0	0	0		1	-
Heavy %	0%	0.4%	0%	0%		0.4%	0%	0%	0%	0%		0%	0%	1.8%	0%	0%		1.7%	5.3%	0%	0%	0%		4.3%	-
Lights	5	248	13	0		266	12	2	1	0		15	4	280	14	0		298	18	2	2	0		22	-
Lights %	100%	99.6%	100%	0%		99.6%	100%	100%	100%	0%		100%	100%	98.2%	100%	0%		98.3%	94.7%	100%	100%	0%		95.7%	-
Single-Unit Trucks	0	1	0	0		1	0	0	0	0		0	0	3	0	0		3	1	0	0	0		1	-
Single-Unit Trucks %	0%	0.4%	0%	0%		0.4%	0%	0%	0%	0%		0%	0%	1.1%	0%	0%		1%	5.3%	0%	0%	0%		4.3%	-
Buses	0	0	0	0		0	0	0	0	0		0	0	2	0	0		2	0	0	0	0		0	-
Buses %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0.7%	0%	0%		0.7%	0%	0%	0%	0%		0%	-
Pedestrians	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	4	-	-	-	-	-	0	-	-
Pedestrians%	-	-	-	-	16.7%		-	-	-	-	16.7%		-	-	-	-	66.7%		-	-	-	-	0%		-
Bicycles on Road	0	1	0	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	-
Bicycles on Road%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-

Peak Hour: 08:00 AM - 09:00 AM Weather: Unknown (1.9 °C)



Peak Hour: 04:15 PM - 05:15 PM Weather: Unknown (6.2 °C)



Turning Movement Count (7 . KING RD & MARLEY RD)

Start Time	N Approach FRANC S					E Approach DI WKi C S					S Approach FRANC S					Int. Total (15 min)	Int. Total (1 hr)
	ght: AT	WdU ATK	nRg: te ATA	dusp AT	Dootacl hGga-cL	l f0h- KTA	WdU KT	nRg: te KTK	dusp KT	Dootacl hGga-cL	l f0h- rTK	ght: rTA	nRg: te rT	dusp rT	Dootacl hGga-cL		
71T771T77	45	2	7	7	64	2	6	7	7	3	7	31	7	7	31	52	
71T43T77	69	4	7	7	27	8	7	7	7	8	7	*8	7	7	*8	95	
71T27T77	23	4	7	7	2*	3	8	7	7	9	7	1*	7	7	1*	464	
71T83T77	88	8	7	7	85	*	4	7	7	1	7	**	7	7	**	464	862
75T771T77	32	8	7	7	31	3	7	7	7	3	4	5*	7	7	51	489	859
75T43T77	8*	2	7	7	89	6	4	7	7	2	6	18	7	7	1*	465	349
75T27T77	36	6	7	7	38	*	6	7	4	5	8	97	7	7	98	43*	338
75T83T77	23	4	7	7	2*	1	7	7	4	1	4	55	7	7	59	426	3*3
EEEEI KDFEEEB																	
4*T771T77	*7	2	7	7	*2	2	7	7	4	2	7	14	7	7	14	421	
4*T43T77	38	4	7	7	33	1	7	7	7	1	7	*8	7	7	*8	46*	
4*T27T77	12	8	7	7	11	9	7	7	4	9	2	*5	7	7	14	431	
4*T83T77	*9	2	7	7	16	3	6	7	4	1	7	57	7	7	57	439	319
41T771T77	12	1	7	7	57	2	4	7	7	8	7	54	7	7	54	4*3	*71
41T43T77	34	9	7	7	*7	1	7	7	4	1	6	14	7	7	12	487	*64
41T27T77	33	3	7	7	*7	4	6	7	4	2	6	19	7	7	54	488	*75
41T83T77	89	1	4	7	31	3	7	7	7	3	7	3*	7	7	3*	445	3*1
Grand Total	19*	35	4	7	533	15	43	7	1	92	43	4414	7	7	445*	**2134**	P
Approach%	92.4%	*.5%	7.4%		P	52.9%	4*.4%	7%		P	4.2%	95.1%	7%		P	-	P
Totals %	21.2%	6.1%	7%		87.4%	2.1%	7.1%	7%		8.8%	7.1%	38.9%	7%		33.*%	-	P
Heavy	44	3	7		P	6	4	7		P	4	45	7		P	-	P
Heavy %	4.8%	5.*%	7%		P	6.*%	*.1%	7%		P	*.1%	4.3%	7%		P	-	P
Bicycles	6	7	7		P	7	7	7		P	7	4	7		P	-	P
Bicycle %	7.2%	7%	7%		P	7%	7%	7%		P	7%	7.4%	7%		P	-	P

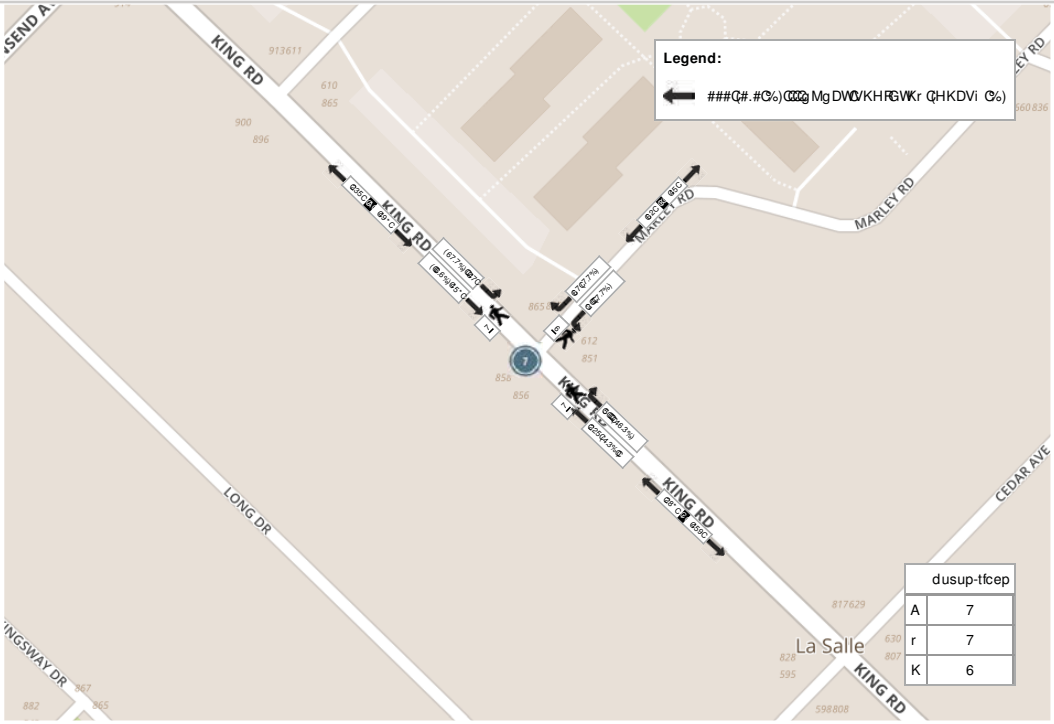
Peak Hour: 08:00 AM - 09:00 AM Weather: Unknown (1.9 °C)

Start Time	N Approach FRANC S					E Approach DI WKi C S					S Approach FRANC S					Int. Total (15 min)
	ght:	WdU	nRg: te	dusp	Dootacl hGga-cL	l f0h-	WdU	nRg: te	dusp	Dootacl hGga-cL	l f0h-	ght:	nRg: te	dusp	Dootacl hGga-cL	
75T771T77	32	8	7	7	31	3	7	7	7	3	4	5*	7	7	51	489
75T43T77	8*	2	7	7	89	6	4	7	7	2	6	18	7	7	1*	465
75T27T77	36	6	7	7	38	*	6	7	4	5	8	97	7	7	98	43*
75T83T77	23	4	7	7	2*	1	7	7	4	1	4	55	7	7	59	426
Grand Total	45*	47	7	7	49*	67	2	7	6	62	5	225	7	7	28*	**565**
Approach%	98.9%	3.4%	7%		P	51%	42%	7%		P	6.2%	91.1%	7%		P	-
Totals %	26.9%	4.5%	7%		28.1%	2.3%	7.3%	7%		8.4%	4.8%	39.5%	7%		*4.6%	-
PHF	7.55	7.*2	7		7.5*	7.14	7.25	7		7.16	7.3	7.98	7		7.96	-
Heavy	8	6	7		*	7	7	7		7	4	3	7		*	-
Heavy %	6.6%	67%	7%		2.4%	7%	7%	7%		7%	46.3%	4.3%	7%		4.1%	-
Lights	456	5	7		497	67	2	7		62	1	222	7		287	-
Lights %	91.5%	57%	7%		9*.9%	477%	477%	7%		477%	51.3%	95.3%	7%		95.2%	-
Single-Unit Trucks	8	7	7		8	7	7	7		7	7	6	7		6	-
Single-Unit Trucks %	6.6%	7%	7%		6%	7%	7%	7%		7%	7%	7.*%	7%		7.*%	-
Buses	7	6	7		6	7	7	7		7	4	2	7		8	-
Buses %	7%	67%	7%		4%	7%	7%	7%		7%	46.3%	7.9%	7%		4.6%	-
Pedestrians	P	P	P	7	P	P	P	P	6	P	P	P	P	7	P	-
Pedestrians%	P	P	P	7%	C	P	P	P	477%	C	P	P	P	7%	C	-
Bicycles on Road	4	7	7	7	P	7	7	7	7	P	7	7	7	7	P	-
Bicycles on Road%	P	P	P	7%	C	P	P	P	7%	C	P	P	P	7%	C	-

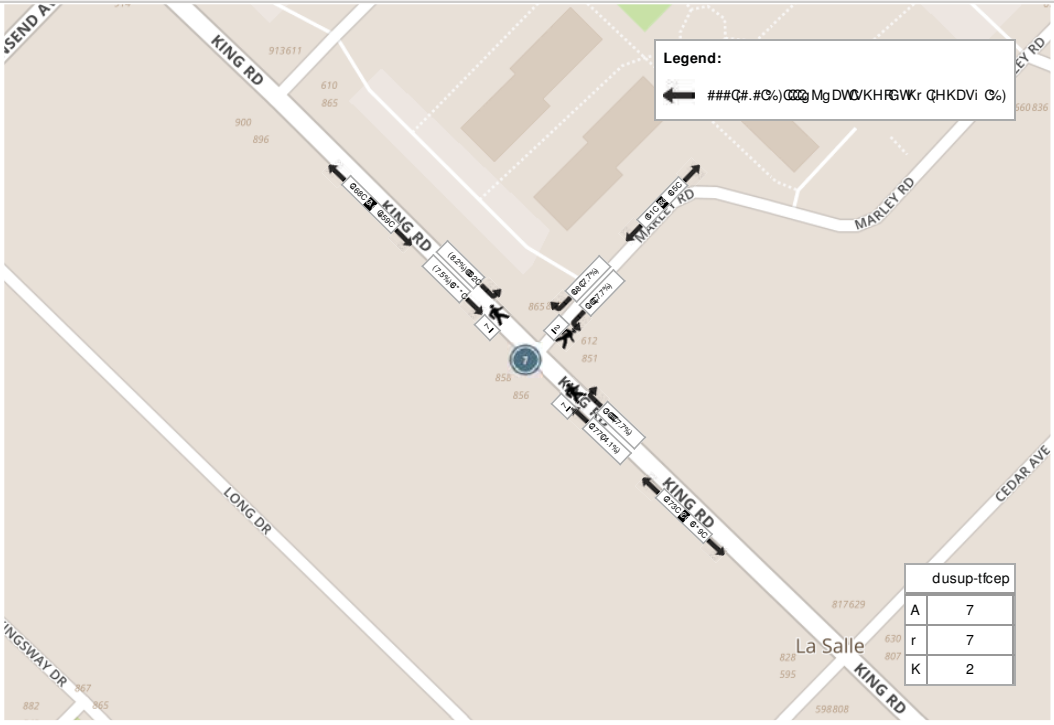
Peak Hour: 04:30 PM - 05:30 PM Weather: Unknown (6.2 °C)

Start Time	N Approach FRANC S					E Approach DI WKi C S					S Approach FRANC S					Int. Total (15 min)
	ght:	WU	n Rg: te	dusp	Dootacl hGa-cL	l f0h-	WU	n Rg: te	dusp	Dootacl hGa-cL	l f0h-	ght:	n Rg: te	dusp	Dootacl hGa-cL	
4*T271T77	12	8	7	7	11	9	7	7	4	9	2	*5	7	7	14	431
4*T831T77	*9	2	7	7	16	3	6	7	4	1	7	57	7	7	57	439
411T771T77	12	1	7	7	57	2	4	7	7	8	7	54	7	7	54	4*3
411T431T77	34	9	7	7	*7	1	7	7	4	1	6	14	7	7	12	487
Grand Total	6**	62	7	7	659	68	2	7	2	61	3	277	7	7	273	**621**
Approach%	96%	5%	7%		P	55.9%	44.4%	7%		P	4.*%	95.8%	7%		P	-
Totals %	86.5%	2.1%	7%		8*.3%	2.9%	7.3%	7%		8.2%	7.5%	85.2%	7%		89.4%	-
PHF	7.94	7.*8	7		7.9	7.*1	7.25	7		7.13	7.86	7.92	7		7.98	-
Heavy	6	4	7		2	7	7	7		7	7	3	7		3	-
Heavy %	7.5%	8.2%	7%		4%	7%	7%	7%		7%	7%	4.1%	7%		4.*%	-
Lights	6*8	66	7		65*	68	2	7		61	3	693	7		277	-
Lights %	99.6%	93.1%	7%		99%	477%	477%	7%		477%	477%	95.2%	7%		95.8%	-
Single-Unit Trucks	6	4	7		2	7	7	7		7	7	2	7		2	-
Single-Unit Trucks %	7.5%	8.2%	7%		4%	7%	7%	7%		7%	7%	4%	7%		4%	-
Buses	7	7	7		7	7	7	7		7	7	6	7		6	-
Buses %	7%	7%	7%		7%	7%	7%	7%		7%	7%	7.1%	7%		7.1%	-
Pedestrians	P	P	P	7	P	P	P	P	2	P	P	P	P	7	P	-
Pedestrians%	P	P	P	7%	C	P	P	P	477%	C	P	P	P	7%	C	-
Bicycles on Road	4	7	7	7	P	7	7	7	7	P	7	4	7	7	P	-
Bicycles on Road%	P	P	P	7%	C	P	P	P	7%	C	P	P	P	7%	C	-

Peak Hour: 08:00 AM - 09:00 AM Weather: Unknown (1.9 °C)



Peak Hour: 04:30 PM - 05:30 PM Weather: Unknown (6.2 °C)



Turning Movement Count (9 . KING RD & NORTH SHORE BLVD E)

Start Time	N Approach FRANC S					E Approach A I DWCKW I i Cght SC					W Approach A I DWCKW I i Cght SC					Int. Total (15 min)	Int. Total (1 hr)
	l :Tru AU	KgCDrnP AUl	edDPns AUA	poac AU	l LLnf 07r CDf u01	DrnP iUA	ho4u iU	edDPns iUl	poac iU	l LLnf 07r CDf u01	l :Tru -Ul	ho4u -UA	edDPns -U	poac -U	l LLnf 07r CDf u01		
52U55U55	5	63	5	5	63	96	89	5	5	3*	8B	8	5	5	89	E3	
52U83U55	8	6B	5	5	69	99	8*	5	5	*5	69	8	5	5	63	85E	
52UB5U55	B	6.	5	5	B8	*6	69	5	5	.*	B2	8	5	5	B.	833	
52U93U55	9	99	5	5	9.	3.	33	5	5	88B	95	B	5	5	9B	659	3*B
5. U55U55	8	95	5	5	98	*6	6E	5	5	E8	36	9	5	5	3*	8. .	*3*
5. U83U55	3	9B	5	5	9.	35	98	5	5	E8	BB	*	5	5	BE	82.	263
5. UB5U55	3	9*	5	8	38	3B	B.	8	5	E6	BB	6	5	5	B3	82.	29.
5. U93U55	.	62	5	5	B3	36	B9	5	5	.*	93	B	5	5	9.	8*E	28B
%%gI i I F%%																	
8*U55U55	2	96	5	5	9E	*6	33	8	5	88.	63	8	5	5	6*	8EB	
8*U83U55	E	B2	5	5	9*	*5	2*	5	5	8B*	BB	2	5	5	95	666	
8*UB5U55	9	3*	5	6	*5	3.	25	5	5	86.	B3	B	5	5	B.	66*	
8*U93U55	2	9*	5	8	3B	*B	. 2	5	5	835	38	85	5	6	*8	6*9	E53
82U55U55	2	9*	5	5	3B	26	26	5	5	899	B8	3	5	5	B*	6BB	E93
82U83U55	B	BB	5	5	B*	2E	2B	5	5	836	B.	*	5	5	99	6B6	E33
82UB5U55	.	9B	5	5	38	**	26	5	5	8B.	65	9	5	5	69	68B	E96
82U93U55	8	B9	5	5	B3	*6	32	5	5	88E	63	6	5	5	62	8. 8	. 3E
Grand Total	2B	*8B	5	9	*. *	E93	. 8B	6	5	82*5	3B3	3E	5	6	3E9	**3040**	d
Approach%	85Gv	. EGv	5v		d	3BC2v	9*Gv	5Gv		d	E5Gv	EGv	5v		d	-	d
Totals %	6Gv	65Gv	5v		66Gv	B8Gv	6*C2v	5Gv		32GEv	82Gv	8GEv	5v		8EGv	-	d
Heavy	*	.	5		d	65	85	5		d	3	B	5		d	-	d
Heavy %	. Gv	8GEv	5v		d	6Gv	8Gv	5v		d	5GEv	3Gv	5v		d	-	d
Bicycles	5	8	5		d	5	9	5		d	9	5	5		d	-	d
Bicycle %	5v	5Gv	5v		d	5v	5Gv	5v		d	5C2v	5v	5v		d	-	d

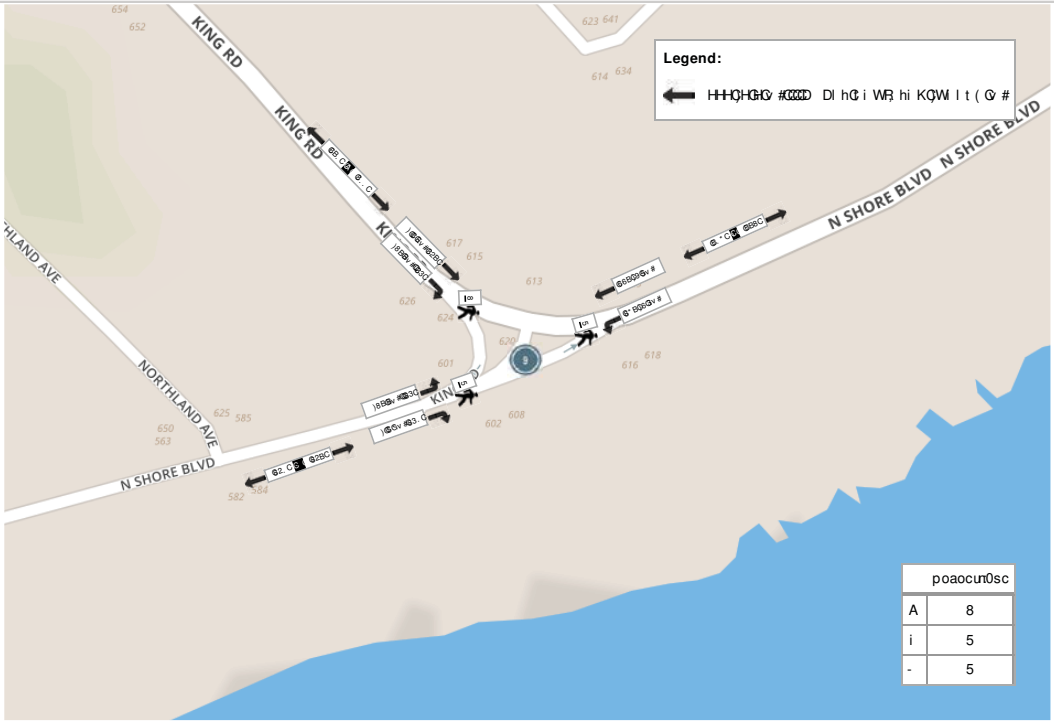
Peak Hour: 07:45 AM - 08:45 AM QQQQ Weather: Unknown (1.9 °C)

Start Time	N Approach FFANQ S					E Approach A I DWQKW I i Qght SQ					W Approach A I DWQKW I i Qght SQ					Int. Total (15 min)
	I :Tru	KgQDrnP	eQDPns	poac	I LLnf 07r QDf u01	DrnP	ho4u	eQDPns	poac	I LLnf 07r QDf u01	I :Tru	ho4u	eQDPns	poac	I LLnf 07r QDf u01	
52L93U55	9	99	5	5	9.	3.	33	5	5	88B	95	B	5	5	9B	659
5. U55U55	8	95	5	5	98	*6	6E	5	5	E8	36	9	5	5	3*	8. .
5. U83U55	3	9B	5	5	9.	35	98	5	5	E8	BB	*	5	5	BE	82.
5. UB5U55	3	9*	5	8	38	3B	B.	8	5	E6	BB	6	5	5	B3	82.
Grand Total	83	82B	5	8	8. .	66B	8*B	8	5	B. 2	83.	83	5	5	82B	**748**
Approach%	. v	E6v	5v		d	32Gv	96Gv	5Gv		d	E8Gv	. Q2v	5v		d	-
Totals %	6v	6BGv	5v		63Gv	6EGv	68Gv	5Gv		38Q2v	68Gv	6v	5v		6BGv	-
PHF	5Q23	5QE9	5		5QE6	5QE	5Q29	5QG3		5G*	5Q2*	5QGB	5		5Q22	-
Heavy	6	3	5		2	E	9	5		8B	8	6	5		B	-
Heavy %	8BGv	6QEv	5v		BQ2v	9v	6QGv	5v		BQ9v	5Gv	8BGv	5v		8Q2v	-
Lights	8B	8*.	5		8. 8	689	83E	8		B29	832	8B	5		825	-
Lights %	. *Q2v	E2Gv	5v		E*GBv	E*v	E2Gv	855v		E*Gv	EEGv	. *Q2v	5v		E. GBv	-
Single-Unit Trucks	6	B	5		3	3	8	5		*	5	5	5		5	-
Single-Unit Trucks %	8BGv	8Q2v	5v		6Q2v	6Gv	5Gv	5v		8Gv	5v	5v	5v		5v	-
Buses	5	6	5		6	9	B	5		2	8	6	5		B	-
Buses %	5v	8Gv	5v		8Gv	8Gv	8Gv	5v		8Gv	5Gv	8BGv	5v		8Q2v	-
Pedestrians	d	d	d	8	d	d	d	d	5	d	d	d	d	5	d	-
Pedestrians%	d	d	d	855v	C	d	d	d	5v	C	d	d	d	5v	C	-
Bicycles on Road	5	8	5	5	d	5	5	5	5	d	B	5	5	5	d	-
Bicycles on Road%	d	d	d	5v	C	d	d	d	5v	C	d	d	d	5v	C	-

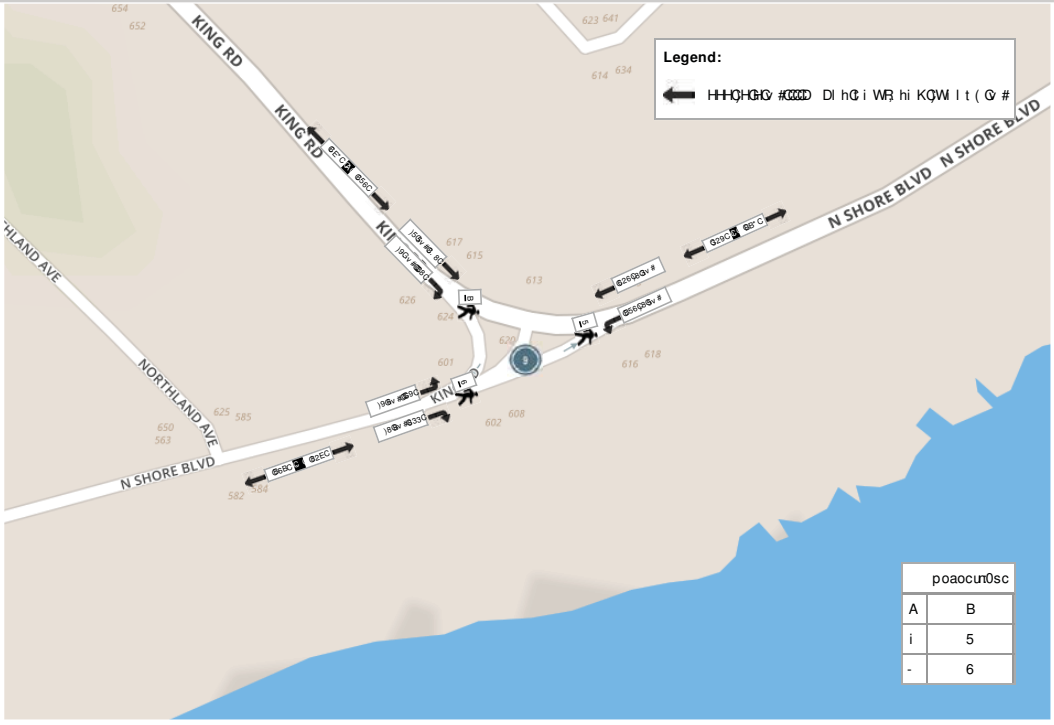
Peak Hour: 04:30 PM - 05:30 PM QQQQ Weather: Unknown (6.2 °C)

Start Time	N Approach FFANQ S					E Approach A I DWQKW I i Qght SQ					W Approach A I DWQKW I i Qght SQ					Int. Total (15 min)
	I :Tru	KgQDrnP	eQDPns	poac	I LLnf 07r QDf u01	DrnP	ho4u	eQDPns	poac	I LLnf 07r QDf u01	I :Tru	ho4u	eQDPns	poac	I LLnf 07r QDf u01	
8*UB5U55	9	3*	5	6	*5	3.	25	5	5	86.	B3	B	5	5	B.	66*
8*U93U55	2	9*	5	8	3B	*B	. 2	5	5	835	38	85	5	6	*8	6*9
82U55U55	2	9*	5	5	3B	26	26	5	5	899	B8	3	5	5	B*	6BB
82U83U55	B	BB	5	5	B*	2E	2B	5	5	836	B.	*	5	5	99	6B6
Grand Total	68	8. 8	5	B	656	626	B56	5	5	329	833	69	5	6	82E	**955**
Approach%	85Gv	. EGv	5v		d	92Gv	36Gv	5v		d	. *Gv	8BGv	5v		d	-
Totals %	6Gv	8Ev	5v		68Gv	6. Gv	B8Gv	5v		*5Gv	8*Gv	6Gv	5v		8. Q2v	-
PHF	5Q23	5G8	5		5G9	5G*	5G2	5		5QE9	5Q2*	5QG	5		5Q2B	-
Heavy	8	5	5		8	9	B	5		2	6	8	5		B	-
Heavy %	9Gv	5v	5v		5Gv	8Gv	8v	5v		8Gv	8Gv	9Gv	5v		8Q2v	-
Lights	65	8. 8	5		658	6*.	6EE	5		3*2	83B	6B	5		82*	-
Lights %	E3Gv	855v	5v		EEGv	E. Gv	EEv	5v		E. Gv	E. Q2v	E3Gv	5v		E. GBv	-
Single-Unit Trucks	8	5	5		8	6	8	5		B	6	8	5		B	-
Single-Unit Trucks %	9Gv	5v	5v		5Gv	5Q2v	5QBv	5v		5Gv	8Gv	9Gv	5v		8Q2v	-
Buses	5	5	5		5	6	6	5		9	5	5	5		5	-
Buses %	5v	5v	5v		5v	5Q2v	5Q2v	5v		5Q2v	5v	5v	5v		5v	-
Pedestrians	d	d	d	B	d	d	d	d	5	d	d	d	d	6	d	-
Pedestrians%	d	d	d	*5v	C	d	d	d	5v	C	d	d	d	95v	C	-
Bicycles on Road	5	5	5	5	d	5	6	5	5	d	5	5	5	5	d	-
Bicycles on Road%	d	d	d	5v	C	d	d	d	5v	C	d	d	d	5v	C	-

Peak Hour: 07:45 AM - 08:45 AM Weather: Unknown (1.9 °C)



Peak Hour: 04:30 PM - 05:30 PM Weather: Unknown (6.2 °C)



Turning Movement Count (7 . KING RD & ALRREY) NS

Atart Time	N pccroahl FRANCS					E pccroahl DIIWKCA					A pccroahl FRANCS					Int. Tota1 (5d minS	Int. Tota1 (5 lrS
	ght: AT	irUATW	D-g:tn ATA	Pred AT	spptoachGolUl	IUfhU WTA	irUWT	D-g:tn WTW	Pred WT	spptoachGolUl	IUfhU TW	ght: TA	D-g:tn T	Pred T	spptoachGolUl		
07T00T00	14	5	0	0	51	15	5	0	0	12	5	67	0	0	64	42	
07T16T00	30	6	0	0	36	19	0	0	0	19	3	99	0	0	94	150	
07T30T00	32	5	0	0	39	16	1	0	0	19	1	73	0	0	72	159	
07T26T00	22	5	0	0	29	56	2	0	1	54	2	72	0	0	78	163	243
08T00T00	63	8	0	0	91	14	3	0	0	55	3	82	0	0	87	170	694
08T16T00	29	10	0	0	69	53	3	0	0	59	1	81	0	0	85	192	913
08T30T00	26	4	0	0	62	7	4	0	5	19	2	88	0	0	45	195	924
08T26T00	32	12	0	0	28	53	3	0	1	59	6	42	0	0	44	173	994
BI WsF																	
19T00T00	93	15	0	0	76	17	1	0	0	18	0	75	0	0	75	196	
19T16T00	65	14	0	1	71	4	1	0	1	10	5	70	0	1	75	163	
19T30T00	77	52	0	0	101	4	1	0	5	10	1	79	0	0	77	188	
19T26T00	73	18	0	0	41	13	5	0	1	16	1	86	0	0	89	145	948
17T00T00	74	51	0	0	100	17	1	0	0	18	3	81	0	0	82	505	736
17T16T00	90	59	0	0	89	15	0	0	1	15	2	76	0	0	74	177	764
17T30T00	64	12	0	0	73	4	0	0	0	4	2	78	0	0	85	192	736
17T26T00	69	12	0	0	70	16	1	0	0	19	3	90	0	0	93	124	945
Gran2 Tota1	852	500	0	1	1052	521	35	0	4	573	21	1512	0	1	1566	**3dd3**	-
pccroahl 4	80E5.	14E5.	0.		-	88E3.	11E7.	0.		-	3E3.	49E7.	0.		-	%	-
Tota1- 4	35E3.	7E8.	0.		20E1.	4E2.	1E3.	0.		10E7.	1E9.	27E9.	0.		24E5.	%	-
seavH	12	3	0		-	13	5	0		-	3	17	0		-	%	-
seavH 4	1E7.	1E6.	0.		-	6E2.	9E3.	0.		-	7E3.	1E2.	0.		-	%	-
yihHn1e-	5	0	0		-	0	0	0		-	0	1	0		-	%	-
yihHn1e 4	0E5.	0.	0.		-	0.	0.	0.		-	0.	0E1.	0.		-	%	-

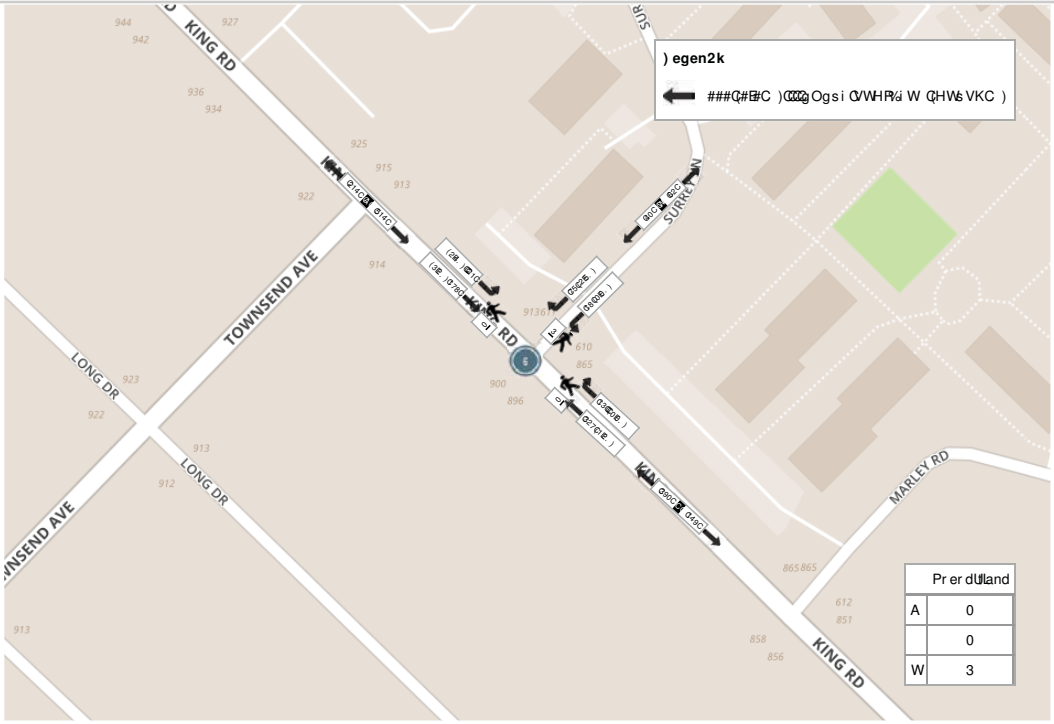
BeaPsourk:0k: pM%8k: pMCCCCS eatlerkLnPnoWn (5.8 UCS

Atart Time	N pccroahl FRANCS					E pccroahl DIIWKCA					A pccroahl FRANCS					Int. Tota1 (5d minS
	ght:	irUU	D-g:tn	Pred	spptoachGolUl	IUfhU	irUU	D-g:tn	Pred	spptoachGolUl	IUfhU	ght:	D-g:tn	Pred	spptoachGolUl	
08T00T00	63	8	0	0	91	14	3	0	0	55	3	82	0	0	87	170
08T16T00	29	10	0	0	69	53	3	0	0	59	1	81	0	0	85	192
08T30T00	26	4	0	0	62	7	4	0	5	19	2	88	0	0	45	195
08T26T00	32	12	0	0	28	53	3	0	1	59	6	42	0	0	44	173
Gran2 Tota1	178	21	0	0	514	75	18	0	3	40	13	327	0	0	390	**778**
pccroahl 4	81E3.	18E7.	0.		-	80.	50.	0.		-	3E9.	49E2.	0.		-	%
Tota1- 4	59E9.	9E1.	0.		35E7.	10E8.	5E7.	0.		13E6.	1E4.	61E4.	0.		63E8.	%
Bsw	0E82	0E73	0		0E4	0E78	0E6	0		0E87	0E96	0E45	0		0E41	%
seavH	9	5	0		8	3	0	0		3	0	6	0		6	%
seavH 4	3E2.	2E4.	0.		3E7.	2E5.	0.	0.		3E3.	0.	1E2.	0.		1E2.	%
)igl t-	175	34	0		511	94	18	0		87	13	325	0		366	%
)igl t- 4	49E9.	46E1.	0.		49E3.	46E8.	100.	0.		49E7.	100.	48E9.	0.		48E9.	%
Aing1e%nit TruhP-	6	0	0		6	0	0	0		0	0	5	0		5	%
Aing1e%nit TruhP- 4	5E8.	0.	0.		5E8.	0.	0.	0.		0.	0.	0E9.	0.		0E9.	%
yu-e-	1	5	0		3	3	0	0		3	0	3	0		3	%
yu-e- 4	0E9.	2E4.	0.		1E2.	2E5.	0.	0.		3E3.	0.	0E4.	0.		0E8.	%
Be2e-trian-	-	-	-	0	-	-	-	-	3	-	-	-	-	0	-	%
Be2e-trian- 4	-	-	-	0.	C	-	-	-	100.	C	-	-	-	0.	C	%
yihHn1e- on Roa2	1	0	0	0	-	0	0	0	0	-	0	0	0	0	-	%
yihHn1e- on Roa24	-	-	-	0.	C	-	-	-	0.	C	-	-	-	0.	C	%

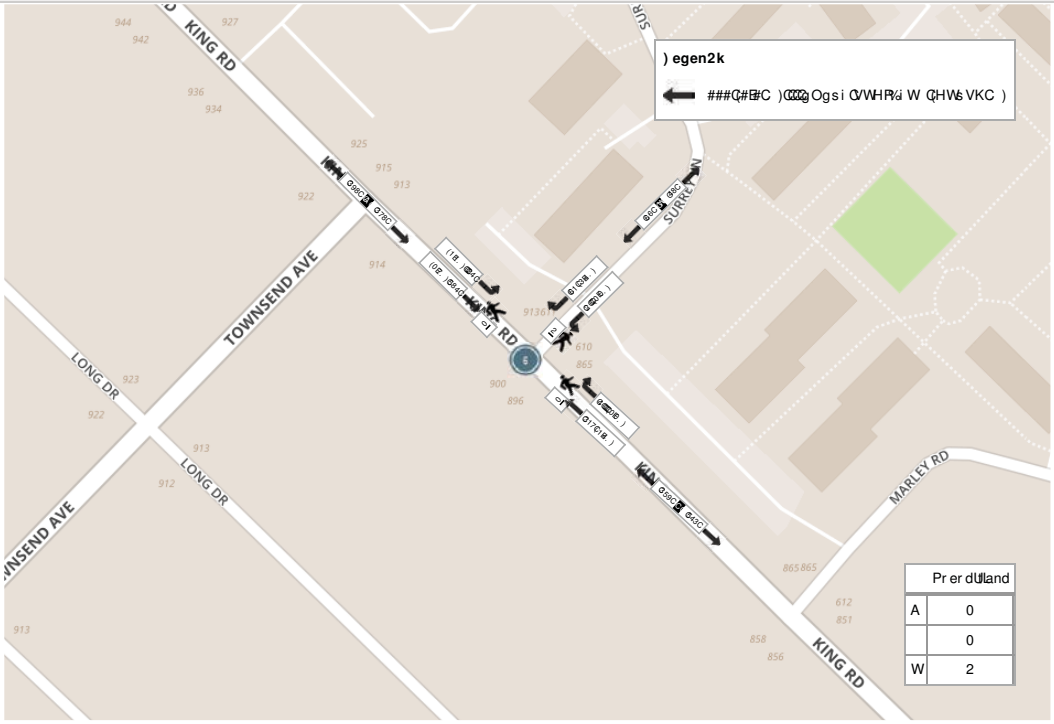
BeaPsourk: °I6: BM %dk6: BMCCCC9 eatl erkLnPnoWn (7.3 UCS

Atart Time	N pccroahl FRANC S					E pccroahl DI I WKCA					A pccroahl FRANC S					Int. Tota1 (5d minS
	ght:	i ruU	D-g: tn	Pred	spptoachGgolvl	I LthU	i ruU	D-g: tn	Pred	spptoachGgolvl	I LthU	ght:	D-g: tn	Pred	spptoachGgolvl	
19T30T00	77	52	0	0	101	4	1	0	5	10	1	79	0	0	77	188
19T26T00	73	18	0	0	41	13	5	0	1	16	1	86	0	0	89	145
17T00T00	74	51	0	0	100	17	1	0	0	18	3	81	0	0	82	505
17T16T00	90	59	0	0	89	15	0	0	1	15	2	76	0	0	74	177
Gran2 Tota1	584	84	0	0	378	61	2	0	2	66	4	317	0	0	359	**Fd8**
pccroahl 4	79E6.	53E6.	0.		-	45E7.	7E3.	0.		-	5EB.	47E5.	0.		-	**%**
Tota1- 4	38E1.	11E7.	0.		24EB.	9E7.	0E6.	0.		7E5.	1E5.	21EB.	0.		23.	**%**
Bsw	0E41	0EB9	0		0E42	0E76	0E6	0		0E79	0EB9	0E43	0		0E46	**%**
seavH	5	1	0		3	5	0	0		5	0	9	0		9	**%**
seavH 4	0E7.	1EB.	0.		0EB.	3E4.	0.	0.		3E9.	0.	1E4.	0.		1EB.	**%**
) igl t-	587	88	0		376	24	2	0		63	4	311	0		350	**%**
) igl t- 4	44E3.	48E4.	0.		44E5.	49E1.	100.	0.		49E2.	100.	48E1.	0.		48E5.	**%**
Aing1e%nit TruhP-	5	1	0		3	0	0	0		0	0	3	0		3	**%**
Aing1e%nit TruhP- 4	0E7.	1EB.	0.		0EB.	0.	0.	0.		0.	0.	0E4.	0.		0E4.	**%**
yu-e-	0	0	0		0	5	0	0		5	0	3	0		3	**%**
yu-e- 4	0.	0.	0.		0.	3E4.	0.	0.		3E9.	0.	0E4.	0.		0E4.	**%**
Be2e-trian-	-	-	-	0	-	-	-	-	2	-	-	-	-	0	-	**%**
Be2e-trian- 4	-	-	-	0.	C	-	-	-	100.	C	-	-	-	0.	C	**%**
yihHn1e- on Roa2	1	0	0	0	-	0	0	0	0	-	0	1	0	0	-	**%**
yihHn1e- on Roa24	-	-	-	0.	C	-	-	-	0.	C	-	-	-	0.	C	**%**

BeaPsourk: 0k: pM %8k: pMCCCC9 eatl erkLnPnoWn (5.8 UCS



BeaP s ourk: °I6: BM %: dk6: BMCCCC9 eatl erkL nPnoWn (7.3 UCS



Turning Movement Count (9 . KING RD & TOH NSEND BLEV

St) rt Time	N Baaro) Ap FFANC S					S Baaro) Ap FFANC S					H Baaro) Ap DWAKi ASQhi					Int. Tot) c (h9 minV	Int. Tot) c (h prV
	I t: Tr AuW	TU AuK	n P - Ue AuA	dspo Au	gaaUtI LTC crl f	TU KuA	0s7r KuW	n P - Ue KuK	dspo Ku	gaaUtI LTC crl f	I t: Tr WuK	0s7r WuA	n P - Ue WuW	dspo Wu	gaaUtI LTC crl f		
14uf1uf1	1	51	1	1	51	26	6	1	1	23	9	6	1	1	8	*B	
14u98uf1	9	B5	1	1	BB	31	6	1	1	36	6	6	1	1	3	958	
14uB1uf1	1	BB	1	1	BB	31	2	1	1	32	B	95	1	1	98	9B6	
14u68uf1	9	61	1	1	69	*1	91	1	1	911	4	8	1	1	95	98B	818
13uf1uf1	9	64	1	1	63	*9	95	1	1	91B	98	2	1	1	59	945	836
13u98uf1	B	81	1	1	8B	**	4	1	1	912	2	3	1	1	96	94B	2B5
13uB1uf1	9	62	1	1	64	34	4	1	1	*6	3	9	1	1	*	981	263
13u68uf1	6	69	1	1	68	91B	92	1	5	99*	4	91	1	1	94	939	242
EEE I i gFEEE																	
92uf1uf1	8	49	1	9	42	48	96	1	1	3*	2	6	1	1	91	948	
92u98uf1	8	25	1	5	24	2*	99	1	5	31	91	2	1	1	92	92B	
92uB1uf1	4	38	1	1	*5	41	92	1	1	32	92	4	1	1	5B	519	
92u68uf1	*	48	1	1	36	3B	98	1	1	*3	94	6	1	9	59	51B	465
94uf1uf1	99	*B	1	1	916	35	9B	1	1	*8	*	2	1	1	98	596	439
94u98uf1	96	49	1	1	38	49	94	1	1	33	95	99	1	1	5B	9*2	396
94uB1uf1	3	22	1	1	46	35	2	1	1	33	2	3	1	1	96	942	43*
94u68uf1	91	2B	1	1	4B	49	2	1	1	44	4	5	1	1	*	98*	468
Gr) nWTot) c	31	3*8	1	B	*48	95*4	926	1	6	9629	9B6	*3	1	9	5B5	**I 115**	P
Baaro) Apd	3%5G	*9%8G	1G		P	33%8G	99%5G	1G		P	84%8G	65%5G	1G		P	**3**	P
Tot) c0 d	BG	BB%8G	1G		B2%8G	63%2G	2%9G	1G		86%8G	8G	B%4G	1G		3%4G	**3**	P
4 e) v%	1	91	1		P	52	6	1		P	3	5	1		P	**3**	P
4 e) v%d	1G	9%9G	1G		P	5G	5%6G	1G		P	2G	5G	1G		P	**3**	P
- iA%Ace0	1	9	1		P	9	1	1		P	9	1	1		P	**3**	P
- iA%Ace d	1G	1%9G	1G		P	1%9G	1G	1G		P	1%4G	1G	1G		P	**3**	P

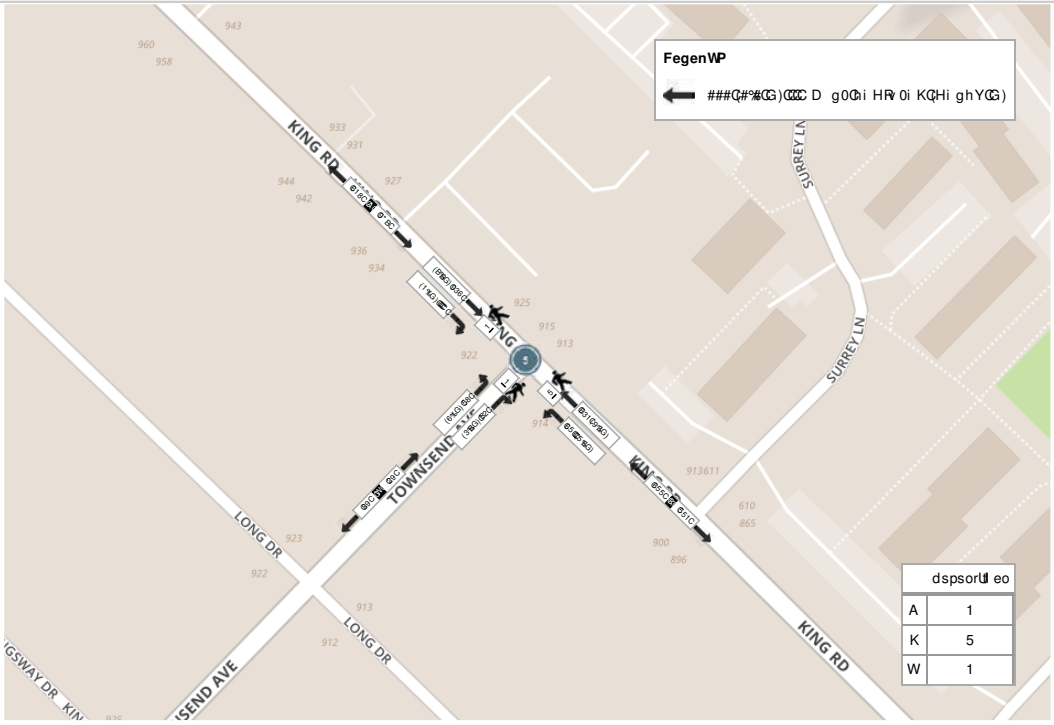
se) y 4 ourPk5Rkk BM 3k: Rkk BMCCCCH e) tperP7 nyno8 n (h.: UCV

St) rt Time	N Baaro) Ap FRANC S					S Baaro) Ap FRANC S					H Baaro) Ap DWAKi ASQhi					Int. Tot) c (h9 minV
	I t: Tr	TU	nP - Ue	dspo	gaaUdI LTC crl f	TU	0s7r	nP - Ue	dspo	gaaUdI LTC crl f	I t: Tr	0s7r	nP - Ue	dspo	gaaUdI LTC crl f	
13uI1uI1	9	64	1	1	63	*9	95	1	1	91B	98	2	1	1	59	945
13u98uI1	B	81	1	1	8B	**	4	1	1	912	2	3	1	1	96	94B
13uB1uI1	9	62	1	1	64	34	4	1	1	*6	3	9	1	1	*	981
13u68uI1	6	69	1	1	68	91B	92	1	5	99*	4	91	1	1	94	939
Gr) nWTot) c	*	936	1	1	9*B	B31	65	1	5	655	B2	58	1	1	29	**1wI**
Baaro) Apd	6%4G	*8%BG	1G		P	*1G	91G	1G		P	8*G	69G	1G		P	**3**
Tot) d0 d	9%BG	54%5G	1G		53%2G	82%5G	2%5G	1G		25%6G	8%BG	B%4G	1G		*G	**3**
s4 °	1%82	1%5	1		1%9	1%5	1%22	1		1%*	1%2	1%2B	1		1%4B	**3**
4 e) v%	1	2	1		2	4	9	1		3	B	9	1		6	**3**
4 e) v%d	1G	B%BG	1G		B%9G	9%8G	5%6G	1G		9%G	3%BG	6G	1G		2%2G	**3**
Figpt0	*	943	1		934	B4B	69	1		696	BB	56	1		84	**3**
Figpt0 d	911G	*2%4G	1G		*2%G	*3%5G	*4%2G	1G		*3%9G	*9%4G	*2G	1G		*B%6G	**3**
Singœ37 nit TruAy0	1	8	1		8	9	9	1		5	9	1	1		9	**3**
Singœ37 nit TruAy0 d	1G	5%4G	1G		5%2G	1%BG	5%6G	1G		1%8G	5%8G	1G	1G		9%2G	**3**
- u0e0	1	9	1		9	2	1	1		2	5	9	1		B	**3**
- u0e0 d	1G	1%8G	1G		1%8G	9%2G	1G	1G		9%6G	8%2G	6G	1G		6%G	**3**
seWe0tri) n0	P	P	P	1	P	P	P	P	5	P	P	P	P	1	P	**3**
seWe0tri) n0d	P	P	P	1G	C	P	P	P	911G	C	P	P	P	1G	C	**3**
- iA%Ace0 on Ro) W	1	9	1	1	P	1	1	1	1	P	1	1	1	1	P	**3**
- iA%Ace0 on Ro) Wd	P	P	P	1G	C	P	P	P	1G	C	P	P	P	1G	C	**3**

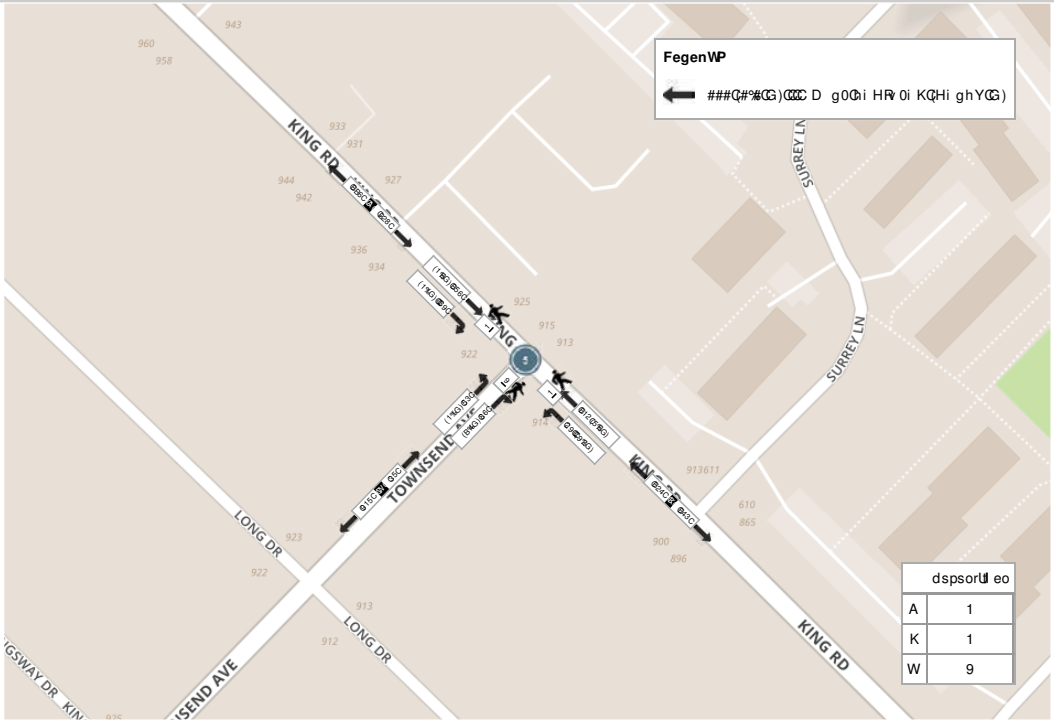
se) y 4 ourPk6P2k sM 3k9P2k sMCCCCH e) tperP7 nyno8 n (1.I UCV

St) rt Time	N Baaro) Ap FRANC S					S Baaro) Ap FRANC S					H Baaro) Ap DWAKi ASQhi					Int. Tot) c (h9 minV
	I t: Tr	TU	nP - Ue	dspo	gaaUdI LTC crl f	TU	0s7r	nP - Ue	dspo	gaaUdI LTC crl f	I t: Tr	0s7r	nP - Ue	dspo	gaaUdI LTC crl f	
92uB1uI1	4	38	1	1	*5	41	92	1	1	32	92	4	1	1	5B	519
92u68uI1	*	48	1	1	36	3B	98	1	1	*3	94	6	1	9	59	51B
94uI1uI1	99	*B	1	1	916	35	9B	1	1	*8	*	2	1	1	98	596
94u98uI1	96	49	1	1	38	49	94	1	1	33	95	99	1	1	5B	9*2
Gr) nWTot) c	69	B56	1	1	B28	B12	29	1	1	B24	86	53	1	9	35	**5h6**
Baaro) Apd	99%5G	33%3G	1G		P	3B%6G	92%2G	1G		P	28%G	B6%9G	1G		P	**3**
Tot) d0 d	8G	B*%3G	1G		66%3G	B4%2G	4%8G	1G		68%9G	2%2G	B%6G	1G		91%9G	**3**
s4 °	1%4B	1%34	1		1%3	1%5	1%	1		1%6	1%4*	1%26	1		1%3*	**3**
4 e) v%	1	9	1		9	4	9	1		3	5	1	1		5	**3**
4 e) v%d	1G	1%BG	1G		1%BG	5%BG	9%2G	1G		5%5G	B%4G	1G	1G		5%6G	**3**
Figpt0	69	B5B	1		B26	5**	21	1		B8*	85	53	1		31	**3**
Figpt0 d	911G	**%4G	1G		**%4G	*4%4G	*3%6G	1G		*4%3G	*2%BG	911G	1G		*4%2G	**3**
Singœ37 nit TruAy0	1	9	1		9	5	9	1		B	5	1	1		5	**3**
Singœ37 nit TruAy0 d	1G	1%BG	1G		1%BG	1%4G	9%2G	1G		1%8G	B%4G	1G	1G		5%6G	**3**
- u0e0	1	1	1		1	8	1	1		8	1	1	1		1	**3**
- u0e0 d	1G	1G	1G		1G	9%2G	1G	1G		9%6G	1G	1G	1G		1G	**3**
seWe0tri) n0	P	P	P	1	P	P	P	P	1	P	P	P	P	9	P	**3**
seWe0tri) n0d	P	P	P	1G	C	P	P	P	1G	C	P	P	P	911G	C	**3**
- iA%Ace0 on Ro) W	1	1	1	1	P	9	1	1	1	P	1	1	1	1	P	**3**
- iA%Ace0 on Ro) Wd	P	P	P	1G	C	P	P	P	1G	C	P	P	P	1G	C	**3**

se) y 4 ourPk5Rkk BM 3k: Rkk BMCCCCHe) tperP7 nyno8 n (h.: UCV



se) y 4 ourPk6P2k sM 3k9P2k sMCCCCHe) tperP7 nyno8 n (1.l UCV



Turning Movement Count (17 . MARLEY RD & SUNSET RD)

Start Time	N Approach SUNSET RD						E Approach MARLEY RD						S Approach SUNSET RD						W Approach MARLEY RD						Int. Total (15 min)	Int. Total (1 hr)
	Right N:W	Thru N:S	Left N:E	U-Turn N:N	Peds N:	Approach Total	Right E:N	Thru E:W	Left E:S	U-Turn E:E	Peds E:	Approach Total	Right S:E	Thru S:N	Left S:W	U-Turn S:S	Peds S:	Approach Total	Right W:S	Thru W:E	Left W:N	U-Turn W:W	Peds W:	Approach Total		
07:00:00	1	0	3	0	0	4	3	1	1	0	0	5	3	0	0	0	0	3	0	2	1	0	0	3	15	
07:15:00	1	0	1	0	1	2	0	2	2	0	0	4	1	0	0	0	0	1	0	0	0	0	1	0	7	
07:30:00	2	0	3	0	2	5	0	3	0	0	1	3	0	0	1	0	0	1	1	1	0	0	3	2	11	
07:45:00	0	0	2	0	0	2	1	2	1	0	0	4	1	0	0	0	0	1	1	2	0	0	1	3	10	43
08:00:00	0	1	0	0	3	1	0	2	4	0	0	6	2	0	0	0	0	2	0	3	1	0	2	4	13	41
08:15:00	2	0	4	0	0	6	0	1	6	0	0	7	3	0	0	0	0	3	0	3	1	0	22	4	20	54
08:30:00	3	1	1	0	0	5	2	4	13	0	0	19	6	0	2	0	0	8	0	3	2	0	10	5	37	80
08:45:00	1	0	2	0	1	3	0	2	0	0	2	2	5	0	1	0	1	6	0	0	1	0	7	1	12	82
BREAK																										
16:00:00	0	0	2	0	0	2	2	4	2	0	0	8	0	0	0	0	0	0	0	3	1	0	0	4	14	
16:15:00	0	1	0	0	2	1	3	6	0	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	10	
16:30:00	2	0	3	0	4	5	4	8	2	0	0	14	0	0	0	0	0	0	0	4	1	0	1	5	24	
16:45:00	1	0	2	0	3	3	1	4	1	0	0	6	2	0	0	0	0	2	0	1	1	0	1	2	13	61
17:00:00	0	1	2	0	1	3	3	4	0	0	1	7	0	1	0	0	0	1	0	5	0	0	1	5	16	63
17:15:00	3	0	1	0	0	4	5	3	1	0	0	9	1	0	0	0	0	1	2	2	2	0	0	6	20	73
17:30:00	0	0	1	0	1	1	3	4	0	0	0	7	1	0	0	0	0	1	0	4	2	0	0	6	15	64
17:45:00	0	0	1	0	1	1	0	6	3	0	0	9	0	0	0	0	0	0	0	5	2	0	0	7	17	68
Grand Total	16	4	28	0	19	48	27	56	36	0	4	119	25	1	4	0	1	30	4	38	15	0	49	57	**254**	-
Approach%	33.3%	8.3%	58.3%	0%		-	22.7%	47.1%	30.3%	0%		-	83.3%	3.3%	13.3%	0%		-	7%	66.7%	26.3%	0%		-	-	-
Totals %	6.3%	1.6%	11%	0%		18.9%	10.6%	22%	14.2%	0%		46.9%	9.8%	0.4%	1.6%	0%		11.8%	1.6%	15%	5.9%	0%		22.4%	-	-
Heavy	0	0	0	0		-	0	4	3	0		-	1	0	0	0		-	1	6	0	0		-	-	-
Heavy %	0%	0%	0%	0%		-	0%	7.1%	8.3%	0%		-	4%	0%	0%	0%		-	25%	15.8%	0%	0%		-	-	-
Bicycles	0	1	0	0		-	0	0	0	0		-	0	0	0	0		-	0	0	0	0		-	-	-
Bicycle %	0%	25%	0%	0%		-	0%	0%	0%	0%		-	0%	0%	0%	0%		-	0%	0%	0%	0%		-	-	-

Spectrum

Turning Movement Count
Location Name: MARLEY RD & SUNSET RD
Date: Wed, Jan 11, 2017 Deployment Lead: Walter Fugaj

BA Group
45 St. Clair Avenue West, Suite 300
Toronto ON, CANADA, M4V 1K9

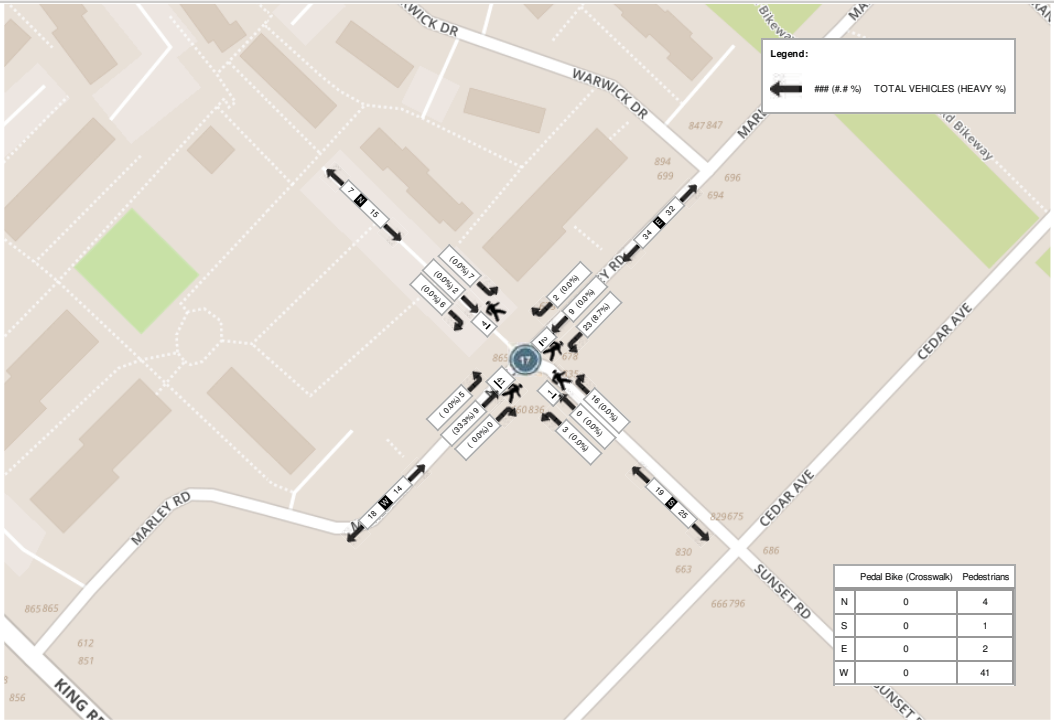
Peak Hour: 08:00 AM - 09:00 AM Weather: Unknown (1.9 °C)

Start Time	N Approach SUNSET RD						E Approach MARLEY RD						S Approach SUNSET RD						W Approach MARLEY RD						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
08:00:00	0	1	0	0	3	1	0	2	4	0	0	6	2	0	0	0	0	2	0	3	1	0	2	4	13
08:15:00	2	0	4	0	0	6	0	1	6	0	0	7	3	0	0	0	0	3	0	3	1	0	22	4	20
08:30:00	3	1	1	0	0	5	2	4	13	0	0	19	6	0	2	0	0	8	0	3	2	0	10	5	37
08:45:00	1	0	2	0	1	3	0	2	0	0	2	2	5	0	1	0	1	6	0	0	1	0	7	1	12
Grand Total	6	2	7	0	4	15	2	9	23	0	2	34	16	0	3	0	1	19	0	9	5	0	41	14	**82**
Approach%	40%	13.3%	46.7%	0%		-	5.9%	26.5%	67.6%	0%		-	84.2%	0%	15.8%	0%		-	0%	64.3%	35.7%	0%		-	-
Totals %	7.3%	2.4%	8.5%	0%		18.3%	2.4%	11%	28%	0%		41.5%	19.5%	0%	3.7%	0%		23.2%	0%	11%	6.1%	0%		17.1%	-
PHF	0.5	0.5	0.44	0		0.63	0.25	0.56	0.44	0		0.45	0.67	0	0.38	0		0.59	0	0.75	0.63	0		0.7	-
Heavy	0	0	0	0		0	0	0	2	0		2	0	0	0	0		0	0	3	0	0		3	-
Heavy %	0%	0%	0%	0%		0%	0%	0%	8.7%	0%		5.9%	0%	0%	0%	0%		0%	0%	33.3%	0%	0%		21.4%	-
Car	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	-
Car %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-
Lights	6	2	7	0		15	2	9	21	0		32	16	0	3	0		19	0	6	5	0		11	-
Lights %	100%	100%	100%	0%		100%	100%	100%	91.3%	0%		94.1%	100%	0%	100%	0%		100%	0%	66.7%	100%	0%		78.6%	-
Single-Unit Trucks	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	1	0	0		1	-
Single-Unit Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	11.1%	0%	0%		7.1%	-
Buses	0	0	0	0		0	0	0	2	0		2	0	0	0	0		0	0	2	0	0		2	-
Buses %	0%	0%	0%	0%		0%	0%	0%	8.7%	0%		5.9%	0%	0%	0%	0%		0%	0%	22.2%	0%	0%		14.3%	-
Articulated Trucks	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	-
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-
Heavy	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	-
Heavy %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-
Pedal Bike (Crosswalk)	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
Pedal Bike (Crosswalk)%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-
Pedestrians	-	-	-	-	4	-	-	-	-	-	2	-	-	-	-	-	1	-	-	-	-	-	41	-	-
Pedestrians%	-	-	-	-	8.3%		-	-	-	-	4.2%		-	-	-	-	2.1%		-	-	-	-	85.4%		-
Pedal Bike (Road)	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	-
Pedal Bike (Road)%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-
Bicycles on Road	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	-
Bicycles on Road%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-

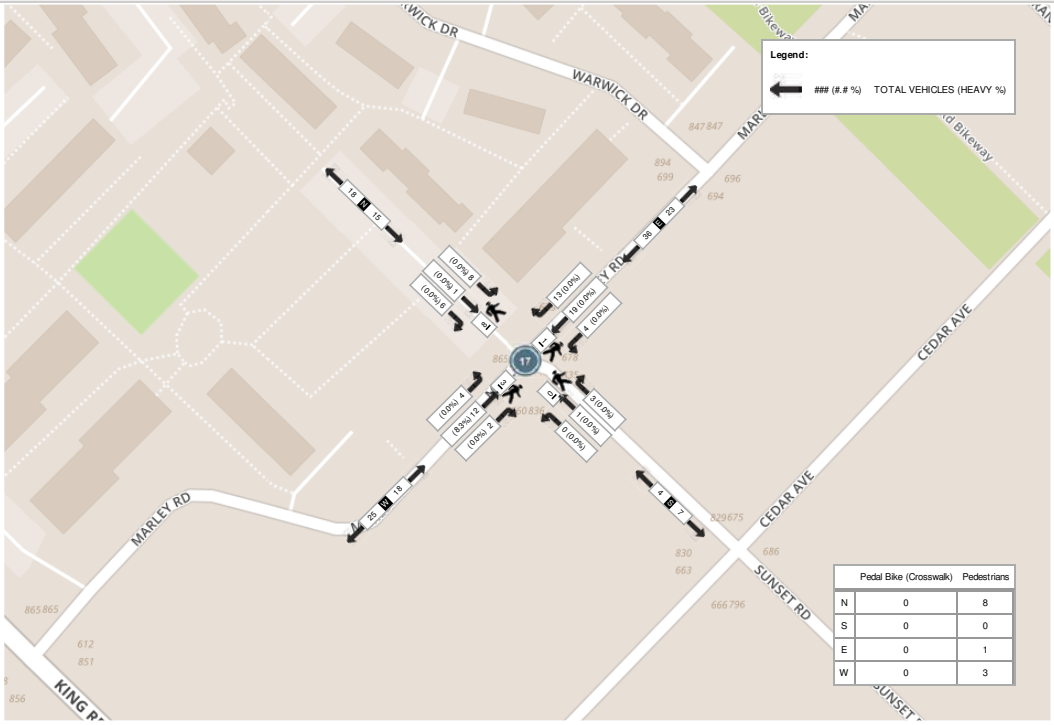
Peak Hour: 04:30 PM - 05:30 PM Weather: Unknown (6.2 °C)

Start Time	N Approach SUNSET RD						E Approach MARLEY RD						S Approach SUNSET RD						W Approach MARLEY RD						Int. Total (15 min)
	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	Right	Thru	Left	U-Turn	Peds	Approach Total	
16:30:00	2	0	3	0	4	5	4	8	2	0	0	14	0	0	0	0	0	0	0	4	1	0	1	5	24
16:45:00	1	0	2	0	3	3	1	4	1	0	0	6	2	0	0	0	0	2	0	1	1	0	1	2	13
17:00:00	0	1	2	0	1	3	3	4	0	0	1	7	0	1	0	0	0	1	0	5	0	0	1	5	16
17:15:00	3	0	1	0	0	4	5	3	1	0	0	9	1	0	0	0	0	1	2	2	2	0	0	6	20
Grand Total	6	1	8	0	8	15	13	19	4	0	1	36	3	1	0	0	0	4	2	12	4	0	3	18	**73**
Approach%	40%	6.7%	53.3%	0%		-	36.1%	52.8%	11.1%	0%		-	75%	25%	0%	0%		-	11.1%	66.7%	22.2%	0%		-	-
Totals %	8.2%	1.4%	11%	0%		20.5%	17.8%	26%	5.5%	0%		49.3%	4.1%	1.4%	0%	0%		5.5%	2.7%	16.4%	5.5%	0%		24.7%	-
PHF	0.5	0.25	0.67	0		0.75	0.65	0.59	0.5	0		0.64	0.38	0.25	0	0		0.5	0.25	0.6	0.5	0		0.75	-
Heavy	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	1	0	0		1	-
Heavy %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	8.3%	0%	0%		5.6%	-
Car	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	-
Car %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-
Lights	6	1	8	0		15	13	19	4	0		36	3	1	0	0		4	2	11	4	0		17	-
Lights %	100%	100%	100%	0%		100%	100%	100%	100%	0%		100%	100%	100%	0%	0%		100%	100%	91.7%	100%	0%		94.4%	-
Single-Unit Trucks	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	1	0	0		1	-
Single-Unit Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	8.3%	0%	0%		5.6%	-
Buses	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	-
Buses %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-
Articulated Trucks	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	-
Articulated Trucks %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-
Heavy	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	-
Heavy %	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	0%	0%	0%	0%		0%	-
Pedal Bike (Crosswalk)	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
Pedal Bike (Crosswalk)%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-
Pedestrians	-	-	-	-	8	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	3	-	-
Pedestrians%	-	-	-	-	66.7%		-	-	-	-	8.3%		-	-	-	-	0%		-	-	-	-	25%		-
Pedal Bike (Road)	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	-
Pedal Bike (Road)%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-
Bicycles on Road	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	-
Bicycles on Road%	-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-	-	-	-	0%		-

Peak Hour: 08:00 AM - 09:00 AM Weather: Unknown (1.9 °C)



Peak Hour: 04:30 PM - 05:30 PM Weather: Unknown (6.2 °C)



Turning Movement Count (12 . NORTH SHORE BLVD E & QEW NB RAMPS)

Start Time	N Approach SB GEWGFRAGM WGEPON(G(POBGWT) G							E Approach EPON(G(POBGWT) G							S Approach SB GEWGFRA							SW Approach SB GEWGFRAGEWGEPON(G(POBGWT) G							W Approach EPON(G(POBGWT) G							Int. Total (15 min)	Int. Total (1 hr)
	Oft: r Eu	WLef Oft: r Eul	N: fH Eul	VLar EuB	d U NH- EuE	ALns Eu	Fppfoec: Norel	Oft: r BuE	N: fH Bu	WLef VLar Bul	VLar Bul	d U NH- BuB	ALns Bu	Fppfoec: Norel	Oft: r luB	N: fH luE	VLar lu	(efn VLar lul	d U NH- lul	ALns lu	Fppfoec: Norel	(efn Oft: r l ul	WLef Oft: r luB	WLef VLar luE	(efn VLar lu	d UNH- lul	ALns lu	Fppfoec: Norel	(efn Oft: r ul	Oft: r ul	N: fH uB	VLar uE	d U NH- u	ALns u	Fppfoec: Norel		
07:00:00	0	0	0	0	0	0	0	87	15	0	0	0	0	239	406	0	66	0	0	2	469	0	0	0	0	0	2	0	26	0	59	0	0	0	205	352	
07:15:00	0	0	0	0	0	0	0	80	206	0	0	0	0	286	424	0	61	0	0	0	480	0	0	0	0	0	0	0	45	0	57	0	0	0	249	845	
07:30:00	0	0	0	0	0	0	0	99	267	0	0	0	0	406	257	0	84	0	0	2	435	0	0	0	0	0	0	0	27	0	17	0	0	0	203	889	
07:45:00	0	0	0	0	0	0	0	75	272	0	0	0	0	480	446	0	87	0	0	0	410	0	0	0	0	0	0	0	48	2	230	0	0	0	299	959	4474
01:00:00	0	0	0	0	0	0	0	78	293	0	0	0	0	465	292	0	83	0	0	2	428	0	0	0	0	0	0	0	49	0	269	0	0	0	294	929	4657
01:15:00	0	0	0	0	0	0	0	71	230	0	0	0	0	421	254	0	83	0	0	4	439	0	0	0	0	0	0	0	47	0	236	0	0	0	270	963	4804
01:60:00	0	0	0	0	0	4	0	94	293	0	0	0	0	449	284	0	68	0	0	0	217	0	0	0	0	0	0	0	42	0	246	0	0	0	233	887	4806
01:45:00	0	0	0	0	0	2	0	84	265	0	0	0	0	252	288	0	68	0	0	0	250	0	0	0	0	0	0	0	29	0	263	0	0	0	280	862	4661
WDBFK																																					
29:00:00	0	0	0	0	0	4	0	17	455	0	0	0	0	619	18	0	32	0	0	2	249	0	0	0	0	0	0	0	20	0	15	0	0	0	55	922	
29:15:00	0	0	0	0	0	4	0	17	641	0	0	0	0	328	58	0	34	0	0	0	267	0	0	0	0	0	0	0	29	0	15	0	0	0	208	987	
29:60:00	0	0	0	0	0	0	0	15	671	0	0	0	0	397	225	0	82	0	0	4	270	0	0	0	0	0	2	0	25	0	208	0	0	0	243	792	
29:45:00	0	0	0	0	0	4	0	10	627	0	0	0	0	657	267	0	98	0	0	0	404	0	0	0	0	0	0	0	43	0	224	0	0	0	269	768	4793
27:00:00	0	0	0	0	0	0	0	95	675	0	0	0	0	331	266	0	67	0	0	2	270	0	0	0	0	0	2	0	29	0	15	0	0	0	208	746	4179
27:15:00	0	0	0	0	0	0	0	94	627	0	0	0	0	675	228	0	83	0	0	2	295	0	0	0	0	0	0	0	21	0	58	0	0	0	226	992	4110
27:60:00	0	0	0	0	0	0	0	84	601	0	0	0	0	690	240	0	67	0	0	6	287	0	0	0	0	0	2	0	29	0	57	0	0	0	226	960	4735
27:45:00	0	0	0	0	0	2	0	80	442	0	0	0	0	472	72	0	38	0	0	2	229	0	0	0	0	0	2	0	26	0	208	0	0	0	221	808	4825
Grand Total	0	0	0	0	0	20	0	2058	6983	0	0	0	0	3735	4670	0	760	0	0	23	6200	0	0	0	0	0	8	0	609	2	2767	0	0	0	4033	**9893**	U
Approach%	0.	0.	0.	0.	0.		U	46%2.	79%5.	0.	0.	0.		U	79%8.	0.	46%8.	0.	0.		U	0.	0.	0.	0.	0.		U	28.	0.	18.	0.	0.		U	-	U
Totals %	0.	0.	0.	0.	0.		0.	22%2.	69%5.	0.	0.	0.		31.	43.	0.	7%3.	0.	0.		62%5.	0.	0.	0.	0.	0.		0.	6%2.	0.	27%9.	0.	0.		40%7.	-	U
Heavy	0	0	0	0	0		U	48	81	0	0	0		U	41	0	7	0	0		U	0	0	0	0	0		U	6	0	32	0	0		U	-	U
Heavy %	0.	0.	0.	0.	0.		U	4%5.	2%9.	0.	0.	0.		U	2%4.	0.	2.	0.	0.		U	0.	0.	0.	0.	0.		U	2.	0.	4%3.	0.	0.		U	-	U
Bicycles	0	0	0	0	0		U	0	6	0	0	0		U	0	0	0	0	0		U	0	0	0	0	0		U	0	0	8	0	0		U	-	U
Bicycle %	0.	0.	0.	0.	0.		U	0.	0%2.	0.	0.	0.		U	0.	0.	0.	0.	0.		U	0.	0.	0.	0.	0.		U	0.	0.	0%5.	0.	0.		U	-	U

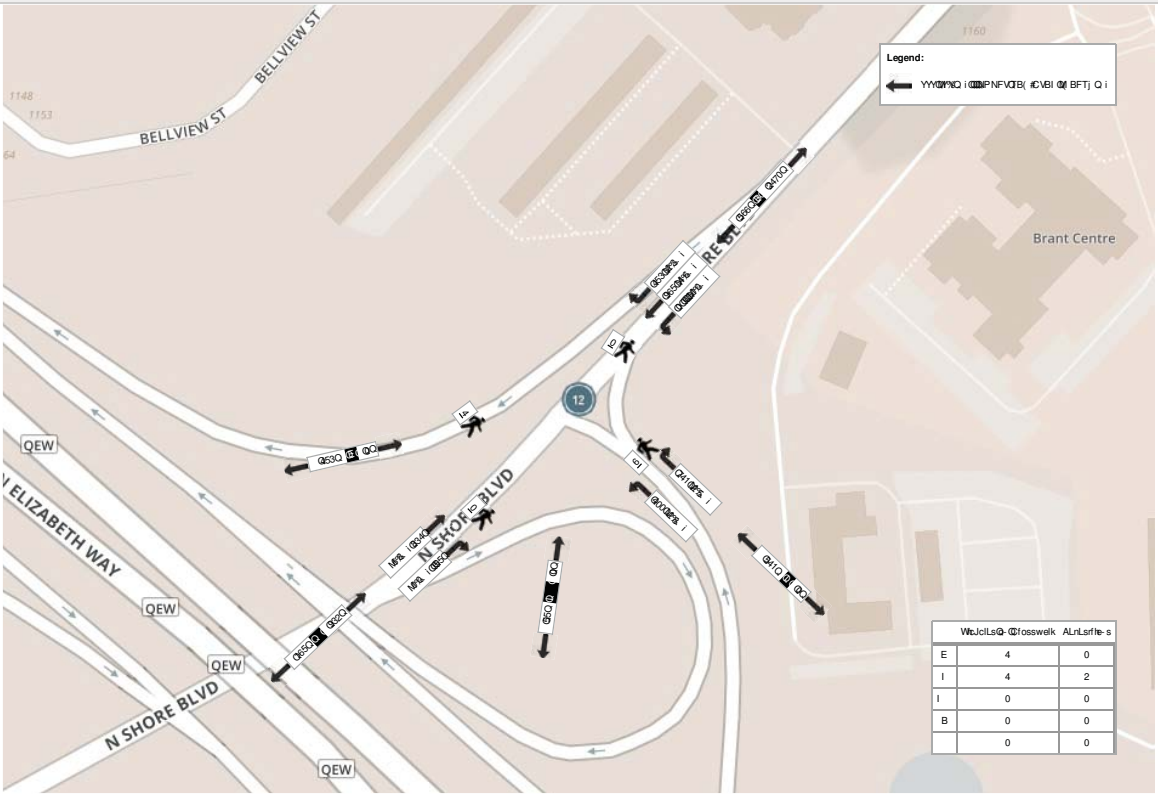
Peak Hour: 07:45 AM - 08:45 AM Weather: Unknown (1.9 °C)

Start Time	N Approach SB GEWDFRAM WEPON(D(POBOWT) Gi							E Approach EPON(D(POBOWT) G							S Approach SB GEWggDFRA							SW Approach SB GEWDFRAGBWEPON(D(POBOWT) Gi							W Approach EPON(D(POBOWT) G							Int. Total (15 min)
	Oft : r	WLef Oft : r	N: fH	VLar	d U NH-	ALns	Fppfoec: Norel	Oft : r	N: fH	WLef VLar	VLar	d U NH-	ALns	Fppfoec: Norel	Oft : r	N: fH	VLar	(efn VLar	d U NH-	ALns	Fppfoec: Norel	(efn Oft : r	WLef Oft : r	WLef VLar	(efn VLar	d U NH-	ALns	Fppfoec: Norel	(efn Oft : r	Oft : r	N: fH	VLar	d U NH-	ALns	Fppfoec: Norel	
07:B8.00	0	0	0	0	0	0	0	75	272	0	0	0	0	480	446	0	87	0	0	0	410	0	0	0	0	0	0	0	48	2	230	0	0	0	299	959
01:00.00	0	0	0	0	0	0	0	78	293	0	0	0	0	465	292	0	83	0	0	2	428	0	0	0	0	0	0	0	49	0	269	0	0	0	294	929
01:29.00	0	0	0	0	0	0	0	71	230	0	0	0	0	421	254	0	83	0	0	4	439	0	0	0	0	0	0	0	47	0	236	0	0	0	270	963
01:60.00	0	0	0	0	0	4	0	94	293	0	0	0	0	449	284	0	68	0	0	0	217	0	0	0	0	0	0	0	42	0	246	0	0	0	233	887
Grand Total	0	0	0	0	0	4	0	453	965	0	0	0	0	566	741	0	400	0	0	6	541	0	0	0	0	0	0	0	55	2	834	0	0	0	934	**2503**
Approach%	0.	0.	0.	0.	0.		U	62%.	91%.	0.	0.	0.		U	71%.	0.	42%.	0.	0.		U	0.	0.	0.	0.	0.	0.	U	28%.	0%.	13%.	0.	0.		U	-
Totals %	0.	0.	0.	0.	0.		0.	22%.	48%.	0.	0.	0.		67%.	45%.	0.	1.	0.	0.		67%.	0.	0.	0.	0.	0.	0.	0.	3.	0.	42%.	0.	0.		48%.	-
PHF	0	0	0	0	0		0	0%6	0%6	0	0	0		0%6	0%4	0	0%1	0	0		0%6	0	0	0	0	0	0	0	0%4	0%8	0%8	0	0		0%3	-
Heavy	0	0	0	0	0		0	3	28	0	0	0		25	23	0	6	0	0		27	0	0	0	0	0	0	0	0	0	25	0	0		25	-
Heavy %	0.	0.	0.	0.	0.		0.	2%.	4%.	0.	0.	0.		4.	2%.	0.	2%.	0.	0.		2%.	0.	0.	0.	0.	0.	0.	0.	0.	0.	6%.	0.	0.		6.	-
Lights	0	0	0	0	0		0	450	943	0	0	0		523	723	0	257	0	0		522	0	0	0	0	0	0	0	55	2	846	0	0		946	-
Lights %	0.	0.	0.	0.	0.		0.	51%.	57%.	0.	0.	0.		51.	51%.	0.	51%.	0.	0.		51%.	0.	0.	0.	0.	0.	0.	0.	200.	200.	59%.	0.	0.		57.	-
Single-Unit Trucks	0	0	0	0	0		0	6	8	0	0	0		1	26	0	6	0	0		29	0	0	0	0	0	0	0	0	0	22	0	0		22	-
Single-Unit Trucks %	0.	0.	0.	0.	0.		0.	2.	0%.	0.	0.	0.		0%.	2%.	0.	2%.	0.	0.		2%.	0.	0.	0.	0.	0.	0.	0.	0.	0.	4.	0.	0.		2%.	-
Buses	0	0	0	0	0		0	0	20	0	0	0		20	2	0	0	0	0		2	0	0	0	0	0	0	0	0	0	1	0	0		1	-
Buses %	0.	0.	0.	0.	0.		0.	0.	2%.	0.	0.	0.		2%.	0%.	0.	0.	0.	0.		0%.	0.	0.	0.	0.	0.	0.	0.	0.	0.	2%.	0.	0.		2%.	-
Articulated Trucks	0	0	0	0	0		0	2	0	0	0	0		2	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0		0	-
Articulated Trucks %	0.	0.	0.	0.	0.		0.	0%.	0.	0.	0.	0.		0%.	0.	0.	0.	0.	0.		0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.		0.	-
Pedestrians	U	U	U	U	U	0	U	U	U	U	U	U	0	U	U	U	U	U	U	2	U	U	U	U	U	U	0	U	U	U	U	U	U	0	U	-
Pedestrians%	U	U	U	U	U	0.	Q	U	U	U	U	U	0.	Q	U	U	U	U	U	40.	Q	U	U	U	U	U	0.	Q	U	U	U	U	U	0.	Q	-
Bicycles on Crosswalk	U	U	U	U	U	4	U	U	U	U	U	U	0	U	U	U	U	U	U	4	U	U	U	U	U	U	0	U	U	U	U	U	U	0	U	-
Bicycles on Crosswalk%	U	U	U	U	U	30.	Q	U	U	U	U	U	0.	Q	U	U	U	U	U	30.	Q	U	U	U	U	U	0.	Q	U	U	U	U	U	0.	Q	-
Bicycles on Road	0	0	0	0	0	0	U	0	0	0	0	0	0	U	0	0	0	0	0	0	U	0	0	0	0	0	0	U	0	0	6	0	0	0	U	-
Bicycles on Road%	U	U	U	U	U	0.	Q	U	U	U	U	U	0.	Q	U	U	U	U	U	0.	Q	U	U	U	U	U	0.	Q	U	U	U	U	U	0.	Q	-

Peak Hour: 04:30 PM - 05:30 PM Weather: Unknown (6.2 °C)

Start Time	N Approach SB GEWDFRAM WEPON(D(POBOWT) Gi							E Approach EPON(D(POBOWT) G							S Approach SB GEWggDFRA							SW Approach SB GEWDFRAGBWEPON(D(POBOWT) Gi							W Approach EPON(D(POBOWT) G							Int. Total (15 min)
	Oft : r	WLef Oft : r	N: fH	VLar	d U NH-	ALns	Fppfoec: Norel	Oft : r	N: fH	WLef VLar	VLar	d U NH-	ALns	Fppfoec: Norel	Oft : r	N: fH	VLar	(efn VLar	d U NH-	ALns	Fppfoec: Norel	(efn Oft : r	WLef Oft : r	WLef VLar	(efn VLar	d U NH-	ALns	Fppfoec: Norel	(efn Oft : r	Oft : r	N: fH	VLar	d U NH-	ALns	Fppfoec: Norel	
29:60.00	0	0	0	0	0	0	0	15	671	0	0	0	0	397	225	0	82	0	0	4	270	0	0	0	0	0	2	0	25	0	208	0	0	0	243	792
29:28.00	0	0	0	0	0	4	0	10	627	0	0	0	0	657	267	0	98	0	0	0	404	0	0	0	0	0	0	0	43	0	224	0	0	0	269	768
27:00.00	0	0	0	0	0	0	0	95	675	0	0	0	0	331	266	0	67	0	0	2	270	0	0	0	0	0	2	0	29	0	15	0	0	0	208	746
27:28.00	0	0	0	0	0	0	0	94	627	0	0	0	0	675	228	0	83	0	0	2	295	0	0	0	0	0	0	0	21	0	58	0	0	0	226	992
Grand Total	0	0	0	0	0	4	0	600	2652	0	0	0	0	2952	803	0	407	0	0	3	722	0	0	0	0	0	4	0	77	0	302	0	0	0	371	**2880**
Approach%	0.	0.	0.	0.	0.		U	27%.	14%.	0.	0.	0.		U	70%.	0.	45%.	0.	0.		U	0.	0.	0.	0.	0.	0.	U	29%.	0.	16%.	0.	0.		U	-
Totals %	0.	0.	0.	0.	0.		0.	20%.	31%.	0.	0.	0.		81%.	27%.	0.	7%.	0.	0.		43%.	0.	0.	0.	0.	0.	0.	0.	4%.	0.	26%.	0.	0.		29%.	-
PHF	0	0	0	0	0		0	0%3	0%4	0	0	0		0%2	0%4	0	0%.	0	0		0%1	0	0	0	0	0	0	0	0%.	0	0%.	0	0		0%1	-
Heavy	0	0	0	0	0		0	1	28	0	0	0		46	2	0	4	0	0		6	0	0	0	0	0	0	0	4	0	4	0	0		3	-
Heavy %	0.	0.	0.	0.	0.		0.	4%.	2%.	0.	0.	0.		2%.	0%.	0.	2.	0.	0.		0%.	0.	0.	0.	0.	0.	0.	0.	4%.	0.	0%.	0.	0.		0%.	-
Lights	0	0	0	0	0		0	454	2679	0	0	0		2991	806	0	408	0	0		701	0	0	0	0	0	0	0	78	0	655	0	0		373	-
Lights %	0.	0.	0.	0.	0.		0.	57%.	51%.	0.	0.	0.		51%.	55%.	0.	55.	0.	0.		55%.	0.	0.	0.	0.	0.	0.	0.	57%.	0.	55%.	0.	0.		55%.	-
Single-Unit Trucks	0	0	0	0	0		0	8	7	0	0	0		24	0	0	4	0	0		4	0	0	0	0	0	0	0	2	0	0	0	0		2	-
Single-Unit Trucks %	0.	0.	0.	0.	0.		0.	2%.	0%.	0.	0.	0.		0%.	0.	0.	2.	0.	0.		0%.	0.	0.	0.	0.	0.	0.	0.	2%.	0.	0.	0.	0.		0%.	-
Buses	0	0	0	0	0		0	6	9	0	0	0		5	2	0	0	0	0		2	0	0	0	0	0	0	0	0	0	4	0	0		4	-
Buses %	0.	0.	0.	0.	0.		0.	2.	0%.	0.	0.	0.		0%.	0%.	0.	0.	0.	0.		0%.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.		0%.	-
Articulated Trucks	0	0	0	0	0		0	0	4	0	0	0		4	0	0	0	0	0		0	0	0	0	0	0	0	0	2	0	0	0	0		2	-
Articulated Trucks %	0.	0.	0.	0.	0.		0.	0.	0%.	0.	0.	0.		0%.	0.	0.	0.	0.	0.		0.	0.	0.	0.	0.	0.	0.	0.	2%.	0.	0.	0.	0.		0%.	-
Pedestrians	U	U	U	U	U	4	U	U	U	U	U	U	0	U	U	U	U	U	U	3	U	U	U	U	U	U	4	U	U	U	U	U	U	0	U	-
Pedestrians%	U	U	U	U	U	48.	Q	U	U	U	U	U	0.	Q	U	U	U	U	U	80.	Q	U	U	U	U	U	48.	Q	U	U	U	U	U	0.	Q	-
Bicycles on Crosswalk	U	U	U	U	U	0	U	U	U	U	U	U	0	U	U	U	U	U	U	0	U	U	U	U	U	U	0	U	U	U	U	U	U	0	U	-
Bicycles on Crosswalk%	U	U	U	U	U	0.	Q	U	U	U	U	U	0.	Q	U	U	U	U	U	0.	Q	U	U	U	U	U	0.	Q	U	U	U	U	U	0.	Q	-
Bicycles on Road	0	0	0	0	0	0	U	0	2	0	0	0	0	U	0	0	0	0	0	0	U	0	0	0	0	0	0	U	0	0	0	0	0	0	U	-
Bicycles on Road%	U	U	U	U	U	0.	Q	U	U	U	U	U	0.	Q	U	U	U	U	U	0.	Q	U	U	U	U	U	0.	Q	U	U	U	U	U	0.	Q	-

Peak Hour: 07:45 AM - 08:45 AMQQQQWeather: Unknown (1.9 °C)



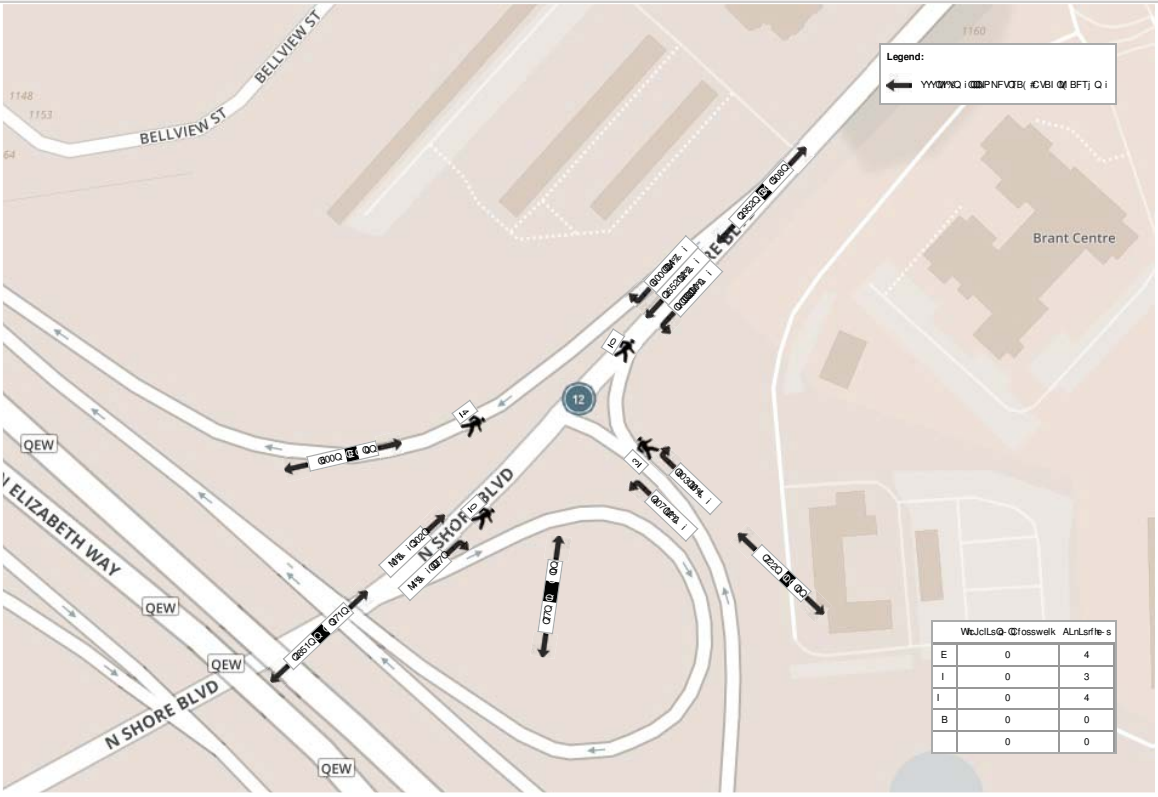
	WtcJclLsQ- Cfosswelk	ALnLsrfte- s
E	4	0
I	4	2
I	0	0
B	0	0
	0	0

Spectrum

NH- h t GrovLD L- rCoH r
Vocerfo- GeD LuEPON(Q(POBQWT) GQGrGSB GEWDFR Al
) erLuQ Ln,Qe- Q2,GQ027QQQQ LpIoJD L- rQLenuQ elrf.fQH ey

WFCQfroHþ
38Q rKQlefrGvL- HLQ Lsr,QHtLQQ0
Nofo- roQE,(QFEF) F,GI3TQK5

Peak Hour: 04:30 PM - 05:30 PMQQQQWeather: Unknown (6.2 °C)



	WtcJclLsQ- Cfosswelk	ALnLsrfte- s
E	0	4
I	0	3
I	0	4
B	0	0
	0	0

NH- h t GrovLD L- rCoH r
Aet LQQQ
WFC27Vj

Turning Movement Count (11 . NORTH SHORE BLVD E & QEW SB RAMPS)

Start Time	N Approach PLA INSI RD EN						E Approach FV WTINTV LISBQOIL						S Approach DVTRA MI O						W Approach FV WTINTV LISBQOIL						Int. Total (15 min)	Int. Total (1 hr)
	(i) Ha FrA	WHd FrN	Bgha FrL	t :Wde FrF	Eguf Fr	RLUbi nsHW anp	(i) Ha LrF	WHd LrA	Bgha LrN	t :Wde LrL	Eguf Lr	RLUbi nsHW anp	(i) Ha NrL	WHd NrF	Bgha NrA	t :Wde NrN	Eguf Nr	RLUbi nsHW anp	(i) Ha A rN	WHd A rL	Bgha A rF	t :Wde A rA	Eguf A r	RLUbi nsHW anp		
ocrooroo	I	o	0l	o	o	77	7l	75	o	o	o	381	o	o	o	o	o	o	o	50	31	o	o	0c	100	
ocr30roo	38	o	01	o	o	70	l 3	09	o	o	o	35o	3	o	o	o	o	3	o	c5	30	o	o	l 9	190	
ocr8oroo	30	o	89	o	o	05	3o7	l 8	o	o	o	3l 9	3	o	o	o	o	3	o	78	10	o	o	l l	881	
ocr50roo	13	o	l 0	o	o	3o7	33l	99	o	o	o	13c	o	o	o	o	o	o	o	l c	80	o	o	311	550	381c
ol rooroo	31	o	7l	o	o	l o	31c	3o7	o	o	o	188	8	o	o	o	o	8	o	93	15	o	o	330	583	30o8
ol r30roo	3o	o	c9	o	o	l 9	3o3	91	o	o	o	398	1	o	o	o	o	1	o	l 8	15	o	o	3oc	893	3099
ol r8oroo	38	o	75	o	1	cc	90	3o9	o	o	o	1o5	8	o	o	o	o	8	o	cl	83	o	o	3o9	898	377o
ol r50roo	3o	o	77	o	3	c7	c9	l c	o	o	o	377	o	o	o	o	o	o	o	l 5	39	o	o	3o8	850	307o
6665 LRM66																										
37rooroo	39	o	88	o	1	01	398	35c	o	o	o	85o	o	o	o	o	o	o	o	75	13	o	o	l 0	5cc	
37r30roo	37	o	80	o	1	03	188	389	o	o	o	8c1	5	o	o	o	o	5	o	co	15	o	o	95	013	
37r8oroo	19	o	03	o	o	l o	1co	309	o	o	o	519	0	o	o	o	o	0	o	77	83	o	o	9c	733	
37r50roo	17	o	03	o	1	cc	113	375	o	o	o	8l 0	o	o	o	o	o	o	o	l 0	1c	o	3	331	0c5	13l 8
3croorroo	13	o	87	o	o	0c	10o	379	o	o	o	539	3	o	o	o	3	3	o	c1	10	o	o	9c	0c5	11l o
3cr30roo	85	o	01	o	o	l 7	111	359	o	o	o	8c3	o	o	o	o	3	o	o	7o	18	o	o	l 8	05o	1199
3cr8oroo	87	o	53	o	o	cc	391	308	o	o	o	850	3	o	o	o	o	3	o	7c	35	o	o	l 3	0o5	1391
3cr50roo	10	o	7l	o	3	98	300	338	o	o	o	17l	1	o	o	o	o	1	o	08	39	o	o	c1	580	1o08
Grand Total	8ol	o	l cl	o	3o	33l 7	1033	3l 91	o	o	o	55o8	18	o	o	o	1	18	o	3351	879	o	3	3033	**7123**	:
Approach%	172	o2	c52	o2		:	0c2	582	o2	o2		:	3oo2	o2	o2	o2		:	o2	o0472	15452	o2		:	-	:
Totals %	5482	o2	31482	o2		374c2	80482	17472	o2	o2		734 2	o482	o2	o2	o2		o482	o2	372	0412	o2		13412	-	:
Heavy	8	o	1o	o		:	13	57	o	o		:	3	o	o	o		:	o	10	0	o		:	-	:
Heavy %	32	o2	1482	o2		:	o4 2	1452	o2	o2		:	5482	o2	o2	o2		:	o2	1412	3452	o2		:	-	:
Bicycles	o	o	o	o		:	o	5	o	o		:	o	o	o	o		:	o	c	o	o		:	-	:
Bicycle %	o2	o2	o2	o2		:	o2	o412	o2	o2		:	o2	o2	o2	o2		:	o2	o472	o2	o2		:	-	:

Spectrum

Wide(e) ID - . gGgeadK - i ea
B- snq- elF nGgrlF V WTINT V LISBQOILICIPLA INSI RD EN
OnqgrlA gu%lvnel33%lo3cIIIIIIOgUp , GgeaEBgnurlA npqgdmi) n&

SRI* d- i U
50lNa4lKpn(dR. gei gIA gf a%Ni (qgl8oo
Wd- ea IV F %K RF RORY%D 5QI3M9

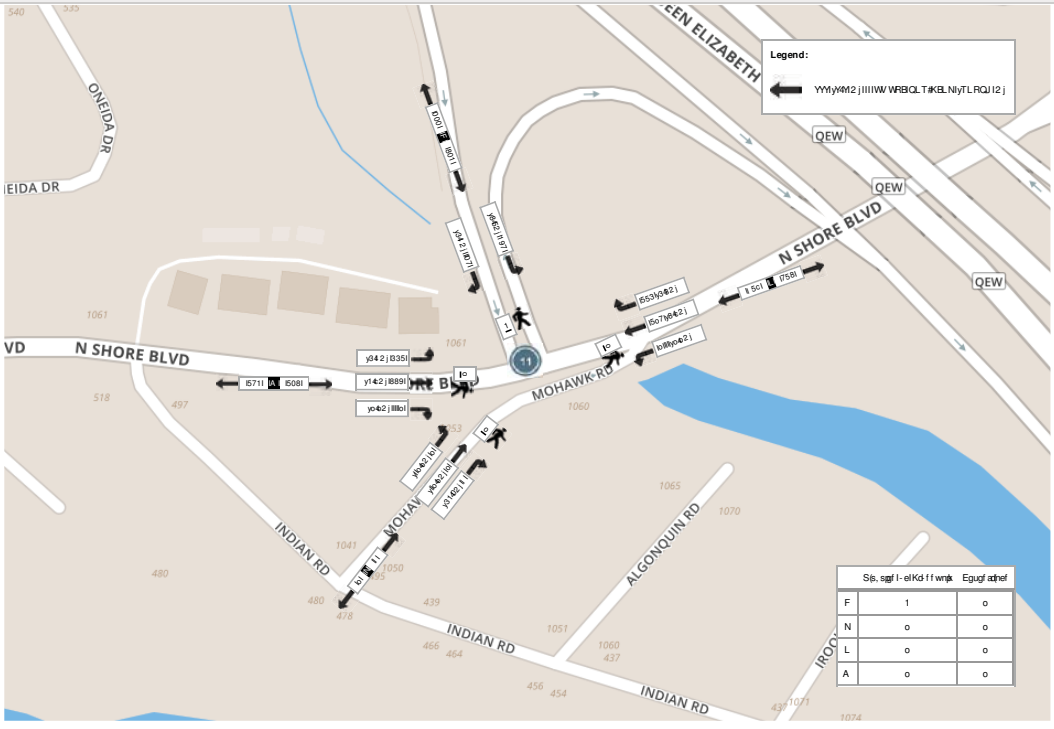
Peak Hour: 07:45 AM - 08:45 AMIIIIIIWeather: Unknown (1.9 °C)

Start Time	N Approach PLA INSI RD EN						E Approach FV WTINTV LISBQOIL						S Approach DVTRA MI O						W Approach FV WTINTV LISBQOIL						Int. Total (15 min)
	(i) Ha	WHd	Bgha	t :Wde	Eguf	RLUbi nsHW anp	(i) Ha	WHd	Bgha	t :Wde	Eguf	RLUbi nsHW anp	(i) Ha	WHd	Bgha	t :Wde	Eguf	RLUbi nsHW anp	(i) Ha	WHd	Bgha	t :Wde	Eguf	RLUbi nsHW anp	
ocr50roo	13	o	l 0	o	o	3o7	33l	99	o	o	o	13c	o	o	o	o	o	o	o	l c	80	o	o	311	550
ol rooroo	31	o	7l	o	o	l o	31c	3o7	o	o	o	188	8	o	o	o	o	8	o	93	15	o	o	330	583
ol r30roo	3o	o	c9	o	o	l 9	3o3	91	o	o	o	398	1	o	o	o	o	1	o	l 8	15	o	o	3oc	893
ol r8oroo	38	o	75	o	1	cc	90	3o9	o	o	o	1o5	8	o	o	o	o	8	o	cl	83	o	o	3o9	898
Grand Total	07	o	197	o	1	801	553	5o7	o	o	o	l 5c	l	o	o	o	o	l	o	889	335	o	o	508	**1660**
Approach%	30482	o2	l 5432	o2		:	01482	5o482	o2	o2		:	3oo2	o2	o2	o2		:	o2	c54 2	10412	o2		:	-
Totals %	8452	o2	3o4 2	o2		13412	17472	15402	o2	o2		032	o402	o2	o2	o2		o402	o2	1o452	7482	o2		1o482	-
PHF	o47c	o	o4 c	o		o4 8	o4 c	o498	o	o		o493	o47c	o	o	o		o47c	o	o498	o4 3	o		o498	-
Heavy	3	o	3o	o		33	0	30	o	o		1o	3	o	o	o		3	o	9	1	o		33	-
Heavy %	34 2	o2	8452	o2		8482	3482	84c2	o2	o2		1452	31402	o2	o2	o2		31402	o2	14c2	34 2	o2		1452	-
Lights	00	o	1l 7	o		853	587	893	o	o		l 1c	c	o	o	o		c	o	88o	331	o		551	-
Lights %	9l 412	o2	97472	o2		97492	9l 492	97482	o2	o2		9c472	l c402	o2	o2	o2		l c402	o2	9c482	9l 412	o2		9c472	-
Single-Unit Trucks	o	o	l	o		l	0	0	o	o		3o	3	o	o	o		3	o	1	1	o		5	-
Single-Unit Trucks %	o2	o2	14c2	o2		1482	3482	3412	o2	o2		3412	31402	o2	o2	o2		31402	o2	o472	34 2	o2		o492	-
Buses	3	o	3	o		1	o	3o	o	o		3o	o	o	o	o		o	o	c	o	o		c	-
Buses %	34 2	o2	o482	o2		o472	o2	1402	o2	o2		3412	o2	o2	o2	o2		o2	o2	1482	o2	o2		3402	-
Articulated Trucks	o	o	3	o		3	o	o	o	o		o	o	o	o	o		o	o	o	o	o		o	-
Articulated Trucks %	o2	o2	o482	o2		o482	o2	o2	o2	o2		o2	o2	o2	o2	o2		o2	o2	o2	o2	o2		o2	-
Pedestrians	:	:	:	:	o	:	:	:	:	:	o	:	:	:	:	:	o	:	:	:	:	:	o	:	-
Pedestrians%	:	:	:	:	o2	l	:	:	:	:	o2	l	:	:	:	:	o2	l	:	:	:	:	o2	l	-
Bicycles on Crosswalk	:	:	:	:	1	:	:	:	:	:	o	:	:	:	:	:	o	:	:	:	:	:	o	:	-
Bicycles on Crosswalk%	:	:	:	:	3oo2	l	:	:	:	:	o2	l	:	:	:	:	o2	l	:	:	:	:	o2	l	-
Bicycles on Road	o	o	o	o	o	:	o	o	o	o	o	:	o	o	o	o	o	:	o	0	o	o	o	:	-
Bicycles on Road%	:	:	:	:	o2	l	:	:	:	:	o2	l	:	:	:	:	o2	l	:	:	:	:	o2	l	-

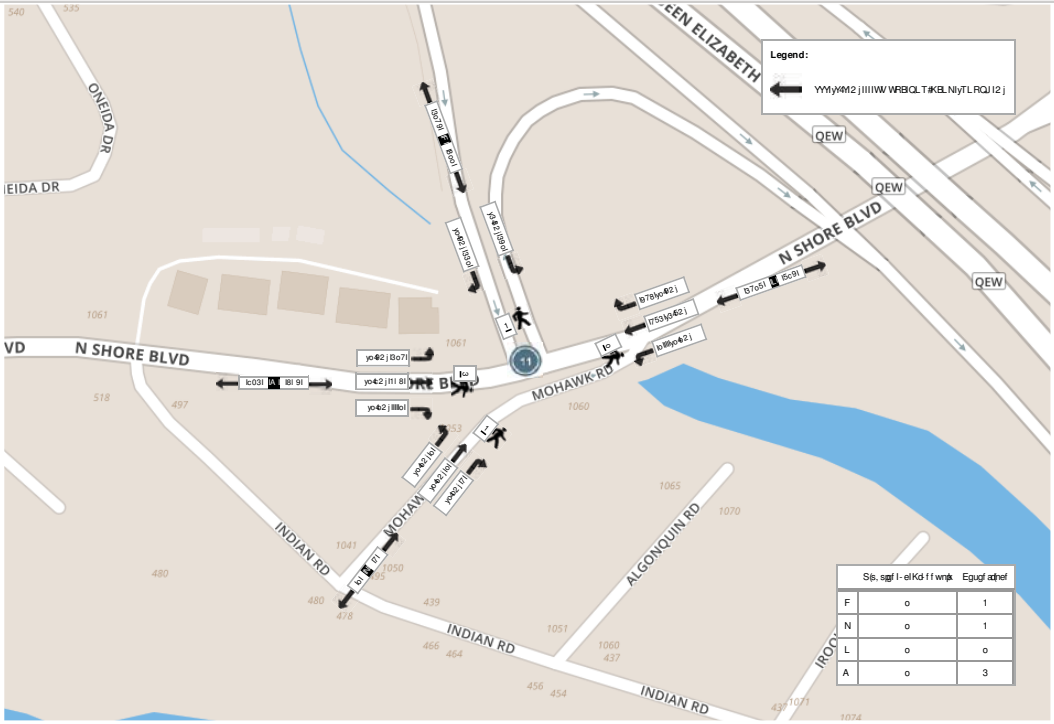
Peak Hour: 04:30 PM - 05:30 PMIIIIIIWeather: Unknown (6.2 °C)

Start Time	N Approach PLA INSI RD EN						E Approach FV WT INT V LISBQOIL						S Approach DV TRA MI O						W Approach FV WT INT V LISBQOIL						Int. Total (15 min)
	(\) Ha	W-tri	Bgha	t :W de	Eguf	RLULti-nsHW-anp	(\) Ha	W-tri	Bgha	t :W de	Eguf	RLULti-nsHW-anp	(\) Ha	W-tri	Bgha	t :W de	Eguf	RLULti-nsHW-anp	(\) Ha	W-tri	Bgha	t :W de	Eguf	RLULti-nsHW-anp	
37r8oroo	19	o	03	o	o	l o	1co	309	o	o	o	519	0	o	o	o	o	0	o	77	83	o	o	9c	733
37r50roo	17	o	03	o	1	cc	113	375	o	o	o	8l 0	o	o	o	o	o	o	o	l 0	1c	o	3	331	0c5
3crooroo	13	o	87	o	o	0c	10o	379	o	o	o	539	3	o	o	o	3	3	o	c1	10	o	o	9c	0c5
3cr30roo	85	o	01	o	o	l 7	111	359	o	o	o	8c3	o	o	o	o	3	o	o	7o	18	o	o	l 8	05o
Grand Total	33o	o	39o	o	1	8oo	978	753	o	o	o	37o5	7	o	o	o	1	7	o	1l 8	3o7	o	3	8l 9	**2299**
Approach%	874c2	o2	78482	o2		:	7o2	5o2	o2	o2		:	3oo2	o2	o2	o2		:	o2	c14 2	1c4l2	o2		:	-
Totals %	54 2	o2	l 482	o2		382	53482	1c492	o2	o2		794 2	o482	o2	o2	o2		o482	o2	31482	5472	o2		37492	-
PHF	o4 3	o	o493	o		o4 c	o4 9	o490	o	o		o498	o48	o	o	o		o48	o	o4l 8	o4l 0	o		o4 c	-
Heavy	3	o	1	o		8	9	9	o	o		3l	o	o	o	o		o	o	1	3	o		8	-
Heavy %	o492	o2	3482	o2		32	o492	3452	o2	o2		3482	o2	o2	o2	o2		o2	o2	o4c2	o492	o2		o4 2	-
Lights	3o9	o	3l l	o		19c	905	781	o	o		30l 7	7	o	o	o		7	o	1l 3	3o0	o		8l 7	-
Lights %	99482	o2	9l 492	o2		992	99482	9l 472	o2	o2		9l 492	3oo2	o2	o2	o2		3oo2	o2	99482	99482	o2		99412	-
Single-Unit Trucks	3	o	3	o		1	l	8	o	o		33	o	o	o	o		o	o	o	3	o		3	-
Single-Unit Trucks %	o492	o2	o402	o2		o4c2	o4 2	o402	o2	o2		o4c2	o2	o2	o2	o2		o2	o2	o2	o492	o2		o482	-
Buses	o	o	o	o		o	o	7	o	o		7	o	o	o	o		o	o	1	o	o		1	-
Buses %	o2	o2	o2	o2		o2	o2	o482	o2	o2		o482	o2	o2	o2	o2		o2	o2	o4c2	o2	o2		o402	-
Articulated Trucks	o	o	3	o		3	3	o	o	o		3	o	o	o	o		o	o	o	o	o		o	-
Articulated Trucks %	o2	o2	o402	o2		o482	o482	o2	o2	o2		o482	o2	o2	o2	o2		o2	o2	o2	o2	o2		o2	-
Pedestrians	:	:	:	:	1	:	:	:	:	:	o	:	:	:	:	:	1	:	:	:	:	:	3	:	-
Pedestrians%	:	:	:	:	5o2	l	:	:	:	:	o2	l	:	:	:	:	5o2	l	:	:	:	:	1o2	l	-
Bicycles on Crosswalk	:	:	:	:	o	:	:	:	:	:	o	:	:	:	:	:	o	:	:	:	:	:	o	:	-
Bicycles on Crosswalk%	:	:	:	:	o2	l	:	:	:	:	o2	l	:	:	:	:	o2	l	:	:	:	:	o2	l	-
Bicycles on Road	o	o	o	o	o	:	o	3	o	o	o	:	o	o	o	o	o	:	o	o	o	o	o	:	-
Bicycles on Road%	:	:	:	:	o2	l	:	:	:	:	o2	l	:	:	:	:	o2	l	:	:	:	:	o2	l	-

Peak Hour: 07:45 AM - 08:45 AMIIIIIIWeather: Unknown (1.9 °C)



Peak Hour: 04:30 PM - 05:30 PMIIIIIWeather: Unknown (6.2 °C)



F	o	1
N	o	1
L	o	o
A	o	3

Turning Movement Count (3 . PLAINS RD E (FAIRVIEW ST) & FRANCIS RD)

Start Time	N Approach SUNET RDJM						E Approach ALN ERDJMDY D SN Ug Yh DRt :						S Approach SUNET RDJM						W Approach ALN ERDJMDY D SN Ug Yh DRt :						Int. Total (15 min)	Int. Total (1 hr)
	UWUe EfTh	t u-n EfTR	LPde EfTY	sp t n-o EfTE	APac Ef	NI l -071uD 0e'3	UWUe YfTE	t u-n YfTh	LPde YfTR	sp t n-o YfTY	APac Yf	NI l -071uD 0e'3	UWUe RfTY	t u-n RfTE	LPde RfTh	sp t n-o RfTR	APac Rf	NI l -071uD 0e'3	UWUe h fTR	t u-n h fTY	LPde h fTE	sp t n-o h fTh	APac h f	NI l -071uD 0e'3		
45f44f44	2	4	2	4	2	8	6	9*	**	*	4	59	8B	*	6	4	4	8K	6	**.	*	4	*	*22	2B*	
45f*Bf44	2	*	K	4	2	*2	*	95	*2	4	4	. 4	89	*	K	4	4	B9	*	*8K	9	4	6	*B9	648	
45f64f44	*	4	B	4	2	9	*	*44	K	*	4	***	B8	2	B	4	4	9*	6	2**	.	4	2	222	844	
45f8Bf44	6	2	2	4	2	5	*	*4K	*5	4	4	*25	8K	6	**	4	4	96	.	26K	*4	4	*	2B5	8B8	*84K
4. f44f44	9	4	K	4	*	*B	6	*2B	*5	4	4	*8B	B9	6	9	4	4	9B	9	*K2	*B	4	6	2*6	86.	*BK9
4. f*Bf44	*.	6	*K	4	*	84	*	**5	*4	4	4	*2.	96	8	*4	4	*	55	8	*K2	*2	4	B	24.	8B6	*58B
4. f64f44	*2	6	K	4	6	28	2	*28	*9	4	4	*82	BB	8	*4	4	*	9K	9	*K2	*6	4	6	2**	889	*5K*
4. f8Bf44	**	*	*8	4	6	29	2	*94	*5	4	4	*5K	85	B	5	4	2	BK	*4	*K9	26	*	9	264	8K8	*. 6*
%GUYNC%%																										
*9f44f44	B2	*5	. 6	4	2	*B2	K	222	88	4	4	25B	2K	*4	5	4	8	89	.	*K	29	4	.	262	54B	
*9f*Bf44	95	*K	59	4	K	*92	9	26K	86	*	4	2. K	62	*6	9	4	2	B*	K	*54	2K	4	*6	24.	5*4	
*9f64f44	B9	*B	5.	4	8	*8K	B	2B6	85	4	4	64B	28	9	9	4	*	69	K	*..	2B	4	*6	222	5*2	
*9f8Bf44	98	*.	9.	4	*	*B4	.	2. 5	88	*	4	684	66	**	5	4	9	B*	**	*K2	26	*	*B	225	59.	2. KB
*5f44f44	B5	**	5K	4	8	*85	9	292	92	4	4	664	6B	*4	*2	4	B	B5	5	*K9	82	4	*K	28B	55K	2K9K
*5f*Bf44	9B	*2	. .	4	*	*9B	*	299	8K	4	4	6*9	22	**	9	4	*	6K	*4	*. 2	66	4	6	22B	58B	6448
*5f64f44	B8	24	. .	4	9	*92	B	28.	B*	*	4	64B	6B	5	6	4	5	8B	.	*5.	24	4	9	249	5*.	64*4
*5f8Bf44	9*	.	. 2	4	*	*B*	B	264	B4	*	*	2. 9	6B	4	K	4	8	88	B	*. 4	*.	4	2	246	9. 8	2K29
Grand Total	B6*	*64	5**	4	88	*652	BK	2. 54	8HK	9	*	6868	994	K*	**5	4	68	. 9.	*4.	2K56	648	2	*46	66. 5	**9061**	p
Approach%	6. v5,	K v8,	B*v. ,	4,		p	*v5,	. 6v9,	*8vB,	4v2,		p	59,	*4vB,	*6vB,	4,		p	6v2,	. 5v. ,	K,	4v',		p	-	p
Totals %	BJK,	*v8,	5v. ,	4,		*Bv',	4v5,	6*v5,	BvB,	4v',		65vK	5v6,	*,	*v6,	4,		K9,	*v2,	62v. ,	6v8,	4,		65v8,	-	p
Heavy	9	*	*4	4		p	8	99	K	4		p	*4	4	B	4		p	*8	. K	*	4		p	-	p
Heavy %	*v',	4v. ,	*v8,	4,		p	9v. ,	2v6,	*v. ,	4,		p	*vB,	4,	8v6,	4,		p	*6,	6,	4v6,	4,		p	-	p
Bicycles	4	4	4	4		p	4	*	4	4		p	4	4	4	4		p	4	8	4	4		p	-	p
Bicycle %	4,	4,	4,	4,		p	4,	4,	4,	4,		p	4,	4,	4,	4,		p	4,	4v',	4,	4,		p	-	p

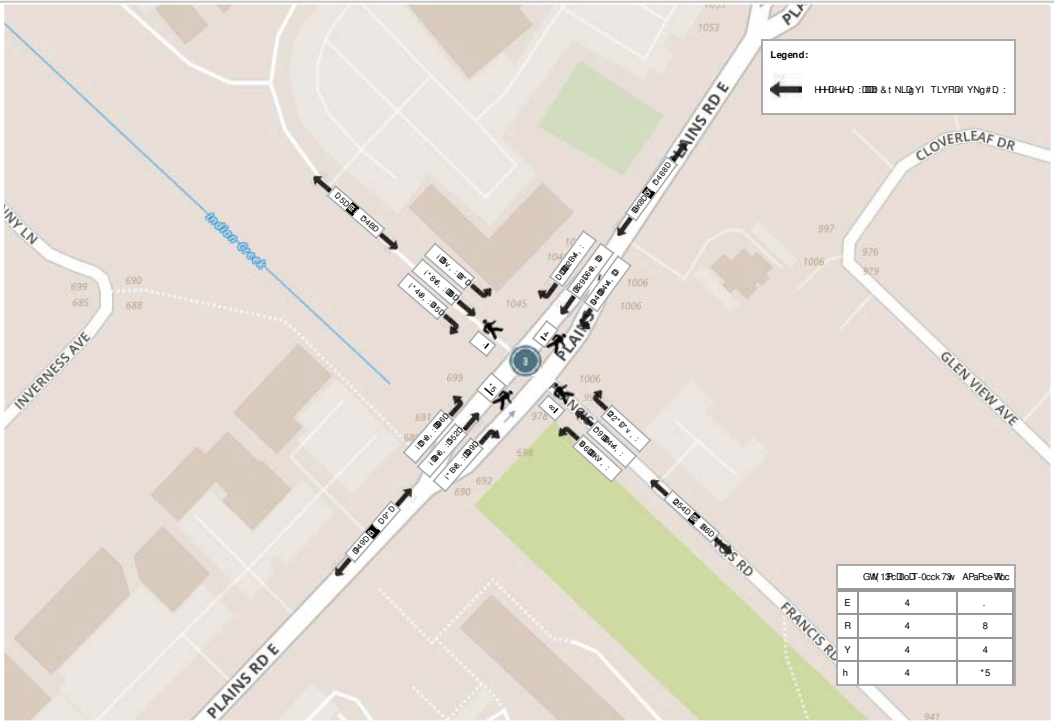
Peak Hour: 08:00 AM - 09:00 AM DDDDWeather: Unknown (1.9 °C)

Start Time	N Approach SUNET RDJM						E Approach ALN ERDJMDYDSN Ug Yh DRt :						S Approach SUNET RDJM						W Approach ALN ERDJMDYDSN Ug Yh DRt :						Int. Total (15 min)
	UWUe	t u-n	LPde	spt n-o	APac	NIl -071uD 0e73	UWUe	t u-n	LPde	spt n-o	APac	NIl -071uD 0e73	UWUe	t u-n	LPde	spt n-o	APac	NIl -071uD 0e73	UWUe	t u-n	LPde	spt n-o	APac	NIl -071uD 0e73	
4. f44f44	9	4	K	4	*	*B	6	*2B	*5	4	4	*8B	B9	6	9	4	4	9B	9	*K2	*B	4	6	2*6	86.
4. f*Bf44	*.	6	*K	4	*	84	*	**5	*4	4	4	*2.	96	8	*4	4	*	55	8	*K2	*2	4	B	24.	8B6
4. f64f44	*2	6	K	4	6	28	2	*28	*9	4	4	*82	BB	8	*4	4	*	9K	9	*K2	*6	4	6	2**	889
4. f8Bf44	**	*	*8	4	6	29	2	*94	*5	4	4	*5K	85	B	5	4	2	BK	*4	*K9	26	*	9	264	8K8
Grand Total	85	5	B*	4	.	*4B	.	B29	94	4	4	BK8	22*	*9	66	4	8	254	29	552	96	*	*5	.92	**1831**
Approach%	88v. ,	9v5,	8. v9,	4,		p	*v6,	. . v9,	*4v*,	4,		p	. *vK,	BvK,	*2v2,	4,		p	6,	. Kv9,	5v6,	4v*,		p	-
Totals %	2v9,	4v8,	2v. ,	4,		Bv5,	4v8,	2. v5,	6v6,	4,		62v8,	*2v* ,	4vK,	*v. ,	4,		*8v5,	*v8,	82v2,	6v8,	4v*,		85v* ,	-
PHF	4v9B	4vB	4v95	4		4v99	4v95	4v. 2	4v. .	4		4v. 6	4v. .	4v.	4v. 6	4		4v. .	4v9B	4vK	4v9.	4v2B		4vK8	-
Heavy	B	*	8	4		*4	2	*K	4	4		2*	8	4	6	4		5	8	66	*	4		6.	-
Heavy %	*4v9,	*8v5,	5v. ,	4,		KvB,	2B,	6v9,	4,	4,		6vB,	*v. ,	4,	Kv* ,	4,		2v9,	*Bv8,	8v6,	*v9,	4,		8v8,	-
Lights	82	9	85	4		KB	9	B45	94	4		B56	2*5	*9	64	4		296	22	56K	92	*		. 28	-
Lights %	. Kv8,	. Bv5,	K2v2,	4,		KvB,	5B,	K9v8,	*44,	4,		K9vB,	K v2,	*44,	K4vK,	4,		K5v8,	. 8v9,	KBv5,	K v8,	*44,		KBv9,	-
Single-Unit Trucks	B	4	2	4		5	*	*2	4	4		*6	*	4	4	4		*	4	*K	4	4		*K	-
Single-Unit Trucks %	*4v9,	4,	6vK,	4,		9v5,	*2vB,	2v6,	4,	4,		2v2,	4vB,	4,	4,	4,		4v8,	4,	2vB,	4,	4,		2v2,	-
Buses	4	*	*	4		2	4	5	4	4		5	6	4	6	4		9	8	**	*	4		*9	-
Buses %	4,	*8v5,	2,	4,		*vK,	4,	*v6,	4,	4,		*v2,	*v8,	4,	Kv* ,	4,		2v2,	*Bv8,	*v8,	*v9,	4,		*vK,	-
Articulated Trucks	4	4	*	4		*	*	4	4	4		*	4	4	4	4		4	4	6	4	4		6	-
Articulated Trucks %	4,	4,	2,	4,		*,	*2vB,	4,	4,	4,		4v2,	4,	4,	4,	4,		4,	4,	4v8,	4,	4,		4v6,	-
Pedestrians	p	p	p	p	.	p	p	p	p	p	4	p	p	p	p	p	8	p	p	p	p	p	*5	p	-
Pedestrians%	p	p	p	p	25v9,	D	p	p	p	p	4,	D	p	p	p	p	*6v. ,	D	p	p	p	p	B. v9,	D	-
Bicycles on Crosswalk	p	p	p	p	4	p	p	p	p	p	4	p	p	p	p	p	4	p	p	p	p	p	4	p	-
Bicycles on Crosswalk%	p	p	p	p	4,	D	p	p	p	p	4,	D	p	p	p	p	4,	D	p	p	p	p	4,	D	-
Bicycles on Road	4	4	4	4	4	p	4	4	4	4	4	p	4	4	4	4	4	p	4	4	4	4	4	p	-
Bicycles on Road%	p	p	p	p	4,	D	p	p	p	p	4,	D	p	p	p	p	4,	D	p	p	p	p	4,	D	-

Peak Hour: 04:45 PM - 05:45 PM DDDDWeather: Unknown (6.2 °C)

Start Time	N Approach SUNET RDJM						E Approach ALN ERDJMDYDSN Ug Yh DRt :						S Approach SUNET RDJM						W Approach ALN ERDJMDYDSN Ug Yh DRt :						Int. Total (15 min)
	UWUe	t u-n	LPde	spt n-o	APac	NIl -071uD 0e73	UWUe	t u-n	LPde	spt n-o	APac	NIl -071uD 0e73	UWUe	t u-n	LPde	spt n-o	APac	NIl -071uD 0e73	UWUe	t u-n	LPde	spt n-o	APac	NIl -071uD 0e73	
*9f8Bf44	98	*.	9.	4	*	*Bf	.	2. 5	88	*	4	684	66	**	5	4	9	B*	**	*K2	26	*	*B	225	59.
*5f44f44	B5	**	5K	4	8	*85	9	292	92	4	4	664	6B	*4	*2	4	B	B5	5	*K9	82	4	*K	28B	55K
*5f*Bf44	9B	*2	. .	4	*	*9B	*	299	8K	4	4	6*9	22	**	9	4	*	6K	*4	*. 2	66	4	6	22B	58B
*5f64f44	B8	24	. .	4	9	*92	B	28.	B*	*	4	64B	6B	5	6	4	5	8B	.	*5.	24	4	9	249	5*.
Grand Total	284	9*	626	4	*2	928	24	*496	249	2	4	*2K*	*2B	6K	2.	4	*K	*K2	69	58.	**.	*	86	K46	**3010**
Approach%	6. vB,	Kv. ,	B*v. ,	4,		p	*vB,	. 2v6,	*9,	4v2,		p	9Bv* ,	24v5,	*8v9,	4,		p	8,	. 2v. ,	*6v* ,	4v* ,		p	-
Totals %	. ,	2,	*4v5,	4,		24v5,	4v5,	6Bv6,	9v. ,	4v* ,		82vK,	8v2,	*v6,	4vK,	4,		9v8,	*v2,	28vK,	6vK,	4,		64,	-
PHF	4vK2	4v59	4vK2	4		4vKB	4v96	4vK6	4v. 6	4vB		4vKB	4v. K	4v. K	4vB,	4		4v. 8	4v. 2	4vKB	4v5	4v2B		4vK2	-
Heavy	4	4	2	4		2	4	*8	2	4		*9	2	4	4	4		2	2	*2	4	4		*8	-
Heavy %	4,	4,	4v9,	4,		4v6,	4,	*v6,	*,	4,		*v2,	*v9,	4,	4,	4,		*,	Bv9,	*v9,	4,	4,		*v9,	-
Lights	284	9*	62*	4		922	24	*48K	248	2		*25B	*26	6K	2.	4		*K4	68	569	**.	*		. . K	-
Lights %	*44,	*44,	KKv8,	4,		KKv5,	*44,	K. v5,	KK,	*44,		K. v. ,	K v8,	*44,	*44,	4,		KK,	K9v8,	K v8,	*44,	*44,		K v8,	-
Single-Unit Trucks	4	4	*	4		*	4	5	*	4		.	2	4	4	4		2	4	6	4	4		6	-
Single-Unit Trucks %	4,	4,	4v6,	4,		4v2,	4,	4v5,	4vB,	4,		4v9,	*v9,	4,	4,	4,		*,	4,	4v8,	4,	4,		4v6,	-
Buses	4	4	4	4		4	4	9	*	4		5	4	4	4	4		4	2	5	4	4		K	-
Buses %	4,	4,	4,	4,		4,	4,	4v9,	4vB,	4,		4vB,	4,	4,	4,	4,		4,	Bv9,	4vK,	4,	4,		*,	-
Articulated Trucks	4	4	*	4		*	4	*	4	4		*	4	4	4	4		4	4	2	4	4		2	-
Articulated Trucks %	4,	4,	4v6,	4,		4v2,	4,	4v* ,	4,	4,		4v* ,	4,	4,	4,	4,		4,	4,	4v5,	4,	4,		4v2,	-
Pedestrians	p	p	p	p	**	p	p	p	p	p	4	p	p	p	p	p	*K	p	p	p	p	p	86	p	-
Pedestrians%	p	p	p	p	*8vK,	D	p	p	p	p	4,	D	p	p	p	p	2Bv5,	D	p	p	p	p	B. v* ,	D	-
Bicycles on Crosswalk	p	p	p	p	*	p	p	p	p	p	4	p	p	p	p	p	4	p	p	p	p	p	4	p	-
Bicycles on Crosswalk%	p	p	p	p	*v8,	D	p	p	p	p	4,	D	p	p	p	p	4,	D	p	p	p	p	4,	D	-
Bicycles on Road	4	4	4	4	4	p	4	*	4	4	4	p	4	4	4	4	4	p	4	*	4	4	4	p	-
Bicycles on Road%	p	p	p	p	4,	D	p	p	p	p	4,	D	p	p	p	p	4,	D	p	p	p	p	4,	D	-

Peak Hour: 08:00 AM - 09:00 AM Weather: Unknown (1.9 °C)



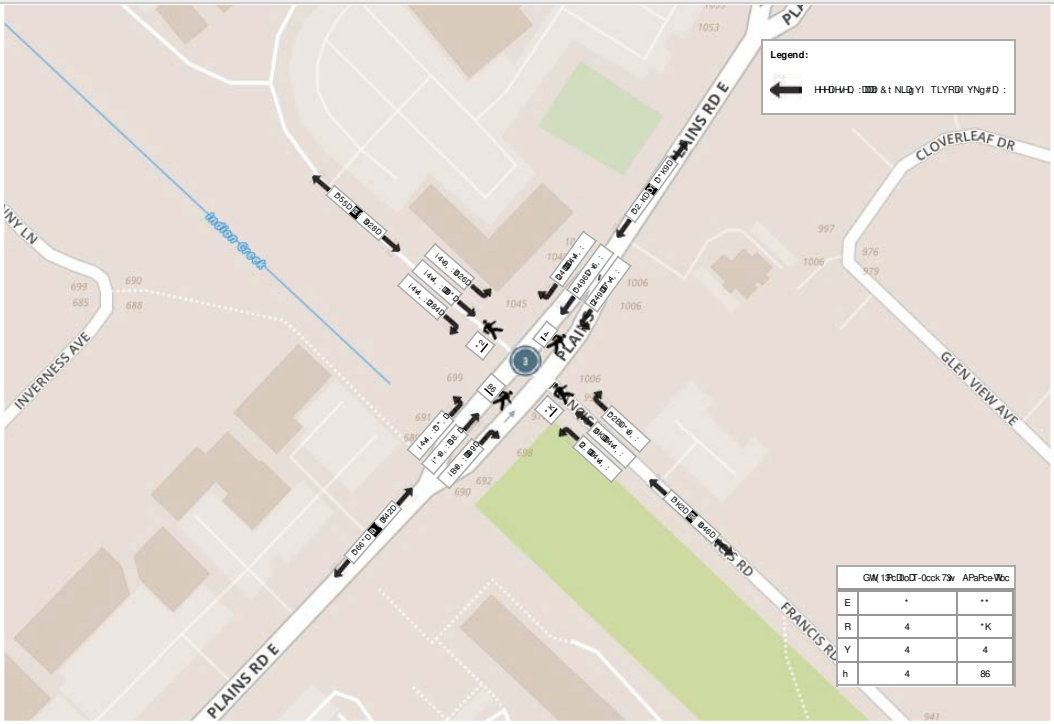
GM(13PcDIoT-0ck 73v APaPceVbc		
E	4	.
R	4	8
Y	4	4
h	4	*5

Spectrum

t n-oWr D 0VPy PoeT 0noe
L017a0bE 7y PTALN ERDJMOYDSN Ug Yh Rt : FFSUNET RDJM
M7ePTDa Pan97oD* r24* 5MPI 30(y PoeLP7afDa 73P-Snr 7)

GNDD-0nl
8EBRaJT 3'WDNVPonPTDa PoeBRnVPB44
t 0-0oeJDaE nT NENMNnTJ 8gDCK

Peak Hour: 04:45 PM - 05:45 PM Weather: Unknown (6.2 °C)



GM(13PcDIoT-0ck 73v APaPceVbc		
E	*	**
R	4	*K
Y	4	4
h	4	86

Turning Movement Count (4 . PLAINS RD E (FAIRVIEW ST) & KING RD)

Start Time	N Approach SUNET R						E Approach DMAUNLT RTYTgAU hUYt TL:						S Approach SUNET R						W Approach DMAUNLT RTYTgAU hUYt TL:						Int. Total (15 min)	Int. Total (1 hr)
	Wue Nft	: u-n NfL	MRde NfY	sp n-o NfN	DPac Nf	All -071uT 0e73	Wue YfN	: u-n Yft	MRde YfL	sp n-o YfY	DPac Yf	All -071uT 0e73	Wue LfY	: u-n LfN	MRde Lft	sp n-o LfL	DPac Lf	All -071uT 0e73	Wue t fL	: u-n t fY	MRde t fN	sp n-o t ft	DPac t f	All -071uT 0e73		
45f44f44	2	8	64	4	4	9*	69	98	B	4	6	26	K	98	66	4	*	28	*6	K	69	4	6	*6B	6K6	
45f*8f44	9	*8	6.	4	9	B5	64	B8	6	4	5	25	**	BK	69	4	B	K6	*K	*6.	96	4	4	*5.	958	
45f94f44	.	*8	B*	4	*	28	96	29	8	*	9	*4*	*4	82	6B	4	*	.4	*9	*56	6.	4	4	6*B	B54	
45fB8f44	*B	64	88	4	9	K	69	K6	*4	4	8	**8	*6	8B	92	4	8	*46	*8	*2.	98	4	*	6*.	868	*286
4K44f44	*2	66	86	4	6	.4	B.	K6	K	*	9	*B4	*6	24	9B	4	9	*42	6*	*89	9B	4	4	64K	8BB	*.*B
4K*8f44	5	69	9.	4	4	2.	9K	.5	K	*	B	*BB	*9	8B	B6	4	9	*4.	6.	*29	99	4	4	668	8B5	64K2
4K94f44	64	*5	92	4	9	59	BB	K2	2	4	*	*92	**	BK	94	4	6	K	65	*8*	94	*	6	64.	845	6*69
4KfB8f44	*.	6B	B2	4	9	K	B9	*6*	*B	4	8	*5K	96	B.	B4	4	6	*6*	*2	*B2	6K	4	4	*.4	85K	6*52
%%G YAS%%																										
*2f44f44	9*	9.	22	4	6	*92	B*	6*6	*B	4	B	625	*9	9K	9K	4	B	K	65	*B8	*5	4	4	*K	2K*	
*2f*8f44	96	96	89	4	*	**5	BK	6B6	*.	4	2	94.	*9	62	6K	4	6	25	65	*6.	*5	4	*	*59	222	
*2f94f44	92	85	K6	4	9	*58	9B	6B8	64	4	8	6. .	*K	99	B*	4	9	. 6	6K	*9.	69	4	4	*.4	582	
*2fB8f44	9B	9.	2K	4	9	*B*	B8	65K	65	4	K	984	*2	95	9.	4	8	. 6	68	*95	*K	4	9	*K4	529	6K22
*5f44f44	96	2.	. 9	4	B	*. B	B5	6B	94	4	2	962	*B	6K	B8	4	9	K5	*5	*B2	6K	4	9	*.*	5. K	6. K9
*5f*8f44	B8	92	24	4	9	*B*	8*	6K5	66	4	8	924	*K	68	B2	4	B	K	62	*69	*.	4	6	*2K	58K	9458
*5f94f44	9.	98	9.	4	8	**9	6.	664	*8	4	2	62B	*8	92	BK	4	9	. .	9*	*98	64	4	6	*K2	226	6. K*
*5fB8f44	9B	69	84	4	B	*45	98	689	64	4	9	94K	*8	68	B*	4	9	K*	9.	*6B	64	4	*	*K9	25.	6K 5
Grand Total	955	B5*	K6.	4	B4	*255	246	68. 5	66B	9	59	9B62	69*	286	855	4	BK	*B24	95*	6684	B42	*	*5	946K	**9591**	p
Approach%	66G v	6KC v	B. GBv	4v		p	*5Q2v	58G v	2Gv	4C v		p	*8GMv	BBGSv	9. GBv	4v		p	*6GSv	5BGSv	*9GBv	4v		p	-	p
Totals %	9C v	BC v	K42v	4v		*5GBv	2Gv	65C v	6Gv	4v		98G5v	6GBv	2Gv	2v	4v		*8GBv	9C v	69GBv	BGBv	4v		9*C2v	-	p
Heavy	2	9	65	4		p	64	29	9	4		p	*9	8	*9	4		p	2	25	8	4		p	-	p
Heavy %	*Q2v	4Q2v	9Q9v	4v		p	9Q9v	6QBv	*Q9v	4v		p	8Q2v	4Q6v	6Q9v	4v		p	*Q2v	9v	*QBv	4v		p	-	p
Bicycles	4	*	4	4		p	4	*	4	4		p	4	4	4	4		p	4	8	4	4		p	-	p
Bicycle %	4v	4QBv	4v	4v		p	4v	4v	4v	4v		p	4v	4v	4v	4v		p	4v	4QBv	4v	4v		p	-	p

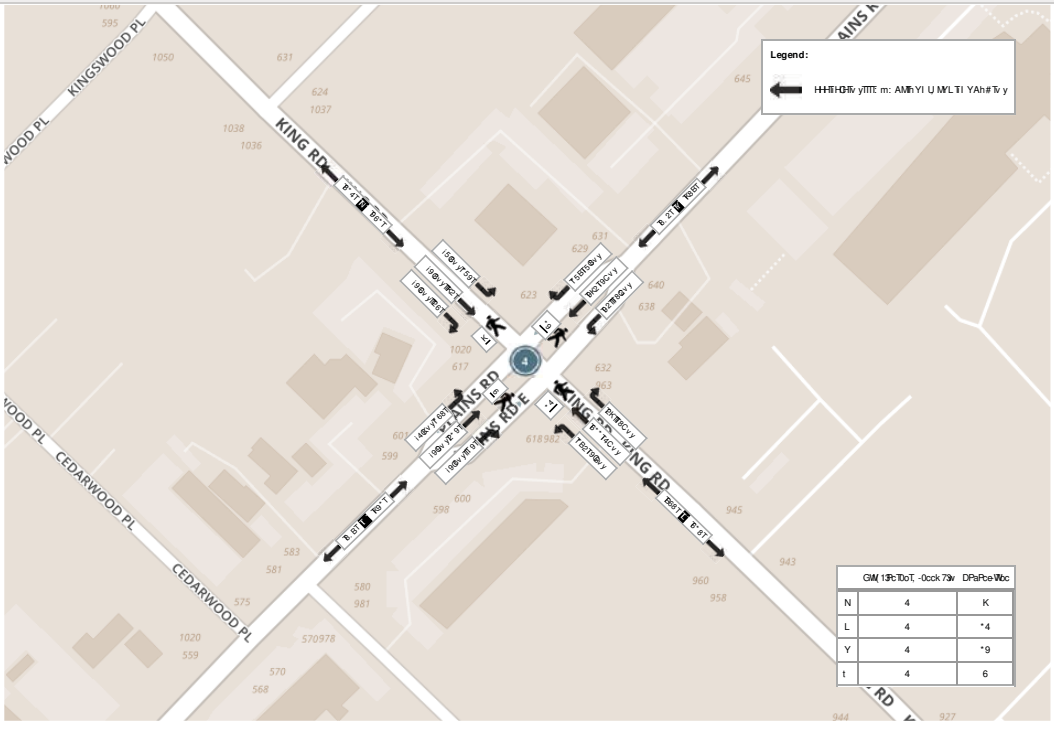
Peak Hour: 08:00 AM - 09:00 AMTTTTTWeather: Unknown (1.9 °C)

Start Time	N Approach SUNET R						E Approach DMAUNLT RTYTgAU hUYt TL:						S Approach SUNET R						W Approach DMAUNLT RTYTgAU hUYt TL:						Int. Total (15 min)
	Wue	: u-n	MRde	sp n-o	DPac	All -071uT 0e73	Wue	: u-n	MRde	sp n-o	DPac	All -071uT 0e73	Wue	: u-n	MRde	sp n-o	DPac	All -071uT 0e73	Wue	: u-n	MRde	sp n-o	DPac	All -071uT 0e73	
4K44f44	*2	66	86	4	6	.4	B.	K6	K	*	9	*B4	*6	24	9B	4	9	*42	6*	*89	9B	4	4	64K	8BB
4K*8f44	5	69	9.	4	4	2.	9K	.5	K	*	B	*BB	*9	8B	B6	4	9	*4.	6.	*29	99	4	4	668	8B5
4K94f44	64	*5	92	4	9	59	BB	K2	2	4	*	*92	**	BK	94	4	6	K	65	*8*	94	*	6	64.	845
4KfB8f44	*.	6B	B2	4	9	K	B9	*6*	*B	4	8	*5K	96	B.	B4	4	6	*6*	*2	*B2	6K	4	4	*.4	85K
Grand Total	26	K2	*59	4	K	96*	*5B	9K2	92	6	*9	8. K	2K	6**	*B2	4	*4	B68	.9	2*9	*68	*	6	K96	**2176**
Approach%	*. GBv	62QMv	89C v	4v		p	6. C v	2BQBv	2v	4QSv		p	*2v	B. Q2v	9BQBv	4v		p	**GBv	59G5v	*8v	4C v		p	-
Totals %	6QMv	Bv	Kv	4v		*BQMv	Kv	*5G5v	*G5v	4C v		65GBv	9C v	. G5v	2G5v	4v		*. GBv	BQ3v	6KGBv	8G5v	4v		9KGBv	-
PHF	4G5K	4C	4QK9	4		4QK	4QK	4QK	4C2B	4QB		4QKB	4QB9	4QMK	4QK5	4		4QMK	4QK	4C.B	4C.6	4GB8		4C.6	-
Heavy	6	9	*9	4		*K	*9	*8	6	4		94	B	6	8	4		**	9	64	*	4		6B	-
Heavy %	9GBv	9QBv	5QBv	4v		8Q2v	5QBv	9C v	8Q2v	4v		8v	8C v	4C v	9QBv	4v		6Q2v	9QBv	9QSv	4QMv	4v		6C v	-
Lights	24	K9	*24	4		949	*2*	95*	9B	6		82K	2B	64.	*B*	4		B*B	. 4	8. 9	*6B	*		K4K	-
Lights %	. 2QMv	. 2QBv	. 6QBv	4v		. BQBv	. 6QBv	. 2C v	. BQBv	*44v		. 8v	. BC v	. . C v	. 2Q2v	4v		. 5QBv	. 2QKv	. 2Q5v	. . GBv	*44v		. 5C v	-
Single-Unit Trucks	*	9	**	4		*8	*4	.	6	4		6*	*	4	6	4		9	*	5	4	4		K	-
Single-Unit Trucks %	*Q2v	9QBv	2QBv	4v		BQ5v	8Q5v	6QSv	8Q2v	4v		9QBv	*QBv	4v	*QBv	4v		4Q5v	*C v	*C v	4v	4v		*v	-
Buses	*	4	6	4		9	9	2	4	4		.	9	6	9	4		K	6	**	*	4		*B	-
Buses %	*Q2v	4v	*QBv	4v		4C v	*G5v	*Q2v	4v	4v		*QBv	BQBv	4C v	6C v	4v		*C v	6QBv	*Q9v	4Q6v	4v		*G5v	-
Articulated Trucks	4	4	4	4		4	4	4	4	4		4	4	4	4	4		4	4	6	4	4		6	-
Articulated Trucks %	4v	4v	4v	4v		4v	4v	4v	4v	4v		4v	4v	4v	4v	4v		4v	4v	4QBv	4v	4v		4QBv	-
Pedestrians	p	p	p	p	K	p	p	p	p	p	*9	p	p	p	p	p	*4	p	p	p	p	p	6	p	-
Pedestrians%	p	p	p	p	6BQBv	T	p	p	p	p	9. QBv	T	p	p	p	p	94QBv	T	p	p	p	p	2C v	T	-
Bicycles on Crosswalk	p	p	p	p	4	p	p	p	p	p	4	p	p	p	p	p	4	p	p	p	p	p	4	p	-
Bicycles on Crosswalk%	p	p	p	p	4v	T	p	p	p	p	4v	T	p	p	p	p	4v	T	p	p	p	p	4v	T	-
Bicycles on Road	4	*	4	4	4	p	4	4	4	4	4	p	4	4	4	4	4	p	4	*	4	4	4	p	-
Bicycles on Road%	p	p	p	p	4v	T	p	p	p	p	4v	T	p	p	p	p	4v	T	p	p	p	p	4v	T	-

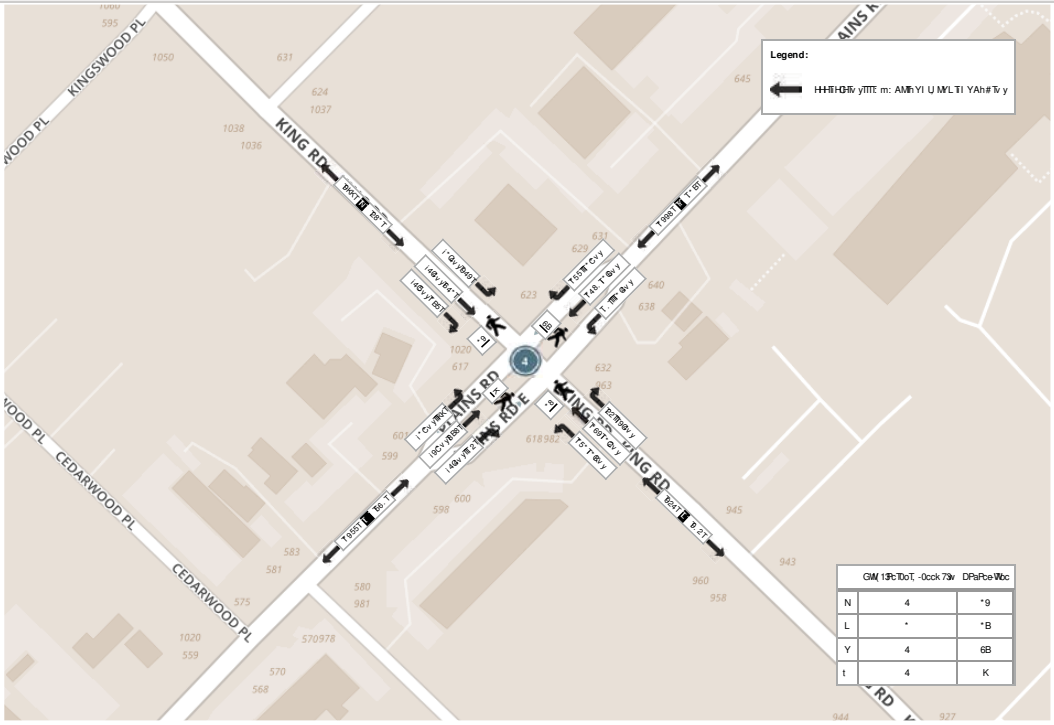
Peak Hour: 04:30 PM - 05:30 PM TTTTTWeather: Unknown (6.2 °C)

Start Time	N Approach SUNET R						E Approach DMAUNLT RTYTgAU hUYt TL:						S Approach SUNET R						W Approach DMAUNLT RTYTgAU hUYt TL:						Int. Total (15 min)
	Wue	: u-n	MRde	sp n-o	DPac	All -071uT 0e73	Wue	: u-n	MRde	sp n-o	DPac	All -071uT 0e73	Wue	: u-n	MRde	sp n-o	DPac	All -071uT 0e73	Wue	: u-n	MRde	sp n-o	DPac	All -071uT 0e73	
*2f94f44	92	85	K6	4	9	*58	9B	6BB	64	4	8	6..	*K	99	B*	4	9	.6	6K	*9.	69	4	4	*.4	582
*2fB8f44	9B	9.	2K	4	9	*B*	BB	65K	65	4	K	984	*2	95	9.	4	8	.6	68	*95	*K	4	9	*K4	529
*5f44f44	96	2.	.9	4	B	*.B	B5	6B.	94	4	2	962	*B	6K	B8	4	9	K5	*5	*B2	6K	4	9	*.*	5.K
*5f*8f44	B8	92	24	4	9	*B*	8*	6K5	66	4	8	924	*K	68	B2	4	B	K	62	*69	*.	4	6	*2K	58K
Grand Total	*B5	64*	949	4	*9	28*	*55	*48.	..	4	6B	*998	22	*69	*5*	4	*8	924	.2	8BB	KK	4	K	56.	**3075**
Approach%	66Q2v	94Cv	B2Q3v	4v		p	*9Q3v	5.Q5v	5Q3v	4v		p	*KQ3v	9BQ3v	B5Q3v	4v		p	*9Q3v	5BQ%v	*6Cv	4v		p	-
Totals %	BQ%v	2Q3v	.Cv	4v		6*Q5v	8Q%v	9BQ3v	9Q3v	4v		B9Q3v	6Cv	Bv	8Q2v	4v		**Q5v	9Cv	*5Q5v	6Cv	4v		69Q5v	-
PHF	4Q86	4Q59	4Q%*	4		4Q8B	4Q%5	4C6	4Q89	4		4C9	4C6	4Q89	4C9	4		4CK	4Q82	4C9	4Q5.	4		4C8	-
Heavy	*	4	9	4		B	6	*9	*	4		*2	6	6	9	4		5	4	*5	*	4		*K	-
Heavy %	4Q5v	4v	*v	4v		4Q2v	*Cv	*Q5v	*v	4v		*Q5v	9v	*Q2v	*Q%v	4v		*Cv	4v	9Cv	*Cv	4v		6Q3v	-
Lights	*B2	64*	944	4		2B5	*58	*4B2	.K	4		*9*.	2B	*6*	*2K	4		989	.2	86K	K5	4		5**	-
Lights %	..Q5v	*44v	..v	4v		..Q5v	.KCv	.KQ%v	..v	4v		.KQ%v	.5v	.KQ5v	.KQ5v	4v		.KCv	*44v	.2Cv	.KCv	4v		.5Q3v	-
Single-Unit Trucks	*	4	*	4		6	4	5	*	4		K	4	4	6	4		6	4	2	4	4		2	-
Single-Unit Trucks %	4Q5v	4v	4Q3v	4v		4Q3v	4v	4Q5v	*v	4v		4Q2v	4v	4v	*Q5v	4v		4Q2v	4v	*Cv	4v	4v		4Q%v	-
Buses	4	4	*	4		*	*	2	4	4		5	6	6	*	4		8	4	.	*	4		*4	-
Buses %	4v	4v	4Q3v	4v		4Q3v	4Q2v	4Q2v	4v	4v		4Q3v	9v	*Q2v	4Q2v	4v		*Q5v	4v	*Q5v	*Cv	4v		*Q5v	-
Articulated Trucks	4	4	*	4		*	*	4	4	4		*	4	4	4	4		4	4	6	4	4		6	-
Articulated Trucks %	4v	4v	4Q3v	4v		4Q3v	4Q2v	4v	4v	4v		4Cv	4v	4v	4v	4v		4v	4v	4Q5v	4v	4v		4Q%v	-
Pedestrians	p	p	p	p	*9	p	p	p	p	p	6B	p	p	p	p	p	*B	p	p	p	p	p	K	p	-
Pedestrians%	p	p	p	p	6*Q5v	T	p	p	p	p	B%v	T	p	p	p	p	69Q3v	T	p	p	p	p	*9Q3v	T	-
Bicycles on Crosswalk	p	p	p	p	4	p	p	p	p	p	4	p	p	p	p	p	*	p	p	p	p	p	4	p	-
Bicycles on Crosswalk%	p	p	p	p	4v	T	p	p	p	p	4v	T	p	p	p	p	*Q5v	T	p	p	p	p	4v	T	-
Bicycles on Road	4	4	4	4	4	p	4	4	4	4	4	p	4	4	4	4	4	p	4	*	4	4	4	p	-
Bicycles on Road%	p	p	p	p	4v	T	p	p	p	p	4v	T	p	p	p	p	4v	T	p	p	p	p	4v	T	-

Peak Hour: 08:00 AM - 09:00 AM TTTTTWeather: Unknown (1.9 °C)



Peak Hour: 04:30 PM - 05:30 PMTTTTTWeather: Unknown (6.2 °C)



Turning Movement Count (7. KI NGI RCD CT & MNGALE GY)

Start Time	p Nccroahl FRAF NCI SC					L Nccroahl DRAWKi SAg					I Nccroahl DRAWKi SAg					RhtKTota1 (75 min)	RhtKTota1 (7 l r)
	Alt:T ruF	WU-T ruK	nPeds ru r	pUba ru	Rccd Lf:S I TL0	Alt:T Kur	:de KuF	nPeds KuK	pUba Ku	Rccd Lf:S I TL0	:de FuK	WU-T Fur	nPeds FuF	pUba Fu	Rccd Lf:S I TL0		
71u77u77	7	4	7	7	4	4	5	7	7	2	1	6	7	7	3	42	
71u49u77	5	6	7	7	9	7	4	7	7	4	4	7	7	7	4	1	
71u57u77	7	5	7	4	5	6	5	7	7	9	5	7	7	7	5	44	
71u29u77	7	7	7	7	7	7	6	7	7	6	9	6	7	7	1	3	24
78u77u77	9	6	7	1	1	7	6	7	7	6	6	6	7	7	2	45	27
78u49u77	*	9	7	7	44	6	6	7	7	2	5	*	7	7	3	62	91
78u57u77	49	8	7	4	65	4	5	7	7	2	8	9	7	7	45	27	8*
78u29u77	4	6	7	5	5	6	6	7	4	2	5	2	7	7	1	42	34
EBBEAKRI EBB																	
4*u77u77	6	2	7	4	*	2	*	7	7	47	2	4	7	6	9	64	
4*u49u77	6	6	7	7	2	2	9	7	7	3	7	7	7	7	7	45	
4*u57u77	5	7	7	7	5	5	44	7	7	42	*	7	7	7	*	65	
4*u29u77	2	6	7	4	*	5	5	7	7	*	2	6	7	7	*	48	19
41u77u77	4	6	7	7	5	4	9	7	7	*	*	4	7	7	1	4*	17
41u49u77	5	6	7	7	9	*	8	7	5	42	6	4	7	7	5	66	13
41u57u77	6	4	7	7	5	6	9	7	7	1	*	4	7	7	1	41	15
41u29u77	4	5	7	4	2	4	*	7	7	1	9	4	7	7	*	41	16
dran2 Tota1	28	53	7	49	81	56	*1	7	2	33	*9	68	7	6	35	**34%**	P
Nccroahl -	99.6%	22.8%	7%		P	56.5%	*1.1%	7%		P	*3.3%	57.4%	7%		P	**s**	P
TotatH-	41.6%	42%	7%		54.6%	44.9%	62%	7%		59.9%	65.5%	47%	7%		55.5%	**s**	P
yeavB	6	6	7		P	6	9	7		P	9	6	7		P	**s**	P
yeavB-	2.6%	9.4%	7%		P	*.5%	1.9%	7%		P	1.1%	1.4%	7%		P	**s**	P
PihBh1eH	P	P	P		P	P	P	P		P	P	P	P		P	**s**	P
PihBh1e-	P	P	P		P	P	P	P		P	P	P	P		P	**s**	P

kea: your089088 NM s8%088 NMSSSSS eatler0Wh: noUn (7K%wC)

Start Time	p Nccroahl FRAF NCI SC					L Nccroahl DRAVKi SAg					I Nccroahl DRAVKi SAg					RntKTota1 (75 min)
	Alt:T	WU-T	nPeds	pUba	RccdLf:SITL0	Alt:T	:de	nPeds	pUba	RccdLf:SITL0	:de	WU-T	nPeds	pUba	RccdLf:SITL0	
78u77u77	9	6	7	1	1	7	6	7	7	6	6	6	7	7	2	45
78u49u77	*	9	7	7	44	6	6	7	7	2	5	*	7	7	3	62
78u57u77	49	8	7	4	65	4	5	7	7	2	8	9	7	7	45	27
78u29u77	4	6	7	5	5	6	6	7	4	2	5	2	7	7	1	42
dran2 Tota1	61	41	7	44	22	9	3	7	4	42	4*	41	7	7	55	**%7**
Nccroahl -	*4.2%	58.*%	7%		P	59.1%	*2.5%	7%		P	28.9%	94.9%	7%		P	**s**
Tota1H-	63.1%	48.1%	7%		28.2%	9.9%	3.3%	7%		49.2%	41.*%	48.1%	7%		5*.5%	**s**
ky °	7.29	7.95	7		7.28	7.*5	7.19	7		7.88	7.9	7.14	7		7.*5	**s**
yeavB	4	4	7		6	7	4	7		4	6	4	7		5	**s**
yeavB-	5.1%	9.3%	7%		2.9%	7%	44.4%	7%		1.4%	46.9%	9.3%	7%		3.4%	**s**
AigltH	6*	4*	7		26	9	8	7		45	42	4*	7		57	**s**
AigltH-	3*.5%	32.4%	7%		39.9%	477%	88.3%	7%		36.3%	81.9%	32.4%	7%		37.3%	**s**
Sing1esWhit Truh: H	7	7	7		7	7	7	7		7	4	7	7		4	**s**
Sing1esWhit Truh: H-	7%	7%	7%		7%	7%	7%	7%		7%	*.5%	7%	7%		5%	**s**
PuHeH	4	4	7		6	7	4	7		4	4	4	7		6	**s**
PuHeH-	5.1%	9.3%	7%		2.9%	7%	44.4%	7%		1.4%	*.5%	9.3%	7%		*.4%	**s**
ke2	P	P	P	7	P	P	P	P	7	P	P	P	P	7	P	**s**
ke2-	P	P	P	7%	S	P	P	P	7%	S	P	P	P	7%	S	**s**
ke2eHtrianH	P	P	P	44	P	P	P	P	4	P	P	P	P	7	P	**s**
ke2eHtrianH-	P	P	P	34.1%	S	P	P	P	8.5%	S	P	P	P	7%	S	**s**

Spectrum

edshstSDI, UmUsTSCIesT
WfiLThsS LmUsF RAF NCI SC SkSDRAVKi SAg
gLTUsF UbGSLs94GS741SSSSgUc0ymUsTSWLouF LOUsetLY

ERSGdec
29SYTSC0UndSR, UseUsF UaTSrehUs577
IdsTSMr GCPr RgRGSD2VSH3

kea: your0860F8 kM s850F8 kMSSSSS eatler0Wh: noUn (.K8 wC)

Start Time	p Nccroahl FRAF NCI SC					L Nccroahl DRAVKi SAg					I Nccroahl DRAVKi SAg					RntKTota1 (75 min)
	Alt:T	WU-T	nPeds	pUba	RccdLf:SITL0	Alt:T	:de	nPeds	pUba	RccdLf:SITL0	:de	WU-T	nPeds	pUba	RccdLf:SITL0	
4*u57u77	5	7	7	7	5	5	44	7	7	42	*	7	7	7	*	65
4*u29u77	2	6	7	4	*	5	5	7	7	*	2	6	7	7	*	48
41u77u77	4	6	7	7	5	4	9	7	7	*	*	4	7	7	1	4*
41u49u77	5	6	7	7	9	*	8	7	5	42	6	4	7	7	5	66
dran2 Tota1	44	*	7	4	41	45	61	7	5	27	48	2	7	7	66	**4%**
Nccroahl -	*2.1%	59.5%	7%		P	56.9%	*1.9%	7%		P	84.8%	48.6%	7%		P	**s**
Tota1H-	45.3%	1.*%	7%		64.9%	4*.9%	52.6%	7%		97.*%	66.8%	9.4%	7%		61.8%	**s**
ky °	7.*3	7.19	7		7.14	7.92	7.*4	7		7.14	7.19	7.9	7		7.13	**s**
yeavB	7	7	7		7	4	7	7		4	4	7	7		4	**s**
yeavB-	7%	7%	7%		7%	1.1%	7%	7%		6.9%	9.*%	7%	7%		2.9%	**s**
AigltH	44	*	7		41	46	61	7		53	41	2	7		64	**s**
AigltH-	477%	477%	7%		477%	36.5%	477%	7%		31.9%	32.2%	477%	7%		39.9%	**s**
Sing1esWhit Truh: H	7	7	7		7	4	7	7		4	4	7	7		4	**s**
Sing1esWhit Truh: H-	7%	7%	7%		7%	1.1%	7%	7%		6.9%	9.*%	7%	7%		2.9%	**s**
PuHeH	7	7	7		7	7	7	7		7	7	7	7		7	**s**
PuHeH-	7%	7%	7%		7%	7%	7%	7%		7%	7%	7%	7%		7%	**s**
ke2	P	P	P	7	P	P	P	P	7	P	P	P	P	7	P	**s**
ke2-	P	P	P	7%	S	P	P	P	7%	S	P	P	P	7%	S	**s**
ke2eHtrianH	P	P	P	4	P	P	P	P	5	P	P	P	P	7	P	**s**
ke2eHtrianH-	P	P	P	69%	S	P	P	P	19%	S	P	P	P	7%	S	**s**

kea: your0890 88 NM s8%088 NMSSSSS eatl er0Wh: noUn (7K%wC)



kea: your0860F8 kM s850F8 kMSSSSS eatl er0Wh: noUn (. K8 wC)



Turning Movement Count (15 . WARWICK CT & SURREY LN)

Start Time	W Approach					S Approach					N Approach					E Approach					Int. Total (15 min)	Int. Total (1 hr)
	FRANC I S	DWC I S	gNt I S	TWu I S	U- - hnPeNdgnOPs	DWC S	gNt S	FRANC S	TWu S	U- - hnPeNdgnOPs	FRANC i S	gNt i S	DWC i S	TWu i S	U- - hnPeNdgnOPs	gNt : S	DWC : S	FRANC : S	TWu : S	U- - hnPeNdgnOPs		
poSppSpp	p	o	p	p	o	a	c	p	p	l	L	p	p	p	L	f	p	p	f	f	cc	
poS10Spp	7	L	p	p	f f	f	f	p	f	c	1	a	p	p	f 7	f	p	p	f	f	co	
poS7pSpp	p	o	f	a	L	f	0	p	c	l	L	f	p	f	1	p	p	f	7	f	ca	
poSa0Spp	p	0	p	p	0	7	0	p	p	L	f a	f	p	p	f 0	p	p	f	7	f	c1	f pc
pLSppSpp	o	f a	p	fp	cf	p	7	p	p	7	f c	c	p	f	f a	p	p	p	c	p	7L	f f L
pLS10Spp	7	f c	p	f	f 0	a	f p	p	p	f a	f c	l	f	p	f 1	c	p	c	f	a	0c	f a7
pLS7pSpp	L	f o	f	p	cl	a	a	p	p	L	f p	f a	p	p	ca	p	p	f	L	f	01	f oL
pLSa0Spp	7	f L	p	f	cf	a	a	p	p	L	L	c	p	p	f p	f	p	p	c	f	ap	f L1
4445 F: U2444																						
f lSppSpp	p	f f	f	L	f c	c	c	f	p	0	f 0	L	p	p	c7	f	f	f	o	7	a7	
f lS10Spp	0	f 7	f	c	f 1	f	c	p	f	7	f p	L	p	p	f L	p	p	f	7	f	af	
f lS7pSpp	L	f a	p	a	cc	0	c	p	p	o	f c	7	c	f	f o	p	p	p	c	p	al	
f lSa0Spp	a	L	f	f	f 7	a	f	p	p	0	f 7	l	p	p	f 1	f	p	p	c	f	7L	f l L
f oSppSpp	0	f l	p	c	cf	f	a	p	p	0	f L	0	0	p	cL	p	p	c	7	c	0l	f Lf
f oS10Spp	7	f 0	p	0	f L	c	0	p	p	o	f a	0	p	c	f 1	p	p	p	l	p	aa	f La
f oS7pSpp	c	f o	p	p	f 1	p	a	p	p	a	f 7	a	f	p	f L	f	p	p	a	f	ac	f Lp
f oSa0Spp	7	f c	f	c	f l	c	7	p	p	0	f L	7	f	p	cc	p	p	p	p	p	a7	f L0
Grand Total	0a	f 1a	l	ap	c0a	7L	0o	f	a	1l	f 1a	oc	fp	0	col	L	f	1	aL	f L	**644**	6
Approach%	cf 3'9	ol 3a9	c3a9		6	713 9	013a9	f 9		6	op3'9	cl 3 9	73 9		6	aa3a9	03 9	0p9		6	-	6
Totals %	L3a9	7p3 9	p3 9		713a9	03 9	L3 9	p3c9		f a3 9	7p3 9	f f 3c9	f 3 9		ac3 9	f 3c9	p3c9	f 3a9		c3L9	-	6
Heavy	c	0	p		6	f	7	p		6	f l	7	p		6	p	p	p		6	-	6
Heavy %	73c9	c3 9	p9		6	c3 9	03'9	p9		6	L3c9	a3c9	p9		6	p9	p9	p9		6	-	6
Bicycles	6	6	6		6	6	6	6		6	6	6	6		6	6	6	6		6	-	6
Bicycle %	6	6	6		6	6	6	6		6	6	6	6		6	6	6	6		6	-	6

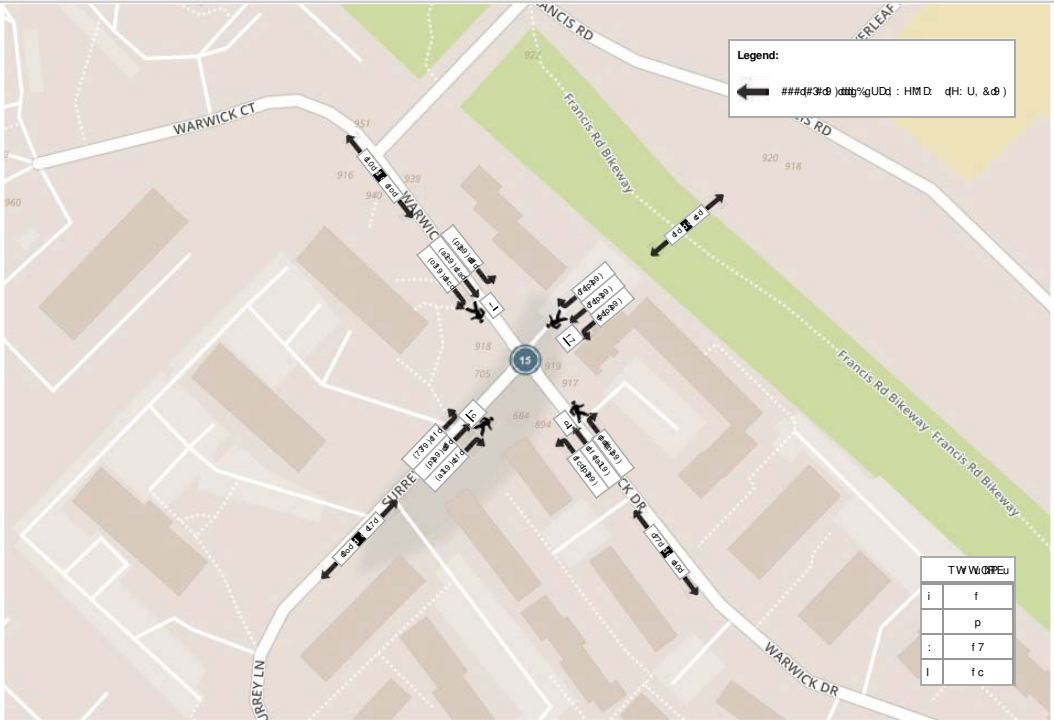
Peak Hour: 08:00 AM - 09:00 AMcbbbbWeather: Unknown (1.9 °C)

Start Time	W Approach					S Approach					N Approach					E Approach					Int. Total (15 min)
	FRANC	DWC	gNt	TWu	U- - hnPeNdgnOPs	DWC	gNt	FRANC	TWu	U- - hnPeNdgnOPs	FRANC	gNt	DWC	TWu	U- - hnPeNdgnOPs	gNt	DWC	FRANC	TWu	U- - hnPeNdgnOPs	
pLSppSpp	o	f a	p	fp	cf	p	7	p	p	7	f c	c	p	f	f a	p	p	p	c	p	7L
pLS10Spp	7	f c	p	f	f 0	a	f p	p	p	f a	f c	l	f	p	f 1	c	p	c	f	a	0c
pLS7pSpp	L	f o	f	p	cl	a	a	p	p	L	f p	f a	p	p	ca	p	p	f	L	f	01
pLSa0Spp	7	f L	p	f	cf	a	a	p	p	L	L	c	p	p	f p	f	p	p	c	f	ap
Grand Total	cf	l f	f	f c	L7	f c	cf	p	p	77	ac	ca	f	f	l o	7	p	7	f 7	l	**189**
Approach%	c03'9	o73'09	f 3c9		6	7l 3a9	l 73 9	p9		6	l c3c9	703L9	f 3'09		6	0p9	p9	0p9		6	-
Totals %	f f 3 9	7c3'9	p3'09		a73 9	l 3'9	f f 3 9	p9		f o3'09	cc3c9	f c3c9	p3'09		703a9	f 3 9	p9	f 3 9		73c9	-	
PHF	p3 l	p3L0	p3c0		p3L	p3c0	p3'07	p		p3'01	p3LL	p3a7	p3c0		p3c	p3'L	p	p3'L		p3'L	-	
Heavy	f	c	p		7	p	f	p		f	7	f	p		a	p	p	p		p	-	
Heavy %	a3L9	73'9	p9		73 9	p9	a3L9	p9		79	o3 9	a3c9	p9		l 9	p9	p9	p9		p9	-	
Lights	cp	01	f		Lp	f c	cp	p		7c	71	c7	f		l 7	7	p	7		l	-	
Lights %	103c9	1l 3c9	f pp9		1l 3a9	f pp9	103c9	p9		1o9	1c3'9	103L9	f pp9		1a9	f pp9	p9	f pp9		f pp9	-	
Single-Unit Trucks	p	f	p		f	p	p	p		p	p	p	p		p	p	p	p		p	-	
Single-Unit Trucks %	p9	f 3 9	p9		f 3c9	p9	p9	p9		p9	p9	p9	p9		p9	p9	p9	p9		p9	-	
Buses	f	f	p		c	p	f	p		f	7	f	p		a	p	p	p		p	-	
Buses %	a3L9	f 3 9	p9		c3a9	p9	a3L9	p9		79	o3 9	a3c9	p9		l 9	p9	p9	p9		p9	-	
Pedestrians	6	6	6	f c	6	6	6	6	p	6	6	6	6	f	6	6	6	6	f 7	6	-	
Pedestrians%	6	6	6	al 3c9	d	6	6	6	p9	d	6	6	6	73L9	d	6	6	6	0p9	d	-	

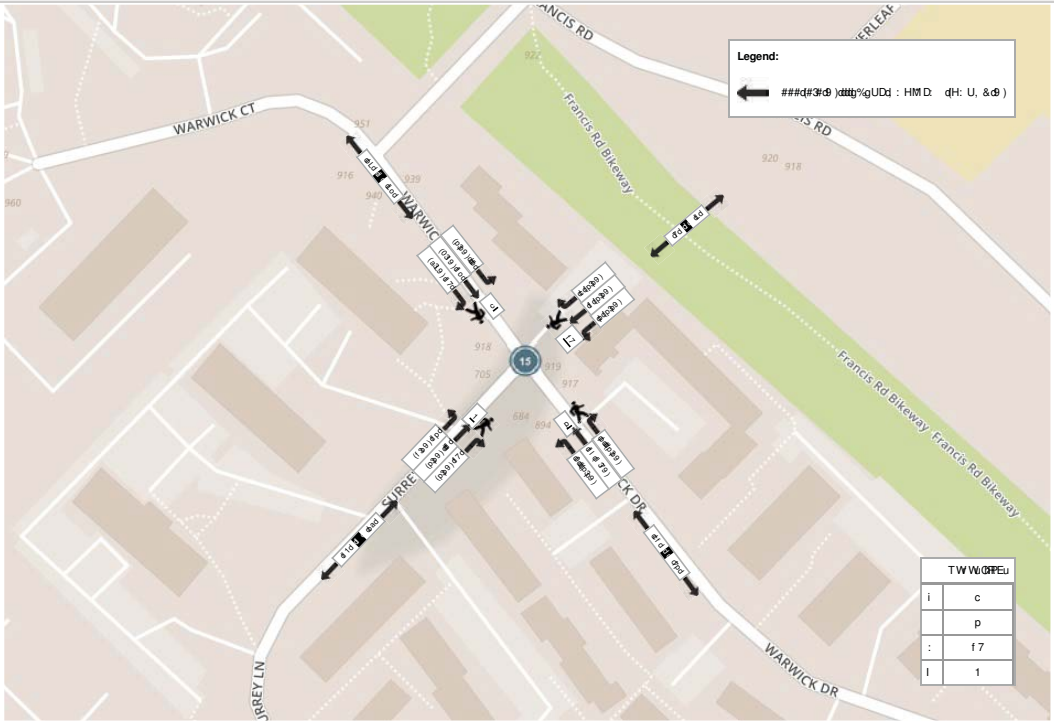
Peak Hour: 05:00 PM - 06:00 PMcccccWeather: Unknown (6.2 °C)

Start Time	W Approach					S Approach					N Approach					E Approach					Int. Total (15 min)
	FRANC	DWC	gNt	TWu	U- - hnPeNdgnOPs	DWC	gNt	FRANC	TWu	U- - hnPeNdgnOPs	FRANC	gNt	DWC	TWu	U- - hnPeNdgnOPs	gNt	DWC	FRANC	TWu	U- - hnPeNdgnOPs	
foppp	0	f l	p	c	cf	f	a	p	p	0	f L	0	0	p	cL	p	p	c	7	c	0l
fo10p	7	f 0	p	0	f L	c	0	p	p	o	f a	0	p	c	f 1	p	p	p	l	p	aa
fo$7p$p	c	f o	p	p	f 1	p	a	p	p	a	f 7	a	f	p	f L	f	p	p	a	f	ac
fo$a0$p	7	f c	f	c	f l	c	7	p	p	0	f L	7	f	p	cc	p	p	p	p	p	a7
Grand Total	f 7	l p	f	1	oa	0	f l	p	p	cf	l 7	f o	o	c	Lo	f	p	c	f 7	7	**185**
Approach%	f o3 9	Lf 3 9	f 3a9		6	c73L9	ol 3c9	p9		6	oc3a9	f 13 09	L9		6	773 79	p9	l l 3b9		6	-
Totals %	o9	7c3a9	p309		ap9	c3b9	L3 l 9	p9		f f 3a9	7a3 l 9	13c9	73L9		ao9	p309	p9	f 3 l 9		f 3 l 9	-
PHF	p3 l 0	p3LL	p3c0		p3LL	p3 l 7	p3L	p		p3b0	p3LL	p3L0	p370		p3bL	p3c0	p	p3c0		p37L	-
Heavy	p	f	p		f	p	f	p		f	7	f	p		a	p	p	p		p	-
Heavy %	p9	f 3b9	p9		f 3a9	p9	l 379	p9		a3L9	a3L9	03l9	p9		a3 l 9	p9	p9	p9		p9	-
Lights	f 7	01	f		o7	0	f 0	p		cp	l p	f l	o		L7	f	p	c		7	-
Lights %	f pp9	1L379	f pp9		1L3 9	f pp9	173L9	p9		103c9	103c9	1a3 l 9	f pp9		103a9	f pp9	p9	f pp9		f pp9	-
Single-Unit Trucks	p	f	p		f	p	f	p		f	f	f	p		c	p	p	p		p	-
Single-Unit Trucks %	p9	f 3b9	p9		f 3a9	p9	l 379	p9		a3L9	f 3 l 9	03l9	p9		c379	p9	p9	p9		p9	-
Buses	p	p	p		p	p	p	p		p	c	p	p		c	p	p	p		p	-
Buses %	p9	p9	p9		p9	p9	p9	p9		p9	73c9	p9	p9		c379	p9	p9	p9		p9	-
Pedestrians	6	6	6	1	6	6	6	6	p	6	6	6	6	c	6	6	6	6	f 7	6	-
Pedestrians%	6	6	6	7oc09	d	6	6	6	p9	d	6	6	6	L379	d	6	6	6	0a3c9	d	-

Peak Hour: 08:00 AM - 09:00 AMcccccWeather: Unknown (1.9 °C)



Peak Hour: 05:00 PM - 06:00 PMdtttttWeather: Unknown (6.2 °C)



Turning Movement Count (14 . WARWICK CT & WARWICK DR)

Start Time	N Approach S UNS ET RTD						E Approach S UNS ET RMN						S Approach S UNS ET RMN						W Approach S ALDRMNEYAS Ui						Int. Total (15 min)	Int. Total (1 hr)
	Ngt: WS	Dt ue WL	f - rt WA	PcDeus WW	p - oa W	Uccul 07t RDl :01	Ngt: ArW	Dt ue ArS	f - rt ArL	PcDeus ArA	p - oa Ar	Uccul 07t RDl :01	Ngt: LrA	Dt ue LrW	f - rt LrS	PcDeus LrL	p - oa Lr	Uccul 07t RDl :01	Ngt: S rL	Dt ue S rA	f - rt S rW	PcDeus S rS	p - oa S r	Uccul 07t RDl :01		
34r33r33	3	5	52	3	5	58	6	3	9	3	5	55	4	*	3	3	5	8	3	5	3	3	5	5	B3	
34r59r33	3	9	54	3	5	**	9	5	4	3	*	5K	8	3	3	3	3	8	B	9	3	3	*	8	9K	
34rK3r33	3	9	*3	3	5	*9	B	3	*	3	9	6	53	5	3	3	6	55	5	6	3	3	B	4	B8	
34rB9r33	3	B	52	3	3	**	9	5	8	3	5	59	53	*	5	3	53	5K	5	K	3	3	9	B	9B	586
32r33r33	5	2	54	3	*	*6	4	K	9	3	*	59	5*	B	3	3	3	56	5	B	3	3	6	9	6*	*52
32r59r33	3	5*	*K	3	5	K9	6	*	6	3	5	5B	*5	*	3	3	3	*K	5	9	3	3	6	6	42	*BK
32rK3r33	3	53	K3	3	3	B3	2	3	6	3	*	5B	5K	6	3	3	*	58	4	9	3	3	*	5*	29	*48
32rB9r33	3	9	4	3	K	5*	6	*	9	3	*	5K	59	6	K	3	9	*B	3	K	3	3	B	K	9*	*44	
...%NAU ...																										
56r33r33	3	*	5*	3	*9	5B	**	5	*3	3	B	BK	2	4	3	3	5	59	5	K	3	3	*5	B	46	
56r59r33	3	K	5K	3	9	56	58	6	56	3	5	B5	55	K	*	3	3	56	3	3	3	3	6	3	4K	
56rK3r33	3	K	8	3	3	5*	*3	5	5*	3	3	KK	5*	K	*	3	*	54	3	5	3	3	6	5	6K	
56rB9r33	3	K	54	3	53	*3	*5	*	59	3	K	K2	B	B	5	3	K	8	*	5	3	3	B	K	43	*2*
54r33r33	3	K	2	3	B	55	59	5	*9	3	*	B5	55	6	5	3	3	52	5	*	3	3	9	K	4K	*48
54r59r33	3	*	6	3	3	2	54	*	56	3	K	K9	4	2	4	3	K	**	5	3	3	3	3	5	66	*4*
54rK3r33	3	B	5*	3	B	56	K3	K	5*	3	B	B9	8	55	K	3	3	*K	3	5	3	3	9	5	29	*8B
54rB9r33	3	9	56	3	5	*5	*3	6	52	3	5	BB	8	9	3	3	5	5B	5	*	3	3	9	K	2*	K36
Grand Total	5	49	*BK	3	92	K58	*55	K5	548	3	KB	B*5	562	43	*3	3	KB	*92	*5	B*	3	3	2*	6K	**1061**	d
Approach%	3GBC	*K9C	46GC	3C		d	93GBC	4GBC	B*GBC	3C		d	69GBC	*4GBC	4GBC	3C		d	KKGBC	66GBC	3C	3C		d	-	d
Totals %	3GBC	4GBC	**GBC	3C		K9GBC	58GBC	*GBC	56GBC	3C		K8GBC	59GBC	6GBC	5GBC	3C		*BGBC	*C	BC	3C	3C		9GBC	-	d
Heavy	3	5	*	3		d	*	3	54	3		d	6	5	3	3		d	3	3	3	3		d	-	d
Heavy %	3C	5GBC	3GBC	3C		d	3GBC	3C	8GBC	3C		d	KGBC	5GBC	3C	3C		d	3C	3C	3C	3C		d	-	d
Bicycles	3	3	3	3		d	3	5	3	3		d	3	3	3	3		d	3	3	3	3		d	-	d
Bicycle %	3C	3C	3C	3C		d	3C	K3C	3C	3C		d	3C	3C	3C	3C		d	3C	3C	3C	3C		d	-	d

Peak Hour: 07:45 AM - 08:45 AM RRRRRWeather: Unknown (1.9 °C)

Start Time	N Approach S UNS ET RTD						E Approach S UNS ET RMN						S Approach S UNS ET RMN						W Approach S ALDRMNEYAS Ui						Int. Total (15 min)
	Nght :	Dtue	f - rt	PcDeus	p - oa	Uccul 07t RDI :01	Nght :	Dtue	f - rt	PcDeus	p - oa	Uccul 07t RDI :01	Nght :	Dtue	f - rt	PcDeus	p - oa	Uccul 07t RDI :01	Nght :	Dtue	f - rt	PcDeus	p - oa	Uccul 07t RDI :01	
34rB9r33	3	B	52	3	3	**	9	5	8	3	5	59	53	*	5	3	53	5K	5	K	3	3	9	B	9B
32r33r33	5	2	54	3	*	*6	4	K	9	3	*	59	5*	B	3	3	3	56	5	B	3	3	6	9	6*
32r59r33	3	5*	*K	3	5	K9	6	*	6	3	5	5B	*5	*	3	3	3	*K	5	9	3	3	6	6	42
32rK3r33	3	53	K3	3	3	B3	2	3	6	3	*	5B	5K	6	3	3	*	58	4	9	3	3	*	5*	29
Grand Total	5	KB	22	3	K	5*K	*6	6	*6	3	6	92	96	5B	5	3	5*	45	53	54	3	3	58	*4	**279**
Approach%	3GBC	*4GBC	45G9C	3C		d	BBG2C	53GBC	BBG2C	3C		d	42GBC	58GBC	5GBC	3C		d	K4C	6KC	3C	3C		d	-
Totals %	3GBC	5*GBC	K5G9C	3C		BBG3C	8GBC	*GBC	8GBC	3C		*3G2C	*3G5C	9C	3GBC	3C		*9GBC	KGBC	6G5C	3C	3C		8GBC	-
PHF	3G19	3G45	3G4K	3		3G44	3G25	3G9	3G*	3		3G44	3G54	3G92	3G19	3		3G44	3GB6	3G29	3	3		3G96	-
Heavy	3	3	5	3		5	3	3	4	3		4	5	5	3	3		*	3	3	3	3		3	-
Heavy %	3C	3C	5G3C	3C		3G2C	3C	3C	*6GBC	3C		5*GBC	5G2C	4G5C	3C	3C		*G2C	3C	3C	3C	3C		3C	-
Lights	5	KB	24	3		5**	*6	6	58	3		95	99	5K	5	3		68	53	54	3	3		*4	-
Lights %	533C	533C	82GBC	3C		88GC	533C	533C	4K5GC	3C		24GBC	82GGC	8*GBC	533C	3C		84GGC	533C	533C	3C	3C		533C	-
Single-Unit Trucks	3	3	5	3		5	3	3	3	3		3	5	5	3	3		*	3	3	3	3		3	-
Single-Unit Trucks %	3C	3C	5G3C	3C		3G2C	3C	3C	3C	3C		3C	5G2C	4G5C	3C	3C		*G2C	3C	3C	3C	3C		3C	-
Buses	3	3	3	3		3	3	3	4	3		4	3	3	3	3		3	3	3	3	3		3	-
Buses %	3C	3C	3C	3C		3C	3C	3C	*6GBC	3C		5*GBC	3C	3C	3C	3C		3C	3C	3C	3C	3C		3C	-
Pedestrians	d	d	d	d	K	d	d	d	d	d	6	d	d	d	d	d	5*	d	d	d	d	d	58	d	-
Pedestrians%	d	d	d	d	4GBC	R	d	d	d	d	59C	R	d	d	d	d	K3C	R	d	d	d	d	B4GBC	R	-
Bicycles on Crosswalk	d	d	d	d	3	d	d	d	d	d	3	d	d	d	d	d	3	d	d	d	d	d	3	d	-
Bicycles on Crosswalk%	d	d	d	d	3C	R	d	d	d	d	3C	R	d	d	d	d	3C	R	d	d	d	d	3C	R	-
Bicycles on Road	3	3	3	3	3	d	3	3	3	3	3	d	3	3	3	3	3	d	3	3	3	3	3	d	-
Bicycles on Road%	d	d	d	d	3C	R	d	d	d	d	3C	R	d	d	d	d	3C	R	d	d	d	d	3C	R	-

Spectrum

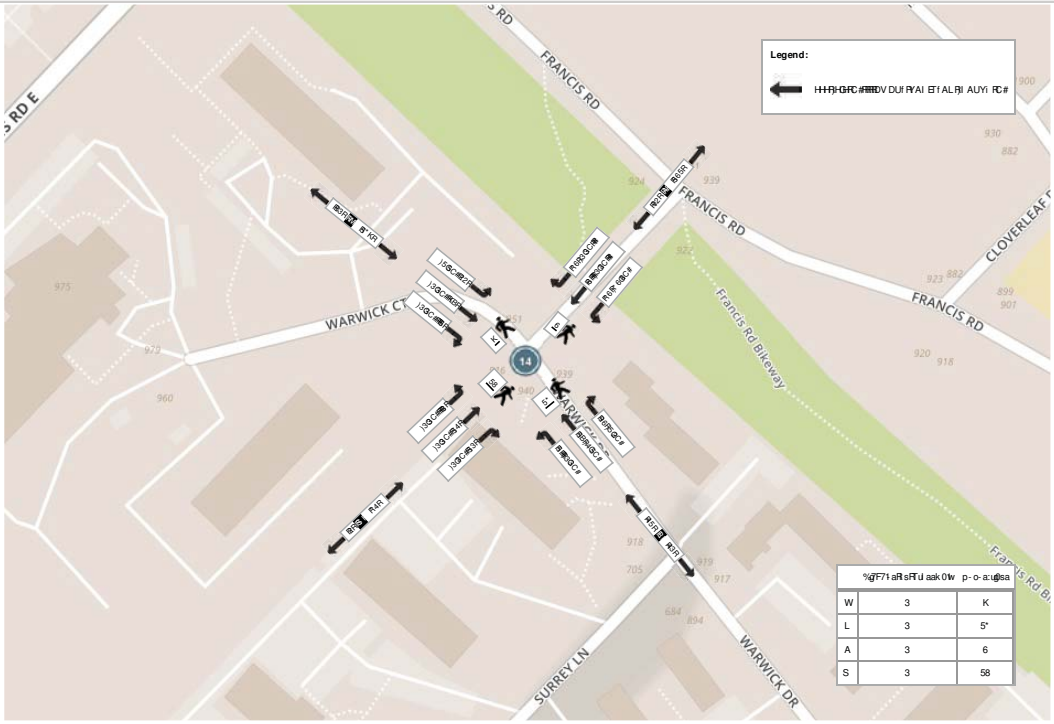
DeusghnRnl , - & - s:RTl es:
f l 70:g sRVO& - rRS UNS ET RTDERRS UNS ET RMN
M0:- rRS - oGj0osR55GR354RRRRM- c1 F& - s:R- 0orRS 01- uRjreh0(

%URiu lec
B9RR:GRT1DgRU, - se- RS - a:GRLeg- RK33
Dl ul s:l RVWGBT UWUMUGBnBYR5 8

Peak Hour: 05:00 PM - 06:00 PM RRRRRWeather: Unknown (6.2 °C)

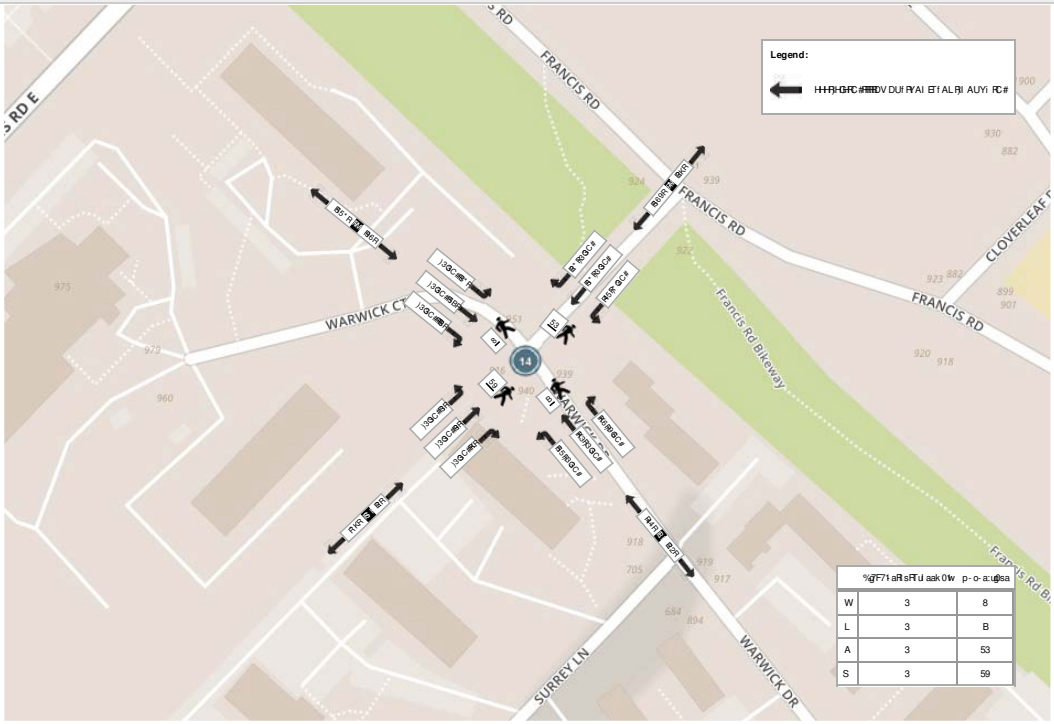
Start Time	N Approach S UNS ET RTD						E Approach S UNS ET RMN						S Approach S UNS ET RMN						W Approach S ALDRMNEYAS Ui						Int. Total (15 min)
	Nght :	Dtue	f - rt	PcDeus	p - oa	Uccul 07t RDI :01	Nght :	Dtue	f - rt	PcDeus	p - oa	Uccul 07t RDI :01	Nght :	Dtue	f - rt	PcDeus	p - oa	Uccul 07t RDI :01	Nght :	Dtue	f - rt	PcDeus	p - oa	Uccul 07t RDI :01	
54r33r33	3	K	2	3	B	55	59	5	*9	3	*	B5	55	6	5	3	3	52	5	*	3	3	9	K	4K
54r59r33	3	*	6	3	3	2	54	*	56	3	K	K9	4	2	4	3	K	**	5	3	3	3	3	5	66
54rK3r33	3	B	5*	3	B	56	K3	K	5*	3	B	B9	8	55	K	3	3	*K	3	5	3	3	9	5	29
54rB9r33	3	9	56	3	5	*5	*3	6	52	3	5	BB	8	9	3	3	5	5B	5	*	3	3	9	K	2*
Grand Total	3	5B	B*	3	8	96	2*	5*	45	3	53	569	K6	K3	55	3	B	44	K	9	3	3	59	2	**306**
Approach%	3C	*9C	49C	3C		d	B9GBC	4GBC	BKC	3C		d	B9G2C	K8C	5BGBC	3C		d	K4GBC	6*GBC	3C	3C		d	-
Totals %	3C	BGBC	5KGBC	3C		52GBC	*6G2C	KGBC	*KG3C	3C		9KGBC	55G2C	8G2C	KGBC	3C		*9G3C	5C	5GBC	3C	3C		*GBC	-
PHF	3	3G4	3GB6	3		3G54	3G52	3G9	3G45	3		3G*	3G*	3G52	3G88	3		3G28	3G49	3GBK	3	3		3G54	-
Heavy	3	3	3	3		3	3	3	*	3		*	*	3	3	3		*	3	3	3	3		3	-
Heavy %	3C	3C	3C	3C		3C	3C	3C	*G2C	3C		5G3C	9GBC	3C	3C	3C		*GBC	3C	3C	3C	3C		3C	-
Lights	3	5B	B*	3		96	2*	5*	68	3		56K	KB	K3	55	3		49	K	9	3	3		2	-
Lights %	3C	533C	533C	3C		533C	533C	533C	84G3C	3C		82G2C	8BGBC	533C	533C	3C		84GBC	533C	533C	3C	3C		533C	-
Single-Unit Trucks	3	3	3	3		3	3	3	3	3		3	*	3	3	3		*	3	3	3	3		3	-
Single-Unit Trucks %	3C	3C	3C	3C		3C	3C	3C	3C	3C		3C	9GBC	3C	3C	3C		*GBC	3C	3C	3C	3C		3C	-
Buses	3	3	3	3		3	3	3	*	3		*	3	3	3	3		3	3	3	3	3		3	-
Buses %	3C	3C	3C	3C		3C	3C	3C	*G2C	3C		5G3C	3C	3C	3C	3C		3C	3C	3C	3C	3C		3C	-
Pedestrians	d	d	d	d	8	d	d	d	d	d	53	d	d	d	d	d	B	d	d	d	d	d	59	d	-
Pedestrians%	d	d	d	d	*KGBC	R	d	d	d	d	*6G3C	R	d	d	d	d	53GBC	R	d	d	d	d	K8GBC	R	-
Bicycles on Crosswalk	d	d	d	d	3	d	d	d	d	d	3	d	d	d	d	d	3	d	d	d	d	d	3	d	-
Bicycles on Crosswalk%	d	d	d	d	3C	R	d	d	d	d	3C	R	d	d	d	d	3C	R	d	d	d	d	3C	R	-
Bicycles on Road	3	3	3	3	3	d	3	3	3	3	3	d	3	3	3	3	3	d	3	3	3	3	3	d	-
Bicycles on Road%	d	d	d	d	3C	R	d	d	d	d	3C	R	d	d	d	d	3C	R	d	d	d	d	3C	R	-

Peak Hour: 07:45 AM - 08:45 AM HHHHWeather: Unknown (1.9 °C)



%gFF7 1 aRs FTu aak 0 w p- o- a: u@sa		
W	3	K
L	3	5*
A	3	6
S	3	58

Peak Hour: 05:00 PM - 06:00 PM HHHHWeather: Unknown (6.2 °C)



%gFF7 1 aRs FTu aak 0 w p- o- a: u@sa		
W	3	8
L	3	B
A	3	53
S	3	59

APPENDIX C:
Synchro/HCM Analysis Sheets

HCM Signalized Intersection Capacity Analysis
3: King Road & Plains Road E

09/20/2017



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	615	95	35	385	175	145	210	70	175	85	60
Future Volume (vph)	125	615	95	35	385	175	145	210	70	175	85	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.0	5.0	3.0	5.0		3.0	6.0		3.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	0.99		1.00	0.99		1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.95		1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1764	3466	1494	1680	3199		1731	1755		1650	1807	1527
Flt Permitted	0.35	1.00	1.00	0.36	1.00		0.68	1.00		0.29	1.00	1.00
Satd. Flow (perm)	645	3466	1494	634	3199		1235	1755		500	1807	1527
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	133	654	101	37	410	186	154	223	74	186	90	64
RTOR Reduction (vph)	0	0	53	0	52	0	0	12	0	0	0	52
Lane Group Flow (vph)	133	654	48	37	544	0	154	285	0	186	90	12
Confl. Peds. (#/hr)	8		10	10		8	2		13	13		2
Heavy Vehicles (%)	1%	3%	3%	6%	4%	8%	3%	1%	6%	8%	4%	3%
Bus Blockages (#/hr)	0	0	0	0	0	6	0	0	2	0	0	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6			4			8		8
Actuated Green, G (s)	54.1	48.1	48.1	49.3	45.7		30.3	18.9		29.1	18.3	18.3
Effective Green, g (s)	56.1	49.1	49.1	51.3	46.7		32.3	19.9		31.1	19.3	19.3
Actuated g/C Ratio	0.55	0.48	0.48	0.50	0.46		0.32	0.19		0.30	0.19	0.19
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0		4.0	7.0		4.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	429	1661	716	364	1458		449	341		284	340	287
v/s Ratio Prot	c0.02	c0.19		0.00	0.17		c0.04	c0.16		c0.08	0.05	
v/s Ratio Perm	0.15		0.03	0.05			0.07			0.12		0.01
v/c Ratio	0.31	0.39	0.07	0.10	0.37		0.34	0.84		0.65	0.26	0.04
Uniform Delay, d1	11.8	17.1	14.3	13.2	18.3		26.3	39.7		28.5	35.5	34.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.4	0.7	0.2	0.1	0.7		0.5	16.0		5.3	0.4	0.1
Delay (s)	12.2	17.8	14.5	13.3	19.0		26.8	55.7		33.9	35.9	34.0
Level of Service	B	B	B	B	B		C	E		C	D	C
Approach Delay (s)		16.6			18.7			45.8			34.5	
Approach LOS		B			B			D			C	

Intersection Summary				
HCM 2000 Control Delay	25.5	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.54			
Actuated Cycle Length (s)	102.4	Sum of lost time (s)	17.0	
Intersection Capacity Utilization	73.1%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

HCM Unsignalized Intersection Capacity Analysis
6: King Road & Townsend Avenue

09/20/2017



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	25	35	40	380	185	10
Future Volume (Veh/h)	25	35	40	380	185	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	27	38	43	409	199	11
Pedestrians				2		
Lane Width (m)				3.5		
Walking Speed (m/s)				1.2		
Percent Blockage				0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)					302	
pX, platoon unblocked						
vC, conflicting volume	700	206	210			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	700	206	210			
tC, single (s)	6.4	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.4	2.2			
p0 queue free %	93	95	97			
cM capacity (veh/h)	390	818	1361			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	65	43	409	210
Volume Left	27	43	0	0
Volume Right	38	0	0	11
cSH	562	1361	1700	1700
Volume to Capacity	0.12	0.03	0.24	0.12
Queue Length 95th (m)	3.1	0.8	0.0	0.0
Control Delay (s)	12.2	7.7	0.0	0.0
Lane LOS	B	A		
Approach Delay (s)	12.2	0.7		0.0
Approach LOS	B			

Intersection Summary				
Average Delay	1.6			
Intersection Capacity Utilization	31.0%	ICU Level of Service		A
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
8: King Road & Surrey Lane

09/20/2017



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	20	70	345	15	40	180
Future Volume (Veh/h)	20	70	345	15	40	180
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	21	72	356	15	41	186
Pedestrians	3					
Lane Width (m)	3.5					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						401
pX, platoon unblocked						
vC, conflicting volume	634	366			374	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	634	366			374	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	95	89			96	
cM capacity (veh/h)	429	673			1165	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	93	371	41	186
Volume Left	21	0	41	0
Volume Right	72	15	0	0
cSH	596	1700	1165	1700
Volume to Capacity	0.16	0.22	0.04	0.11
Queue Length 95th (m)	4.4	0.0	0.9	0.0
Control Delay (s)	12.1	0.0	8.2	0.0
Lane LOS	B		A	
Approach Delay (s)	12.1	0.0	1.5	
Approach LOS	B			

Intersection Summary				
Average Delay		2.1		
Intersection Capacity Utilization		37.8%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Signalized Intersection Capacity Analysis
9: QEW SB On-Ramp/QEW SB Off-Ramp & Plains Road East

09/20/2017



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	900	135	0	700	0	0	0	0	165	0	86
Future Volume (vph)	0	900	135	0	700	0	0	0	0	165	0	86
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0					6.0		6.0
Lane Util. Factor		0.91	1.00		0.91					0.97		1.00
Frpb, ped/bikes		1.00	0.97		1.00					1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00					1.00		1.00
Frt		1.00	0.85		1.00					1.00		0.85
Flt Protected		1.00	1.00		1.00					0.95		1.00
Satd. Flow (prot)		4980	1483		4980					3429		1493
Flt Permitted		1.00	1.00		1.00					0.95		1.00
Satd. Flow (perm)		4980	1483		4980					3429		1493
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	957	144	0	745	0	0	0	0	176	0	91
RTOR Reduction (vph)	0	0	34	0	0	0	0	0	0	0	0	80
Lane Group Flow (vph)	0	957	110	0	745	0	0	0	0	176	0	11
Confl. Peds. (#/hr)	2		4	4		2	1					1
Heavy Vehicles (%)	0%	3%	5%	0%	3%	0%	0%	0%	0%	1%	0%	7%
Turn Type		NA	Perm		NA					Prot		Prot
Protected Phases		2			6					8		8
Permitted Phases			2									
Actuated Green, G (s)		69.0	69.0		69.0					10.0		10.0
Effective Green, g (s)		70.0	70.0		70.0					11.0		11.0
Actuated g/C Ratio		0.76	0.76		0.76					0.12		0.12
Clearance Time (s)		6.0	6.0		6.0					7.0		7.0
Vehicle Extension (s)		3.0	3.0		3.0					3.0		3.0
Lane Grp Cap (vph)		3789	1128		3789					409		178
v/s Ratio Prot		c0.19			0.15					c0.05		0.01
v/s Ratio Perm			0.07									
v/c Ratio		0.25	0.10		0.20					0.43		0.06
Uniform Delay, d1		3.3	2.8		3.1					37.6		35.9
Progression Factor		1.00	1.00		1.00					1.00		1.00
Incremental Delay, d2		0.2	0.2		0.1					0.7		0.1
Delay (s)		3.4	3.0		3.2					38.3		36.1
Level of Service		A	A		A					D		D
Approach Delay (s)		3.4			3.2			0.0			37.6	
Approach LOS		A			A			A			D	

Intersection Summary					
HCM 2000 Control Delay		7.6	HCM 2000 Level of Service		A
HCM 2000 Volume to Capacity ratio		0.28			
Actuated Cycle Length (s)		92.0	Sum of lost time (s)		11.0
Intersection Capacity Utilization		42.9%	ICU Level of Service		A
Analysis Period (min)		15			

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
10: King Road & Marley Road

09/20/2017



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	20	340	10	10	185
Future Volume (Veh/h)	5	20	340	10	10	185
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	5	22	374	11	11	203
Pedestrians	2					
Lane Width (m)	3.5					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	606	382			387	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	606	382			387	
tC, single (s)	6.4	6.2			4.3	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.4	
p0 queue free %	99	97			99	
cM capacity (veh/h)	458	669			1078	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	27	385	214
Volume Left	5	0	11
Volume Right	22	11	0
cSH	616	1700	1078
Volume to Capacity	0.04	0.23	0.01
Queue Length 95th (m)	1.1	0.0	0.2
Control Delay (s)	11.1	0.0	0.5
Lane LOS	B		A
Approach Delay (s)	11.1	0.0	0.5
Approach LOS	B		

Intersection Summary				
Average Delay		0.7		
Intersection Capacity Utilization		28.5%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
11: Sunset Road/Parking Lot & Marley Road

09/20/2017



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	10	0	25	10	0	5	0	15	5	0	5
Future Volume (Veh/h)	5	10	0	25	10	0	5	0	15	5	0	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55
Hourly flow rate (vph)	9	18	0	45	18	0	9	0	27	9	0	9
Pedestrians		41			2			1			4	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		3			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	22			19			195	149	21	177	149	63
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	22			19			195	149	21	177	149	63
tC, single (s)	4.1			4.2			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			97			99	100	97	99	100	99
cM capacity (veh/h)	1601			1552			714	718	1060	743	718	971

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	27	63	36	18
Volume Left	9	45	9	9
Volume Right	0	0	27	9
cSH	1601	1552	945	842
Volume to Capacity	0.01	0.03	0.04	0.02
Queue Length 95th (m)	0.1	0.7	0.9	0.5
Control Delay (s)	2.4	5.3	9.0	9.4
Lane LOS	A	A	A	A
Approach Delay (s)	2.4	5.3	9.0	9.4
Approach LOS			A	A

Intersection Summary				
Average Delay		6.2		
Intersection Capacity Utilization		22.4%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
12: King Road & Cedar Avenue

09/20/2017



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Volume (veh/h)	5	0	10	5	0	25	5	315	5	5	180	0
Future Volume (Veh/h)	5	0	10	5	0	25	5	315	5	5	180	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	6	0	11	6	0	28	6	354	6	6	202	0
Pedestrians		1			3			2			1	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	613	590	205	599	587	361	203			363		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	613	590	205	599	587	361	203			363		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	100	99	99	100	96	100			100		
cM capacity (veh/h)	387	418	839	405	419	686	1380			1204		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	17	34	366	208
Volume Left	6	6	6	6
Volume Right	11	28	6	0
cSH	594	611	1380	1204
Volume to Capacity	0.03	0.06	0.00	0.00
Queue Length 95th (m)	0.7	1.4	0.1	0.1
Control Delay (s)	11.2	11.2	0.2	0.3
Lane LOS	B	B	A	A
Approach Delay (s)	11.2	11.2	0.2	0.3
Approach LOS	B	B		

Intersection Summary					
Average Delay	1.1				
Intersection Capacity Utilization	29.8%	ICU Level of Service		A	
Analysis Period (min)	15				

HCM Unsignalized Intersection Capacity Analysis
13: Francis Road & Cedar Avenue/Ceadr Avenue

09/20/2017



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Volume (veh/h)	5	0	5	5	10	10	10	95	5	5	50	0
Future Volume (Veh/h)	5	0	5	5	10	10	10	95	5	5	50	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	6	0	6	6	12	12	12	116	6	6	61	0
Pedestrians		5			5			2			1	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	240	229	68	229	226	125	66			127		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	240	229	68	229	226	125	66			127		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	100	99	99	98	99	99			100		
cM capacity (veh/h)	685	661	995	711	663	926	1542			1466		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	12	30	134	67
Volume Left	6	6	12	6
Volume Right	6	12	6	0
cSH	812	760	1542	1466
Volume to Capacity	0.01	0.04	0.01	0.00
Queue Length 95th (m)	0.4	1.0	0.2	0.1
Control Delay (s)	9.5	9.9	0.7	0.7
Lane LOS	A	A	A	A
Approach Delay (s)	9.5	9.9	0.7	0.7
Approach LOS	A	A		

Intersection Summary					
Average Delay	2.3				
Intersection Capacity Utilization	18.5%	ICU Level of Service		A	
Analysis Period (min)	15				

HCM Signalized Intersection Capacity Analysis
19: Francis Road/Designers Way & Plains Road E/Plains Road East 09/20/2017



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	770	25	60	525	10	35	15	220	50	5	45
Future Volume (vph)	65	770	25	60	525	10	35	15	220	50	5	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.0		3.0	5.0		6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	1.00		1.00	0.86		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	0.96	1.00
Satd. Flow (prot)	1747	3402		1784	3408		1638	1585		1570	1572	1328
Flt Permitted	0.40	1.00		0.27	1.00		0.95	1.00		0.60	0.60	1.00
Satd. Flow (perm)	741	3402		509	3408		1638	1585		996	986	1328
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	70	828	27	65	565	11	38	16	237	54	5	48
RTOR Reduction (vph)	0	2	0	0	1	0	0	214	0	0	0	44
Lane Group Flow (vph)	70	853	0	65	575	0	38	39	0	29	30	4
Confl. Peds. (#/hr)	8		4	4		8	17					17
Heavy Vehicles (%)	2%	4%	15%	0%	4%	25%	9%	0%	2%	8%	14%	11%
Bus Blockages (#/hr)	0	0	8	0	0	6	0	0	0	0	0	0
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA		Perm	NA	Perm
Protected Phases	5	2		1	6		4	4			8	
Permitted Phases	2			6						8		8
Actuated Green, G (s)	54.6	49.2		54.4	49.1		8.1	8.1		6.1	6.1	6.1
Effective Green, g (s)	56.6	50.2		56.4	50.1		9.1	9.1		7.1	7.1	7.1
Actuated g/C Ratio	0.61	0.54		0.61	0.54		0.10	0.10		0.08	0.08	0.08
Clearance Time (s)	4.0	6.0		4.0	6.0		7.0	7.0		7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	521	1842		396	1841		160	155		76	75	101
v/s Ratio Prot	0.01	c0.25		c0.01	0.17		0.02	c0.02				
v/s Ratio Perm	0.07			0.09						0.03	c0.03	0.00
v/c Ratio	0.13	0.46		0.16	0.31		0.24	0.25		0.38	0.40	0.04
Uniform Delay, d1	7.4	13.0		7.9	11.8		38.6	38.7		40.7	40.8	39.6
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.1	0.8		0.2	0.4		0.8	0.9		3.2	3.5	0.1
Delay (s)	7.5	13.8		8.1	12.2		39.4	39.5		43.9	44.2	39.8
Level of Service	A	B		A	B		D	D		D	D	D
Approach Delay (s)		13.4			11.8			39.5			42.1	
Approach LOS		B			B			D			D	

Intersection Summary				
HCM 2000 Control Delay	18.3	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.40			
Actuated Cycle Length (s)	92.7	Sum of lost time (s)	20.0	
Intersection Capacity Utilization	65.5%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

HCM Signalized Intersection Capacity Analysis
22: QEW NB Off-Ramp & North Shore Boulevard E 09/20/2017



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER
Lane Configurations											
Traffic Volume (vph)	0	540	100	0	640	295	200	0	730	0	0
Future Volume (vph)	0	540	100	0	640	295	200	0	730	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		6.0		6.0		
Lane Util. Factor		0.95			0.95		1.00		1.00		
Frpb, ped/bikes		1.00			0.99		1.00		1.00		
Flpb, ped/bikes		1.00			1.00		1.00		1.00		
Frt		0.98			0.95		1.00		0.85		
Flt Protected		1.00			1.00		0.95		1.00		
Satd. Flow (prot)		3361			3322		1750		1566		
Flt Permitted		1.00			1.00		0.95		1.00		
Satd. Flow (perm)		3361			3322		1750		1566		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	600	111	0	711	328	222	0	811	0	0
RTOR Reduction (vph)	0	25	0	0	90	0	0	0	0	0	0
Lane Group Flow (vph)	0	686	0	0	949	0	222	0	811	0	0
Confl. Peds. (#/hr)			3			2					
Heavy Vehicles (%)	0%	4%	0%	0%	2%	1%	2%	0%	2%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	2	0	0	0	0	0
Turn Type		NA			NA		Prot		custom		
Protected Phases		2			6		4		4		
Permitted Phases									2		
Actuated Green, G (s)		23.8			23.8		23.3		47.1		
Effective Green, g (s)		24.8			24.8		24.3		49.1		
Actuated g/C Ratio		0.41			0.41		0.40		0.82		
Clearance Time (s)		6.0			6.0		7.0		7.0		
Vehicle Extension (s)		3.0			3.0		3.0		3.0		
Lane Grp Cap (vph)		1386			1370		707		1435		
v/s Ratio Prot		0.20			c0.29		0.13		c0.23		
v/s Ratio Perm									0.29		
v/c Ratio		0.49			0.69		0.31		0.57		
Uniform Delay, d1		13.0			14.5		12.2		1.9		
Progression Factor		1.00			1.00		1.00		1.00		
Incremental Delay, d2		0.3			1.5		1.2		0.5		
Delay (s)		13.3			16.0		13.4		2.4		
Level of Service		B			B		B		A		
Approach Delay (s)		13.3			16.0			4.7		0.0	
Approach LOS		B			B			A		A	

Intersection Summary				
HCM 2000 Control Delay	11.2	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.67			
Actuated Cycle Length (s)	60.1	Sum of lost time (s)	11.0	
Intersection Capacity Utilization	73.7%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				

HCM Unsignalized Intersection Capacity Analysis
23: North Shore Boulevard E & Francis Road

09/20/2017



Movement	EBL	EBT	WBT	WBR	SEL	SER
Lane Configurations						
Traffic Volume (veh/h)	10	350	385	70	75	10
Future Volume (Veh/h)	10	350	385	70	75	10
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	11	368	405	74	79	11
Pedestrians			1		7	
Lane Width (m)			3.5		3.5	
Walking Speed (m/s)			1.2		1.2	
Percent Blockage			0		1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			358			
pX, platoon unblocked	0.87				0.87	0.87
vC, conflicting volume	486				840	449
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	335				742	293
tC, single (s)	4.3				6.4	6.3
tC, 2 stage (s)						
tF (s)	2.4				3.5	3.4
p0 queue free %	99				76	98
cM capacity (veh/h)	970				324	628

Direction, Lane #	EB 1	WB 1	SE 1	SE 2
Volume Total	379	479	79	11
Volume Left	11	0	79	0
Volume Right	0	74	0	11
cSH	970	1700	324	628
Volume to Capacity	0.01	0.28	0.24	0.02
Queue Length 95th (m)	0.3	0.0	7.5	0.4
Control Delay (s)	0.4	0.0	19.7	10.8
Lane LOS	A		C	B
Approach Delay (s)	0.4	0.0	18.6	
Approach LOS			C	

Intersection Summary				
Average Delay		1.9		
Intersection Capacity Utilization		37.3%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Signalized Intersection Capacity Analysis
30: North Shore Boulevard E & QEW SB Off-Ramp

09/20/2017



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	115	340	405	440	295	55
Future Volume (vph)	115	340	405	440	295	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	5.0	5.0	5.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1749	1824	1807	1581	1733	1531
Flt Permitted	0.40	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	729	1824	1807	1581	1733	1531
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	124	366	435	473	317	59
RTOR Reduction (vph)	0	0	0	228	0	45
Lane Group Flow (vph)	124	366	435	245	317	14
Confl. Peds. (#/hr)	2					1
Heavy Vehicles (%)	2%	3%	4%	1%	3%	2%
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		8	
Permitted Phases	2			6		8
Actuated Green, G (s)	56.2	56.2	45.5	45.5	20.7	20.7
Effective Green, g (s)	57.2	57.2	46.5	46.5	21.7	21.7
Actuated g/C Ratio	0.64	0.64	0.52	0.52	0.24	0.24
Clearance Time (s)	3.0	6.0	6.0	6.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	562	1160	934	817	418	369
v/s Ratio Prot	0.02	c0.20	c0.24		c0.18	
v/s Ratio Perm	0.12			0.15		0.01
v/c Ratio	0.22	0.32	0.47	0.30	0.76	0.04
Uniform Delay, d1	7.2	7.4	13.8	12.4	31.7	26.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	0.7	1.7	0.9	7.7	0.0
Delay (s)	7.4	8.2	15.5	13.3	39.4	26.2
Level of Service	A	A	B	B	D	C
Approach Delay (s)		8.0	14.4		37.3	
Approach LOS		A	B		D	

Intersection Summary				
HCM 2000 Control Delay		17.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio		0.53		
Actuated Cycle Length (s)		89.9	Sum of lost time (s)	13.0
Intersection Capacity Utilization		56.5%	ICU Level of Service	B
Analysis Period (min)		15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
32: Francis Road & Warwick Drive

09/20/2017



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	135	15	10	125	50	45
Future Volume (Veh/h)	135	15	10	125	50	45
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	148	16	11	137	55	49
Pedestrians	9			16	18	
Lane Width (m)	3.5			3.5	3.5	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	1			1	1	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)					219	
pX, platoon unblocked						
vC, conflicting volume	266	104	113			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	266	104	113			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.4			
p0 queue free %	79	98	99			
cM capacity (veh/h)	702	936	1378			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	164	148	104
Volume Left	148	11	0
Volume Right	16	0	49
cSH	720	1378	1700
Volume to Capacity	0.23	0.01	0.06
Queue Length 95th (m)	7.0	0.2	0.0
Control Delay (s)	11.5	0.6	0.0
Lane LOS	B	A	
Approach Delay (s)	11.5	0.6	0.0
Approach LOS	B		

Intersection Summary				
Average Delay		4.7		
Intersection Capacity Utilization		31.0%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
33: Warwick Drive & Warwick Court

09/20/2017



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	25	25	15	55	90	35
Future Volume (vph)	25	25	15	55	90	35
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	30	30	18	67	110	43

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	60	85	153
Volume Left (vph)	30	0	110
Volume Right (vph)	30	67	0
Hadj (s)	0.03	-0.42	0.16
Departure Headway (s)	4.4	3.8	4.3
Degree Utilization, x	0.07	0.09	0.18
Capacity (veh/h)	768	921	826
Control Delay (s)	7.8	7.1	8.2
Approach Delay (s)	7.8	7.1	8.2
Approach LOS	A	A	A

Intersection Summary				
Delay		7.8		
Level of Service		A		
Intersection Capacity Utilization		24.4%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
35: Warwick Drive & Surrey Lane

09/20/2017



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	60	20	10	20	25	40
Future Volume (Veh/h)	60	20	10	20	25	40
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	75	25	13	25	31	50
Pedestrians	12				1	
Lane Width (m)	3.5				3.5	
Walking Speed (m/s)	1.2				1.2	
Percent Blockage	1				0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	120	68	93			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	120	68	93			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	91	97	99			
cM capacity (veh/h)	856	977	1499			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	100	38	81
Volume Left	75	13	0
Volume Right	25	0	50
cSH	884	1499	1700
Volume to Capacity	0.11	0.01	0.05
Queue Length 95th (m)	3.1	0.2	0.0
Control Delay (s)	9.6	2.6	0.0
Lane LOS	A	A	
Approach Delay (s)	9.6	2.6	0.0
Approach LOS	A		

Intersection Summary				
Average Delay		4.8		
Intersection Capacity Utilization	19.5%	ICU Level of Service		A
Analysis Period (min)	15			

HCM Signalized Intersection Capacity Analysis
36: QEW NB Off-Ramp/Plains Rd & Fairview Street

09/20/2017



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	110	840	0	0	385	10	175	250	560	0	0	250
Future Volume (vph)	110	840	0	0	385	10	175	250	560	0	0	250
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	5.0			5.0		6.0	6.0	6.0			6.0
Lane Util. Factor	1.00	0.91			0.91		0.95	0.91	0.95			1.00
Frpb, ped/bikes	1.00	1.00			1.00		1.00	1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00	1.00			1.00
Frt	1.00	1.00			1.00		1.00	0.94	0.85			0.85
Flt Protected	0.95	1.00			1.00		0.95	1.00	1.00			1.00
Satd. Flow (prot)	1732	4980			4854		1679	1592	1502			1536
Flt Permitted	0.49	1.00			1.00		0.95	1.00	1.00			1.00
Satd. Flow (perm)	903	4980			4854		1679	1592	1502			1536
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	118	903	0	0	414	11	188	269	602	0	0	269
RTOR Reduction (vph)	0	0	0	0	3	0	0	22	115	0	0	193
Lane Group Flow (vph)	118	903	0	0	422	0	169	447	306	0	0	76
Confl. Peds. (#/hr)	1		1	1		1						
Heavy Vehicles (%)	3%	3%	2%	0%	5%	13%	1%	1%	1%	0%	0%	4%
Turn Type	pm+pt	NA			NA		Perm	NA	Perm	D.Pm		Perm
Protected Phases	1	2			2			4				
Permitted Phases	2	1					4		4	4		4
Actuated Green, G (s)	53.0	53.0			45.0		26.0	26.0	26.0			26.0
Effective Green, g (s)	55.0	55.0			46.0		27.0	27.0	27.0			27.0
Actuated g/C Ratio	0.58	0.58			0.48		0.28	0.28	0.28			0.28
Clearance Time (s)	3.0	6.0			6.0		7.0	7.0	7.0			7.0
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	601	2883			2350		477	452	426			436
v/s Ratio Prot	0.02	c0.15			0.09							
v/s Ratio Perm	0.10	0.03					0.10	0.28	0.20			0.05
v/c Ratio	0.20	0.31			0.18		0.35	0.99	0.72			0.18
Uniform Delay, d1	9.0	10.3			13.8		27.1	33.8	30.6			25.6
Progression Factor	1.00	1.00			1.00		1.00	1.00	1.00			1.00
Incremental Delay, d2	0.2	0.1			0.2		0.5	38.9	5.7			0.2
Delay (s)	9.2	10.3			14.0		27.5	72.8	36.3			25.8
Level of Service	A	B			B		C	E	D			C
Approach Delay (s)		10.2			14.0			51.1			25.8	
Approach LOS		B			B			D			C	

Intersection Summary				
HCM 2000 Control Delay	27.9	HCM 2000 Level of Service		C
HCM 2000 Volume to Capacity ratio	0.54			
Actuated Cycle Length (s)	95.0	Sum of lost time (s)		13.0
Intersection Capacity Utilization	70.1%	ICU Level of Service		C
Analysis Period (min)	15			

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
45: Marley Road & Warwick Drive

09/20/2017



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	15	15	10	5	15	25
Future Volume (Veh/h)	15	15	10	5	15	25
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.57	0.57	0.57	0.57	0.57	0.57
Hourly flow rate (vph)	26	26	18	9	26	44
Pedestrians			1		11	
Lane Width (m)			3.5		3.5	
Walking Speed (m/s)			1.2		1.2	
Percent Blockage			0		1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	38				112	34
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	38				112	34
tC, single (s)	4.2				6.5	6.2
tC, 2 stage (s)						
tF (s)	2.3				3.6	3.3
p0 queue free %	98				97	96
cM capacity (veh/h)	1533				851	1025

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	52	27	70
Volume Left	26	0	26
Volume Right	0	9	44
cSH	1533	1700	953
Volume to Capacity	0.02	0.02	0.07
Queue Length 95th (m)	0.4	0.0	1.9
Control Delay (s)	3.8	0.0	9.1
Lane LOS	A		A
Approach Delay (s)	3.8	0.0	9.1
Approach LOS			A

Intersection Summary				
Average Delay		5.6		
Intersection Capacity Utilization	18.3%	ICU Level of Service		A
Analysis Period (min)	15			

HCM Signalized Intersection Capacity Analysis
3: King Road & Plains Road E

09/20/2017



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	545	70	100	1060	175	170	125	65	305	200	145
Future Volume (vph)	90	545	70	100	1060	175	170	125	65	305	200	145
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.0	5.0	3.0	5.0		3.0	6.0		3.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.95	1.00	0.99		1.00	0.98		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		0.99	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.95		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1767	3466	1521	1760	3438		1750	1709		1754	1879	1581
Flt Permitted	0.12	1.00	1.00	0.38	1.00		0.42	1.00		0.44	1.00	1.00
Satd. Flow (perm)	217	3466	1521	710	3438		768	1709		819	1879	1581
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	93	562	72	103	1093	180	175	129	67	314	206	149
RTOR Reduction (vph)	0	0	36	0	10	0	0	17	0	0	0	125
Lane Group Flow (vph)	93	562	36	103	1263	0	175	179	0	314	206	24
Confl. Peds. (#/hr)	13		15	15		13			24	24		
Heavy Vehicles (%)	1%	3%	0%	1%	1%	1%	2%	2%	3%	1%	0%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	2	0	0	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6			4			8		8
Actuated Green, G (s)	61.6	55.0	55.0	64.6	56.5		28.3	17.3		28.3	17.3	17.3
Effective Green, g (s)	63.6	56.0	56.0	66.6	57.5		30.3	18.3		30.3	18.3	18.3
Actuated g/C Ratio	0.57	0.50	0.50	0.59	0.51		0.27	0.16		0.27	0.16	0.16
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0		4.0	7.0		4.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	227	1726	757	505	1758		311	278		320	305	257
v/s Ratio Prot	c0.03	0.16		c0.02	c0.37		0.06	0.10		c0.10	0.11	
v/s Ratio Perm	0.20		0.02	0.10			0.09			c0.16		0.02
v/c Ratio	0.41	0.33	0.05	0.20	0.72		0.56	0.64		0.98	0.68	0.09
Uniform Delay, d1	15.1	16.9	14.5	10.2	21.2		33.5	44.0		39.0	44.3	40.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.2	0.5	0.1	0.2	2.6		2.3	5.1		45.0	5.8	0.2
Delay (s)	16.3	17.4	14.6	10.4	23.8		35.8	49.1		84.0	50.1	40.2
Level of Service	B	B	B	B	C		D	D		F	D	D
Approach Delay (s)		17.0			22.8			42.8			63.8	
Approach LOS		B			C			D			E	

Intersection Summary					
HCM 2000 Control Delay	32.5	HCM 2000 Level of Service		C	
HCM 2000 Volume to Capacity ratio	0.78				
Actuated Cycle Length (s)	112.4	Sum of lost time (s)		17.0	
Intersection Capacity Utilization	84.1%	ICU Level of Service		E	
Analysis Period (min)	15				
c Critical Lane Group					

HCM Unsignalized Intersection Capacity Analysis
6: King Road & Townsend Avenue

09/20/2017



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	30	55	60	305	325	40
Future Volume (Veh/h)	30	55	60	305	325	40
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	32	58	63	321	342	42
Pedestrians				2		
Lane Width (m)				3.5		
Walking Speed (m/s)				1.2		
Percent Blockage				0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)					302	
pX, platoon unblocked	0.91	0.91	0.91			
vC, conflicting volume	810	365	384			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	743	254	275			
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	92	95			
cM capacity (veh/h)	333	709	1173			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	90	63	321	384
Volume Left	32	63	0	0
Volume Right	58	0	0	42
cSH	506	1173	1700	1700
Volume to Capacity	0.18	0.05	0.19	0.23
Queue Length 95th (m)	5.1	1.4	0.0	0.0
Control Delay (s)	13.7	8.2	0.0	0.0
Lane LOS	B	A		
Approach Delay (s)	13.7	1.4		0.0
Approach LOS	B			

Intersection Summary				
Average Delay		2.0		
Intersection Capacity Utilization	38.6%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
8: King Road & Surrey Lane

09/20/2017



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	50	315	10	90	290
Future Volume (Veh/h)	5	50	315	10	90	290
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	5	53	335	11	96	309
Pedestrians	3					
Lane Width (m)	3.5					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						401
pX, platoon unblocked						
vC, conflicting volume	844	344			349	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	844	344			349	
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	92			92	
cM capacity (veh/h)	309	693			1212	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	58	346	96	309
Volume Left	5	0	96	0
Volume Right	53	11	0	0
cSH	626	1700	1212	1700
Volume to Capacity	0.09	0.20	0.08	0.18
Queue Length 95th (m)	2.4	0.0	2.1	0.0
Control Delay (s)	11.3	0.0	8.2	0.0
Lane LOS	B		A	
Approach Delay (s)	11.3	0.0	1.9	
Approach LOS	B			

Intersection Summary				
Average Delay		1.8		
Intersection Capacity Utilization	35.5%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Signalized Intersection Capacity Analysis
9: QEW SB On-Ramp/QEW SB Off-Ramp & Plains Road East

09/20/2017



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	850	345	0	1410	0	0	0	0	390	0	180
Future Volume (vph)	0	850	345	0	1410	0	0	0	0	390	0	180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0					6.0		6.0
Lane Util. Factor		0.91	1.00		0.91					0.97		1.00
Frpb, ped/bikes		1.00	0.96		1.00					1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00					1.00		1.00
Frt		1.00	0.85		1.00					1.00		0.85
Flt Protected		1.00	1.00		1.00					0.95		1.00
Satd. Flow (prot)		5029	1498		5079					3429		1566
Flt Permitted		1.00	1.00		1.00					0.95		1.00
Satd. Flow (perm)		5029	1498		5079					3429		1566
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	867	352	0	1439	0	0	0	0	398	0	184
RTOR Reduction (vph)	0	0	92	0	0	0	0	0	0	0	0	61
Lane Group Flow (vph)	0	867	260	0	1439	0	0	0	0	398	0	123
Confl. Peds. (#/hr)			14	14			1					1
Heavy Vehicles (%)	0%	2%	2%	0%	1%	0%	0%	0%	0%	1%	0%	2%
Turn Type		NA	Perm		NA					Prot		Prot
Protected Phases		2			6					8		8
Permitted Phases			2									
Actuated Green, G (s)		84.1	84.1		84.1					18.3		18.3
Effective Green, g (s)		85.1	85.1		85.1					19.3		19.3
Actuated g/C Ratio		0.74	0.74		0.74					0.17		0.17
Clearance Time (s)		6.0	6.0		6.0					7.0		7.0
Vehicle Extension (s)		3.0	3.0		3.0					3.0		3.0
Lane Grp Cap (vph)		3708	1104		3745					573		261
v/s Ratio Prot		0.17			c0.28					c0.12		0.08
v/s Ratio Perm			0.17									
v/c Ratio		0.23	0.24		0.38					0.69		0.47
Uniform Delay, d1		4.8	4.8		5.6					45.3		43.4
Progression Factor		1.00	1.00		1.00					1.00		1.00
Incremental Delay, d2		0.1	0.5		0.3					3.6		1.3
Delay (s)		5.0	5.3		5.9					48.9		44.8
Level of Service		A	A		A					D		D
Approach Delay (s)		5.1			5.9			0.0			47.6	
Approach LOS		A			A			A			D	

Intersection Summary				
HCM 2000 Control Delay	13.1	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.44			
Actuated Cycle Length (s)	115.4	Sum of lost time (s)	11.0	
Intersection Capacity Utilization	47.7%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
10: King Road & Marley Road

09/20/2017



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	25	300	5	25	265
Future Volume (Veh/h)	5	25	300	5	25	265
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	5	27	330	5	27	291
Pedestrians	2					
Lane Width (m)	3.5					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	680	334			337	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	680	334			337	
tC, single (s)	6.4	6.2			4.3	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.4	
p0 queue free %	99	96			98	
cM capacity (veh/h)	409	711			1126	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	32	335	318
Volume Left	5	0	27
Volume Right	27	5	0
cSH	637	1700	1126
Volume to Capacity	0.05	0.20	0.02
Queue Length 95th (m)	1.3	0.0	0.6
Control Delay (s)	10.9	0.0	0.9
Lane LOS	B		A
Approach Delay (s)	10.9	0.0	0.9
Approach LOS	B		

Intersection Summary				
Average Delay	0.9			
Intersection Capacity Utilization	44.7%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis
11: Sunset Road/Parking Lot & Marley Road

09/20/2017



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	10	0	5	20	15	0	0	5	10	0	5
Future Volume (Veh/h)	5	10	0	5	20	15	0	0	5	10	0	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55
Hourly flow rate (vph)	9	18	0	9	36	27	0	0	9	18	0	9
Pedestrians		41			2			1			4	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		3			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	67			19			154	122	21	118	108	94
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	67			19			154	122	21	118	108	94
tC, single (s)	4.1			4.2			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			100	100	99	98	100	99
cM capacity (veh/h)	1542			1552			772	760	1060	840	773	933

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	27	72	9	27
Volume Left	9	9	0	18
Volume Right	0	27	9	9
cSH	1542	1552	1060	869
Volume to Capacity	0.01	0.01	0.01	0.03
Queue Length 95th (m)	0.1	0.1	0.2	0.8
Control Delay (s)	2.5	1.0	8.4	9.3
Lane LOS	A	A	A	A
Approach Delay (s)	2.5	1.0	8.4	9.3
Approach LOS			A	A

Intersection Summary					
Average Delay	3.4				
Intersection Capacity Utilization	23.4%	ICU Level of Service		A	
Analysis Period (min)	15				

HCM Unsignalized Intersection Capacity Analysis
12: King Road & Cedar Avenue

09/20/2017



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	20	0	0	10	15	285	5	15	250	5
Future Volume (Veh/h)	0	0	20	0	0	10	15	285	5	15	250	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	21	0	0	11	16	303	5	16	266	5
Pedestrians					1			4			1	
Lane Width (m)					3.5			3.5			3.5	
Walking Speed (m/s)					1.2			1.2			1.2	
Percent Blockage					0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	650	642	272	664	642	308	271			309		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	650	642	272	664	642	308	271			309		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	97	100	100	99	99			99		
cM capacity (veh/h)	372	385	757	358	385	736	1304			1262		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	21	11	324	287
Volume Left	0	0	16	16
Volume Right	21	11	5	5
cSH	757	736	1304	1262
Volume to Capacity	0.03	0.01	0.01	0.01
Queue Length 95th (m)	0.7	0.4	0.3	0.3
Control Delay (s)	9.9	10.0	0.5	0.6
Lane LOS	A	A	A	A
Approach Delay (s)	9.9	10.0	0.5	0.6
Approach LOS	A	A		

Intersection Summary					
Average Delay	1.0				
Intersection Capacity Utilization	31.3%	ICU Level of Service		A	
Analysis Period (min)	15				

HCM Unsignalized Intersection Capacity Analysis
13: Francis Road & Cedar Avenue/Ceadr Avenue

09/20/2017



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	5	5	0	0	10	5	100	10	15	85	5
Future Volume (Veh/h)	5	5	5	0	0	10	5	100	10	15	85	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	6	6	6	0	0	11	6	111	11	17	94	6
Pedestrians		8			8			2			1	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		1			1			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	280	281	107	278	278	126	108			130		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	280	281	107	278	278	126	108			130		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	99	99	100	100	99	100			99		
cM capacity (veh/h)	650	613	945	649	615	924	1486			1458		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	18	11	128	117
Volume Left	6	0	6	17
Volume Right	6	11	11	6
cSH	709	924	1486	1458
Volume to Capacity	0.03	0.01	0.00	0.01
Queue Length 95th (m)	0.6	0.3	0.1	0.3
Control Delay (s)	10.2	8.9	0.4	1.2
Lane LOS	B	A	A	A
Approach Delay (s)	10.2	8.9	0.4	1.2
Approach LOS	B	A		

Intersection Summary				
Average Delay	1.7			
Intersection Capacity Utilization	23.9%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Signalized Intersection Capacity Analysis
19: Francis Road/Designers Way & Plains Road E/Plains Road East

09/20/2017



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	120	750	35	205	1065	20	30	40	125	325	60	240
Future Volume (vph)	120	750	35	205	1065	20	30	40	125	325	60	240
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.0		3.0	5.0		6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00		1.00	0.89		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	0.97	1.00
Satd. Flow (prot)	1784	3463		1765	3523		1785	1640		1696	1726	1452
Flt Permitted	0.13	1.00		0.21	1.00		0.95	1.00		0.95	0.97	1.00
Satd. Flow (perm)	252	3463		392	3523		1785	1640		1696	1726	1452
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	124	773	36	211	1098	21	31	41	129	335	62	247
RTOR Reduction (vph)	0	2	0	0	1	0	0	97	0	0	0	202
Lane Group Flow (vph)	124	807	0	211	1118	0	31	73	0	198	199	45
Confl. Peds. (#/hr)	12		19	19		12	43					43
Heavy Vehicles (%)	0%	2%	6%	1%	1%	0%	0%	0%	2%	0%	0%	1%
Bus Blockages (#/hr)	0	0	8	0	0	6	0	0	0	0	0	0
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA		custom	NA	Perm
Protected Phases	5	2		1	6		4	4		8	8	
Permitted Phases	2			6						8		8
Actuated Green, G (s)	48.3	40.5		56.1	44.4		10.0	10.0		17.8	17.8	17.8
Effective Green, g (s)	50.3	41.5		57.2	45.4		11.0	11.0		18.8	18.8	18.8
Actuated g/C Ratio	0.48	0.40		0.55	0.44		0.11	0.11		0.18	0.18	0.18
Clearance Time (s)	4.0	6.0		4.0	6.0		7.0	7.0		7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	251	1381		383	1537		188	173		306	312	262
v/s Ratio Prot	0.04	0.23		c0.07	c0.32		0.02	c0.04		c0.12	0.12	
v/s Ratio Perm	0.20			0.24								0.03
v/c Ratio	0.49	0.58		0.55	0.73		0.16	0.42		0.65	0.64	0.17
Uniform Delay, d1	17.4	24.5		14.1	24.2		42.3	43.5		39.5	39.4	36.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.5	1.8		1.7	3.0		0.4	1.7		4.7	4.2	0.3
Delay (s)	18.9	26.3		15.8	27.2		42.7	45.2		44.2	43.7	36.3
Level of Service	B	C		B	C		D	D		D	D	D
Approach Delay (s)		25.3			25.4			44.8			41.0	
Approach LOS		C			C			D			D	

Intersection Summary						
HCM 2000 Control Delay	29.9	HCM 2000 Level of Service	C			
HCM 2000 Volume to Capacity ratio	0.66					
Actuated Cycle Length (s)	104.0	Sum of lost time (s)	20.0			
Intersection Capacity Utilization	76.7%	ICU Level of Service	D			
Analysis Period (min)	15					
c Critical Lane Group						

HCM Signalized Intersection Capacity Analysis
22: QEW NB Off-Ramp & North Shore Boulevard E

09/20/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER
Lane Configurations											
Traffic Volume (vph)	0	400	75	0	1390	300	205	0	505	0	0
Future Volume (vph)	0	400	75	0	1390	300	205	0	505	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		6.0		6.0		
Lane Util. Factor		0.95			0.95		1.00		1.00		
Frpb, ped/bikes		1.00			1.00		1.00		1.00		
Flpb, ped/bikes		1.00			1.00		1.00		1.00		
Frt		0.98			0.97		1.00		0.85		
Flt Protected		1.00			1.00		0.95		1.00		
Satd. Flow (prot)		3426			3414		1767		1597		
Flt Permitted		1.00			1.00		0.95		1.00		
Satd. Flow (perm)		3426			3414		1767		1597		
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	421	79	0	1463	316	216	0	532	0	0
RTOR Reduction (vph)	0	13	0	0	15	0	0	0	0	0	0
Lane Group Flow (vph)	0	487	0	0	1764	0	216	0	532	0	0
Confl. Peds. (#/hr)	2		4	4		2					
Heavy Vehicles (%)	0%	1%	3%	0%	1%	3%	1%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	2	0	0	0	0	0
Turn Type		NA			NA		Prot		custom		
Protected Phases		2			6		4		4		
Permitted Phases									2		
Actuated Green, G (s)		89.0			89.0		17.0		106.0		
Effective Green, g (s)		90.0			90.0		18.0		108.0		
Actuated g/C Ratio		0.76			0.76		0.15		0.91		
Clearance Time (s)		6.0			6.0		7.0		7.0		
Vehicle Extension (s)		3.0			3.0		3.0		3.0		
Lane Grp Cap (vph)		2591			2582		267		1529		
v/s Ratio Prot		0.14			c0.52		c0.12		0.05		
v/s Ratio Perm									0.28		
v/c Ratio		0.19			0.68		0.81		0.35		
Uniform Delay, d1		4.1			7.3		48.8		0.7		
Progression Factor		1.00			1.00		1.00		1.00		
Incremental Delay, d2		0.2			0.8		16.3		0.1		
Delay (s)		4.3			8.1		65.2		0.9		
Level of Service		A			A		E		A		
Approach Delay (s)		4.3			8.1			19.4		0.0	
Approach LOS		A			A			B		A	

Intersection Summary				
HCM 2000 Control Delay	10.3	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.70			
Actuated Cycle Length (s)	119.0	Sum of lost time (s)	11.0	
Intersection Capacity Utilization	71.3%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

HCM Unsignalized Intersection Capacity Analysis
23: North Shore Boulevard E & Francis Road

09/20/2017

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	330	595	120	55	10
Future Volume (Veh/h)	5	330	595	120	55	10
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	5	355	640	129	59	11
Pedestrians					6	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			358			
pX, platoon unblocked	0.77				0.77	0.77
vC, conflicting volume	775				1076	710
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	563				952	480
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				73	98
cM capacity (veh/h)	784				219	454

Direction, Lane #	EB 1	WB 1	SB 1	SB 2
Volume Total	360	769	59	11
Volume Left	5	0	59	0
Volume Right	0	129	0	11
cSH	784	1700	219	454
Volume to Capacity	0.01	0.45	0.27	0.02
Queue Length 95th (m)	0.2	0.0	8.4	0.6
Control Delay (s)	0.2	0.0	27.4	13.1
Lane LOS	A		D	B
Approach Delay (s)	0.2	0.0	25.2	
Approach LOS			D	

Intersection Summary				
Average Delay	1.5			
Intersection Capacity Utilization	48.7%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Signalized Intersection Capacity Analysis
30: North Shore Boulevard E & QEW SB Off-Ramp

09/20/2017



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	105	285	640	965	190	110
Future Volume (vph)	105	285	640	965	190	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1767	1860	1860	1543	1767	1581
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1767	1860	1860	1543	1767	1581
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	112	303	681	1027	202	117
RTOR Reduction (vph)	0	0	0	296	0	98
Lane Group Flow (vph)	112	303	681	731	202	19
Confl. Peds. (#/hr)	2			2		1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA	NA	Perm	Prot	Prot
Protected Phases	5	2	6		8	8
Permitted Phases				6		
Actuated Green, G (s)	8.0	85.1	74.1	74.1	17.5	17.5
Effective Green, g (s)	9.0	86.1	75.1	75.1	18.5	18.5
Actuated g/C Ratio	0.08	0.74	0.64	0.64	0.16	0.16
Clearance Time (s)	3.0	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	136	1373	1197	993	280	250
v/s Ratio Prot	c0.06	0.16	0.37		c0.11	0.01
v/s Ratio Perm				c0.47		
v/c Ratio	0.82	0.22	0.57	0.74	0.72	0.07
Uniform Delay, d1	53.0	4.8	11.7	14.0	46.6	41.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	31.5	0.4	2.0	4.9	8.8	0.1
Delay (s)	84.5	5.1	13.6	18.9	55.4	41.9
Level of Service	F	A	B	B	E	D
Approach Delay (s)		26.6	16.8		50.5	
Approach LOS		C	B		D	

Intersection Summary				
HCM 2000 Control Delay	22.9	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.74			
Actuated Cycle Length (s)	116.6	Sum of lost time (s)	14.0	
Intersection Capacity Utilization	74.1%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
32: Francis Road & Warwick Drive

09/20/2017



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	70	10	10	120	145	155
Future Volume (Veh/h)	70	10	10	120	145	155
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	76	11	11	130	158	168
Pedestrians	2			5	4	
Lane Width (m)	3.5			3.5	3.5	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)					219	
pX, platoon unblocked	0.94	0.94	0.94			
vC, conflicting volume	400	249	328			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	334	174	258			
tC, single (s)	6.4	6.3	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.4	2.4			
p0 queue free %	88	99	99			
cM capacity (veh/h)	617	794	1139			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	87	141	326
Volume Left	76	11	0
Volume Right	11	0	168
cSH	634	1139	1700
Volume to Capacity	0.14	0.01	0.19
Queue Length 95th (m)	3.8	0.2	0.0
Control Delay (s)	11.6	0.7	0.0
Lane LOS	B	A	
Approach Delay (s)	11.6	0.7	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	29.8%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
33: Warwick Drive & Warwick Court

09/20/2017



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	70	80	30	35	40	15
Future Volume (vph)	70	80	30	35	40	15
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	78	89	33	39	44	17

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	167	72	61
Volume Left (vph)	78	0	44
Volume Right (vph)	89	39	0
Hadj (s)	-0.20	-0.27	0.14
Departure Headway (s)	4.0	4.1	4.5
Degree Utilization, x	0.19	0.08	0.08
Capacity (veh/h)	873	844	771
Control Delay (s)	7.9	7.4	7.8
Approach Delay (s)	7.9	7.4	7.8
Approach LOS	A	A	A

Intersection Summary			
Delay		7.8	
Level of Service		A	
Intersection Capacity Utilization		26.7%	ICU Level of Service A
Analysis Period (min)		15	

HCM Unsignalized Intersection Capacity Analysis
35: Warwick Drive & Surrey Lane

09/20/2017



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	60	15	5	15	15	65
Future Volume (Veh/h)	60	15	5	15	15	65
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	72	18	6	18	18	78
Pedestrians	9				2	
Lane Width (m)	3.5				3.5	
Walking Speed (m/s)	1.2				1.2	
Percent Blockage	1				0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	98	66	105			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	98	66	105			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	92	98	100			
cM capacity (veh/h)	889	996	1488			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	90	24	96
Volume Left	72	6	0
Volume Right	18	0	78
cSH	909	1488	1700
Volume to Capacity	0.10	0.00	0.06
Queue Length 95th (m)	2.6	0.1	0.0
Control Delay (s)	9.4	1.9	0.0
Lane LOS	A	A	
Approach Delay (s)	9.4	1.9	0.0
Approach LOS	A		

Intersection Summary			
Average Delay		4.2	
Intersection Capacity Utilization		18.5%	ICU Level of Service A
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis
36: QEW NB Off-Ramp & Fairview Street

09/20/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	1120	0	0	1865	5	115	175	340	5	0	540
Future Volume (vph)	95	1120	0	0	1865	5	115	175	340	5	0	540
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	5.0			5.0		6.0	6.0	6.0	6.0		6.0
Lane Util. Factor	1.00	0.91			0.91		0.95	0.91	0.95	1.00		1.00
Frpb, ped/bikes	1.00	1.00			1.00		1.00	1.00	1.00	1.00		1.00
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00	1.00	1.00		1.00
Frt	1.00	1.00			1.00		1.00	0.95	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00		0.95	1.00	1.00	0.95		1.00
Satd. Flow (prot)	1733	5079			5076		1662	1615	1502	1785		1597
Flt Permitted	0.07	1.00			1.00		0.95	1.00	1.00	0.36		1.00
Satd. Flow (perm)	123	5079			5076		1662	1615	1502	672		1597
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	97	1143	0	0	1903	5	117	179	347	5	0	551
RTOR Reduction (vph)	0	0	0	0	0	0	0	15	74	0	0	143
Lane Group Flow (vph)	97	1143	0	0	1908	0	105	270	179	5	0	409
Confl. Peds. (#/hr)	3		19	19		3						
Heavy Vehicles (%)	3%	1%	0%	0%	1%	0%	2%	0%	1%	0%	0%	0%
Turn Type	pm+pt	NA			NA		Perm	NA	Perm	D.Pm		Perm
Protected Phases	1	2			2			4				
Permitted Phases	2	1					4		4	4		4
Actuated Green, G (s)	66.7	66.7			58.3		29.1	29.1	29.1	29.1		29.1
Effective Green, g (s)	68.7	68.7			59.3		30.1	30.1	30.1	30.1		30.1
Actuated g/C Ratio	0.61	0.61			0.53		0.27	0.27	0.27	0.27		0.27
Clearance Time (s)	3.0	6.0			6.0		7.0	7.0	7.0	7.0		7.0
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	210	3120			2692		447	434	404	180		429
v/s Ratio Prot	c0.04	0.19			c0.38							
v/s Ratio Perm	0.24	0.03					0.06	0.17	0.12	0.01		c0.26
v/c Ratio	0.46	0.37			0.71		0.23	0.62	0.44	0.03		0.95
Uniform Delay, d1	14.9	10.7			19.8		31.9	35.9	33.9	30.1		40.1
Progression Factor	1.00	1.00			1.00		1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	1.6	0.1			0.9		0.3	2.8	0.8	0.1		31.3
Delay (s)	16.5	10.8			20.6		32.1	38.6	34.7	30.1		71.5
Level of Service	B	B			C		C	D	C	C		E
Approach Delay (s)		11.2			20.6			36.0			71.1	
Approach LOS		B			C			D			E	

Intersection Summary				
HCM 2000 Control Delay	26.7	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.76			
Actuated Cycle Length (s)	111.8	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	95.0%	ICU Level of Service	F	
Analysis Period (min)	15			

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
45: Marley Road & Warwick Drive

09/20/2017

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	20	25	15	5	10
Future Volume (Veh/h)	5	20	25	15	5	10
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.57	0.57	0.57	0.57	0.57	0.57
Hourly flow rate (vph)	9	35	44	26	9	18
Pedestrians			1		11	
Lane Width (m)			3.5		3.5	
Walking Speed (m/s)			1.2		1.2	
Percent Blockage			0		1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	81				122	68
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	81				122	68
tC, single (s)	4.2				6.5	6.2
tC, 2 stage (s)						
tF (s)	2.3				3.6	3.3
p0 queue free %	99				99	98
cM capacity (veh/h)	1478				850	981

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	44	70	27
Volume Left	9	0	9
Volume Right	0	26	18
cSH	1478	1700	933
Volume to Capacity	0.01	0.04	0.03
Queue Length 95th (m)	0.1	0.0	0.7
Control Delay (s)	1.6	0.0	9.0
Lane LOS	A		A
Approach Delay (s)	1.6	0.0	9.0
Approach LOS			A

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	16.4%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
48: Mohawk Road & North Shore Boulevard E

09/20/2017

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	475	0	0	1605	0	10
Future Volume (Veh/h)	475	0	0	1605	0	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	505	0	0	1707	0	11
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	62			257		
pX, platoon unblocked					0.75	
vC, conflicting volume			505		1358	252
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			505		824	252
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	99
cM capacity (veh/h)			1070		238	753

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	252	252	854	854	11
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	11
cSH	1700	1700	1700	1700	753
Volume to Capacity	0.15	0.15	0.50	0.50	0.01
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.4
Control Delay (s)	0.0	0.0	0.0	0.0	9.9
Lane LOS					A
Approach Delay (s)	0.0		0.0		9.9
Approach LOS					A

Intersection Summary				
Average Delay	0.0			
Intersection Capacity Utilization	47.7%	ICU Level of Service		A
Analysis Period (min)	15			

HCM Signalized Intersection Capacity Analysis
3: King Road & Plains Road E

FBAM
09/20/2017

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	780	95	35	490	175	145	265	70	175	110	60
Future Volume (vph)	125	780	95	35	490	175	145	265	70	175	110	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.0	5.0	3.0	5.0		3.0	6.0		3.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	0.99		1.00	0.99		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.96		1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1766	3466	1494	1682	3236		1731	1773		1651	1807	1528
Flt Permitted	0.28	1.00	1.00	0.26	1.00		0.68	1.00		0.24	1.00	1.00
Satd. Flow (perm)	526	3466	1494	469	3236		1242	1773		411	1807	1528
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	133	830	101	37	521	186	154	282	74	186	117	64
RTOR Reduction (vph)	0	0	54	0	35	0	0	10	0	0	0	49
Lane Group Flow (vph)	133	830	47	37	672	0	154	346	0	186	117	15
Confl. Peds. (#/hr)	8		10	10		8	2		13	13		2
Heavy Vehicles (%)	1%	3%	3%	6%	4%	8%	3%	1%	6%	8%	4%	3%
Bus Blockages (#/hr)	0	0	0	0	0	6	0	0	2	0	0	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6			4			8		8
Actuated Green, G (s)	51.2	45.2	45.2	46.2	42.7		29.7	21.8		29.9	21.9	21.9
Effective Green, g (s)	53.2	46.2	46.2	48.2	43.7		31.7	22.8		31.9	22.9	22.9
Actuated g/C Ratio	0.53	0.46	0.46	0.48	0.44		0.32	0.23		0.32	0.23	0.23
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0		4.0	7.0		4.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	368	1609	693	282	1421		439	406		243	415	351
v/s Ratio Prot	c0.03	c0.24		0.01	0.21		0.03	c0.20		c0.07	0.06	
v/s Ratio Perm	0.17		0.03	0.06			0.08			0.18		0.01
v/c Ratio	0.36	0.52	0.07	0.13	0.47		0.35	0.85		0.77	0.28	0.04
Uniform Delay, d1	12.5	18.8	14.7	14.0	19.7		25.4	36.7		26.9	31.5	29.8
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.6	1.2	0.2	0.2	1.1		0.5	15.7		13.4	0.4	0.0
Delay (s)	13.2	20.0	14.9	14.2	20.9		25.8	52.4		40.3	31.9	29.8
Level of Service	B	B	B	B	C		C	D		D	C	C
Approach Delay (s)		18.6			20.6			44.4			35.8	
Approach LOS		B			C			D			D	

Intersection Summary					
HCM 2000 Control Delay	26.4	HCM 2000 Level of Service		C	
HCM 2000 Volume to Capacity ratio	0.64				
Actuated Cycle Length (s)	99.5	Sum of lost time (s)		17.0	
Intersection Capacity Utilization	75.9%	ICU Level of Service		D	
Analysis Period (min)	15				
Description: OPTIMIZED					

c Critical Lane Group



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	25	35	40	435	210	10
Future Volume (Veh/h)	25	35	40	435	210	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	27	38	43	468	226	11
Pedestrians				2		
Lane Width (m)				3.5		
Walking Speed (m/s)				1.2		
Percent Blockage				0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)					302	
pX, platoon unblocked						
vC, conflicting volume	786	234	237			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	786	234	237			
tC, single (s)	6.4	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.4	2.2			
p0 queue free %	92	95	97			
cM capacity (veh/h)	347	790	1330			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	65	43	468	237
Volume Left	27	43	0	0
Volume Right	38	0	0	11
cSH	516	1330	1700	1700
Volume to Capacity	0.13	0.03	0.28	0.14
Queue Length 95th (m)	3.4	0.8	0.0	0.0
Control Delay (s)	13.0	7.8	0.0	0.0
Lane LOS	B	A		
Approach Delay (s)	13.0	0.7		0.0
Approach LOS	B			

Intersection Summary				
Average Delay	1.5			
Intersection Capacity Utilization	33.8%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	20	70	400	15	40	205
Future Volume (Veh/h)	20	70	400	15	40	205
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	21	72	412	15	41	211
Pedestrians	3					
Lane Width (m)	3.5					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						401
pX, platoon unblocked						
vC, conflicting volume	716	422			430	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	716	422			430	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	95	88			96	
cM capacity (veh/h)	384	625			1111	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	93	427	41	211
Volume Left	21	0	41	0
Volume Right	72	15	0	0
cSH	548	1700	1111	1700
Volume to Capacity	0.17	0.25	0.04	0.12
Queue Length 95th (m)	4.9	0.0	0.9	0.0
Control Delay (s)	12.9	0.0	8.4	0.0
Lane LOS	B		A	
Approach Delay (s)	12.9	0.0	1.4	
Approach LOS	B			

Intersection Summary				
Average Delay	2.0			
Intersection Capacity Utilization	40.7%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Signalized Intersection Capacity Analysis
9: QEW SB On-Ramp/QEW SB Off-Ramp & Plains Road East

FBAM
09/20/2017



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1065	135	0	805	0	0	0	0	165	0	85
Future Volume (vph)	0	1065	135	0	805	0	0	0	0	165	0	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0					6.0		6.0
Lane Util. Factor		0.91	1.00		0.91					0.97		1.00
Frpb, ped/bikes		1.00	0.97		1.00					1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00					1.00		1.00
Frt		1.00	0.85		1.00					1.00		0.85
Flt Protected		1.00	1.00		1.00					0.95		1.00
Satd. Flow (prot)		4980	1483		4980					3429		1493
Flt Permitted		1.00	1.00		1.00					0.95		1.00
Satd. Flow (perm)		4980	1483		4980					3429		1493
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	1133	144	0	856	0	0	0	0	176	0	90
RTOR Reduction (vph)	0	0	34	0	0	0	0	0	0	0	0	79
Lane Group Flow (vph)	0	1133	110	0	856	0	0	0	0	176	0	11
Confl. Peds. (#/hr)	2		4	4		2	1					1
Heavy Vehicles (%)	0%	3%	5%	0%	3%	0%	0%	0%	0%	1%	0%	7%
Turn Type		NA	Perm		NA					Prot		Prot
Protected Phases		2			6					8		8
Permitted Phases			2									
Actuated Green, G (s)		69.0	69.0		69.0					10.0		10.0
Effective Green, g (s)		70.0	70.0		70.0					11.0		11.0
Actuated g/C Ratio		0.76	0.76		0.76					0.12		0.12
Clearance Time (s)		6.0	6.0		6.0					7.0		7.0
Vehicle Extension (s)		3.0	3.0		3.0					3.0		3.0
Lane Grp Cap (vph)		3789	1128		3789					409		178
v/s Ratio Prot		c0.23			0.17					c0.05		0.01
v/s Ratio Perm			0.07									
v/c Ratio		0.30	0.10		0.23					0.43		0.06
Uniform Delay, d1		3.4	2.8		3.2					37.6		35.9
Progression Factor		1.00	1.00		1.00					1.00		1.00
Incremental Delay, d2		0.2	0.2		0.1					0.7		0.1
Delay (s)		3.6	3.0		3.3					38.3		36.1
Level of Service		A	A		A					D		D
Approach Delay (s)		3.5			3.3			0.0			37.6	
Approach LOS		A			A			A			D	

Intersection Summary				
HCM 2000 Control Delay	7.2	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.32			
Actuated Cycle Length (s)	92.0	Sum of lost time (s)	11.0	
Intersection Capacity Utilization	42.9%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
10: King Road & Marley Road

FBAM
09/20/2017



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	20	395	10	10	210
Future Volume (Veh/h)	5	20	395	10	10	210
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	5	22	434	11	11	231
Pedestrians	2					
Lane Width (m)	3.5					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	694	442			447	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	694	442			447	
tC, single (s)	6.4	6.2			4.3	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.4	
p0 queue free %	99	96			99	
cM capacity (veh/h)	406	619			1023	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	27	445	242
Volume Left	5	0	11
Volume Right	22	11	0
cSH	564	1700	1023
Volume to Capacity	0.05	0.26	0.01
Queue Length 95th (m)	1.2	0.0	0.3
Control Delay (s)	11.7	0.0	0.5
Lane LOS	B		A
Approach Delay (s)	11.7	0.0	0.5
Approach LOS	B		

Intersection Summary			
Average Delay	0.6		
Intersection Capacity Utilization	31.4%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
11: Sunset Road/Parking Lot & Marley Road

FBAM
09/20/2017



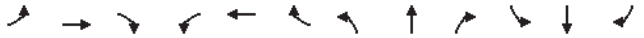
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	10	0	25	10	0	5	0	15	5	0	5
Future Volume (Veh/h)	5	10	0	25	10	0	5	0	15	5	0	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55
Hourly flow rate (vph)	9	18	0	45	18	0	9	0	27	9	0	9
Pedestrians		41			2			1			4	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		3			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	22			19			195	149	21	177	149	63
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	22			19			195	149	21	177	149	63
tC, single (s)	4.1			4.2			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			97			99	100	97	99	100	99
cM capacity (veh/h)	1601			1552			714	718	1060	743	718	971

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	27	63	36	18
Volume Left	9	45	9	9
Volume Right	0	0	27	9
cSH	1601	1552	945	842
Volume to Capacity	0.01	0.03	0.04	0.02
Queue Length 95th (m)	0.1	0.7	0.9	0.5
Control Delay (s)	2.4	5.3	9.0	9.4
Lane LOS	A	A	A	A
Approach Delay (s)	2.4	5.3	9.0	9.4
Approach LOS			A	A

Intersection Summary					
Average Delay	6.2				
Intersection Capacity Utilization	22.4%	ICU Level of Service		A	
Analysis Period (min)	15				

HCM Unsignalized Intersection Capacity Analysis
12: King Road & Cedar Avenue

FBAM
09/20/2017



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	0	10	5	0	25	5	370	5	5	205	0
Future Volume (Veh/h)	5	0	10	5	0	25	5	370	5	5	205	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	6	0	11	6	0	28	6	416	6	6	230	0
Pedestrians		1			3			2			1	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	703	680	233	689	677	423	231			425		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	703	680	233	689	677	423	231			425		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	100	99	98	100	96	100			99		
cM capacity (veh/h)	335	371	809	353	372	633	1348			1142		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	17	34	428	236
Volume Left	6	6	6	6
Volume Right	11	28	6	0
cSH	540	555	1348	1142
Volume to Capacity	0.03	0.06	0.00	0.01
Queue Length 95th (m)	0.8	1.6	0.1	0.1
Control Delay (s)	11.9	11.9	0.2	0.3
Lane LOS	B	B	A	A
Approach Delay (s)	11.9	11.9	0.2	0.3
Approach LOS	B	B		

Intersection Summary					
Average Delay	1.0				
Intersection Capacity Utilization	32.8%	ICU Level of Service		A	
Analysis Period (min)	15				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	0	5	5	10	10	10	95	5	5	50	0
Future Volume (Veh/h)	5	0	5	5	10	10	10	95	5	5	50	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	6	0	6	6	12	12	12	116	6	6	61	0
Pedestrians		5			5			2			1	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	240	229	68	229	226	125	66			127		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	240	229	68	229	226	125	66			127		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	100	99	99	98	99	99			100		
cM capacity (veh/h)	685	661	995	711	663	926	1542			1466		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	12	30	134	67
Volume Left	6	6	12	6
Volume Right	6	12	6	0
cSH	812	760	1542	1466
Volume to Capacity	0.01	0.04	0.01	0.00
Queue Length 95th (m)	0.4	1.0	0.2	0.1
Control Delay (s)	9.5	9.9	0.7	0.7
Lane LOS	A	A	A	A
Approach Delay (s)	9.5	9.9	0.7	0.7
Approach LOS	A	A		

Intersection Summary				
Average Delay	2.3			
Intersection Capacity Utilization	18.5%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	935	25	60	630	10	35	15	220	50	5	45
Future Volume (vph)	65	935	25	60	630	10	35	15	220	50	5	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.0		3.0	5.0		6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	1.00		1.00	0.86		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	0.96	1.00
Satd. Flow (prot)	1748	3407		1785	3412		1638	1585		1570	1572	1323
Flt Permitted	0.35	1.00		0.20	1.00		0.95	1.00		0.95	0.96	1.00
Satd. Flow (perm)	637	3407		384	3412		1638	1585		1570	1572	1323
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	70	1005	27	65	677	11	38	16	237	54	5	48
RTOR Reduction (vph)	0	2	0	0	1	0	0	214	0	0	0	45
Lane Group Flow (vph)	70	1030	0	65	687	0	38	39	0	29	30	3
Confl. Peds. (#/hr)	8		4	4		8	17					17
Heavy Vehicles (%)	2%	4%	15%	0%	4%	25%	9%	0%	2%	8%	14%	11%
Bus Blockages (#/hr)	0	0	8	0	0	6	0	0	0	0	0	0
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA		custom	NA	Perm
Protected Phases	5	2		1	6		4	4		8	8	
Permitted Phases	2			6						8		8
Actuated Green, G (s)	54.4	49.1		54.4	49.1		8.1	8.1		5.7	5.7	5.7
Effective Green, g (s)	56.4	50.1		56.4	50.1		9.1	9.1		6.7	6.7	6.7
Actuated g/C Ratio	0.61	0.54		0.61	0.54		0.10	0.10		0.07	0.07	0.07
Clearance Time (s)	4.0	6.0		4.0	6.0		7.0	7.0		7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	465	1851		330	1854		161	156		114	114	96
v/s Ratio Prot	0.01	c0.30		c0.01	0.20		0.02	c0.02		0.02	c0.02	
v/s Ratio Perm	0.08			0.11								0.00
v/c Ratio	0.15	0.56		0.20	0.37		0.24	0.25		0.25	0.26	0.04
Uniform Delay, d1	7.4	13.8		8.3	12.0		38.3	38.4		40.4	40.4	39.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.2	1.2		0.3	0.6		0.8	0.9		1.2	1.2	0.2
Delay (s)	7.6	15.0		8.6	12.6		39.1	39.3		41.6	41.7	39.9
Level of Service	A	B		A	B		D	D		D	D	D
Approach Delay (s)		14.5			12.3			39.2			40.8	
Approach LOS		B			B			D			D	

Intersection Summary						
HCM 2000 Control Delay	18.2	HCM 2000 Level of Service	B			
HCM 2000 Volume to Capacity ratio	0.46					
Actuated Cycle Length (s)	92.2	Sum of lost time (s)	20.0			
Intersection Capacity Utilization	65.5%	ICU Level of Service	C			
Analysis Period (min)	15					
c Critical Lane Group						



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER
Lane Configurations											
Traffic Volume (vph)	0	565	100	0	695	295	200	0	730	0	0
Future Volume (vph)	0	565	100	0	695	295	200	0	730	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		6.0		6.0		
Lane Util. Factor		0.95			0.95		1.00		1.00		
Frpb, ped/bikes		1.00			0.99		1.00		1.00		
Flpb, ped/bikes		1.00			1.00		1.00		1.00		
Frt		0.98			0.96		1.00		0.85		
Flt Protected		1.00			1.00		0.95		1.00		
Satd. Flow (prot)		3363			3332		1750		1566		
Flt Permitted		1.00			1.00		0.95		1.00		
Satd. Flow (perm)		3363			3332		1750		1566		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	628	111	0	772	328	222	0	811	0	0
RTOR Reduction (vph)	0	24	0	0	77	0	0	0	0	0	0
Lane Group Flow (vph)	0	715	0	0	1023	0	222	0	811	0	0
Confl. Peds. (#/hr)			3			2					
Heavy Vehicles (%)	0%	4%	0%	0%	2%	1%	2%	0%	2%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	2	0	0	0	0	0
Turn Type		NA			NA		Prot		custom		
Protected Phases		2			6		4		4		
Permitted Phases									2		
Actuated Green, G (s)		25.2			25.2		23.3		48.5		
Effective Green, g (s)		26.2			26.2		24.3		50.5		
Actuated g/C Ratio		0.43			0.43		0.40		0.82		
Clearance Time (s)		6.0			6.0		7.0		7.0		
Vehicle Extension (s)		3.0			3.0		3.0		3.0		
Lane Grp Cap (vph)		1432			1419		691		1438		
v/s Ratio Prot		0.21			c0.31		0.13		c0.22		
v/s Ratio Perm									0.30		
v/c Ratio		0.50			0.72		0.32		0.56		
Uniform Delay, d1		12.9			14.6		12.9		1.8		
Progression Factor		1.00			1.00		1.00		1.00		
Incremental Delay, d2		0.3			1.8		1.2		0.5		
Delay (s)		13.1			16.5		14.1		2.3		
Level of Service		B			B		B		A		
Approach Delay (s)		13.1			16.5			4.9		0.0	
Approach LOS		B			B			A		A	

Intersection Summary				
HCM 2000 Control Delay	11.4	HCM 2000 Level of Service		B
HCM 2000 Volume to Capacity ratio	0.68			
Actuated Cycle Length (s)	61.5	Sum of lost time (s)		11.0
Intersection Capacity Utilization	74.4%	ICU Level of Service		D
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	375	440	70	75	10
Future Volume (Veh/h)	10	375	440	70	75	10
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	11	395	463	74	79	11
Pedestrians			1		7	
Lane Width (m)			3.5		3.5	
Walking Speed (m/s)			1.2		1.2	
Percent Blockage			0		1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			358			
pX, platoon unblocked	0.83				0.83	0.83
vC, conflicting volume	544				925	507
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	348				807	304
tC, single (s)	4.3				6.4	6.3
tC, 2 stage (s)						
tF (s)	2.4				3.5	3.4
p0 queue free %	99				72	98
cM capacity (veh/h)	914				282	590

Direction, Lane #	EB 1	WB 1	SB 1	SB 2
Volume Total	406	537	79	11
Volume Left	11	0	79	0
Volume Right	0	74	0	11
cSH	914	1700	282	590
Volume to Capacity	0.01	0.32	0.28	0.02
Queue Length 95th (m)	0.3	0.0	8.9	0.5
Control Delay (s)	0.4	0.0	22.6	11.2
Lane LOS	A		C	B
Approach Delay (s)	0.4	0.0	21.2	
Approach LOS			C	

Intersection Summary				
Average Delay	2.0			
Intersection Capacity Utilization	38.6%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	115	365	460	440	295	55
Future Volume (vph)	115	365	460	440	295	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	5.0	5.0	5.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1749	1824	1807	1581	1733	1531
Flt Permitted	0.35	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	642	1824	1807	1581	1733	1531
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	124	392	495	473	317	59
RTOR Reduction (vph)	0	0	0	228	0	45
Lane Group Flow (vph)	124	392	495	245	317	14
Confl. Peds. (#/hr)	2					1
Heavy Vehicles (%)	2%	3%	4%	1%	3%	2%
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		8	
Permitted Phases	2			6		8
Actuated Green, G (s)	56.2	56.2	45.5	45.5	20.7	20.7
Effective Green, g (s)	57.2	57.2	46.5	46.5	21.7	21.7
Actuated g/C Ratio	0.64	0.64	0.52	0.52	0.24	0.24
Clearance Time (s)	3.0	6.0	6.0	6.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	515	1160	934	817	418	369
v/s Ratio Prot	0.02	c0.21	c0.27		c0.18	
v/s Ratio Perm	0.13			0.15		0.01
v/c Ratio	0.24	0.34	0.53	0.30	0.76	0.04
Uniform Delay, d1	7.6	7.6	14.4	12.4	31.7	26.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	0.8	2.2	0.9	7.7	0.0
Delay (s)	7.8	8.4	16.6	13.3	39.4	26.2
Level of Service	A	A	B	B	D	C
Approach Delay (s)		8.2	15.0		37.3	
Approach LOS		A	B		D	

Intersection Summary				
HCM 2000 Control Delay	17.6	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.57			
Actuated Cycle Length (s)	89.9	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	59.4%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	135	15	10	125	50	45
Future Volume (Veh/h)	135	15	10	125	50	45
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	148	16	11	137	55	49
Pedestrians	9			16	18	
Lane Width (m)	3.5			3.5	3.5	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	1			1	1	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)					219	
pX, platoon unblocked						
vC, conflicting volume	266	104	113			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	266	104	113			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.4			
p0 queue free %	79	98	99			
cM capacity (veh/h)	702	936	1378			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	164	148	104
Volume Left	148	11	0
Volume Right	16	0	49
cSH	720	1378	1700
Volume to Capacity	0.23	0.01	0.06
Queue Length 95th (m)	7.0	0.2	0.0
Control Delay (s)	11.5	0.6	0.0
Lane LOS	B	A	
Approach Delay (s)	11.5	0.6	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	4.7		
Intersection Capacity Utilization	31.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	25	25	15	55	90	35
Future Volume (vph)	25	25	15	55	90	35
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	30	30	18	67	110	43

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	60	85	153
Volume Left (vph)	30	0	110
Volume Right (vph)	30	67	0
Hadj (s)	0.03	-0.42	0.16
Departure Headway (s)	4.4	3.8	4.3
Degree Utilization, x	0.07	0.09	0.18
Capacity (veh/h)	768	921	826
Control Delay (s)	7.8	7.1	8.2
Approach Delay (s)	7.8	7.1	8.2
Approach LOS	A	A	A

Intersection Summary			
Delay		7.8	
Level of Service		A	
Intersection Capacity Utilization		24.4%	ICU Level of Service A
Analysis Period (min)		15	



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	60	20	10	20	25	40
Future Volume (Veh/h)	60	20	10	20	25	40
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	75	25	13	25	31	50
Pedestrians	12				1	
Lane Width (m)	3.5				3.5	
Walking Speed (m/s)	1.2				1.2	
Percent Blockage	1				0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	120	68	93			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	120	68	93			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	91	97	99			
cM capacity (veh/h)	856	977	1499			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	100	38	81
Volume Left	75	13	0
Volume Right	25	0	50
cSH	884	1499	1700
Volume to Capacity	0.11	0.01	0.05
Queue Length 95th (m)	3.1	0.2	0.0
Control Delay (s)	9.6	2.6	0.0
Lane LOS	A	A	
Approach Delay (s)	9.6	2.6	0.0
Approach LOS	A		

Intersection Summary			
Average Delay		4.8	
Intersection Capacity Utilization		19.5%	ICU Level of Service A
Analysis Period (min)		15	

HCM Signalized Intersection Capacity Analysis
36: QEW NB Off-Ramp/Plains Rd & Fairview Street

FBAM
09/20/2017



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	110	1005	100	0	490	10	175	250	560	0	0	250
Future Volume (vph)	110	1005	100	0	490	10	175	250	560	0	0	250
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	5.0			5.0		6.0	6.0	6.0			6.0
Lane Util. Factor	1.00	0.91			0.91		0.95	0.91	0.95			1.00
Frpb, ped/bikes	1.00	1.00			1.00		1.00	1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00	1.00			1.00
Frt	1.00	0.99			1.00		1.00	0.94	0.85			0.85
Flt Protected	0.95	1.00			1.00		0.95	1.00	1.00			1.00
Satd. Flow (prot)	1732	4907			4860		1679	1592	1502			1536
Flt Permitted	0.43	1.00			1.00		0.95	1.00	1.00			1.00
Satd. Flow (perm)	780	4907			4860		1679	1592	1502			1536
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	118	1081	108	0	527	11	188	269	602	0	0	269
RTOR Reduction (vph)	0	13	0	0	2	0	0	22	65	0	0	185
Lane Group Flow (vph)	118	1176	0	0	536	0	169	447	356	0	0	84
Confl. Peds. (#/hr)	1		1	1		1						
Heavy Vehicles (%)	3%	3%	2%	0%	5%	13%	1%	1%	1%	0%	0%	4%
Turn Type	pm+pt	NA			NA		Perm	NA	Perm	D.Pm		Perm
Protected Phases	1	2			2			4				
Permitted Phases	2	1					4		4	4		4
Actuated Green, G (s)	50.2	50.2			42.0		28.4	28.4	28.4			28.4
Effective Green, g (s)	52.2	52.2			43.0		29.4	29.4	29.4			29.4
Actuated g/C Ratio	0.55	0.55			0.45		0.31	0.31	0.31			0.31
Clearance Time (s)	3.0	6.0			6.0		7.0	7.0	7.0			7.0
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	522	2707			2209		521	494	466			477
v/s Ratio Prot	0.02	c0.20			0.11							
v/s Ratio Perm	0.10	0.04					0.10	0.28	0.24			0.05
v/c Ratio	0.23	0.43			0.24		0.32	0.90	0.76			0.18
Uniform Delay, d1	10.2	12.5			15.8		25.0	31.3	29.5			23.8
Progression Factor	1.00	1.00			1.00		1.00	1.00	1.00			1.00
Incremental Delay, d2	0.2	0.1			0.3		0.4	19.9	7.3			0.2
Delay (s)	10.4	12.6			16.1		25.4	51.1	36.7			23.9
Level of Service	B	B			B		C	D	D			C
Approach Delay (s)		12.4			16.1			41.3			23.9	
Approach LOS		B			B			D			C	

Intersection Summary				
HCM 2000 Control Delay	23.6	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.60			
Actuated Cycle Length (s)	94.6	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	70.1%	ICU Level of Service	C	
Analysis Period (min)	15			
Description: OPTIMIZED				
c Critical Lane Group				

HCM Unsignalized Intersection Capacity Analysis
45: Marley Road & Warwick Drive

FBAM
09/20/2017



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	15	15	10	5	15	25
Future Volume (Veh/h)	15	15	10	5	15	25
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.57	0.57	0.57	0.57	0.57	0.57
Hourly flow rate (vph)	26	26	18	9	26	44
Pedestrians			1		11	
Lane Width (m)			3.5		3.5	
Walking Speed (m/s)			1.2		1.2	
Percent Blockage			0		1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	38				112	34
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	38				112	34
tC, single (s)	4.2				6.5	6.2
tC, 2 stage (s)						
tF (s)	2.3				3.6	3.3
p0 queue free %	98				97	96
cM capacity (veh/h)	1533				851	1025

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	52	27	70
Volume Left	26	0	26
Volume Right	0	9	44
cSH	1533	1700	953
Volume to Capacity	0.02	0.02	0.07
Queue Length 95th (m)	0.4	0.0	1.9
Control Delay (s)	3.8	0.0	9.1
Lane LOS	A		A
Approach Delay (s)	3.8	0.0	9.1
Approach LOS			A

Intersection Summary				
Average Delay	5.6			
Intersection Capacity Utilization	18.3%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Signalized Intersection Capacity Analysis
3: King Road & Plains Road E

FBPM
09/20/2017



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	690	70	100	1345	175	170	160	65	305	255	145
Future Volume (vph)	90	690	70	100	1345	175	170	160	65	305	255	145
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.0	5.0	3.0	5.0		3.0	6.0		3.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.95	1.00	0.99		1.00	0.99		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		0.99	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1767	3466	1520	1763	3456		1750	1732		1758	1879	1581
Flt Permitted	0.08	1.00	1.00	0.30	1.00		0.31	1.00		0.39	1.00	1.00
Satd. Flow (perm)	140	3466	1520	558	3456		577	1732		713	1879	1581
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	93	711	72	103	1387	180	175	165	67	314	263	149
RTOR Reduction (vph)	0	0	39	0	8	0	0	12	0	0	0	122
Lane Group Flow (vph)	93	711	33	103	1559	0	175	220	0	314	263	27
Confl. Peds. (#/hr)	13		15	15		13			24	24		
Heavy Vehicles (%)	1%	3%	0%	1%	1%	1%	2%	2%	3%	1%	0%	1%
Bus Blockages (#/hr)	0	0	0	0	0	6	0	0	2	0	0	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6			4			8		8
Actuated Green, G (s)	60.2	52.1	52.1	60.6	52.3		33.0	20.0		33.0	20.0	20.0
Effective Green, g (s)	62.2	53.1	53.1	62.6	53.3		35.0	21.0		35.0	21.0	21.0
Actuated g/C Ratio	0.54	0.46	0.46	0.55	0.47		0.31	0.18		0.31	0.18	0.18
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0		4.0	7.0		4.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	205	1608	705	403	1610		320	317		346	344	290
v/s Ratio Prot	c0.04	0.21		0.02	c0.45		0.07	0.13		c0.11	0.14	
v/s Ratio Perm	0.21		0.02	0.12			0.10			c0.17		0.02
v/c Ratio	0.45	0.44	0.05	0.26	0.97		0.55	0.69		0.91	0.76	0.09
Uniform Delay, d1	22.9	20.7	16.8	13.1	29.7		31.1	43.7		35.5	44.4	38.8
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.6	0.9	0.1	0.3	16.1		1.9	6.4		26.3	9.7	0.1
Delay (s)	24.5	21.5	16.9	13.4	45.8		33.0	50.1		61.8	54.1	38.9
Level of Service	C	C	B	B	D		C	D		E	D	D
Approach Delay (s)		21.5			43.8			42.8			54.3	
Approach LOS		C			D			D			D	

Intersection Summary				
HCM 2000 Control Delay	40.4	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.90			
Actuated Cycle Length (s)	114.4	Sum of lost time (s)	17.0	
Intersection Capacity Utilization	93.7%	ICU Level of Service	F	
Analysis Period (min)	15			
Description: OPTIMIZED				

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
6: King Road & Townsend Avenue

FBPM
09/20/2017



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	30	55	60	340	380	40
Future Volume (Veh/h)	30	55	60	340	380	40
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	32	58	63	358	400	42
Pedestrians				2		
Lane Width (m)				3.5		
Walking Speed (m/s)				1.2		
Percent Blockage				0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)					302	
pX, platoon unblocked	0.87	0.87	0.87			
vC, conflicting volume	905	423	442			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	819	267	288			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	89	91	94			
cM capacity (veh/h)	287	669	1112			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	90	63	358	442
Volume Left	32	63	0	0
Volume Right	58	0	0	42
cSH	454	1112	1700	1700
Volume to Capacity	0.20	0.06	0.21	0.26
Queue Length 95th (m)	5.8	1.4	0.0	0.0
Control Delay (s)	14.9	8.4	0.0	0.0
Lane LOS	B	A		
Approach Delay (s)	14.9	1.3		0.0
Approach LOS	B			

Intersection Summary				
Average Delay	2.0			
Intersection Capacity Utilization	41.5%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	50	350	10	90	345
Future Volume (Veh/h)	5	50	350	10	90	345
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	5	53	372	11	96	367
Pedestrians	3					
Lane Width (m)	3.5					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						401
pX, platoon unblocked	0.96					
vC, conflicting volume	940	380			386	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	917	380			386	
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	92			92	
cM capacity (veh/h)	268	661			1175	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	58	383	96	367
Volume Left	5	0	96	0
Volume Right	53	11	0	0
cSH	587	1700	1175	1700
Volume to Capacity	0.10	0.23	0.08	0.22
Queue Length 95th (m)	2.6	0.0	2.1	0.0
Control Delay (s)	11.8	0.0	8.3	0.0
Lane LOS	B		A	
Approach Delay (s)	11.8	0.0	1.7	
Approach LOS	B			

Intersection Summary				
Average Delay		1.6		
Intersection Capacity Utilization		37.4%	ICU Level of Service	A
Analysis Period (min)		15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	995	345	0	1695	0	0	0	0	390	0	180
Future Volume (vph)	0	995	345	0	1695	0	0	0	0	390	0	180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0					6.0		6.0
Lane Util. Factor		0.91	1.00		0.91					0.97		1.00
Frpb, ped/bikes		1.00	0.96		1.00					1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00					1.00		1.00
Frt		1.00	0.85		1.00					1.00		0.85
Flt Protected		1.00	1.00		1.00					0.95		1.00
Satd. Flow (prot)		5029	1498		5079					3429		1566
Flt Permitted		1.00	1.00		1.00					0.95		1.00
Satd. Flow (perm)		5029	1498		5079					3429		1566
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	1015	352	0	1730	0	0	0	0	398	0	184
RTOR Reduction (vph)	0	0	92	0	0	0	0	0	0	0	0	34
Lane Group Flow (vph)	0	1015	260	0	1730	0	0	0	0	398	0	150
Confl. Peds. (#/hr)			14	14			1					1
Heavy Vehicles (%)	0%	2%	2%	0%	1%	0%	0%	0%	0%	1%	0%	2%
Turn Type		NA	Perm		NA					Prot		Prot
Protected Phases		2			6					8		8
Permitted Phases			2									
Actuated Green, G (s)		84.1	84.1		84.1					18.3		18.3
Effective Green, g (s)		85.1	85.1		85.1					19.3		19.3
Actuated g/C Ratio		0.74	0.74		0.74					0.17		0.17
Clearance Time (s)		6.0	6.0		6.0					7.0		7.0
Vehicle Extension (s)		3.0	3.0		3.0					3.0		3.0
Lane Grp Cap (vph)		3708	1104		3745					573		261
v/s Ratio Prot		0.20			c0.34					c0.12		0.10
v/s Ratio Perm			0.17									
v/c Ratio		0.27	0.24		0.46					0.69		0.57
Uniform Delay, d1		5.0	4.8		6.0					45.3		44.3
Progression Factor		1.00	1.00		1.00					1.00		1.00
Incremental Delay, d2		0.2	0.5		0.4					3.6		3.0
Delay (s)		5.2	5.3		6.4					48.9		47.3
Level of Service		A	A		A					D		D
Approach Delay (s)		5.2			6.4			0.0			48.4	
Approach LOS		A			A			A			D	

Intersection Summary					
HCM 2000 Control Delay		12.6	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio		0.50			
Actuated Cycle Length (s)		115.4	Sum of lost time (s)	11.0	
Intersection Capacity Utilization		53.2%	ICU Level of Service	A	
Analysis Period (min)		15			

c Critical Lane Group



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	25	335	5	25	320
Future Volume (Veh/h)	5	25	335	5	25	320
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	5	27	368	5	27	352
Pedestrians	2					
Lane Width (m)	3.5					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	778	372			375	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	778	372			375	
tC, single (s)	6.4	6.2			4.3	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.4	
p0 queue free %	99	96			98	
cM capacity (veh/h)	358	677			1089	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	32	373	379
Volume Left	5	0	27
Volume Right	27	5	0
cSH	594	1700	1089
Volume to Capacity	0.05	0.22	0.02
Queue Length 95th (m)	1.4	0.0	0.6
Control Delay (s)	11.4	0.0	0.8
Lane LOS	B		A
Approach Delay (s)	11.4	0.0	0.8
Approach LOS	B		

Intersection Summary				
Average Delay		0.9		
Intersection Capacity Utilization		47.5%	ICU Level of Service	A
Analysis Period (min)		15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	10	0	5	20	15	0	0	5	10	0	5
Future Volume (Veh/h)	5	10	0	5	20	15	0	0	5	10	0	5
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55
Hourly flow rate (vph)	9	18	0	9	36	27	0	0	9	18	0	9
Pedestrians		41			2			1			4	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		3			0			0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	67			19			154	122	21	118	108	94
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	67			19			154	122	21	118	108	94
tC, single (s)	4.1			4.2			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			100	100	99	98	100	99
cM capacity (veh/h)	1542			1552			772	760	1060	840	773	933

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	27	72	9	27
Volume Left	9	9	0	18
Volume Right	0	27	9	9
cSH	1542	1552	1060	869
Volume to Capacity	0.01	0.01	0.01	0.03
Queue Length 95th (m)	0.1	0.1	0.2	0.8
Control Delay (s)	2.5	1.0	8.4	9.3
Lane LOS	A	A	A	A
Approach Delay (s)	2.5	1.0	8.4	9.3
Approach LOS			A	A

Intersection Summary				
Average Delay		3.4		
Intersection Capacity Utilization		23.4%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis FBPM
12: King Road & Cedar Avenue 09/20/2017



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	0	0	20	0	0	10	15	320	5	15	305	5
Future Volume (Veh/h)	0	0	20	0	0	10	15	320	5	15	305	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	21	0	0	11	16	340	5	16	324	5
Pedestrians					1			4			1	
Lane Width (m)					3.5			3.5			3.5	
Walking Speed (m/s)					1.2			1.2			1.2	
Percent Blockage					0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	745	736	330	759	736	344	329			346		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	745	736	330	759	736	344	329			346		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	97	100	100	98	99			99		
cM capacity (veh/h)	321	339	702	308	339	702	1242			1223		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	21	11	361	345
Volume Left	0	0	16	16
Volume Right	21	11	5	5
cSH	702	702	1242	1223
Volume to Capacity	0.03	0.02	0.01	0.01
Queue Length 95th (m)	0.7	0.4	0.3	0.3
Control Delay (s)	10.3	10.2	0.5	0.5
Lane LOS	B	B	A	A
Approach Delay (s)	10.3	10.2	0.5	0.5
Approach LOS	B	B		

Intersection Summary					
Average Delay			0.9		
Intersection Capacity Utilization			33.7%	ICU Level of Service	A
Analysis Period (min)			15		

HCM Unsignalized Intersection Capacity Analysis FBPM
13: Francis Road & Cedar Avenue 09/20/2017



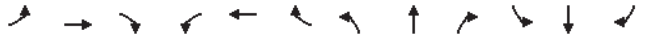
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	5	5	5	0	0	10	5	100	5	15	85	5
Future Volume (Veh/h)	5	5	5	0	0	10	5	100	5	15	85	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	6	6	6	0	0	11	6	111	6	17	94	6
Pedestrians		8			8			2			1	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		1			1			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	277	276	107	276	276	123	108			125		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	277	276	107	276	276	123	108			125		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	99	99	100	100	99	100			99		
cM capacity (veh/h)	652	617	945	651	617	927	1486			1465		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	18	11	123	117
Volume Left	6	0	6	17
Volume Right	6	11	6	6
cSH	712	927	1486	1465
Volume to Capacity	0.03	0.01	0.00	0.01
Queue Length 95th (m)	0.6	0.3	0.1	0.3
Control Delay (s)	10.2	8.9	0.4	1.2
Lane LOS	B	A	A	A
Approach Delay (s)	10.2	8.9	0.4	1.2
Approach LOS	B	A		

Intersection Summary					
Average Delay			1.7		
Intersection Capacity Utilization			23.8%	ICU Level of Service	A
Analysis Period (min)			15		

HCM Signalized Intersection Capacity Analysis
19: Francis Road/Designers Way & Plains Road E/Plains Road East

FBPM
09/20/2017



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	120	895	35	205	1350	20	30	40	125	325	60	240
Future Volume (vph)	120	895	35	205	1350	20	30	40	125	325	60	240
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.0		3.0	5.0		6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00		1.00	0.89		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	0.97	1.00
Satd. Flow (prot)	1785	3469		1766	3525		1785	1640		1696	1726	1452
Flt Permitted	0.10	1.00		0.14	1.00		0.95	1.00		0.95	0.97	1.00
Satd. Flow (perm)	184	3469		269	3525		1785	1640		1696	1726	1452
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	124	923	36	211	1392	21	31	41	129	335	62	247
RTOR Reduction (vph)	0	2	0	0	1	0	0	97	0	0	0	202
Lane Group Flow (vph)	124	957	0	211	1412	0	31	73	0	198	199	45
Confl. Peds. (#/hr)	12		19	19		12	43					43
Heavy Vehicles (%)	0%	2%	6%	1%	1%	0%	0%	0%	2%	0%	0%	1%
Bus Blockages (#/hr)	0	0	8	0	0	6	0	0	0	0	0	0
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA		custom	NA	Perm
Protected Phases	5	2		1	6		4	4		8	8	
Permitted Phases	2			6						8		8
Actuated Green, G (s)	47.7	39.9		56.2	44.4		10.0	10.0		17.8	17.8	17.8
Effective Green, g (s)	49.7	40.9		57.2	45.4		11.0	11.0		18.8	18.8	18.8
Actuated g/C Ratio	0.48	0.39		0.55	0.44		0.11	0.11		0.18	0.18	0.18
Clearance Time (s)	4.0	6.0		4.0	6.0		7.0	7.0		7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	223	1364		339	1538		188	173		306	312	262
v/s Ratio Prot	0.05	0.28		c0.08	c0.40		0.02	c0.04		c0.12	0.12	
v/s Ratio Perm	0.22			0.26								0.03
v/c Ratio	0.56	0.70		0.62	0.92		0.16	0.42		0.65	0.64	0.17
Uniform Delay, d1	20.9	26.4		15.9	27.6		42.3	43.5		39.5	39.4	36.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	3.0	3.0		3.5	10.3		0.4	1.7		4.7	4.2	0.3
Delay (s)	23.9	29.5		19.4	37.8		42.7	45.2		44.2	43.7	36.3
Level of Service	C	C		B	D		D	D		D	D	D
Approach Delay (s)		28.8			35.5			44.8			41.0	
Approach LOS		C			D			D			D	

Intersection Summary				
HCM 2000 Control Delay	35.0	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.77			
Actuated Cycle Length (s)	104.0	Sum of lost time (s)	20.0	
Intersection Capacity Utilization	82.5%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				

HCM Signalized Intersection Capacity Analysis
22: QEW NB Off-Ramp & North Shore Boulevard E

FBPM
09/20/2017



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER
Lane Configurations											
Traffic Volume (vph)	0	455	75	0	1425	300	205	0	505	0	0
Future Volume (vph)	0	455	75	0	1425	300	205	0	505	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		6.0		6.0		
Lane Util. Factor		0.95			0.95		1.00		1.00		
Frpb, ped/bikes		1.00			1.00		1.00		1.00		
Flpb, ped/bikes		1.00			1.00		1.00		1.00		
Frt		0.98			0.97		1.00		0.85		
Flt Protected		1.00			1.00		0.95		1.00		
Satd. Flow (prot)		3437			3417		1767		1597		
Flt Permitted		1.00			1.00		0.95		1.00		
Satd. Flow (perm)		3437			3417		1767		1597		
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	479	79	0	1500	316	216	0	532	0	0
RTOR Reduction (vph)	0	10	0	0	14	0	0	0	0	0	0
Lane Group Flow (vph)	0	548	0	0	1802	0	216	0	532	0	0
Confl. Peds. (#/hr)	2		4	4		2					
Heavy Vehicles (%)	0%	1%	3%	0%	1%	3%	1%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	2	0	0	0	0	0
Turn Type		NA			NA		Prot		custom		
Protected Phases		2			6		4		4		
Permitted Phases									2		
Actuated Green, G (s)		85.1			85.1		18.3		103.4		
Effective Green, g (s)		86.1			86.1		19.3		105.4		
Actuated g/C Ratio		0.74			0.74		0.17		0.91		
Clearance Time (s)		6.0			6.0		7.0		7.0		
Vehicle Extension (s)		3.0			3.0		3.0		3.0		
Lane Grp Cap (vph)		2542			2527		292		1528		
v/s Ratio Prot		0.16			c0.53		c0.12		0.06		
v/s Ratio Perm									0.28		
v/c Ratio		0.22			0.71		0.74		0.35		
Uniform Delay, d1		4.7			8.3		46.2		0.8		
Progression Factor		1.00			1.00		1.00		1.00		
Incremental Delay, d2		0.2			1.0		9.4		0.1		
Delay (s)		4.9			9.3		55.6		0.9		
Level of Service		A			A		E		A		
Approach Delay (s)		4.9			9.3			16.7		0.0	
Approach LOS		A			A			B		A	

Intersection Summary				
HCM 2000 Control Delay	10.3	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.72			
Actuated Cycle Length (s)	116.4	Sum of lost time (s)	11.0	
Intersection Capacity Utilization	71.3%	ICU Level of Service	C	
Analysis Period (min)	15			
Description: OPTIMIZED				
c Critical Lane Group				



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	385	630	120	55	10
Future Volume (Veh/h)	5	385	630	120	55	10
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	5	414	677	129	59	11
Pedestrians					6	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			358			
pX, platoon unblocked	0.74				0.74	0.74
vC, conflicting volume	812				1172	748
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	565				1054	477
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				67	97
cM capacity (veh/h)	745				181	433

Direction, Lane #	EB 1	WB 1	SB 1	SB 2
Volume Total	419	806	59	11
Volume Left	5	0	59	0
Volume Right	0	129	0	11
cSH	745	1700	181	433
Volume to Capacity	0.01	0.47	0.33	0.03
Queue Length 95th (m)	0.2	0.0	10.7	0.6
Control Delay (s)	0.2	0.0	34.3	13.5
Lane LOS	A		D	B
Approach Delay (s)	0.2	0.0	31.1	
Approach LOS			D	

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	50.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	105	340	675	965	190	110
Future Volume (vph)	105	340	675	965	190	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1767	1845	1860	1531	1767	1581
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1767	1845	1860	1531	1767	1581
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	112	362	718	1027	202	117
RTOR Reduction (vph)	0	0	0	302	0	98
Lane Group Flow (vph)	112	362	718	725	202	19
Confl. Peds. (#/hr)	2			2		1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Bus Blockages (#/hr)	0	2	0	2	0	0
Turn Type	Prot	NA	NA	Perm	Prot	Prot
Protected Phases	5	2	6		8	8
Permitted Phases				6		
Actuated Green, G (s)	10.3	85.1	71.8	71.8	17.5	17.5
Effective Green, g (s)	11.3	86.1	72.8	72.8	18.5	18.5
Actuated g/C Ratio	0.10	0.74	0.62	0.62	0.16	0.16
Clearance Time (s)	3.0	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	171	1362	1161	955	280	250
v/s Ratio Prot	c0.06	0.20	0.39		c0.11	0.01
v/s Ratio Perm				c0.47		
v/c Ratio	0.65	0.27	0.62	0.76	0.72	0.07
Uniform Delay, d1	50.8	5.0	13.4	15.6	46.6	41.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.7	0.5	2.5	5.7	8.8	0.1
Delay (s)	59.5	5.4	15.9	21.3	55.4	41.9
Level of Service	E	A	B	C	E	D
Approach Delay (s)		18.2	19.1		50.5	
Approach LOS		B	B		D	

Intersection Summary				
HCM 2000 Control Delay	22.9	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.74			
Actuated Cycle Length (s)	116.6	Sum of lost time (s)	14.0	
Intersection Capacity Utilization	74.1%	ICU Level of Service	D	
Analysis Period (min)	15			
Description: OPTIMIZED				

c Critical Lane Group



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	70	10	10	120	145	155
Future Volume (Veh/h)	70	10	10	120	145	155
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	76	11	11	130	158	168
Pedestrians	2			5	4	
Lane Width (m)	3.5			3.5	3.5	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)					219	
pX, platoon unblocked	0.94	0.94	0.94			
vC, conflicting volume	400	249	328			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	334	174	258			
tC, single (s)	6.4	6.3	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.4	2.4			
p0 queue free %	88	99	99			
cM capacity (veh/h)	617	794	1139			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	87	141	326
Volume Left	76	11	0
Volume Right	11	0	168
cSH	634	1139	1700
Volume to Capacity	0.14	0.01	0.19
Queue Length 95th (m)	3.8	0.2	0.0
Control Delay (s)	11.6	0.7	0.0
Lane LOS	B	A	
Approach Delay (s)	11.6	0.7	0.0
Approach LOS	B		

Intersection Summary				
Average Delay		2.0		
Intersection Capacity Utilization		29.8%	ICU Level of Service	A
Analysis Period (min)		15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	70	80	30	35	40	15
Future Volume (vph)	70	80	30	35	40	15
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	78	89	33	39	44	17

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	167	72	61
Volume Left (vph)	78	0	44
Volume Right (vph)	89	39	0
Hadj (s)	-0.20	-0.27	0.14
Departure Headway (s)	4.0	4.1	4.5
Degree Utilization, x	0.19	0.08	0.08
Capacity (veh/h)	873	844	771
Control Delay (s)	7.9	7.4	7.8
Approach Delay (s)	7.9	7.4	7.8
Approach LOS	A	A	A

Intersection Summary				
Delay		7.8		
Level of Service		A		
Intersection Capacity Utilization		26.7%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis
35: Warwick Drive & Surrey Lane

FBPM
09/20/2017



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	60	15	5	15	15	65
Future Volume (Veh/h)	60	15	5	15	15	65
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	72	18	6	18	18	78
Pedestrians	9				2	
Lane Width (m)	3.5				3.5	
Walking Speed (m/s)	1.2				1.2	
Percent Blockage	1				0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	98	66	105			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	98	66	105			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	92	98	100			
cM capacity (veh/h)	889	996	1488			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	90	24	96
Volume Left	72	6	0
Volume Right	18	0	78
cSH	909	1488	1700
Volume to Capacity	0.10	0.00	0.06
Queue Length 95th (m)	2.6	0.1	0.0
Control Delay (s)	9.4	1.9	0.0
Lane LOS	A	A	
Approach Delay (s)	9.4	1.9	0.0
Approach LOS	A		

Intersection Summary				
Average Delay		4.2		
Intersection Capacity Utilization	18.5%	ICU Level of Service	A	
Analysis Period (min)	15			

HCM Signalized Intersection Capacity Analysis
36: QEW NB Off-Ramp & Fairview Street

FBPM
09/20/2017



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	1265	75	0	2150	5	115	175	340	5	0	540
Future Volume (vph)	95	1265	75	0	2150	5	115	175	340	5	0	540
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	5.0			5.0		6.0	6.0	6.0	6.0		6.0
Lane Util. Factor	1.00	0.91			0.91		0.95	0.91	0.95	1.00		1.00
Frpb, ped/bikes	1.00	1.00			1.00		1.00	1.00	1.00	1.00		1.00
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00	1.00	1.00		1.00
Frt	1.00	0.99			1.00		1.00	0.95	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00		0.95	1.00	1.00	0.95		1.00
Satd. Flow (prot)	1733	5022			5077		1662	1615	1502	1785		1597
Flt Permitted	0.06	1.00			1.00		0.95	1.00	1.00	0.34		1.00
Satd. Flow (perm)	116	5022			5077		1662	1615	1502	643		1597
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	97	1291	77	0	2194	5	117	179	347	5	0	551
RTOR Reduction (vph)	0	6	0	0	0	0	0	15	55	0	0	142
Lane Group Flow (vph)	97	1362	0	0	2199	0	105	270	198	5	0	409
Confl. Peds. (#/hr)	3		19	19		3						
Heavy Vehicles (%)	3%	1%	0%	0%	1%	0%	2%	0%	1%	0%	0%	0%
Turn Type	pm+pt	NA			NA		Perm	NA	Perm	D.Pm		Perm
Protected Phases	1	2			2			4				
Permitted Phases	2	1					4		4	4		4
Actuated Green, G (s)	70.4	70.4			62.0		29.0	29.0	29.0	29.0		29.0
Effective Green, g (s)	72.4	72.4			63.0		30.0	30.0	30.0	30.0		30.0
Actuated g/C Ratio	0.63	0.63			0.55		0.26	0.26	0.26	0.26		0.26
Clearance Time (s)	3.0	6.0			6.0		7.0	7.0	7.0	7.0		7.0
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	204	3150			2771		432	419	390	167		415
v/s Ratio Prot	c0.04	0.24			c0.43							
v/s Ratio Perm	0.26	0.04					0.06	0.17	0.13	0.01		c0.26
v/c Ratio	0.48	0.43			0.79		0.24	0.64	0.51	0.03		0.99
Uniform Delay, d1	17.7	11.0			21.0		33.7	38.0	36.4	31.8		42.5
Progression Factor	1.00	1.00			1.00		1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	1.7	0.1			1.6		0.3	3.4	1.0	0.1		40.0
Delay (s)	19.4	11.1			22.6		34.0	41.4	37.5	31.9		82.5
Level of Service	B	B			C		C	D	D	C		F
Approach Delay (s)		11.6			22.6			38.6			82.0	
Approach LOS		B			C			D			F	

Intersection Summary					
HCM 2000 Control Delay	28.2	HCM 2000 Level of Service		C	
HCM 2000 Volume to Capacity ratio	0.82				
Actuated Cycle Length (s)	115.4	Sum of lost time (s)		13.0	
Intersection Capacity Utilization	100.5%	ICU Level of Service		G	
Analysis Period (min)	15				

c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	20	25	15	5	10
Future Volume (Veh/h)	5	20	25	15	5	10
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.57	0.57	0.57	0.57	0.57	0.57
Hourly flow rate (vph)	9	35	44	26	9	18
Pedestrians			1		11	
Lane Width (m)			3.5		3.5	
Walking Speed (m/s)			1.2		1.2	
Percent Blockage			0		1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	81				122	68
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	81				122	68
tC, single (s)	4.2				6.5	6.2
tC, 2 stage (s)						
tF (s)	2.3				3.6	3.3
p0 queue free %	99				99	98
cM capacity (veh/h)	1478				850	981

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	44	70	27
Volume Left	9	0	9
Volume Right	0	26	18
cSH	1478	1700	933
Volume to Capacity	0.01	0.04	0.03
Queue Length 95th (m)	0.1	0.0	0.7
Control Delay (s)	1.6	0.0	9.0
Lane LOS	A		A
Approach Delay (s)	1.6	0.0	9.0
Approach LOS			A

Intersection Summary				
Average Delay		2.2		
Intersection Capacity Utilization	16.4%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	475	0	0	1605	0	5
Future Volume (Veh/h)	475	0	0	1605	0	5
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	505	0	0	1707	0	5
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	62			257		
pX, platoon unblocked						
vC, conflicting volume			505		1358	252
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			505		1358	252
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	99
cM capacity (veh/h)			1070		142	753

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	252	252	854	854	5
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	5
cSH	1700	1700	1700	1700	753
Volume to Capacity	0.15	0.15	0.50	0.50	0.01
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.2
Control Delay (s)	0.0	0.0	0.0	0.0	9.8
Lane LOS					A
Approach Delay (s)	0.0		0.0		9.8
Approach LOS					A

Intersection Summary				
Average Delay		0.0		
Intersection Capacity Utilization	47.7%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	780	105	45	490	175	160	310	85	175	125	60
Future Volume (vph)	125	780	105	45	490	175	160	310	85	175	125	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.0	5.0	3.0	5.0		3.0	6.0		3.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.96	1.00	0.99		1.00	0.99		1.00	1.00	0.99
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.96		1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1766	3466	1494	1682	3236		1731	1771		1652	1807	1528
Flt Permitted	0.28	1.00	1.00	0.26	1.00		0.67	1.00		0.16	1.00	1.00
Satd. Flow (perm)	519	3466	1494	458	3236		1219	1771		282	1807	1528
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	133	830	112	48	521	186	170	330	90	186	133	64
RTOR Reduction (vph)	0	0	61	0	35	0	0	10	0	0	0	48
Lane Group Flow (vph)	133	830	51	48	672	0	170	410	0	186	133	16
Confl. Peds. (#/hr)	8		10	10		8	2		13	13		2
Heavy Vehicles (%)	1%	3%	3%	6%	4%	8%	3%	1%	6%	8%	4%	3%
Bus Blockages (#/hr)	0	0	0	0	0	6	0	0	2	0	0	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6			4			8		8
Actuated Green, G (s)	51.0	45.0	45.0	46.2	42.6		31.7	23.7		31.7	23.7	23.7
Effective Green, g (s)	53.0	46.0	46.0	48.2	43.6		33.7	24.7		33.7	24.7	24.7
Actuated g/C Ratio	0.52	0.45	0.45	0.48	0.43		0.33	0.24		0.33	0.24	0.24
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0		4.0	7.0		4.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	357	1573	678	273	1392		451	431		215	440	372
v/s Ratio Prot	c0.03	c0.24		0.01	0.21		0.03	c0.23		c0.08	0.07	
v/s Ratio Perm	0.17		0.03	0.08			0.09			0.21		0.01
v/c Ratio	0.37	0.53	0.08	0.18	0.48		0.38	0.95		0.87	0.30	0.04
Uniform Delay, d1	13.4	19.9	15.6	14.9	20.7		25.0	37.7		27.3	31.3	29.3
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.7	1.3	0.2	0.3	1.2		0.5	31.1		28.4	0.4	0.0
Delay (s)	14.0	21.1	15.8	15.2	21.9		25.5	68.8		55.7	31.7	29.3
Level of Service	B	C	B	B	C		C	E		E	C	C
Approach Delay (s)		19.7			21.5			56.4			42.9	
Approach LOS		B			C			E			D	

Intersection Summary				
HCM 2000 Control Delay	31.1	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.69			
Actuated Cycle Length (s)	101.3	Sum of lost time (s)	17.0	
Intersection Capacity Utilization	79.2%	ICU Level of Service	D	
Analysis Period (min)	15			
Description: OPTIMIZED				

c Critical Lane Group



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	25	35	40	510	245	10
Future Volume (Veh/h)	25	35	40	510	245	10
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	27	38	43	548	263	11
Pedestrians				2		
Lane Width (m)				3.5		
Walking Speed (m/s)				1.2		
Percent Blockage				0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)					302	
pX, platoon unblocked	1.00	1.00	1.00			
vC, conflicting volume	902	270	274			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	902	269	273			
tC, single (s)	6.4	6.3	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.4	2.2			
p0 queue free %	91	95	97			
cM capacity (veh/h)	295	753	1289			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	65	43	548	274
Volume Left	27	43	0	0
Volume Right	38	0	0	11
cSH	458	1289	1700	1700
Volume to Capacity	0.14	0.03	0.32	0.16
Queue Length 95th (m)	3.9	0.8	0.0	0.0
Control Delay (s)	14.2	7.9	0.0	0.0
Lane LOS	B	A		
Approach Delay (s)	14.2	0.6		0.0
Approach LOS	B			

Intersection Summary				
Average Delay	1.4			
Intersection Capacity Utilization	37.8%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	65	130	415	30	65	215
Future Volume (Veh/h)	65	130	415	30	65	215
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	67	134	428	31	67	222
Pedestrians	3					
Lane Width (m)	3.5					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						401
pX, platoon unblocked						
vC, conflicting volume	802	446			462	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	802	446			462	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	80	78			94	
cM capacity (veh/h)	333	606			1081	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	201	459	67	222
Volume Left	67	0	67	0
Volume Right	134	31	0	0
cSH	476	1700	1081	1700
Volume to Capacity	0.42	0.27	0.06	0.13
Queue Length 95th (m)	16.5	0.0	1.6	0.0
Control Delay (s)	18.0	0.0	8.6	0.0
Lane LOS	C		A	
Approach Delay (s)	18.0	0.0	2.0	
Approach LOS	C			

Intersection Summary				
Average Delay	4.4			
Intersection Capacity Utilization	48.9%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1190	135	0	845	0	0	0	0	165	0	95
Future Volume (vph)	0	1190	135	0	845	0	0	0	0	165	0	95
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0					6.0		6.0
Lane Util. Factor		0.91	1.00		0.91					0.97		1.00
Frpb, ped/bikes		1.00	0.97		1.00					1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00					1.00		1.00
Frt		1.00	0.85		1.00					1.00		0.85
Flt Protected		1.00	1.00		1.00					0.95		1.00
Satd. Flow (prot)		4980	1483		4980					3429		1493
Flt Permitted		1.00	1.00		1.00					0.95		1.00
Satd. Flow (perm)		4980	1483		4980					3429		1493
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	0	1266	144	0	899	0	0	0	0	176	0	101
RTOR Reduction (vph)	0	0	34	0	0	0	0	0	0	0	0	89
Lane Group Flow (vph)	0	1266	110	0	899	0	0	0	0	176	0	12
Confl. Peds. (#/hr)	2		4	4		2	1					1
Heavy Vehicles (%)	0%	3%	5%	0%	3%	0%	0%	0%	0%	1%	0%	7%
Turn Type		NA	Perm		NA					Prot		Prot
Protected Phases		2			6					8		8
Permitted Phases			2									
Actuated Green, G (s)		69.0	69.0		69.0					10.0		10.0
Effective Green, g (s)		70.0	70.0		70.0					11.0		11.0
Actuated g/C Ratio		0.76	0.76		0.76					0.12		0.12
Clearance Time (s)		6.0	6.0		6.0					7.0		7.0
Vehicle Extension (s)		3.0	3.0		3.0					3.0		3.0
Lane Grp Cap (vph)		3789	1128		3789					409		178
v/s Ratio Prot		c0.25			0.18					c0.05		0.01
v/s Ratio Perm			0.07									
v/c Ratio		0.33	0.10		0.24					0.43		0.07
Uniform Delay, d1		3.5	2.8		3.2					37.6		35.9
Progression Factor		1.00	1.00		1.00					1.00		1.00
Incremental Delay, d2		0.2	0.2		0.1					0.7		0.2
Delay (s)		3.8	3.0		3.4					38.3		36.1
Level of Service		A	A		A					D		D
Approach Delay (s)		3.7			3.4			0.0			37.5	
Approach LOS		A			A			A			D	

Intersection Summary					
HCM 2000 Control Delay	7.2	HCM 2000 Level of Service		A	
HCM 2000 Volume to Capacity ratio	0.35				
Actuated Cycle Length (s)	92.0	Sum of lost time (s)		11.0	
Intersection Capacity Utilization	43.5%	ICU Level of Service		A	
Analysis Period (min)	15				

c Critical Lane Group



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	25	35	410	20	20	255
Future Volume (Veh/h)	25	35	410	20	20	255
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	27	38	451	22	22	280
Pedestrians	2					
Lane Width (m)	3.5					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	788	464			475	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	788	464			475	
tC, single (s)	6.4	6.2			4.3	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.4	
p0 queue free %	92	94			98	
cM capacity (veh/h)	354	601			998	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	65	473	302
Volume Left	27	0	22
Volume Right	38	22	0
cSH	466	1700	998
Volume to Capacity	0.14	0.28	0.02
Queue Length 95th (m)	3.9	0.0	0.5
Control Delay (s)	14.0	0.0	0.8
Lane LOS	B		A
Approach Delay (s)	14.0	0.0	0.8
Approach LOS	B		

Intersection Summary				
Average Delay		1.4		
Intersection Capacity Utilization		40.1%	ICU Level of Service	A
Analysis Period (min)		15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	15	30	0	25	35	15	5	0	15	20	0	25
Future Volume (vph)	15	30	0	25	35	15	5	0	15	20	0	25
Peak Hour Factor	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55
Hourly flow rate (vph)	27	55	0	45	64	27	9	0	27	36	0	45

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	82	136	36	81
Volume Left (vph)	27	45	9	36
Volume Right (vph)	0	27	27	45
Hadj (s)	0.44	0.00	-0.40	-0.24
Departure Headway (s)	4.7	4.3	4.1	4.2
Degree Utilization, x	0.11	0.16	0.04	0.09
Capacity (veh/h)	733	821	822	802
Control Delay (s)	8.3	8.1	7.3	7.6
Approach Delay (s)	8.3	8.1	7.3	7.6
Approach LOS	A	A	A	A

Intersection Summary				
Delay		7.9		
Level of Service		A		
Intersection Capacity Utilization		24.8%	ICU Level of Service	A
Analysis Period (min)		15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	5	0	10	5	0	25	5	395	5	5	270	0
Future Volume (Veh/h)	5	0	10	5	0	25	5	395	5	5	270	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	6	0	11	6	0	28	6	444	6	6	303	0
Pedestrians		1			3			2			1	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	804	781	306	790	778	451	304			453		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	804	781	306	790	778	451	304			453		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	100	99	98	100	95	100			99		
cM capacity (veh/h)	286	324	737	301	326	611	1267			1116		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	17	34	456	309
Volume Left	6	6	6	6
Volume Right	11	28	6	0
cSH	474	517	1267	1116
Volume to Capacity	0.04	0.07	0.00	0.01
Queue Length 95th (m)	0.9	1.7	0.1	0.1
Control Delay (s)	12.9	12.5	0.2	0.2
Lane LOS	B	B	A	A
Approach Delay (s)	12.9	12.5	0.2	0.2
Approach LOS	B	B		

Intersection Summary					
Average Delay			1.0		
Intersection Capacity Utilization			34.3%	ICU Level of Service	A
Analysis Period (min)			15		

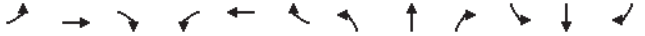


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (veh/h)	5	0	5	5	10	10	10	130	5	5	115	0
Future Volume (Veh/h)	5	0	5	5	10	10	10	130	5	5	115	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	6	0	6	6	12	12	12	159	6	6	140	0
Pedestrians		5			5			2			1	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	362	351	147	351	348	168	145			170		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	362	351	147	351	348	168	145			170		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	100	99	99	98	99	99			100		
cM capacity (veh/h)	568	565	900	591	567	877	1444			1414		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	12	30	177	146
Volume Left	6	6	12	6
Volume Right	6	12	6	0
cSH	697	667	1444	1414
Volume to Capacity	0.02	0.05	0.01	0.00
Queue Length 95th (m)	0.4	1.1	0.2	0.1
Control Delay (s)	10.3	10.7	0.6	0.3
Lane LOS	B	B	A	A
Approach Delay (s)	10.3	10.7	0.6	0.3
Approach LOS	B	B		

Intersection Summary					
Average Delay			1.6		
Intersection Capacity Utilization			21.7%	ICU Level of Service	A
Analysis Period (min)			15		

HCM Signalized Intersection Capacity Analysis FTAM
19: Francis Road/Designers Way & Plains Road E/Plains Road East 09/20/2017



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	65	950	25	100	640	10	35	15	330	50	5	45
Future Volume (vph)	65	950	25	100	640	10	35	15	330	50	5	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.0		3.0	5.0		6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	1.00		1.00	0.86		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	0.96	1.00
Satd. Flow (prot)	1748	3408		1785	3412		1638	1579		1570	1572	1321
Flt Permitted	0.34	1.00		0.19	1.00		0.95	1.00		0.95	0.96	1.00
Satd. Flow (perm)	624	3408		357	3412		1638	1579		1570	1572	1321
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	70	1022	27	108	688	11	38	16	355	54	5	48
RTOR Reduction (vph)	0	2	0	0	1	0	0	227	0	0	0	45
Lane Group Flow (vph)	70	1047	0	108	698	0	38	144	0	29	30	3
Confl. Peds. (#/hr)	8		4	4		8	17					17
Heavy Vehicles (%)	2%	4%	15%	0%	4%	25%	9%	0%	2%	8%	14%	11%
Bus Blockages (#/hr)	0	0	8	0	0	6	0	0	0	0	0	0
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA		custom	NA	Perm
Protected Phases	5	2		1	6		4	4		8	8	
Permitted Phases	2			6						8		8
Actuated Green, G (s)	54.4	49.0		55.2	49.4		10.5	10.5		5.8	5.8	5.8
Effective Green, g (s)	56.4	50.0		57.2	50.4		11.5	11.5		6.8	6.8	6.8
Actuated g/C Ratio	0.59	0.53		0.60	0.53		0.12	0.12		0.07	0.07	0.07
Clearance Time (s)	4.0	6.0		4.0	6.0		7.0	7.0		7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	445	1791		316	1808		198	190		112	112	94
v/s Ratio Prot	0.01	c0.31		c0.02	0.20		0.02	c0.09		0.02	c0.02	
v/s Ratio Perm	0.08			0.18								0.00
v/c Ratio	0.16	0.58		0.34	0.39		0.19	0.76		0.26	0.27	0.04
Uniform Delay, d1	8.4	15.4		9.6	13.2		37.6	40.5		41.8	41.8	41.1
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.2	1.4		0.6	0.6		0.5	15.9		1.2	1.3	0.2
Delay (s)	8.6	16.8		10.3	13.8		38.1	56.3		43.0	43.1	41.3
Level of Service	A	B		B	B		D	E		D	D	D
Approach Delay (s)		16.3			13.4			54.6			42.2	
Approach LOS		B			B			D			D	

Intersection Summary				
HCM 2000 Control Delay	22.9	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.56			
Actuated Cycle Length (s)	95.1	Sum of lost time (s)	20.0	
Intersection Capacity Utilization	67.3%	ICU Level of Service	C	
Analysis Period (min)	15			
c Critical Lane Group				

HCM Signalized Intersection Capacity Analysis FTAM
22: QEW NB Off-Ramp & North Shore Boulevard E 09/20/2017



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER
Lane Configurations											
Traffic Volume (vph)	0	615	130	0	705	295	215	0	730	0	0
Future Volume (vph)	0	615	130	0	705	295	215	0	730	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		6.0		6.0		
Lane Util. Factor		0.95			0.95		1.00		1.00		
Frpb, ped/bikes		1.00			0.99		1.00		1.00		
Flpb, ped/bikes		1.00			1.00		1.00		1.00		
Frt		0.97			0.96		1.00		0.85		
Flt Protected		1.00			1.00		0.95		1.00		
Satd. Flow (prot)		3352			3333		1750		1566		
Flt Permitted		1.00			1.00		0.95		1.00		
Satd. Flow (perm)		3352			3333		1750		1566		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	683	144	0	783	328	239	0	811	0	0
RTOR Reduction (vph)	0	29	0	0	75	0	0	0	0	0	0
Lane Group Flow (vph)	0	798	0	0	1036	0	239	0	811	0	0
Confl. Peds. (#/hr)			3			2					
Heavy Vehicles (%)	0%	4%	0%	0%	2%	1%	2%	0%	2%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	2	0	0	0	0	0
Turn Type		NA			NA		Prot		custom		
Protected Phases		2			6		4		4		
Permitted Phases									2		
Actuated Green, G (s)		25.4			25.4		23.3		48.7		
Effective Green, g (s)		26.4			26.4		24.3		50.7		
Actuated g/C Ratio		0.43			0.43		0.39		0.82		
Clearance Time (s)		6.0			6.0		7.0		7.0		
Vehicle Extension (s)		3.0			3.0		3.0		3.0		
Lane Grp Cap (vph)		1434			1426		689		1439		
v/s Ratio Prot		0.24			c0.31		0.14		c0.22		
v/s Ratio Perm									0.30		
v/c Ratio		0.56			0.73		0.35		0.56		
Uniform Delay, d1		13.3			14.7		13.1		1.8		
Progression Factor		1.00			1.00		1.00		1.00		
Incremental Delay, d2		0.5			1.9		1.4		0.5		
Delay (s)		13.7			16.5		14.5		2.3		
Level of Service		B			B		B		A		
Approach Delay (s)		13.7			16.5			5.1		0.0	
Approach LOS		B			B			A		A	

Intersection Summary				
HCM 2000 Control Delay	11.7	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.69			
Actuated Cycle Length (s)	61.7	Sum of lost time (s)	11.0	
Intersection Capacity Utilization	76.5%	ICU Level of Service	D	
Analysis Period (min)	15			
c Critical Lane Group				



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	425	455	105	140	10
Future Volume (Veh/h)	10	425	455	105	140	10
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	11	447	479	111	147	11
Pedestrians			1		7	
Lane Width (m)			3.5		3.5	
Walking Speed (m/s)			1.2		1.2	
Percent Blockage			0		1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			358			
pX, platoon unblocked	0.81				0.81	0.81
vC, conflicting volume	597				1012	542
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	384				896	316
tC, single (s)	4.3				6.4	6.3
tC, 2 stage (s)						
tF (s)	2.4				3.5	3.4
p0 queue free %	99				40	98
cM capacity (veh/h)	863				244	567

Direction, Lane #	EB 1	WB 1	SB 1	SB 2
Volume Total	458	590	147	11
Volume Left	11	0	147	0
Volume Right	0	111	0	11
cSH	863	1700	244	567
Volume to Capacity	0.01	0.35	0.60	0.02
Queue Length 95th (m)	0.3	0.0	28.3	0.5
Control Delay (s)	0.4	0.0	40.0	11.5
Lane LOS	A		E	B
Approach Delay (s)	0.4	0.0	38.0	
Approach LOS			E	

Intersection Summary				
Average Delay	5.1			
Intersection Capacity Utilization	44.9%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	150	445	485	440	295	80
Future Volume (vph)	150	445	485	440	295	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	5.0	5.0	5.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1749	1824	1807	1581	1733	1531
Flt Permitted	0.33	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	599	1824	1807	1581	1733	1531
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	161	478	522	473	317	86
RTOR Reduction (vph)	0	0	0	230	0	65
Lane Group Flow (vph)	161	478	522	243	317	21
Confl. Peds. (#/hr)	2					1
Heavy Vehicles (%)	2%	3%	4%	1%	3%	2%
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		8	
Permitted Phases	2			6		8
Actuated Green, G (s)	56.2	56.2	45.2	45.2	20.7	20.7
Effective Green, g (s)	57.2	57.2	46.2	46.2	21.7	21.7
Actuated g/C Ratio	0.64	0.64	0.51	0.51	0.24	0.24
Clearance Time (s)	3.0	6.0	6.0	6.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	496	1160	928	812	418	369
v/s Ratio Prot	0.03	c0.26	c0.29		c0.18	
v/s Ratio Perm	0.17			0.15		0.01
v/c Ratio	0.32	0.41	0.56	0.30	0.76	0.06
Uniform Delay, d1	8.1	8.1	14.9	12.6	31.7	26.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	1.1	2.5	0.9	7.7	0.1
Delay (s)	8.4	9.1	17.4	13.5	39.4	26.3
Level of Service	A	A	B	B	D	C
Approach Delay (s)		9.0	15.5		36.6	
Approach LOS		A	B		D	

Intersection Summary				
HCM 2000 Control Delay	17.6	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.60			
Actuated Cycle Length (s)	89.9	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	62.7%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	245	15	10	125	50	85
Future Volume (Veh/h)	245	15	10	125	50	85
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	269	16	11	137	55	93
Pedestrians	9			16	18	
Lane Width (m)	3.5			3.5	3.5	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	1			1	1	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)					219	
pX, platoon unblocked						
vC, conflicting volume	288	126	157			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	288	126	157			
tC, single (s)	6.4	6.2	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.4			
p0 queue free %	61	98	99			
cM capacity (veh/h)	682	910	1327			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	285	148	148
Volume Left	269	11	0
Volume Right	16	0	93
cSH	692	1327	1700
Volume to Capacity	0.41	0.01	0.09
Queue Length 95th (m)	16.2	0.2	0.0
Control Delay (s)	13.8	0.6	0.0
Lane LOS	B	A	
Approach Delay (s)	13.8	0.6	0.0
Approach LOS	B		

Intersection Summary				
Average Delay		6.9		
Intersection Capacity Utilization		36.1%	ICU Level of Service	A
Analysis Period (min)		15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	65	25	15	165	90	35
Future Volume (vph)	65	25	15	165	90	35
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	79	30	18	201	110	43

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	109	219	153
Volume Left (vph)	79	0	110
Volume Right (vph)	30	201	0
Hadj (s)	0.31	-0.51	0.16
Departure Headway (s)	5.0	3.9	4.6
Degree Utilization, x	0.15	0.23	0.19
Capacity (veh/h)	666	899	755
Control Delay (s)	8.9	8.0	8.7
Approach Delay (s)	8.9	8.0	8.7
Approach LOS	A	A	A

Intersection Summary				
Delay		8.4		
Level of Service		A		
Intersection Capacity Utilization		34.7%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Unsignalized Intersection Capacity Analysis FTAM
35: Warwick Drive & Surrey Lane 09/20/2017



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	125	20	40	65	35	70
Future Volume (Veh/h)	125	20	40	65	35	70
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	156	25	50	81	44	88
Pedestrians	12				1	
Lane Width (m)	3.5				3.5	
Walking Speed (m/s)	1.2				1.2	
Percent Blockage	1				0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	282	100	144			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	282	100	144			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	77	97	97			
cM capacity (veh/h)	674	938	1437			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	181	131	132
Volume Left	156	50	0
Volume Right	25	0	88
cSH	701	1437	1700
Volume to Capacity	0.26	0.03	0.08
Queue Length 95th (m)	8.2	0.9	0.0
Control Delay (s)	11.9	3.1	0.0
Lane LOS	B	A	
Approach Delay (s)	11.9	3.1	0.0
Approach LOS	B		

Intersection Summary				
Average Delay		5.8		
Intersection Capacity Utilization		27.1%	ICU Level of Service	A
Analysis Period (min)		15		

HCM Signalized Intersection Capacity Analysis FTAM
36: QEW NB Off-Ramp/Plains Rd & Fairview Street 09/20/2017



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	110	1115	115	0	530	10	173	250	560	0	0	250
Future Volume (vph)	110	1115	115	0	530	10	173	250	560	0	0	250
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	5.0			5.0		6.0	6.0	6.0			6.0
Lane Util. Factor	1.00	0.91			0.91		0.95	0.91	0.95			1.00
Frpb, ped/bikes	1.00	1.00			1.00		1.00	1.00	1.00			1.00
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00	1.00			1.00
Frt	1.00	0.99			1.00		1.00	0.94	0.85			0.85
Flt Protected	0.95	1.00			1.00		0.95	1.00	1.00			1.00
Satd. Flow (prot)	1732	4904			4862		1679	1592	1502			1536
Flt Permitted	0.40	1.00			1.00		0.95	1.00	1.00			1.00
Satd. Flow (perm)	736	4904			4862		1679	1592	1502			1536
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	118	1199	124	0	570	11	186	269	602	0	0	269
RTOR Reduction (vph)	0	13	0	0	2	0	0	22	50	0	0	185
Lane Group Flow (vph)	118	1310	0	0	579	0	167	447	371	0	0	84
Confl. Peds. (#/hr)	1		1	1		1						
Heavy Vehicles (%)	3%	3%	2%	0%	5%	13%	1%	1%	1%	0%	0%	4%
Turn Type	pm+pt	NA			NA		Perm	NA	Perm	D.Pm		Perm
Protected Phases	1	2			2			4				
Permitted Phases	2	1					4		4	4		4
Actuated Green, G (s)	50.2	50.2			42.0		28.4	28.4	28.4			28.4
Effective Green, g (s)	52.2	52.2			43.0		29.4	29.4	29.4			29.4
Actuated g/C Ratio	0.55	0.55			0.45		0.31	0.31	0.31			0.31
Clearance Time (s)	3.0	6.0			6.0		7.0	7.0	7.0			7.0
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0			3.0
Lane Grp Cap (vph)	502	2706			2210		521	494	466			477
v/s Ratio Prot	0.02	c0.22			0.12							
v/s Ratio Perm	0.11	0.05					0.10	0.28	0.25			0.05
v/c Ratio	0.24	0.48			0.26		0.32	0.90	0.80			0.18
Uniform Delay, d1	10.2	13.0			16.0		25.0	31.3	29.9			23.8
Progression Factor	1.00	1.00			1.00		1.00	1.00	1.00			1.00
Incremental Delay, d2	0.2	0.1			0.3		0.4	19.9	9.2			0.2
Delay (s)	10.5	13.1			16.3		25.3	51.1	39.0			23.9
Level of Service	B	B			B		C	D	D			C
Approach Delay (s)		12.9			16.3			42.2			23.9	
Approach LOS		B			B			D			C	

Intersection Summary				
HCM 2000 Control Delay	23.6	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.64			
Actuated Cycle Length (s)	94.6	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	70.0%	ICU Level of Service	C	
Analysis Period (min)	15			
Description: OPTIMIZED				
c Critical Lane Group				



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	15	50	35	15	45	40
Future Volume (Veh/h)	15	50	35	15	45	40
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.57	0.57	0.57	0.57	0.57	0.57
Hourly flow rate (vph)	26	88	61	26	79	70
Pedestrians			1		11	
Lane Width (m)			3.5		3.5	
Walking Speed (m/s)			1.2		1.2	
Percent Blockage			0		1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	98				226	85
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	98				226	85
tC, single (s)	4.2				6.5	6.2
tC, 2 stage (s)						
tF (s)	2.3				3.6	3.3
p0 queue free %	98				89	93
cM capacity (veh/h)	1457				733	960

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	114	87	149
Volume Left	26	0	79
Volume Right	0	26	70
cSH	1457	1700	824
Volume to Capacity	0.02	0.05	0.18
Queue Length 95th (m)	0.4	0.0	5.3
Control Delay (s)	1.8	0.0	10.3
Lane LOS	A		B
Approach Delay (s)	1.8	0.0	10.3
Approach LOS			B

Intersection Summary				
Average Delay		5.0		
Intersection Capacity Utilization		21.7%	ICU Level of Service	A
Analysis Period (min)		15		



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	70	25	30	100	60	65
Future Volume (vph)	70	25	30	100	60	65
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	78	28	33	111	67	72

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total (vph)	106	144	139
Volume Left (vph)	0	33	67
Volume Right (vph)	28	0	72
Hadj (s)	-0.10	0.11	-0.18
Departure Headway (s)	4.3	4.4	4.3
Degree Utilization, x	0.13	0.18	0.17
Capacity (veh/h)	807	774	793
Control Delay (s)	7.9	8.4	8.1
Approach Delay (s)	7.9	8.4	8.1
Approach LOS	A	A	A

Intersection Summary				
Delay		8.2		
Level of Service		A		
Intersection Capacity Utilization		27.6%	ICU Level of Service	A
Analysis Period (min)		15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	690	85	115	1345	175	180	190	80	305	300	145
Future Volume (vph)	90	690	85	115	1345	175	180	190	80	305	300	145
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.0	5.0	3.0	5.0		3.0	6.0		3.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.95	1.00	0.99		1.00	0.99		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1767	3466	1519	1763	3456		1750	1731		1761	1879	1581
Flt Permitted	0.08	1.00	1.00	0.29	1.00		0.24	1.00		0.30	1.00	1.00
Satd. Flow (perm)	140	3466	1519	545	3456		438	1731		563	1879	1581
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	93	711	88	119	1387	180	186	196	82	314	309	149
RTOR Reduction (vph)	0	0	48	0	8	0	0	13	0	0	0	120
Lane Group Flow (vph)	93	711	40	119	1559	0	186	265	0	314	309	29
Confl. Peds. (#/hr)	13		15	15		13			24	24		
Heavy Vehicles (%)	1%	3%	0%	1%	1%	1%	2%	2%	3%	1%	0%	1%
Bus Blockages (#/hr)	0	0	0	0	0	6	0	0	2	0	0	0
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6			4			8		8
Actuated Green, G (s)	60.2	52.1	52.1	61.4	52.7		35.0	22.0		35.0	22.0	22.0
Effective Green, g (s)	62.2	53.1	53.1	63.4	53.7		37.0	23.0		37.0	23.0	23.0
Actuated g/C Ratio	0.53	0.45	0.45	0.54	0.46		0.32	0.20		0.32	0.20	0.20
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0		4.0	7.0		4.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	201	1575	690	396	1588		296	340		321	370	311
v/s Ratio Prot	c0.04	0.21		c0.02	c0.45		0.08	0.15		c0.12	0.16	
v/s Ratio Perm	0.21		0.03	0.14			0.12			c0.19		0.02
v/c Ratio	0.46	0.45	0.06	0.30	0.98		0.63	0.78		0.98	0.84	0.09
Uniform Delay, d1	23.9	21.9	17.8	13.9	31.1		31.4	44.5		36.2	45.1	38.4
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.7	0.9	0.2	0.4	18.6		4.1	10.8		43.8	14.9	0.1
Delay (s)	25.6	22.8	18.0	14.3	49.7		35.6	55.3		80.0	60.0	38.5
Level of Service	C	C	B	B	D		D	E		E	E	D
Approach Delay (s)		22.6			47.2			47.4			64.0	
Approach LOS		C			D			D			E	

Intersection Summary				
HCM 2000 Control Delay	44.9	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.93			
Actuated Cycle Length (s)	116.8	Sum of lost time (s)	17.0	
Intersection Capacity Utilization	96.2%	ICU Level of Service	F	
Analysis Period (min)	15			
Description: OPTIMIZED				

c Critical Lane Group



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	30	55	60	395	455	40
Future Volume (Veh/h)	30	55	60	395	455	40
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	32	58	63	416	479	42
Pedestrians				2		
Lane Width (m)				3.5		
Walking Speed (m/s)				1.2		
Percent Blockage				0		
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)					302	
pX, platoon unblocked	0.84	0.84	0.84			
vC, conflicting volume	1042	502	521			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	957	318	340			
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	90	94			
cM capacity (veh/h)	228	605	1029			

Direction, Lane #	EB 1	NB 1	NB 2	SB 1
Volume Total	90	63	416	521
Volume Left	32	63	0	0
Volume Right	58	0	0	42
cSH	381	1029	1700	1700
Volume to Capacity	0.24	0.06	0.24	0.31
Queue Length 95th (m)	7.2	1.6	0.0	0.0
Control Delay (s)	17.3	8.7	0.0	0.0
Lane LOS	C	A		
Approach Delay (s)	17.3	1.1		0.0
Approach LOS	C			

Intersection Summary				
Average Delay	1.9			
Intersection Capacity Utilization	45.4%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	40	90	365	30	150	360
Future Volume (Veh/h)	40	90	365	30	150	360
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	43	96	388	32	160	383
Pedestrians	3					
Lane Width (m)	3.5					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						401
pX, platoon unblocked	0.96					
vC, conflicting volume	1110	407			423	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1096	407			423	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	78	85			86	
cM capacity (veh/h)	197	638			1139	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	139	420	160	383
Volume Left	43	0	160	0
Volume Right	96	32	0	0
cSH	377	1700	1139	1700
Volume to Capacity	0.37	0.25	0.14	0.23
Queue Length 95th (m)	13.3	0.0	3.9	0.0
Control Delay (s)	20.0	0.0	8.7	0.0
Lane LOS	C		A	
Approach Delay (s)	20.0	0.0	2.6	
Approach LOS	C			

Intersection Summary				
Average Delay		3.8		
Intersection Capacity Utilization		47.1%	ICU Level of Service	A
Analysis Period (min)		15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1085	345	0	1790	0	0	0	0	390	0	195
Future Volume (vph)	0	1085	345	0	1790	0	0	0	0	390	0	195
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0		5.0					6.0		6.0
Lane Util. Factor		0.91	1.00		0.91					0.97		1.00
Frpb, ped/bikes		1.00	0.96		1.00					1.00		1.00
Flpb, ped/bikes		1.00	1.00		1.00					1.00		1.00
Frt		1.00	0.85		1.00					1.00		0.85
Flt Protected		1.00	1.00		1.00					0.95		1.00
Satd. Flow (prot)		5029	1498		5079					3429		1566
Flt Permitted		1.00	1.00		1.00					0.95		1.00
Satd. Flow (perm)		5029	1498		5079					3429		1566
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	1107	352	0	1827	0	0	0	0	398	0	199
RTOR Reduction (vph)	0	0	93	0	0	0	0	0	0	0	0	27
Lane Group Flow (vph)	0	1107	259	0	1827	0	0	0	0	398	0	172
Confl. Peds. (#/hr)			14	14			1					1
Heavy Vehicles (%)	0%	2%	2%	0%	1%	0%	0%	0%	0%	1%	0%	2%
Turn Type		NA	Perm		NA					Prot		Prot
Protected Phases		2			6					8		8
Permitted Phases			2									
Actuated Green, G (s)		84.1	84.1		84.1					18.4		18.4
Effective Green, g (s)		85.1	85.1		85.1					19.4		19.4
Actuated g/C Ratio		0.74	0.74		0.74					0.17		0.17
Clearance Time (s)		6.0	6.0		6.0					7.0		7.0
Vehicle Extension (s)		3.0	3.0		3.0					3.0		3.0
Lane Grp Cap (vph)		3705	1103		3742					575		263
v/s Ratio Prot		0.22			c0.36					c0.12		0.11
v/s Ratio Perm			0.17									
v/c Ratio		0.30	0.24		0.49					0.69		0.65
Uniform Delay, d1		5.1	4.8		6.2					45.2		44.9
Progression Factor		1.00	1.00		1.00					1.00		1.00
Incremental Delay, d2		0.2	0.5		0.5					3.6		5.7
Delay (s)		5.3	5.3		6.7					48.8		50.6
Level of Service		A	A		A					D		D
Approach Delay (s)		5.3			6.7			0.0			49.4	
Approach LOS		A			A			A			D	

Intersection Summary					
HCM 2000 Control Delay		12.8	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio		0.53			
Actuated Cycle Length (s)		115.5	Sum of lost time (s)	11.0	
Intersection Capacity Utilization		55.9%	ICU Level of Service	B	
Analysis Period (min)		15			

c Critical Lane Group



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	60	40	355	10	40	355
Future Volume (Veh/h)	60	40	355	10	40	355
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	66	44	390	11	44	390
Pedestrians	2					
Lane Width (m)	3.5					
Walking Speed (m/s)	1.2					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	876	398			403	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	876	398			403	
tC, single (s)	6.4	6.2			4.3	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.4	
p0 queue free %	79	93			96	
cM capacity (veh/h)	308	655			1063	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	110	401	434
Volume Left	66	0	44
Volume Right	44	11	0
cSH	391	1700	1063
Volume to Capacity	0.28	0.24	0.04
Queue Length 95th (m)	9.1	0.0	1.0
Control Delay (s)	17.8	0.0	1.3
Lane LOS	C		A
Approach Delay (s)	17.8	0.0	1.3
Approach LOS	C		

Intersection Summary				
Average Delay	2.7			
Intersection Capacity Utilization	56.0%	ICU Level of Service		B
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Traffic Volume (vph)	10	10	0	5	75	75	0	0	5	0	0	25
Future Volume (vph)	10	10	0	5	75	75	0	0	5	0	0	25
Peak Hour Factor	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55
Hourly flow rate (vph)	18	18	0	9	136	136	0	0	9	0	0	45

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	36	281	9	45
Volume Left (vph)	18	9	0	0
Volume Right (vph)	0	136	9	45
Hadj (s)	0.38	-0.28	-0.60	-0.60
Departure Headway (s)	4.6	3.8	4.0	4.0
Degree Utilization, x	0.05	0.29	0.01	0.05
Capacity (veh/h)	753	939	825	832
Control Delay (s)	7.9	8.3	7.0	7.2
Approach Delay (s)	7.9	8.3	7.0	7.2
Approach LOS	A	A	A	A

Intersection Summary				
Delay	8.1			
Level of Service	A			
Intersection Capacity Utilization	27.4%	ICU Level of Service		A
Analysis Period (min)	15			

HCM Unsignalized Intersection Capacity Analysis FTPM
12: King Road & Cedar Avenue 09/20/2017



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	20	0	0	10	15	345	5	15	395	5
Future Volume (Veh/h)	0	0	20	0	0	10	15	345	5	15	395	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	0	0	21	0	0	11	16	367	5	16	420	5
Pedestrians					1			4			1	
Lane Width (m)					3.5			3.5			3.5	
Walking Speed (m/s)					1.2			1.2			1.2	
Percent Blockage					0			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	868	860	426	882	860	372	425			373		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	868	860	426	882	860	372	425			373		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	97	100	100	98	99			99		
cM capacity (veh/h)	264	288	620	253	288	678	1145			1196		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	21	11	388	441
Volume Left	0	0	16	16
Volume Right	21	11	5	5
cSH	620	678	1145	1196
Volume to Capacity	0.03	0.02	0.01	0.01
Queue Length 95th (m)	0.8	0.4	0.3	0.3
Control Delay (s)	11.0	10.4	0.5	0.4
Lane LOS	B	B	A	A
Approach Delay (s)	11.0	10.4	0.5	0.4
Approach LOS	B	B		

Intersection Summary					
Average Delay		0.8			
Intersection Capacity Utilization	37.9%	ICU Level of Service		A	
Analysis Period (min)	15				

HCM Unsignalized Intersection Capacity Analysis FTPM
13: Francis Road & Cedar Avenue 09/20/2017



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	5	5	0	0	10	5	215	5	15	75	5
Future Volume (Veh/h)	5	5	5	0	0	10	5	215	5	15	75	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	6	6	6	0	0	11	6	239	6	17	83	6
Pedestrians		8			8			2			1	
Lane Width (m)		3.5			3.5			3.5			3.5	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		1			1			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	394	393	96	393	393	251	97			253		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	394	393	96	393	393	251	97			253		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	99	99	99	100	100	99	100			99		
cM capacity (veh/h)	545	530	958	545	530	787	1499			1315		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	18	11	251	106
Volume Left	6	0	6	17
Volume Right	6	11	6	6
cSH	629	787	1499	1315
Volume to Capacity	0.03	0.01	0.00	0.01
Queue Length 95th (m)	0.7	0.3	0.1	0.3
Control Delay (s)	10.9	9.6	0.2	1.3
Lane LOS	B	A	A	A
Approach Delay (s)	10.9	9.6	0.2	1.3
Approach LOS	B	A		

Intersection Summary					
Average Delay		1.3			
Intersection Capacity Utilization	25.2%	ICU Level of Service		A	
Analysis Period (min)	15				

HCM Signalized Intersection Capacity Analysis FTPM
19: Francis Road/Designers Way & Plains Road E/Plains Road East 09/20/2017



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	120	910	35	300	1365	20	30	40	205	325	60	240
Future Volume (vph)	120	910	35	300	1365	20	30	40	205	325	60	240
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	3.0	5.0		3.0	5.0		6.0	6.0		6.0	6.0	6.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		0.95	0.95	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00		1.00	0.87		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	0.97	1.00
Satd. Flow (prot)	1785	3469		1767	3525		1785	1616		1696	1726	1451
Flt Permitted	0.11	1.00		0.11	1.00		0.95	1.00		0.95	0.97	1.00
Satd. Flow (perm)	201	3469		206	3525		1785	1616		1696	1726	1451
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	124	938	36	309	1407	21	31	41	211	335	62	247
RTOR Reduction (vph)	0	2	0	0	1	0	0	156	0	0	0	203
Lane Group Flow (vph)	124	972	0	309	1427	0	31	96	0	198	199	44
Confl. Peds. (#/hr)	12		19	19		12	43					43
Heavy Vehicles (%)	0%	2%	6%	1%	1%	0%	0%	0%	2%	0%	0%	1%
Bus Blockages (#/hr)	0	0	8	0	0	6	0	0	0	0	0	0
Turn Type	pm+pt	NA		pm+pt	NA		Split	NA		custom	NA	Perm
Protected Phases	5	2		1	6		4	4		8	8	
Permitted Phases	2			6						8		8
Actuated Green, G (s)	44.1	36.4		56.6	44.9		11.1	11.1		18.0	18.0	18.0
Effective Green, g (s)	46.1	37.4		57.6	45.9		12.1	12.1		19.0	19.0	19.0
Actuated g/C Ratio	0.44	0.35		0.54	0.43		0.11	0.11		0.18	0.18	0.18
Clearance Time (s)	4.0	6.0		4.0	6.0		7.0	7.0		7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	218	1227		366	1530		204	184		304	310	260
v/s Ratio Prot	0.05	0.28		c0.14	c0.40		0.02	c0.06		c0.12	0.12	
v/s Ratio Perm	0.20			0.32								0.03
v/c Ratio	0.57	0.79		0.84	0.93		0.15	0.52		0.65	0.64	0.17
Uniform Delay, d1	22.8	30.7		26.7	28.4		42.2	44.1		40.3	40.2	36.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	3.4	5.3		16.1	11.8		0.3	2.7		4.9	4.5	0.3
Delay (s)	26.1	36.0		42.8	40.2		42.5	46.7		45.2	44.7	37.0
Level of Service	C	D		D	D		D	D		D	D	D
Approach Delay (s)		34.8			40.7			46.3			41.9	
Approach LOS		C			D			D			D	

Intersection Summary				
HCM 2000 Control Delay	39.6	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.82			
Actuated Cycle Length (s)	105.7	Sum of lost time (s)	20.0	
Intersection Capacity Utilization	87.9%	ICU Level of Service	E	
Analysis Period (min)	15			
c Critical Lane Group				

HCM Signalized Intersection Capacity Analysis FTPM
22: QEW NB Off-Ramp & North Shore Boulevard E 09/20/2017



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER
Lane Configurations											
Traffic Volume (vph)	0	485	95	0	1455	300	235	0	505	0	0
Future Volume (vph)	0	485	95	0	1455	300	235	0	505	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		6.0		6.0		
Lane Util. Factor		0.95			0.95		1.00		1.00		
Frpb, ped/bikes		1.00			1.00		1.00		1.00		
Flpb, ped/bikes		1.00			1.00		1.00		1.00		
Frt		0.98			0.97		1.00		0.85		
Flt Protected		1.00			1.00		0.95		1.00		
Satd. Flow (prot)		3422			3419		1767		1597		
Flt Permitted		1.00			1.00		0.95		1.00		
Satd. Flow (perm)		3422			3419		1767		1597		
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	511	100	0	1532	316	247	0	532	0	0
RTOR Reduction (vph)	0	13	0	0	14	0	0	0	0	0	0
Lane Group Flow (vph)	0	598	0	0	1834	0	247	0	532	0	0
Confl. Peds. (#/hr)	2		4	4		2					
Heavy Vehicles (%)	0%	1%	3%	0%	1%	3%	1%	0%	0%	0%	0%
Bus Blockages (#/hr)	0	0	0	0	0	2	0	0	0	0	0
Turn Type		NA			NA		Prot		custom		
Protected Phases		2			6		4		4		
Permitted Phases									2		
Actuated Green, G (s)		85.1			85.1		19.7		104.8		
Effective Green, g (s)		86.1			86.1		20.7		106.8		
Actuated g/C Ratio		0.73			0.73		0.18		0.91		
Clearance Time (s)		6.0			6.0		7.0		7.0		
Vehicle Extension (s)		3.0			3.0		3.0		3.0		
Lane Grp Cap (vph)		2501			2498		310		1529		
v/s Ratio Prot		0.17			c0.54		c0.14		0.06		
v/s Ratio Perm									0.27		
v/c Ratio		0.24			0.73		0.80		0.35		
Uniform Delay, d1		5.2			9.2		46.5		0.8		
Progression Factor		1.00			1.00		1.00		1.00		
Incremental Delay, d2		0.2			1.1		13.2		0.1		
Delay (s)		5.4			10.4		59.8		0.9		
Level of Service		A			B		E		A		
Approach Delay (s)		5.4			10.4			19.6		0.0	
Approach LOS		A			B			B		A	

Intersection Summary				
HCM 2000 Control Delay	11.6	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.75			
Actuated Cycle Length (s)	117.8	Sum of lost time (s)	11.0	
Intersection Capacity Utilization	71.3%	ICU Level of Service	C	
Analysis Period (min)	15			
Description: OPTIMIZED				
c Critical Lane Group				



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	465	640	235	45	10
Future Volume (Veh/h)	5	465	640	235	45	10
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	5	500	688	253	48	11
Pedestrians					6	
Lane Width (m)					3.5	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			358			
pX, platoon unblocked	0.68				0.68	0.68
vC, conflicting volume	947				1330	820
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	689				1251	503
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				62	97
cM capacity (veh/h)	621				127	388

Direction, Lane #	EB 1	WB 1	SB 1	SB 2
Volume Total	505	941	48	11
Volume Left	5	0	48	0
Volume Right	0	253	0	11
cSH	621	1700	127	388
Volume to Capacity	0.01	0.55	0.38	0.03
Queue Length 95th (m)	0.2	0.0	12.6	0.7
Control Delay (s)	0.2	0.0	49.7	14.5
Lane LOS	A		E	B
Approach Delay (s)	0.2	0.0	43.1	
Approach LOS			E	

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	58.2%	ICU Level of Service	B
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	125	390	735	965	190	175
Future Volume (vph)	125	390	735	965	190	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1767	1860	1860	1543	1767	1581
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1767	1860	1860	1543	1767	1581
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	133	415	782	1027	202	186
RTOR Reduction (vph)	0	0	0	296	0	156
Lane Group Flow (vph)	133	415	782	731	202	30
Confl. Peds. (#/hr)	2			2		1
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%
Turn Type	Prot	NA	NA	Perm	Prot	Prot
Protected Phases	5	2	6		8	8
Permitted Phases				6		
Actuated Green, G (s)	10.7	85.1	71.4	71.4	17.5	17.5
Effective Green, g (s)	11.7	86.1	72.4	72.4	18.5	18.5
Actuated g/C Ratio	0.10	0.74	0.62	0.62	0.16	0.16
Clearance Time (s)	3.0	7.0	7.0	7.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	177	1373	1154	958	280	250
v/s Ratio Prot	c0.08	0.22	0.42		c0.11	0.02
v/s Ratio Perm				c0.47		
v/c Ratio	0.75	0.30	0.68	0.76	0.72	0.12
Uniform Delay, d1	51.0	5.1	14.5	15.9	46.6	42.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	16.4	0.6	3.2	5.7	8.8	0.2
Delay (s)	67.4	5.7	17.7	21.7	55.4	42.3
Level of Service	E	A	B	C	E	D
Approach Delay (s)		20.7	19.9		49.1	
Approach LOS		C	B		D	

Intersection Summary			
HCM 2000 Control Delay	24.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	116.6	Sum of lost time (s)	14.0
Intersection Capacity Utilization	75.2%	ICU Level of Service	D
Analysis Period (min)	15		
Description: OPTIMIZED			
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	150	10	10	120	145	250
Future Volume (Veh/h)	150	10	10	120	145	250
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	163	11	11	130	158	272
Pedestrians	2			5	4	
Lane Width (m)	3.5			3.5	3.5	
Walking Speed (m/s)	1.2			1.2	1.2	
Percent Blockage	0			0	0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)					219	
pX, platoon unblocked	0.89	0.89	0.89			
vC, conflicting volume	452	301	432			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	321	151	299			
tC, single (s)	6.4	6.3	4.3			
tC, 2 stage (s)						
tF (s)	3.5	3.4	2.4			
p0 queue free %	72	99	99			
cM capacity (veh/h)	590	771	1036			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	174	141	430
Volume Left	163	11	0
Volume Right	11	0	272
cSH	599	1036	1700
Volume to Capacity	0.29	0.01	0.25
Queue Length 95th (m)	9.6	0.3	0.0
Control Delay (s)	13.4	0.8	0.0
Lane LOS	B	A	
Approach Delay (s)	13.4	0.8	0.0
Approach LOS	B		

Intersection Summary				
Average Delay		3.3		
Intersection Capacity Utilization		39.4%	ICU Level of Service	A
Analysis Period (min)		15		



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	165	80	30	115	40	15
Future Volume (vph)	165	80	30	115	40	15
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	183	89	33	128	44	17

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total (vph)	272	161	61
Volume Left (vph)	183	0	44
Volume Right (vph)	89	128	0
Hadj (s)	-0.03	-0.40	0.14
Departure Headway (s)	4.4	4.2	4.9
Degree Utilization, x	0.33	0.19	0.08
Capacity (veh/h)	781	800	685
Control Delay (s)	9.5	8.2	8.3
Approach Delay (s)	9.5	8.2	8.3
Approach LOS	A	A	A

Intersection Summary				
Delay		9.0		
Level of Service		A		
Intersection Capacity Utilization		38.2%	ICU Level of Service	A
Analysis Period (min)		15		



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	105	15	25	50	30	145
Future Volume (Veh/h)	105	15	25	50	30	145
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	127	18	30	60	36	175
Pedestrians	9				2	
Lane Width (m)	3.5				3.5	
Walking Speed (m/s)	1.2				1.2	
Percent Blockage	1				0	
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	254	132	220			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	254	132	220			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	82	98	98			
cM capacity (veh/h)	711	915	1351			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	145	90	211
Volume Left	127	30	0
Volume Right	18	0	175
cSH	732	1351	1700
Volume to Capacity	0.20	0.02	0.12
Queue Length 95th (m)	5.9	0.5	0.0
Control Delay (s)	11.1	2.7	0.0
Lane LOS	B	A	
Approach Delay (s)	11.1	2.7	0.0
Approach LOS	B		

Intersection Summary				
Average Delay		4.2		
Intersection Capacity Utilization		32.6%	ICU Level of Service	A
Analysis Period (min)		15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	1345	90	0	2245	5	115	175	340	5	0	540
Future Volume (vph)	95	1345	90	0	2245	5	115	175	340	5	0	540
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	2.0	5.0			5.0		6.0	6.0	6.0	6.0		6.0
Lane Util. Factor	1.00	0.91			0.91		0.95	0.91	0.95	1.00		1.00
Frpb, ped/bikes	1.00	1.00			1.00		1.00	1.00	1.00	1.00		1.00
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00	1.00	1.00		1.00
Frt	1.00	0.99			1.00		1.00	0.95	0.85	1.00		0.85
Flt Protected	0.95	1.00			1.00		0.95	1.00	1.00	0.95		1.00
Satd. Flow (prot)	1733	5015			5077		1662	1615	1502	1785		1597
Flt Permitted	0.06	1.00			1.00		0.95	1.00	1.00	0.34		1.00
Satd. Flow (perm)	116	5015			5077		1662	1615	1502	643		1597
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	97	1372	92	0	2291	5	117	179	347	5	0	551
RTOR Reduction (vph)	0	7	0	0	0	0	0	15	46	0	0	141
Lane Group Flow (vph)	97	1457	0	0	2296	0	105	270	207	5	0	410
Confl. Peds. (#/hr)	3		19	19		3						
Heavy Vehicles (%)	3%	1%	0%	0%	1%	0%	2%	0%	1%	0%	0%	0%
Turn Type	pm+pt	NA			NA		Perm	NA	Perm	D.Pm		Perm
Protected Phases	1	2			2			4				
Permitted Phases	2	1					4		4	4		4
Actuated Green, G (s)	70.4	70.4			62.0		29.0	29.0	29.0	29.0		29.0
Effective Green, g (s)	72.4	72.4			63.0		30.0	30.0	30.0	30.0		30.0
Actuated g/C Ratio	0.63	0.63			0.55		0.26	0.26	0.26	0.26		0.26
Clearance Time (s)	3.0	6.0			6.0		7.0	7.0	7.0	7.0		7.0
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0	3.0		3.0
Lane Grp Cap (vph)	204	3146			2771		432	419	390	167		415
v/s Ratio Prot	c0.04	0.25			c0.45							
v/s Ratio Perm	0.26	0.04					0.06	0.17	0.14	0.01		c0.26
v/c Ratio	0.48	0.46			0.83		0.24	0.64	0.53	0.03		0.99
Uniform Delay, d1	18.8	11.3			21.7		33.7	38.0	36.7	31.8		42.5
Progression Factor	1.00	1.00			1.00		1.00	1.00	1.00	1.00		1.00
Incremental Delay, d2	1.7	0.1			2.2		0.3	3.4	1.4	0.1		40.4
Delay (s)	20.5	11.4			23.9		34.0	41.4	38.1	31.9		82.9
Level of Service	C	B			C		C	D	D	C		F
Approach Delay (s)		12.0			23.9			38.9			82.4	
Approach LOS		B			C			D			F	

Intersection Summary				
HCM 2000 Control Delay	28.6	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.84			
Actuated Cycle Length (s)	115.4	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	102.3%	ICU Level of Service	G	
Analysis Period (min)	15			

c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	10	100	55	5	50
Future Volume (Veh/h)	5	10	100	55	5	50
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.57	0.57	0.57	0.57	0.57	0.57
Hourly flow rate (vph)	9	18	175	96	9	88
Pedestrians			1		11	
Lane Width (m)			3.5		3.5	
Walking Speed (m/s)			1.2		1.2	
Percent Blockage			0		1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	282				271	234
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	282				271	234
tC, single (s)	4.2				6.5	6.2
tC, 2 stage (s)						
tF (s)	2.3				3.6	3.3
p0 queue free %	99				99	89
cM capacity (veh/h)	1247				698	793

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	27	271	97
Volume Left	9	0	9
Volume Right	0	96	88
cSH	1247	1700	783
Volume to Capacity	0.01	0.16	0.12
Queue Length 95th (m)	0.2	0.0	3.4
Control Delay (s)	2.7	0.0	10.2
Lane LOS	A		B
Approach Delay (s)	2.7	0.0	10.2
Approach LOS			B

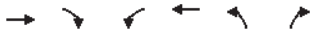
Intersection Summary				
Average Delay		2.7		
Intersection Capacity Utilization		20.4%	ICU Level of Service	A
Analysis Period (min)		15		



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	475	0	0	1605	0	5
Future Volume (Veh/h)	475	0	0	1605	0	5
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	505	0	0	1707	0	5
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	62			257		
pX, platoon unblocked						
vC, conflicting volume			505		1358	252
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			505		1358	252
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	99
cM capacity (veh/h)			1070		142	753

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	252	252	854	854	5
Volume Left	0	0	0	0	0
Volume Right	0	0	0	0	5
cSH	1700	1700	1700	1700	753
Volume to Capacity	0.15	0.15	0.50	0.50	0.01
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.2
Control Delay (s)	0.0	0.0	0.0	0.0	9.8
Lane LOS					A
Approach Delay (s)	0.0		0.0		9.8
Approach LOS					A

Intersection Summary				
Average Delay		0.0		
Intersection Capacity Utilization		47.7%	ICU Level of Service	A
Analysis Period (min)		15		



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Traffic Volume (vph)	85	50	80	80	45	45
Future Volume (vph)	85	50	80	80	45	45
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	89	53	84	84	47	47

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total (vph)	142	168	94
Volume Left (vph)	0	84	47
Volume Right (vph)	53	0	47
Hadj (s)	-0.19	0.15	-0.17
Departure Headway (s)	4.1	4.4	4.4
Degree Utilization, x	0.16	0.21	0.12
Capacity (veh/h)	848	784	760
Control Delay (s)	7.9	8.6	8.0
Approach Delay (s)	7.9	8.6	8.0
Approach LOS	A	A	A

Intersection Summary				
Delay	8.2			
Level of Service	A			
Intersection Capacity Utilization	31.6%	ICU Level of Service	A	
Analysis Period (min)	15			

APPENDIX D:
Collision Data Sheets

Collision Details Report

From: January 1, 2012 **To:** May 1, 2017

Location ..... FRANCIS RD @ PLAINS RD E **Municipality.....** Burlington

Traffic Control.... Traffic signal **Total Collisions....** 50

Collision ID	Date/Day/Time	Environment	Impact Type	Classification	Direction	Surface Cond'n	Vehicle Manoeuver	Vehicle type	First Event	Driver Action	Light
13-059547	2013-Apr-16, Tue,16:45	Clear	Rear end	Non-fatal injury	East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	Daylight
Comments:					East	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Lost control	
13-021034s	2013-Feb-08, Fri,12:20	Snow	Rear end	Non-reportable	West	Packed snow	Slowing or stopping	Passenger van	Other motor vehicle	Driving properly	Daylight
Comments:					West						
16-245155	2016-Aug-16, Tue,18:18	Clear	Angle	P.D. only	North	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Disobeyed traffic control	Daylight
Comments:					West	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	
15-003888	2015-Jan-06, Tue,13:02	Clear	Angle	Non-fatal injury	East	Wet	Going ahead	Delivery van	Other motor vehicle	Driving properly	Daylight
Comments:					South	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Disobeyed traffic control	
15-148759s	2015-Jun-17, Wed,17:30	Clear	Rear end	Non-reportable	East	Dry					Daylight
Comments:					East	Dry	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Lost control	
16-178077	2016-Jun-14, Tue,09:07	Clear	Rear end	P.D. only	North	Dry	Stopped	Passenger van	Other motor vehicle	Following too close	Daylight
Comments:					North	Dry	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Driving properly	
12-172480	2012-Oct-20, Sat,08:45	Rain	Rear end	P.D. only	East	Wet	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly	Daylight
Comments:					East	Wet	Slowing or stopping	Automobile, station wagon		Following too close	
13-161454s	2013-Sep-21, Sat,08:30	Rain	Rear end	P.D. only	East	Wet	Slowing or stopping	Delivery van	Other motor vehicle		Daylight
Comments:					East		Slowing or stopping	Automobile, station wagon		Driving properly	

Collision ID	Date/Day/Time	Environment	Impact Type	Classification	Direction	Surface Cond'n	Vehicle Manoeuver	Vehicle type	First Event	Driver Action	Light
13-112083	2013-Jul-09, Tue,09:20	Rain	Rear end	P.D. only	East	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Following too close	Daylight
Comments:					East	Wet	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Driving properly	
14-29656	2014-Dec-18, Thu,19:00	Clear	SMV other	P.D. only	South	Dry	Turning left	Passenger van	Pole (sign, parking meter)	Lost control	Dark
Comments:											
14-251985	2014-Oct-23, Thu,15:35	Clear	Turning movement	P.D. only	East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Disobeyed traffic control	Daylight
Comments:					West	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Improper turn	
16-148210s	2016-May-18, Wed,18:00	Clear	Sideswipe	Non-reportable	West	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	Daylight
Comments:					West						
12-158218	2012-Sep-24, Mon,15:40	Clear	Approaching	P.D. only	East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Other	Daylight
Comments:					West	Dry	Stopped	Automobile, station wagon		Driving properly	
12-186501	2012-Nov-12, Mon,14:06	Rain	Turning movement	P.D. only	North	Wet	Turning right	Automobile, station wagon		Improper turn	Daylight
Comments:					South	Wet	Turning left	Automobile, station wagon	Other motor vehicle	Driving properly	
17-016433	2017-Jan-14, Sat,14:35	Clear	Sideswipe	P.D. only	West	Dry	Changing lanes	Automobile, station wagon	Other motor vehicle	Driving properly	Daylight
Comments:					West	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Improper lane change	
17-006845	2017-Jan-06, Fri,18:52	Clear	Rear end	P.D. only	West	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Following too close	Dark
Comments:					West	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	
13-077524	2013-May-15, Wed,22:21	Clear	Turning movement	P.D. only	West	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Improper turn	Dark
Comments:					West	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Driving properly	
12-210972	2012-Dec-28, Fri,19:15	Clear	Angle	P.D. only	South	Wet	Turning left	Automobile, station wagon	Other motor vehicle	Driving properly	Dusk
Comments:					East	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Improper turn	
12-192762	2012-Nov-24, Sat,13:10	Clear	Rear end	P.D. only	West	Dry	Slowing or stopping	Automobile, station wagon	Other motor vehicle		Daylight
Comments:					West	Dry	Stopped	Automobile, station wagon	Other motor vehicle		

12-003744	2012-Jan-07, Sat,13:30	Clear	Angle	P.D. only	West	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Disobeyed traffic control	Daylight
Comments:					South	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Driving properly	
14-168107	2014-Jul-19, Sat,15:40	Rain	Sideswipe	P.D. only	West	Wet	Changing lanes	Pick-up truck	Other motor vehicle	Driving properly	Daylight
Comments:					West	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Failed to yield right-of-way	
12-146271	2012-Sep-04, Tue,15:35	Rain	Rear end	P.D. only	West	Wet	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly	Daylight
Comments:					West	Wet	Stopped	Automobile, station wagon		Driving properly	
12-102044s	2012-Jun-22, Fri,13:40	Clear	Rear end	Non-reportable	East	Dry				Driving properly	Daylight
Comments:					East		Slowing or stopping	Automobile, station wagon	Other motor vehicle		
15-179423	2015-Jul-22, Wed,10:45	Clear	Turning movement	Non-fatal injury	East	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Failed to yield right-of-way	Daylight
Comments:					West	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	
14-040970	2014-Feb-21, Fri,17:45	Fog, mist, smoke, dust	Turning movement	P.D. only	West	Wet	Turning left	Automobile, station wagon	Other motor vehicle	Disobeyed traffic control	Dusk
Comments:					East	Wet	Going ahead	Pick-up truck	Other motor vehicle	Driving properly	
16-288290	2016-Sep-24, Sat,18:13	Clear	Sideswipe	P.D. only	West	Dry	Changing lanes	Automobile, station wagon	Other motor vehicle	Improper lane change	Daylight
Comments:					West	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	
14-89926	2014-Apr-22, Tue,19:10	Clear	Turning movement	P.D. only	East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Disobeyed traffic control	Daylight
Comments:					West	Dry	Turning left	Pick-up truck	Other motor vehicle	Driving properly	
13-166886s	2013-Sep-30, Mon,10:00	Rain	Rear end	P.D. only	East	Wet	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly	Daylight
Comments:					East		Slowing or stopping	Automobile, station wagon			
15-319153s	2015-Dec-28, Mon,13:00	Clear	Rear end	Non-reportable	East	Dry				Driving properly	Daylight
Comments:					East	Dry	Stopped	Automobile, station wagon	Other motor vehicle		
13-037979	2013-Mar-09, Sat,16:20	Clear	Rear end	P.D. only	West	Dry	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Driving properly	Daylight
Comments:					West	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Other	

15-037161	2015-Feb-14, Sat,15:05	Clear	Rear end	P.D. only	North	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Following too close	Daylight
Comments:					North	Dry	Going ahead	Passenger van	Other motor vehicle	Driving properly	
13-073122	2013-May-08, Wed,21:32	Rain	Rear end	P.D. only	West	Wet	Going ahead	Pick-up truck	Other motor vehicle	Driving properly	Dark
Comments:					West	Wet	Going ahead	Pick-up truck	Other motor vehicle	Speed too fast for condition	
14-001141s	2014-Jan-02, Thu,16:45	Snow	Rear end	P.D. only	North	Packed snow	Slowing or stopping	Automobile, station wagon	Skidding/sliding	Driving properly	Dusk
Comments:					North						
15-48353	2015-Feb-27, Fri,14:00	Clear	Rear end	P.D. only	West	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Speed too fast for condition	Daylight
Comments:					West	Dry	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Driving properly	
16-277055s	2016-Sep-14, Wed,10:45	Clear	Rear end	Non-reportable	West	Dry				Driving properly	Daylight
Comments:					West	Dry	Stopped	Pick-up truck	Other motor vehicle		
15-319534	2015-Dec-29, Tue,19:15	Rain	SMV other	Non-fatal injury	West	Wet	Going ahead	Automobile, station wagon	Pedestrian	Driving properly	Dark
Comments:											
12-129391	2012-Aug-06, Mon,05:50	Clear	Rear end	Non-fatal injury	East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	Daylight
Comments:					East	Dry	Slowing or stopping	Automobile, station wagon		Following too close	
13-156956	2013-Sep-17, Tue,16:30	Clear	Angle	Non-fatal injury	North	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	Daylight
Comments:					East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Disobeyed traffic control	
12-006288	2012-Jan-11, Wed,18:00	Clear	SMV other	Non-fatal injury	West	Wet	Turning left	Automobile, station wagon	Pedestrian	Failed to yield right-of-way	Dark, artificial
Comments:						Wet					
12-054079s	2012-Apr-04, Wed,08:00	Clear	Rear end	Non-reportable	North	Dry	Turning right	Other	Other motor vehicle	Following too close	Daylight
Comments:					North						
16-286750s	2016-Sep-23, Fri,10:00	Clear	Rear end	Non-reportable	East	Dry	Slowing or stopping	Automobile, station wagon	Skidding/sliding	Driving properly	Daylight
Comments:					East	Dry					

15-256622	2015-Oct-17, Sat,21:51	Clear	Turning movement	P.D. only	West	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Improper turn	Dark
Comments:					East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	
14-113656	2014-May-19, Mon,18:10	Clear	Angle	Other	West	Dry	Going ahead	Bicycle	Other motor vehicle	Driving properly	Daylight
Comments:					North	Dry	Turning right	Automobile, station wagon	Cyclist	Failed to yield right-of-way	
14-296164s	2014-Dec-18, Thu,16:00	Clear	Rear end	Non-reportable	West	Dry	Slowing or stopping	Pick-up truck	Other motor vehicle	Driving properly	Dusk
Comments:					West	Dry					
14-213456s	2014-Sep-08, Mon,13:00	Clear	Rear end	P.D. only	East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	Daylight
Comments:					East	Dry	Stopped	Passenger van	Other motor vehicle	Driving properly	
14-080071	2014-Apr-10, Thu,22:34	Clear	Sideswipe	P.D. only	East	Dry	Changing lanes	Automobile, station wagon	Other motor vehicle	Driving properly	Dark, artificial
Comments:					East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Improper lane change	
14-291444	2014-Dec-12, Fri,11:38	Clear	Turning movement	P.D. only	East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	Daylight
Comments:					West	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Improper turn	
12-179834s	2012-Oct-30, Tue,16:30	Rain	Rear end	P.D. only	West	Wet	Stopped	Pick-up truck	Other motor vehicle	Driving properly	Daylight
Comments:					West		Unknown	Unknown	Other motor vehicle		
14-041701	2014-Feb-22, Sat,15:25	Clear	Angle	P.D. only	East	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	Daylight
Comments:					North	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Disobeyed traffic control	
15-007360	2015-Jan-10, Sat,11:44	Clear	Angle	P.D. only	North	Dry	Going ahead	Passenger van	Other motor vehicle	Driving properly	Daylight
Comments:					East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Disobeyed traffic control	

Collision Details Report

From: January 1, 2012 **To:** May 1, 2017

Location ..... KING RD @ NORTH SHORE BLVD E **Municipality.....** Burlington

Traffic Control.... Stop sign **Total Collisions....** 8

Collision ID	Date/Day/Time	Environment	Impact Type	Classification	Direction	Surface Cond'n	Vehicle Manoeuver	Vehicle type	First Event	Driver Action	Light
13-122340	2013-Jul-24, Wed,18:45	Clear	Angle	P.D. only	West	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Improper turn	Daylight
Comments:					South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	
13-105410s	2013-Jun-28, Fri,12:30	Clear	Rear end	P.D. only	East	Dry	Slowing or stopping	Automobile, station wagon			Daylight
Comments:					East		Stopped	Automobile, station wagon	Other motor vehicle	Driving properly	
12-196001	2012-Nov-30, Fri,16:01	Snow	SMV other	P.D. only	South	Ice	Going ahead	Automobile, station wagon	Skidding/sliding	Speed too fast for condition	Daylight
Comments:						Ice					
14-066895	2014-Mar-26, Wed,07:40	Clear	Rear end	P.D. only	East	Dry	Stopped	Truck - car carrier	Other motor vehicle	Driving properly	Daylight
Comments:					East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Speed too fast for condition	
12-073701	2012-May-07, Mon,18:25	Rain	Turning movement	P.D. only	South	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Improper turn	Daylight
Comments:					North	Wet	Turning left	Pick-up truck	Other motor vehicle	Driving properly	
12-012165	2012-Jan-22, Sun,02:20	Clear	SMV other	P.D. only	West	Dry	Going ahead	Automobile, station wagon	Ran off road	Lost control	Dark
Comments:											
12-062869	2012-Apr-19, Thu,17:44	Clear	Turning movement	Non-fatal injury	West	Dry	Turning left	Automobile, station wagon	Cyclist	Failed to yield right-of-way	Daylight
Comments:					East	Dry	Going ahead	Bicycle	Other motor vehicle	Driving properly	
15-174637	2015-Jul-16, Thu,19:00	Clear	Turning movement	P.D. only	North	Dry	Turning left	Passenger van	Other motor vehicle	Failed to yield right-of-way	Daylight
Comments:					South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	

Collision Details Report

From: January 1, 2012 **To:** May 1, 2017

Location ..... KING RD @ PLAINS RD E **Municipality.....** Burlington

Traffic Control.... Traffic signal **Total Collisions....** 41

Collision ID	Date/Day/Time	Environment	Impact Type	Classification	Direction	Surface Cond'n	Vehicle Manoeuver	Vehicle type	First Event	Driver Action	Light
13-030941	2013-Feb-25, Mon,18:30	Clear	Turning movement	P.D. only	West	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Disobeyed traffic control	Dark
Comments:					East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Improper turn	
15-180648	2015-Jul-23, Thu,17:40	Clear	Turning movement	P.D. only	West	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Disobeyed traffic control	Daylight
Comments:					East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	
13-047241	2013-Mar-26, Tue,16:49	Clear	Rear end	Other	North	Dry	Turning left	Pick-up truck	Other motor vehicle	Driving properly	Daylight
Comments:					North	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Following too close	
13-119560s	2013-Jul-19, Fri,19:00	Rain	Rear end	P.D. only	East	Wet	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Driving properly	Daylight
Comments:					East			Automobile, station wagon			
16-319296s	2016-Oct-23, Sun,16:00	Clear	Rear end	Non-reportable	East	Dry	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Driving properly	Daylight
Comments:					East	Dry	Stopped	Pick-up truck	Other motor vehicle	Driving properly	
14-079661s	2014-Apr-09, Wed,19:30	Clear	Rear end	P.D. only	East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle		Daylight
Comments:					East	Dry				Driving properly	
15-245726	2015-Oct-04, Sun,13:59	Clear	Rear end	P.D. only	East	Dry	Going ahead	Pick-up truck	Other motor vehicle	Following too close	Daylight
Comments:					East	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly	
12-099066	2012-Jun-17, Sun,23:05	Clear	Rear end	P.D. only	North	Dry	Reversing	Pick-up truck	Other motor vehicle	Other	Dark
Comments:					North	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly	

12-065193s	2012-Apr-23, Mon,12:00	Rain	SMV other	Non-reportable	South	Wet	Turning right	Automobile, station wagon	Skidding/sliding	Driving properly	Daylight
Comments:											
13-030914	2013-Feb-25, Mon,18:30	Clear	Turning movement	P.D. only	West	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Disobeyed traffic control	Dark
Comments:					East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Improper turn	
13-021721	2013-Feb-10, Sun,15:45	Clear	Rear end	Non-fatal injury	West	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	Daylight
Comments:					West	Dry	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Following too close	
13-123318	2013-Jul-26, Fri,11:19	Clear	SMV other	Non-fatal injury	East	Dry	Turning right	Automobile, station wagon	Pedestrian	Failed to yield right-of-way	Daylight
Comments:						Dry					
12-102649	2012-Jun-23, Sat,11:55	Clear	Rear end	P.D. only	East	Dry	Slowing or stopping	Passenger van	Other motor vehicle	Driving properly	Daylight
Comments:					East	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Other	
12-143385	2012-Aug-30, Thu,17:56	Clear	Turning movement	P.D. only	West	Dry	Going ahead	Automobile, station wagon		Driving properly	Daylight
Comments:					South	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Improper turn	
12-194978	2012-Nov-28, Wed,18:20	Clear	Sideswipe	P.D. only	South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	Dark, artificial
Comments:					South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	
14-071423	2014-Mar-31, Mon,16:30	Clear	Rear end	Non-fatal injury	West	Dry	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Following too close	Daylight
Comments:					West	Dry	Changing lanes	Automobile, station wagon	Other motor vehicle	Driving properly	
15-041233s	2015-Feb-19, Thu,12:00	Clear	Rear end	Non-reportable	South	Packed snow	Slowing or stopping	Automobile, station wagon	Skidding/sliding	Lost control	Daylight
Comments:					South	Packed snow					
14-280754s	2014-Nov-27, Thu,14:30	Clear	Turning movement	Non-reportable	West	Dry	Turning left			Failed to yield right-of-way	Daylight
Comments:					East	Dry	Turning right	Automobile, station wagon	Other motor vehicle		
16-289285	2016-Sep-25, Sun,18:10	Clear	Sideswipe	Non-fatal injury	North	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Driving properly	Daylight
Comments:					North	Dry	Turning left	Motorcycle	Other motor vehicle	Improper turn	

15-165504	2015-Jul-06, Mon,11:38	Clear	Rear end	P.D. only	West	Dry	Stopped	Pick-up truck	Other motor vehicle	Lost control	Daylight
Comments:					West	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	
15-76888	2015-Mar-30, Mon,14:30	Rain	Rear end	P.D. only	East	Wet	Stopped	Delivery van	Other motor vehicle	Driving properly	Daylight
Comments:					East	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Other	
14-236624	2014-Oct-05, Sun,09:39	Clear	Turning movement	Non-fatal injury	East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	Daylight
Comments:					West	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Improper turn	
16-52464	2016-Feb-20, Sat,14:57	Clear	Angle	Non-fatal injury	East	Dry	Going ahead	Pick-up truck	Other motor vehicle	Disobeyed traffic control	Daylight
Comments:					North	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Driving properly	
12-073596	2012-May-07, Mon,15:00	Rain	Rear end	P.D. only	East	Wet	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Following too close	Daylight
Comments:					East	Wet	Stopped	Passenger van	Other motor vehicle	Driving properly	
12-201373	2012-Dec-10, Mon,10:41	Rain	Rear end	P.D. only	East	Wet	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly	Daylight
Comments:					East	Wet	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Following too close	
13-046267	2013-Mar-24, Sun,20:26	Clear	Rear end	P.D. only	West	Dry	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Following too close	
Comments:					West	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	
16-307002s	2016-Oct-12, Wed,12:00	Clear	Rear end	Non-reportable	West	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly	Daylight
Comments:					West	Dry					
14-275198s	2014-Nov-21, Fri,11:00	Clear	Turning movement	Non-reportable	South	Wet	Turning left	Passenger van	Other motor vehicle		Daylight
Comments:					North	Wet	Turning right			Driving properly	
14-132856	2014-Jun-09, Mon,15:20	Clear	Sideswipe	P.D. only	West	Dry	Changing lanes	Automobile, station wagon	Other motor vehicle	Improper lane change	Daylight
Comments:					West	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	
14-134611s	2014-Jun-11, Wed,10:00	Clear	Sideswipe	P.D. only	North	Dry		Unknown			Daylight
Comments:					North	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	

13-152000	2013-Sep-10, Tue,16:22	Clear	Rear end	P.D. only	South	Dry	Going ahead	School bus	Other motor vehicle	Driving properly	Daylight
Comments:					South	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Other	
14-236299	2014-Oct-04, Sat,20:15	Clear	Sideswipe	P.D. only	West		Going ahead	Police vehicle	Other motor vehicle	Improper lane change	Dark
Comments:					West	Dry	Changing lanes	Automobile, station wagon	Other motor vehicle	Driving properly	
16-170772	2016-Jun-07, Tue,15:50	Clear	Angle	P.D. only	North	Dry	Turning right	Automobile, station wagon	Other motor vehicle	Failed to yield right-of-way	Daylight
Comments:					East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	
13-115103	2013-Jul-13, Sat,20:10	Clear	Rear end	P.D. only	East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Other	Daylight
Comments:					East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	
13-047136	2013-Mar-26, Tue,13:46	Clear	Turning movement	P.D. only	West	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Driving properly	Daylight
Comments:					East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Disobeyed traffic control	
14-022784s	2014-Jan-29, Wed,09:00	Clear	Rear end	P.D. only	East	Ice	Slowing or stopping	Automobile, station wagon	Other motor vehicle	Lost control	Daylight
Comments:					East	Ice	Slowing or stopping	Pick-up truck	Other motor vehicle	Driving properly	
16-007263	2016-Jan-08, Fri,13:50	Clear	Sideswipe	P.D. only	North	Dry	Changing lanes	Automobile, station wagon	Other motor vehicle	Improper turn	Daylight
Comments:					North	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	
15-207512s	2015-Aug-23, Sun,16:00	Clear	Rear end	Non-reportable	West	Dry				Driving properly	Daylight
Comments:					West	Dry	Stopped	Automobile, station wagon	Other motor vehicle		
14-148952	2014-Jun-27, Fri,19:20	Clear	Rear end	P.D. only	South	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Improper lane change	Daylight
Comments:					South	Dry	Stopped	Automobile, station wagon	Other motor vehicle	Driving properly	
13-228363	2013-Dec-17, Tue,20:27	Snow	Turning movement	P.D. only	West	Loose snow	Turning left	Automobile, station wagon	Other motor vehicle	Driving properly	Dark
Comments:					East	Loose snow	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	
16-389544	2016-Dec-27, Tue,14:37	Clear	SMV other	P.D. only	South	Dry	Turning left	Automobile, station wagon	Pole (utility, power)	Driving properly	Daylight
Comments:											

Collision Details Report

From: January 1, 2012 **To:** May 1, 2017

Location ..... FRANCIS RD @ NORTH SHORE BLVD E **Municipality.....** Burlington

Traffic Control.... Stop sign **Total Collisions....** 5

Collision ID	Date/Day/Time	Environment	Impact Type	Classification	Direction	Surface Cond'n	Vehicle Manoeuver	Vehicle type	First Event	Driver Action	Light
12-073920	2012-May-08, Tue,07:55	Rain	Sideswipe	P.D. only	South	Wet	Going ahead	Automobile, station wagon	Other motor vehicle	Driving properly	Daylight
Comments:					South	Wet	Reversing	Automobile, station wagon	Other motor vehicle	Other	
12-192716s	2012-Nov-24, Sat,11:00	Clear	Angle	P.D. only	West	Dry	Unknown	Unknown	Other motor vehicle		Daylight
Comments:					South		Turning left	Pick-up truck	Other motor vehicle		
14-172234	2014-Jul-24, Thu,13:40	Clear	Turning movement	Non-fatal injury	West	Dry	Turning left	Automobile, station wagon	Other motor vehicle	Driving properly	Daylight
Comments:					East	Dry	Going ahead	Automobile, station wagon	Other motor vehicle	Failed to yield right-of-way	
14-228382	2014-Sep-25, Thu,18:30	Clear	Other	Non-fatal injury	West	Dry	Turning right	Automobile, station wagon	Cyclist	Other	Daylight
Comments:					East	Dry	Going ahead	Bicycle	Other motor vehicle	Driving properly	
15-233043s	2015-Sep-19, Sat,15:40	Rain	Angle	Non-reportable	West	Wet				Driving properly	Daylight
Comments:					South	Wet	Stopped	Automobile, station wagon	Other motor vehicle		